

# **Generic Environmental Impact Statement for License Renewal of Nuclear Plants**

## **Supplement 52**

### **Regarding Davis-Besse Nuclear Power Station**

Final Report

Appendices

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# **Generic Environmental Impact Statement for License Renewal of Nuclear Plants**

## **Supplement 52**

### **Regarding Davis-Besse Nuclear Power Station**

Final Report

Appendices

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## ABSTRACT

This supplemental environmental impact statement (SEIS) has been prepared in response to an application submitted by FirstEnergy Nuclear Operating Company (FENOC) to renew the operating license for Davis-Besse Nuclear Power Station, Unit No. 1, (Davis-Besse) for an additional 20 years.

This SEIS includes the analysis that evaluates the environmental impacts of the proposed action and alternatives to the proposed action. Alternatives considered include replacement power from a new, natural-gas-fired combined-cycle (NGCC) power plant; combination alternative of NGCC, solar, wind, and compressed air energy storage; a coal-fired power plant; and not renewing the license (the no-action alternative).

The U.S. Nuclear Regulatory Commission's (NRC's) recommendation is that the adverse environmental impacts of license renewal for Davis-Besse are not great enough to deny the option of license renewal for energy-planning decisionmakers. This recommendation is based on the following:

- analysis and findings in the generic environmental impact statement,
- the Environmental Report submitted by FENOC,
- consultation with Federal, state, Tribal, and local agencies,
- NRC staff's own independent review,
- NRC staff's consideration of public comments received during the scoping process, and
- NRC staff's consideration of public comments received during the draft SEIS comment period.



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## EXECUTIVE SUMMARY

### BACKGROUND

By letter dated August 27, 2010, FirstEnergy Nuclear Operating Company (FENOC) submitted an application to the U.S. Nuclear Regulatory Commission (NRC) to issue a renewed operating license for Davis-Besse Nuclear Power Station, Unit No. 1, (Davis-Besse), for an additional 20-year period.

Pursuant to Title 10, Part 51.20(b)(2) of the *Code of Federal Regulations* (10 CFR 51.20(b)(2)), the renewal of a power reactor operating license requires preparation of an environmental impact statement (EIS) or a supplement to an existing EIS. In addition, 10 CFR 51.95(c) states that the NRC shall prepare an EIS, which is a supplement to the NRC's NUREG-1437, "Generic Environmental Impact Statement (GEIS) for License Renewal of Nuclear Plants."

The GEIS was originally published in 1996, and amended in 1999. Subsequently, on June 20, 2013, the NRC published a final rule (78 FR 37282) revising 10 CFR Part 51, "Environmental protection regulations for domestic licensing and related regulatory functions." The final rule updates the potential environmental impacts associated with the renewal of an operating license for a nuclear power reactor for an additional 20 years. A revised GEIS, which updates the 1996 GEIS, provides the technical basis for the final rule. The revised GEIS specifically supports the revised list of National Environmental Policy Act (NEPA) issues and associated environmental impact findings for license renewal contained in Table B-1 in Appendix B to Subpart A of the revised 10 CFR Part 51. The 2013 rule revised the previous rule to consolidate similar Category 1 and 2 issues, change some Category 2 issues into Category 1 issues, consolidate some of those issues with existing Category 1 issues, and adds new Category 1 and 2 issues.

The final rule became effective July 22, 2013, after publication in the Federal Register. Compliance by license renewal applicants is not required until June 20, 2014, (i.e., license renewal applications submitted later than 1 year after publication must be compliant with the new rule). Nevertheless, under NEPA, the NRC must now consider and analyze, in its license renewal Supplemental Environmental Impact Statement (SEIS), the potential significant impacts described by the final rule's new Category 2 issues, and to the extent there is any new and significant information, the potential significant impacts described by the final rule's new Category 1 issues.

In addition, on September 19, 2014, the NRC published a revised rule at 10 CFR 51.23 (Continued Storage Rule) and associated generic environmental impact statement for continued storage of spent nuclear fuel. The NRC staff has also separately addressed in this SEIS, under the uranium fuel cycle, the impacts from the Continued Storage Rule.

Upon acceptance of FENOC's application, the NRC staff began the environmental review process described in 10 CFR Part 51 by publishing a Notice of Intent, in the Federal Register, to prepare a supplemental environmental impact statement (SEIS) and conduct scoping. In preparation of this SEIS for Davis-Besse, the NRC staff performed the following:

- conducted public scoping meetings on November 4, 2010, in Port Clinton, Ohio;
- conducted a site audit at the plant in March 8-10, 2011;
- reviewed FENOC's Environmental Report (ER) and compared it to the GEIS;

## Executive Summary

- consulted with Federal, state, and local agencies;
- conducted a review of the issues following the guidance set forth in NUREG-1555, “Standard Review Plans for Environmental Reviews for Nuclear Power Plants, Supplement 1: Operating License Renewal”;
- considered public comments received during the scoping process;
- issued the draft SEIS for comment;
- conducted public meetings to receive comments on the draft SEIS on March 25, 2014; and
- considered the public comments received during the draft SEIS comment period.

### **PROPOSED ACTION**

FENOC initiated the proposed Federal action—issuing a renewed power reactor operating license—by submitting an application for the license renewal of Davis-Besse, for which the existing license (NPF-003) will expire on April 22, 2017. The NRC’s Federal action is the decision whether or not to renew the license for an additional 20 years (April 22, 2037).

### **PURPOSE AND NEED FOR ACTION**

The purpose and need for the proposed action (issuance of a renewed license) is to provide an option that allows for power generation capability beyond the term of the current nuclear power plant operating license to meet future system generating needs. Such needs may be determined by other energy-planning decisionmakers, such as state, utility, and, where authorized, Federal (other than NRC). This definition of purpose and need reflects the NRC’s recognition that, unless there are findings in the safety review required by the Atomic Energy Act (AEA) or findings in the National Environmental Policy Act (NEPA) environmental analysis that would lead the NRC to reject a license renewal application (LRA), the NRC does not have a role in the energy-planning decisions of whether a particular nuclear power plant should continue to operate.

If the renewed license is issued, the appropriate energy-planning decisionmakers, along with FENOC, will ultimately decide if the plant will continue to operate based on factors such as the need for power. If the operating license is not renewed, then the facility must be shut down on or before the expiration date of the current operating license—April 22, 2017.

## ENVIRONMENTAL IMPACTS OF LICENSE RENEWAL

The SEIS evaluates the potential environmental impacts of the proposed action. The environmental impacts from the proposed action are designated as SMALL, MODERATE, or LARGE. As set forth in the GEIS, Category 1 issues are those that meet all of the following criteria:

- The environmental impacts associated with the issue are determined to apply either to all plants or, for some issues, to plants having a specific type of cooling system or other specified plant or site characteristics.
- A single significance level (i.e., SMALL, MODERATE, or LARGE) has been assigned to the impacts, except for collective offsite radiological impacts from the fuel cycle and from high-level waste and spent fuel disposal.
- Mitigation of adverse impacts associated with the issue is considered in the analysis, and it has been determined that additional plant-specific mitigation measures are likely not to be sufficiently beneficial to warrant implementation.

**SMALL:** Environmental effects are not detectable or are so minor that they will neither destabilize nor noticeably alter any important attribute of the resource.

**MODERATE:** Environmental effects are sufficient to alter noticeably, but not to destabilize, important attributes of the resource.

**LARGE:** Environmental effects are clearly noticeable and are sufficient to destabilize important attributes of the resource.

For Category 1 issues, no additional site-specific analysis is required in this SEIS unless new and significant information is identified. Chapter 4 of this report presents the process for identifying new and significant information. Site-specific issues (Category 2) are those that do not meet one or more of the criterion for Category 1 issues; therefore, an additional site-specific review for these non-generic issues is required, and the results are documented in this SEIS.

FENOC submitted its ER under NRC's 1996 rule governing license renewal environmental reviews (61 FR 28467, June 5, 1996, as amended), as codified in NRC's environmental protection regulation, 10 CFR 51. The 1996 GEIS and Addendum 1 to the GEIS provided the technical basis for the list of NEPA issues and associated environmental impact findings for license renewal contained in Table B-1 in Appendix B to 40 Subpart A of 10 CFR Part 51. For Davis-Besse, the NRC staff initiated its environmental review in accordance with the 1996 rule and GEIS and documented its findings in Chapter 4 of this SEIS.

Under NEPA, the NRC must now consider and analyze in this SEIS the potential significant impacts described by the 2013 rule's new Category 2 issues, and to the extent there is any new and significant information, the potential significant impacts described by the 2013 rule's new Category 1 issues.

The new Category 1 issues include geology and soils, exposure of terrestrial organisms to radionuclides, exposure of aquatic organisms to radionuclides, human health impact from chemicals, and physical occupational hazards. Radionuclides released to groundwater, effects on terrestrial resources (non-cooling system impacts), minority and low-income populations (i.e., environmental justice), and cumulative impacts were added as new Category 2 issues. These issues are described in Chapter 4 of this SEIS.

The NRC staff did not identify any new issues applicable to Davis-Besse that have a significant environmental impact. The NRC staff, therefore, relies upon the conclusions of the 1996 and 2013 GEIS for all Category 1 issues applicable to Davis-Besse.

## Executive Summary

Table ES–1 summarizes the Category 2 issues applicable to Davis-Besse, as well as the NRC staff's findings related to those issues. If the NRC staff determined that there were no Category 2 issues applicable for a particular resource area, the findings of the GEIS, as documented in Appendix B to Subpart A of 10 CFR Part 51, stand. Hereafter in this SEIS, general references to the GEIS, without stipulation, are inclusive of the 1996 GEIS. Information and findings specific to the June 2013, final rule and GEIS, are identified as such.

**Table ES–1. Summary of NRC Conclusions Relating to Site-Specific Impact of License Renewal**

Resource Area	Relevant Category 2 Issues	Impacts
Land use	NONE	SMALL
Air quality	NONE	SMALL
Geology and soils	NONE <sup>(a)</sup>	SMALL
Surface water resources	NONE	SMALL
Groundwater resources	Radionuclides released to groundwater <sup>(a)</sup>	SMALL
Aquatic resources	NONE	SMALL
Terrestrial resources	Effects on terrestrial resources (non-cooling system impacts) <sup>(a)</sup>	SMALL
Protected species	Threatened or endangered species	No effect/ may affect, but is not likely to adversely affect <sup>(b)</sup>
Human health	Electromagnetic fields-acute effects (electric shock)	SMALL
Socioeconomics	Housing Impacts	SMALL
	Public services (public utilities)	SMALL
	Offsite land use	SMALL
	Public services (public transportation)	SMALL
	Historic and archaeological resources	SMALL to MODERATE
Cumulative Impacts	Surface water resources <sup>(a)</sup>	SMALL to MODERATE
	Aquatic resources <sup>(a)</sup>	LARGE
	Terrestrial resources <sup>(a)</sup>	MODERATE
	Human health-microbiological organisms <sup>(a)</sup>	MODERATE
	All other evaluated resources <sup>(a)</sup>	SMALL

<sup>(a)</sup> These issues are new Category 2 issues identified in the 2013 GEIS and Rule (78 FR 37282). U.S. Nuclear Regulatory Commission. "Revisions to Environmental Review for Renewal of Nuclear Power Plant Operating Licenses." June 2013.

<sup>(b)</sup> For Federally protected species, the 2013 GEIS and rule state that, in complying with the Endangered Species Act (ESA), the NRC will report the effects of continued operations and refurbishment in terms of its ESA findings, which varies by species for Davis-Besse.

Source: Table B–1 in Appendix B, Subpart A, to 10 CFR Part 51 (NRC 1996, 61 FR 28467), unless otherwise specified

## Executive Summary

With respect to environmental justice, the NRC staff determined that there would be no disproportionately high and adverse impacts to these populations from the continued operation of Davis-Besse during the license renewal period. Additionally, the NRC staff determined that no disproportionately high and adverse human health impacts would be expected in special pathway receptor populations in the region as a result of subsistence consumption of water, local food, fish, and wildlife.

### **SEVERE ACCIDENT MITIGATION ALTERNATIVES**

Since FENOC had not previously considered alternatives to reduce the likelihood or potential consequences of a variety of highly uncommon, but potentially serious, accidents at Davis-Besse, NRC regulation 10 CFR 51.53(c)(3)(ii)(L) requires that FENOC evaluate severe accident mitigation alternatives (SAMAs) in the course of the license renewal review. SAMAs are potential ways to reduce the risk or potential impacts of uncommon, but potentially severe, accidents and may include changes to plant components, systems, procedures, and training.

The NRC staff reviewed the ER's evaluation of potential SAMAs. Based on the staff's review, the NRC staff concluded that none of the potentially cost-beneficial SAMAs relate to adequately managing the effects of aging during the period of extended operation. Therefore, they need not be implemented as part of the license renewal, pursuant to 10 CFR Part 54.

### **ALTERNATIVES**

The NRC staff considered the environmental impacts associated with alternatives to license renewal. These alternatives include other methods of power generation and not renewing the Davis-Besse operating license (the no-action alternative). Replacement power options considered were as follows:

- natural-gas-fired combined-cycle (NGCC),
- combination alternative (wind, solar, NGCC, and compressed air energy storage), and
- coal-fired power.

The NRC staff initially considered a number of additional alternatives for analysis as alternatives to license renewal of Davis-Besse; however, these were later dismissed due to technical, resource availability, or commercial limitations that currently exist and that the NRC staff believes are likely to continue to exist when the existing Davis-Besse license expires in 2017. The no-action alternative by the NRC staff, and the effects it would have, were also considered.

Where possible, the NRC staff evaluated potential environmental impacts for these alternatives located both at the Davis-Besse site and at some other unspecified alternate location.

Alternatives considered but dismissed were as follows:

- wind power,
- wind power with compressed air energy storage,
- solar power,
- solar power with compressed air energy storage,
- wood waste,
- conventional hydroelectric power,
- ocean wave and current energy,



- geothermal power,
- municipal solid waste (MSW),
- biofuels,
- oil-fired power,
- fuel cells,
- energy conservation and energy efficiency, and
- purchased power.

The NRC staff evaluated each alternative using the same impact areas that were used in evaluating impacts from license renewal.

## **RECOMMENDATION**

The NRC's recommendation is that the adverse environmental impacts of license renewal for Davis-Besse are not so great that preserving the option of license renewal for energy-planning decisionmakers would be unreasonable. This recommendation is based on the following:

- analysis and findings in the GEIS;
- ER submitted by FENOC;
- consultation with Federal, State, and local agencies;
- NRC staff's own independent review;
- consideration of public comments received during the scoping process; and
- consideration of public comments received during the draft SEIS comment period.



## ABBREVIATIONS AND ACRONYMS

$\mu\text{Ci/g}$	microcurie(s) per gram
AADT	annual average daily traffic
AEC	Atomic Energy Commission
ALARA	as low as is reasonably achievable
AQCR	Air Quality Control Region
BSBO	Black Swamp Bird Observatory
Btu	British thermal unit(s)
C	Celsius
CAA	Clean Air Act, as amended through 1990
CDF	core damage frequency
CEQ	Council on Environmental Quality
CET	containment event tree
CFR	<i>Code of Federal Regulations</i>
cfs	cubic foot/feet per second
CO	carbon monoxide
CO <sub>2</sub>	carbon dioxide
CO <sub>2</sub> e	carbon dioxide equivalent(s)
CWA	Clean Water Act
CWS	circulating water system
DAPC	Division of Air Pollution Control
Davis-Besse	Davis-Besse Nuclear Power Station
DAW	dry active waste
DSM	demand-side management
EFH	essential fish habitat
EIA	Energy Information Administration
EPCRA	Emergency Planning and Community Right-to-Know Act of 1986
EPRI	Electric Power Research Institute
ER	Environmental Report
ERM	Environmental Resources Management
ESA	Endangered Species Act
F	Fahrenheit
FBC	fluidized-bed-combustion
FE	FirstEnergy Corporation

## Abbreviations and Acronyms

FENGenCo	FirstEnergy Nuclear Generation Corp.
FENOC	FirstEnergy Nuclear Operating Company
FERC	Federal Energy Regulatory Commission
FES	final environmental statement
fps	foot/feet per second
ft <sup>3</sup>	cubic foot/feet
FWS	U.S. Fish and Wildlife Service
gal	gallon(s)
GEIS	generic environmental impact statement
GHG	greenhouse gas
GLWQA	Great Lakes Water Quality Agreement
gpd	gallon(s) per day
gpm	gallon(s) per minute
GWP	global warming potential
IGCC	integrated gasification combined cycle
IJC	International Joint Commission
IPA	integrated plant assessment
ISFSI	independent spent fuel storage installation
kV	kilovolt(s)
kWh	kilowatt-hour(s)
LaMP	lakewide management plan
LAMP	Lakewide Management Plan
lb	pound(s)
lb/MMBtu	pound(s) per million British thermal units
LOS	level(s) of service
LLRWSF	low-level radioactive waste storage facility
m <sup>3</sup>	cubic meter(s)
mA	milliampere(s)
MAAP	Modular Accident Analysis Program
MACCS2	MELCOR Accident Consequence Code System
MBTA	Migratory Bird Treaty Act
MDC	minimum detection concentration
mg/l	milligram(s) per liter
mgd	million gallons per day
MM	million

MMBtu	million British thermal units
MSW	municipal solid waste
MW	megawatt(s)
MWd/MTU	megawatt-day(s) per metric ton uranium
MWe	megawatt(s)-electric
MWh	megawatt-hour(s)
MWt	megawatt(s)-thermal
NAAQS	national ambient air quality standards
NCDC	National Climatic Data Center
NEI	Nuclear Energy Institute
NEPA	National Environmental Policy Act
NESC	National Electrical Safety Code
NGCC	natural gas-fired combined cycle
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NO <sub>x</sub>	nitrogen oxide(s)
NO <sub>2</sub>	nitrogen dioxide
NPDES	national pollutant discharge elimination system
NRC	Nuclear Regulatory Commission
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NRR	Office of Nuclear Reactor Regulation
O <sub>3</sub>	ozone
OAC	Ohio Administrative Code
OCMP	Ohio Coastal Management Program
ODCM	offsite dose calculation manual
ODNR	Ohio Department of Natural Resources
OEPA	Ohio Environmental Protection Agency
OHPO	Ohio Historic Preservation Office
ONWR	Ottawa National Wildlife Refuge
OPSB	Ohio Power Siting Board
Pb	lead
PCBs	polychlorinated biphenyls
PCDD	polychlorinated dibenzo-p-dioxin
PCDF	polychlorinated dibenzofuran

## Abbreviations and Acronyms

pCi/L	picocurie(s) per liter
PDS	plant damage state
PEIS	programmatic environment impact statement
PM	particulate matter
PM <sub>10</sub>	particulates with diameters less than 10 microns
PM <sub>2.5</sub>	particulates with diameters less than 2.5 microns
ppb	part(s) per billion
ppm	part(s) per million
ppt	part(s) per thousand
PRA	probabilistic risk assessment
PSD	prevention of significant deterioration
psig	pound(s) per square inch, gauge
PWR	pressurized water reactor
RC	release category
RCRA	Resource Conservation and Recovery Act of 1976, as amended
RCS	reactor coolant system
REC	renewable energy credits
rms	root mean square
ROW	right of way
RPS	renewable portfolio standards
SAMA	severe accident mitigation alternative
scf	standard cubic foot/feet
SEIS	supplemental environmental impact statement
SHPO	State Historic Preservation Officer
SO <sub>2</sub>	sulfur dioxide
SO <sub>x</sub>	sulfur oxide(s)
S.U.	standard unit(s)
SWS	service water system
TRC	total residual chlorine
TRO	total residual oxidant
USACE	U.S. Army Corps of Engineers
USAR	updated safety analysis report
USCB	U.S. Census Bureau
USDOD	U.S. Department of Defense
USDOE	U.S. Department of Energy

## Abbreviations and Acronyms

USEPA	U.S. Environmental Protection Agency
USGCRP	U.S. Global Change Research Program
USGS	U.S. Geological Survey
USOSHA	U.S. Occupational Safety and Health Administration
wt%	percent by weight
yr	year





**APPENDIX A**  
**COMMENTS RECEIVED ON THE ENVIRONMENTAL REVIEW**



# COMMENTS RECEIVED ON THE ENVIRONMENTAL REVIEW

## A.1 Comments Received During Scoping

The scoping process began on October 28, 2010, with the publication of the U.S. Nuclear Regulatory Commission's (NRC) notice of intent to conduct scoping in the *Federal Register* (75 FR 66399). As part of the scoping process, NRC held two public meetings at Camp Perry Lodging and Conference Center, Port Clinton, OH, on November 4, 2010. Approximately 40 members of the public attended the meetings. After the NRC staff presented prepared statements pertaining to the license renewal and the scoping process, the meetings were opened to the for public for their comments. Attendees provided oral statements that were recorded and transcribed by a certified court reporter. Transcripts of the entire meeting are attached at the end of this appendix. In addition to the comments received during the public meetings, comments were received through the mail and e-mail.

Each commenter was given a unique identifier so that every comment could be traced back to its author. Table A-1 identifies the individuals who provided comments applicable to the environmental review and the commenter ID associated with each person's set of comments. The individuals are listed in the order in which they spoke at the public meeting, then at the people's hearing, then at the Sierra Club meeting, and in random order for the comments received by letter or e-mail. The submitter of the two videos provided the NRC with a transcribed version of one of their meetings. In order to respond to comments, the other meeting was transcribed by the Environmental Project Manager. The video transcribed by the Project Manger remains the submitted comments. To maintain consistency with the scoping summary report, the unique identifier used in that report for each set of comments is retained in this appendix.

Specific comments were categorized and consolidated by topic. Comments with similar specific objectives were combined to capture the common essential issues raised by participants. Comments fall into one of the following general groups:

Specific comments that address environmental issues within the purview of the NRC environmental regulations related to license renewal. These comments address the Category 1 (generic) or Category 2 (site-specific) issues identified in NUREG-1437, *Generic Environmental Impact Statement for License Renewal of Nuclear Plants* (GEIS), or issues not addressed in the GEIS. The comments also address alternatives to license renewal and related Federal actions. There are also comments that do not identify new information for the NRC to analyze as part of its environmental review.

There are comments that address issues that do not to fall within or are specifically excluded from the purview of NRC environmental regulations related to license renewal. These comments typically address issues such as the need for power, emergency preparedness, security, current operational safety issues, and safety issues related to operation during the renewal period.

**Table A–1. Commenters on the Scope of the Environmental Review**

*Each commenter is identified along with their affiliation and how their comment was submitted.*

Commenter	Affiliation (If Stated)	ID	Comment Source	ADAMS Accession Number
Mark Stahl	President of the Ottawa County Commissioners	1	Afternoon scoping meeting	ML110140231
			Evening scoping meeting	ML110140232
Jere Witt	County Administrator Ottawa County	2	Afternoon scoping meeting	ML110140231
			Evening scoping meeting	ML110140232
Fred Petersen	Director of the Emergency Management Agency Ottawa County	3	Afternoon scoping meeting	ML110140231
Chris Galvin	Director, United Way Ottawa County	4	Afternoon scoping meeting	ML110140231
			Meeting notes	ML110680510
Jackie VanTress	Office and Professional Employees International Union (OPEIU) Local 19	5	Afternoon scoping meeting	ML110140231
Kimberly Kaufman	Executive Director, Black Swamp Bird Observatory	6	Afternoon scoping meeting	ML110140231
Steve Inchak	Representative Congressman Kucinich	7	Afternoon scoping meeting	ML110140231
Beth Leggett	Director, American Red Cross Ottawa County	8	Afternoon scoping meeting	ML110140231
Brad Goetz	International Brotherhood of Electrical Workers Local 1413	9	Afternoon scoping meeting	ML110140231
Ann Heckerd	Food Coordinator, St. Vincent DePaul Food Pantry	10	Afternoon scoping meeting	ML110140231
Brian Boles	Plant Manager, Davis-Besse	11	Afternoon scoping meeting	ML110140231
			Evening scoping meeting	ML110140232
Larry Tscherne	International Brotherhood of Electrical Workers	12	Afternoon scoping meeting	ML110140231
Mike Drusbacky	Deputy Director, Ottawa County	13	Evening scoping meeting	ML110140232
Joseph DeMare	Ohio Green Party	14	Evening scoping meeting	ML110140232
			People's hearing	ML11348A017
			Meeting notes	ML110680517

Commenter	Affiliation (If Stated)	ID	Comment Source	ADAMS Accession Number
Jane Ridenour	President, OPEIU Local 19	15	Evening scoping meeting	ML110140232
			Meeting notes	ML110680512
Patricia Marida	Chair, Nuclear Issues Committee Sierra Club	16	Evening scoping meeting	ML110140232
			Sierra Club meeting	ML11348A013
			Letter	ML103370043
			Letter	ML110680515
Matthew Heyrman		17	Evening scoping meeting	ML110140232
Anita Rios	Ohio Green Party	18	People's hearing	ML11348A017
Kevin Kamps	Beyond Nuclear	19	People's hearing	ML11348A017
Al Compaan	Professor, University of Toledo	20	People's hearing	ML11348A017
Katie Hoepfl	Student, University of Toledo	21	People's hearing	ML11348A017
Tony Szilagye		22	People's hearing	ML11348A017
Ed McArdle	Sierra Club of Michigan	23	People's hearing	ML11348A017
Phyllis Oster		24	People's hearing	ML11348A017
Dave Ellison		25	People's hearing	ML11348A017
Michael Keegan	Coalition for a Nuclear Free Great Lakes Don't Waste Michigan	26	People's hearing	ML11348A017
Ralph Semrock	Associate Professor, Owens	27	People's hearing	ML11348A017
Mike Leonardi		28	People's hearing	ML11348A017
Unidentifiable Woman		29	People's hearing	ML11348A017
Eric Britton		30	People's hearing	ML11348A017
			E-mail	ML110680350
Suzanne Patser		31	Sierra Club meeting	ML11348A013
James Whitaker		32	Sierra Club meeting	ML11348A013
Scott Robinson		33	Sierra Club meeting	ML11348A013
Simone Morgan	Sierra Club	34	Sierra Club meeting	
			E-mail	ML110680350
Emily Journey		35	Sierra Club meeting	ML11348A013
Bob Patraicus		36	Sierra Club meeting	ML11348A013
Kevin Malcolm		37	Sierra Club meeting	ML11348A013
Doug Todd		38	Sierra Club meeting	ML11348A013

## Appendix A

Commenter	Affiliation (If Stated)	ID	Comment Source	ADAMS Accession Number
Connie Hammond	Sierra Club	39	Sierra Club meeting	ML11348A013
			E-mail	ML110680350
Bernadine Kent		40	Sierra Club meeting	ML11348A013
Unknown		41	Sierra Club meeting	ML11348A013
Pete Johnson		42	Sierra Club meeting	ML11348A013
Connie Gadwell-Newton	Ohio Green Party	43	Sierra Club meeting	ML11348A013
			E-mail	ML110680350
Lee Blackburn	Sierra Club	44	E-mail	ML103430609
			E-mail	ML110680350
Mary Knapp	Field Supervisor, U.S. Fish and Wildlife Service	45	Letter	ML110060289
John P. Froman	Chief, Peoria Tribe of Indians of Oklahoma	46	Letter	ML103570365
Dennis Kucinich	Member of Congress, 10th District Ohio House of Representatives	47	Letter	ML110680518
Marilyn & Paul Nesser		48	E-mail	ML110680519
Jessica Lillian Weinberg		49	E-mail	ML110680520
Erika Agner	Sierra Club	50	E-mail	ML110680350
Christian George	Sierra Club	51	E-mail	ML110680350
Amanda Baldino	Sierra Club	52	E-mail	ML110680451
Inez George	Sierra Club	53	E-mail	ML110680530
Leeza Perry	Sierra Club	54	E-mail	ML110680350
Jeremy Bantz	Sierra Club	55	E-mail	ML110680350
David Greene	Sierra Club	56	E-mail	ML110680537
Jean Puchstein	Sierra Club	57	E-mail	ML110680350
Sandy Bihn	Sierra Club	58	E-mail	ML110680350
Bob Greenbaum	Sierra Club	59	E-mail	ML110680350
Carol Rainey	Sierra Club	60	E-mail	ML110680350
Leonard Bildstein	Sierra Club	61	E-mail	ML110680455
Cate Renner	Sierra Club	62	E-mail	ML11116A124
Karen Hansen	Sierra Club	63	E-mail	ML110680529
Natalie Schafrath	Sierra Club	64	E-mail	ML110680532
Kathleen Bodnar	Sierra Club	65	E-mail	ML110680350
Margaret Holfinger	Sierra Club	66	E-mail	ML110680350

<b>Commenter</b>	<b>Affiliation (If Stated)</b>	<b>ID</b>	<b>Comment Source</b>	<b>ADAMS Accession Number</b>
Ben Shapiro	Sierra Club	67	E-mail	ML110680350
Susan Jones	Sierra Club	68	E-mail	ML110680453
Leslie Stansbery	Sierra Club	69	E-mail	ML110680528
Stephen & Connie Caruso	Sierra Club	70	E-mail	ML110680525
Robert Kyle	Sierra Club	71	E-mail	ML110680350
Andy Trokan	Sierra Club	72	E-mail	ML110680350
Joan DeLauro	Sierra Club	73	E-mail	ML110680350
Joan Lang	Sierra Club	74	E-mail	ML110680452
Jim Wagner	Sierra Club	75	E-mail	ML110680350
June Douglas	Sierra Club	76	E-mail	ML110680350
Tekla Lewin	Sierra Club	77	E-mail	ML110680539
Tim Wagner	Sierra Club	78	E-mail	ML110680350
Virginia Douglas	Sierra Club	79	E-mail	ML110680350
Mary Beth Lohse	Sierra Club	80	E-mail	ML110680350
George M. Williams	Sierra Club	81	E-mail	ML110680449
			E-mail	ML110680454
Donna Emig	Sierra Club	82	E-mail	ML110680350
Liz Loring	Sierra Club	83	E-mail	ML110680350
Lance Wilson	Sierra Club	84	E-mail	ML110680350
Mike Fremont	Sierra Club	85	E-mail	ML110680523
Nick Mellis	Sierra Club	86	E-mail	ML110680350
Paul Wojoski	Sierra Club	87	E-mail	ML110680350
Linda Milligan	Sierra Club	88	E-mail	ML110680350
Elisa Young	Sierra Club	89	E-mail	ML110680350
Matt Trokan	Sierra Club	90	E-mail	ML110680350

In order to evaluate the comments, the NRC staff gave each comment a unique identification code that categorizes the comment by technical issue and allows each comment or set of comments to be traced back to the commenter and original source (transcript, video recording, letter, or e-mail) from which the comments were submitted.

Comments were placed into one of 17 technical issue categories, which are based on the topics that will be contained within the staff's supplemental environmental impact statement (SEIS) for Davis-Besse, as outlined by the GEIS. These technical issue categories and their abbreviation codes are presented in Table A-2.

**Table A–2. Technical Issue Categories**

*Comments were divided into one of the 17 categories below, each of which has a unique abbreviation code.*

<b>Code</b>	<b>Technical Issue</b>
AL	Alternative energy sources
AM	Air & meteorology
AQ	Aquatic resources
CI <sup>(a)</sup>	Cumulative impacts
CR	Cultural resources
HH	Human health
HY	Hydrology
LR	License renewal & its process
LU <sup>(a)</sup>	Land use
NO <sup>(a)</sup>	Noise
OL	Opposition to license renewal
OS	Outside of scope <sup>(b)</sup>
PA	Postulated accidents & SAMA
RW	Radioactive & non-radioactive waste
SE	Socioeconomics
SL	Support of license renewal
TR	Terrestrial resources

<sup>(a)</sup> No comments specific to the categories of cumulative impacts, land use, or noise were submitted during the Davis-Besse scoping period.

<sup>(b)</sup> Outside of scope are those comments that pertain to issues that are not evaluated during the environmental review of license renewal and include, but are not limited to, issues such as need for power; emergency preparedness; safety; security; terrorism; and spent nuclear fuel storage and disposal.

Comments received during scoping applicable to this environmental review are presented in this section along with the NRC response. They are presented in the order shown in Table A–3. The comments that are outside the scope of the environmental review for Davis-Besse are not included here but can be found in the scoping summary report, which can be accessed through the Agencywide Documents Access and Management System (ADAMS), Accession No. ML11168A197.



**Table A–3. Comment Response Location in Order of Resource Area**

<b>Comment Category</b>	<b>Page</b>
Alternative Energy Sources (AL)	7
Air & Meteorology (AM)	19
Aquatic Resources (AQ)	20
Cultural Resources (CR)	23
Human Health (HH)	23
Hydrology (HY)	29
License Renewal and its Process (LR)	32
Opposition to License Renewal (OL)	37
Postulated Accidents & SAMA (PA)	42
Radioactive & Non-Radioactive Waste (RW)	43
Socioeconomics (SE)	47
Support of License Renewal (SL)	50
Terrestrial Resources (TR)	51

### **A.1.1 Alternative Energy Sources (AL)**

**Comment: 5-2-AL;** Research has shown that nuclear power is clean, is efficient and produces more energy at a lower cost than any other means of generation. So, it is important that we keep this plant in operation.

**Comment: 11-1-AL;** It's a priority for us as a company because Davis-Besse is a significant asset to our company. It provides a large source of safe, reliable, environmental friendly electricity to the surrounding area.

**Comment: 12-3-AL;** By extending the license here at Davis-Besse, it would continue to provide good clean power that's critical.

**Comment: 15-3-AL, 15-7-AL;** Research has shown that nuclear power is clean, it is efficient and it produces more energy at a lower cost than any other means of generation. So, it is important that we keep this plant in operation.

**Response:** *These comments are generally supportive of nuclear power, citing the cleanliness, efficiency and the cost of electricity. The discussion of alternatives, including license renewal, are presented in Chapter 8. No new and significant information was found as a result of these scoping comments and further evaluation was not considered in the development of the SEIS.*

**Comment: 16-6-AL;** In Ohio, the use of electricity has been increasing for a number of years. Now, with progressive legislation and Ohio Senate Bill 221, energy efficiency and conservation combined with the renewable sources of solar, wind and geothermal, these are providing so much additional and conserve energy to all plants and new coal plants in our state have been cancelled, and there's a strong movement to shut down the old polluting coal-fired plants.

**Comment: 16-27-AL;** In Ohio, the use of electricity has been decreasing for a number of years. Now with progressive legislation like Ohio's SB 221, energy efficiency and conservation, combined with the renewable sources of solar, wind, and geothermal, are providing so much additional and conserved energy that all plans for new coal plants in our state have been cancelled and there is a strong movement to shut down the old polluting coal-fired plants. The argument of US rising energy needs is irrational at best and at worst the resulting global warming would threaten our life-support system, and yes, our "way of life."

**Comment: 20-1-AL;** One of the things that I think is important to keep in mind is that First Energy and Davis-Besse provides about 8.3% of First Energy's baseload power generation, so that's important to recognize in terms of the alternatives. Now, in Ohio, Senate bill 221, which was passed in the spring of 2008, mandates for the investor-owned utilities that they should, achieve a higher efficiency by reducing demand by 2025 by 22%, a much larger number than the 8.3%, generation that's provided by Davis-Besse. And in addition, achieve 12 1/2% generation from renewals by 2025 and another 12 1/2% generation from so-called advanced energy, which may include new, new advanced nuclear, but continuation of Davis-Besse would not qualify for that additional gen..., for that 12 1/2%. Distributed generation will also qualify for a, a credit under the Senate bill 221. And alternative sources are very attractive for...wind, as Kevin mentioned, and also solar.

**Comment: 20-7-AL;** It may be done by advanced nuclear, and that's requiring NRC Generation III. Davis-Besse, I believe, is Generation II technology, but Generation III incorporates a passive safety systems. So even if the power goes out, such as when the tornado came through and disconnected the power plant from its emergency diesel generators, there would be passive safety equipment in the Gen-II, Gen-III design. And the Gen-III design would be for 60 years of operation instead of 40 years.

**Comment: 22-9-AL;** Here are a few suggestions. In the year 2021, Senate bill 221 will eliminate or generate as much power as Davis-Besse produces. If First Energy takes seriously the opportunities available for generating power through energy efficiency and making agreements for a better payoff for exceeding the energy efficiency targets the Senate bill 221 mandates, they can be more profitable without Davis-Besse. If they take an aggressive look at the potential of combined heat and power, wind, compressed air storage, solar, they can generate either through efficiency or through greater uses of existing resources, the needed capacity that the loss of Davis-Besse will create. There are solution for generating capacity. For every one cent invested in elec...in energy efficiency, three cents profit is gained. the solutions and incentives...alternative to the continuation of nuclear power to the elimination of nuclear power are already out there.

**Response:** *The comments are in general support of alternative energy production sources and reference The Ohio Senate Bill 221 as legislative support for renewable energy sources. The comments also represent a general opposition to nuclear energy.*

*The Ohio Senate Bill (Am. Sub. S. B. No. 221) passed through the Ohio House of Representatives on Tuesday, April 22, 2008, and it passed through the Ohio Senate on Wednesday April 23, 2008, the effective date of the bill was July 31, 2008.*

*The bill focuses on energy pricing and sources. The pricing of electricity is outside the scope of the environmental review and is not discussed further in the SEIS. According to the bill analysis published by the Ohio Legislative Service Commission, the primary points of the bill, as it relates to energy sources, are as follows:*

- *requires an electric distribution utility and an electric services company to provide a portion of their electricity supplies from alternative energy resources*

- *defines alternative energy resources as consisting of specified advanced energy resources and renewable energy resources with a placed-in-service date of January 1, 1998, or later, and as consisting of existing or new mercantile customer-sited resources*
- *specifies that the requisite portion of the electric supply derived from alternative energy sources must equal 25 percent of the total number of kilowatt hours of electricity sold by the utility or company to any and all retail electric consumers whose electric load centers are served by the utility and are located within the utility's certified territory or, in the case of an electric services company, are served by the company and are located within Ohio*
- *provides that half of the alternative energy can be generated from advanced energy resources, but at least half must be generated from renewable energy resources, including 0.5 percent from solar energy resources, subject to yearly, minimum, renewable and solar benchmarks that increase as a percentage of electric supply through 2024*
- *authorizes the Public Utilities Commission of Ohio (PUCO) to enforce the renewable energy and solar energy resource benchmarks through the assessment of compliance payments*
- *prescribes energy savings and peak demand reduction requirements for electric distribution utilities through 2025, sets yearly benchmarks, and authorizes PUCO enforcement of compliance through the assessment of forfeitures*
- *authorizes the PUCO to approve a revenue decoupling mechanism for an electric distribution utility if it reasonably aligns the interests of the utility and of its customers in favor of energy efficiency or energy conservation programs*
- *requires the PUCO, to the extent permitted by Federal law, to adopt rules establishing greenhouse gas (GHG) emissions reporting and carbon dioxide control planning requirements for each electric generating facility located in Ohio that is owned or operated by a public utility that is subject to PUCO jurisdiction and that emits GHGs, including facilities in operation on the act's effective date*

*The NRC staff is aware of Senate Bill 221 and incorporated information about the legislation into its own alternatives analysis. State regulatory agencies and FirstEnergy Nuclear Operating Company (FENOC) will ultimately decide whether the plant will continue to operate based on factors such as the need for power or other matters within the State's jurisdiction or the purview of the owners. Alternatives are discussed in Chapter 8, "Alternatives," of this SEIS; they include conservation (demand-side management) and renewable energy sources such as wind and solar energy.*

**Comment: 16-8-AL;** There is good reason why there are no nuclear power plants coming on line to replace the old ones. Wall Street will not support them. The normal up-front cost and a 12- to 20-year length of time for completion makes it financially uncompetitive with wind and solar. On the latter, decentralize, meaning that jobs are being created all over the state. As compared to Davis Besse's extended shut-downs, if the wind stops blowing or the sun is behind a cloud, somewhere, it is likely not too serious or a long-term power shortage problem.

**Comment: 16-20-AL;** We are closing down Coal plants now because Ohio is actually using less electricity than they used to. We've got efficiency we've got solar we have wind we have geothermal we have all kinds of sustainable ways.

**Comment: 19-11-AL;** And, there was another, license extension, that I wanted to mention, that's being challenged. I brought some things to look at over here, some old posters from Seabrook New Hampshire, in the mid-1970s. you know, fifteen hundred people got arrested on a single day in 1977 trying to block the construction of Seabrook. Well, Seabrook has gone for a 20-year license extension and they've gone for it 20 years early, incredibly. They're only 20 years old. They have 20 more years on their license, and they've asked for a 20-year license extension. So Paul Gunter, my coworker, has challenged this 20-year early application, and his main challenge is the wind power potential off the gulf of Maine, which is tremendous. So showing that wind power is a great alternative. And, I'll just close now, by saying that the wind power potential of the Great Lakes is there. That will be one of our contentions against Davis-Besse for 20 more years. And add to that solar potential, with the biggest solar panel manufacturing factory in the country right here in Toledo. Add to that the efficiency potential, and there's no need for 20 more years of radioactive Russian roulette on the Lake Erie shoreline. Thank you Very much.

**Comment: 20-6-AL;** But we, should also know that there are some very good alternatives for, generating electricity, and one of those normally not thought about as generation, but it's energy conservation. And that is now widely accepted as the cheapest way to get more effectively, to get more energy, it's to use our energy more, more wisely. And then there's a very strong wind resources and solar resources. So, the important thing that, we need to recognize is that, is that these components, energy conservation, wind and solar, are already mandated by Senate bill 221 in the state of Ohio. And, windmills are, used by the, the publicly-owned, utilities, they are allowed by Ohio law to pass through, to pass those costs on to the customers, so, on to the consumers of the electricity. That, that might not have been my favorite way of doing it, but that's the way, the legislators have decided in the Public Utility Commission of Ohio.

**Comment: 20-9-AL;** So, let's take a little bit closer look at the resources that are available for wind. Lake Erie and the Lake Erie shore, as well as all of the Great Lakes, are great resources for, for wind energy. So, I, I'm showing here this, wind energy map. This is for the average wind power across the United States. And it may be hard to see from there, but, we hear a lot about the, the wind corridor in the Great Midwest, from Texas through to North Dakota. That's this, region of the Great Plains. But now, the wind, resources in...increase, the average wind power increases as you go from white, actually the key is down here, from white to the light blue to the darker blue and still darker, and you can see that, Ohio, for the most part, has a lot of wind resources that are similar to Texas. We hear about Texas because it has the most wind power of any of the any of the states. And Ohio has similar resources. But if you look at, in Lake Erie and on the near shore and, up to the border with Canada, you can see it's a very dark blue, and that's similar to some of these mountain passes here. So wind, resource availability in Lake Erie is really, really prime. much higher than almost any of the places in, in Texas, for example. So that's an indication that there really are tremendous resources out there and wind power is very competitive in terms of, rates for electricity generated by wind power. The big, let me just back up...One of the big issues with Texas, which is now struggling with getting the power, of course they have some major cities, but they can generate more than what can be used in their cities, is how you are going to get the power out to the big metropolitan areas like Chicago and Cleveland and Toledo and so on, and Detroit. That is not a problem when you generate the power in Lake Erie, we have a lot of major metropolitan areas that are very nearby.

**Comment: 20-10-AL;** For solar, Ohio has, actually very good solar isolation as well. and I want to point out that in this, in this Environmental Report, that's part of the First Energy petition

for the renewal, there are some errors in that, in that report. For example, they, they say that the amount of sunlight in Ohio is less than half of what it is in some of the best areas in the country. that's a bit of a, an error and I'll point out why in just a moment. And then, they also used some data for the costs, which came from back in 1988, and the costs for solar photo-voltaic electricity has come down dramatically since 1988. One of the mistakes that is commonly, made when you think about solar, is you think about being able to see a sun, the sun in a clear day. And you think, you think, that, well, it's only on those clear days that photo-voltaics will generate usable power. And this is the kind of map that you would use if you were really worried only about direct sunlight, being able to have a clear sky, and being able to see a clear sun out there. And then when you take and you compare Toledo or, or Lake Erie with some areas in the Southwest, and I did the numbers here. actually, for the...for the South. when you compare Toledo with Orlando, even when you consider only direct sunshine, Toledo gets 75% of what Orlando does, down here in Florida. But it's not as good as San Diego, it's almost 60% of San Diego, >>>. and if you go out to the Mojave Desert, Toledo gets about 45%. So that's a number that's consistent with what, First Energy claimed in that report. However, the real data that you need to look at are the, us, the full sky radiation. The point of...Most solar panels are flat panels and they will accept light which is indirect, that is, as it comes scattered in hazy days or light cloudy days and light is scattered from those clouds and still make it to those panels. And so this is the appropriate math that needs to be looked for, the amount of electricity that can be produced by solar panels over the years. So, in that case, if you compared Toledo with Orlando, or Toledo with San Diego, Toledo gets 86% of what, Orlando gets, 79% of what Sand Diego gets. So the argument that the solar resources in Ohio, in Northern Ohio, are not very good, and actually you can see that the best resources here are Western Ohio and in certain...that's an argument that doesn't, work when you address solar. And that last point that I'd like to make about solar is that there are huge changes that have been happening in the last several years in terms of the costs of solar panels. And the cost driver on this is actually FirstEnergy, First Solar, sorry, First Solar, which is, started here in Toledo, by Toledo industrialists such as Harold, Harold McMaster, and our only US generating, US manufacturing facility is in Perrysburg.

**Comment: 20-12-AL;** Energy conservation, retro-fitting of homes and businesses and so with the more energy-efficient lights, and motors, and thermal efficiency saves, saves, save energy for everyone. It reduces the need for, generating capacity. Ohio has a lot of manufactures that supply components for wind turbines. The maintenance of wind turbines generates many jobs. I've already mentioned, First Solar is the largest manufacturer in the world. So manufacturing creates jobs. And there are several other PV manufacturers that are beginning, in Ohio, most of them actually in northwest Ohio, in the Toledo area. PV design and insulation creates a num...a large set of jobs.

**Comment: 21-2-AL;** So what I have done is done some statistical modeling using systems that are already in place here in northwest Ohio. I used one of the wind turbines in Bowling Green, owned by Bowling Green municipalities, and a solar array mounted on the home of Professor Compaan. This model is a little bit confusing. What it is here is on the X axis we have the volatility or the intermittency of the system that FirstEnergy mentioned. So what that means is that at some points throughout the day it can be high, it can be low. It's unexpected, the power production that would be produced. On here [indicating the Y axis] it's the actual output of the system. So along our curve here we have an entire wind, only wind system, and at the other end we have only solar. And, along the middle is a combination of the two. what I'm going to show you today is that it's not a matter of using one or the other. The combination of these different forms of renewable energy that's really going to help us offset the loss of nuclear power by closing Davis-Besse. So over here on the end of the curve is where we have the least volatility in the system. For this specific northwest Ohio that turned out to be about half wind

and half solar that's going to produce the best outcome for us. Just an example here of what I mean by this. So in a 100% wind system has a volatility something like this. This is the power production over the course of the week by the Bowling Green wind turbine. you can see it's pretty unexpected what it's going to produce throughout the day. And on the opposite end, a 100% solar system, follows a pattern, you only get power production during the day, but even throughout the day you not sure if you're going to get a sunny day, cloudy day things like that re unexpected...So, by optimizing the system, using similar rating, say one megawatt wind turbine farm and one megawatt solar array, you get something that's quite a bit more predictable. Now put this here against a demand curve. This is from EBCOT it's in Texas, but the demand curve for any big city is gonna look about the same. A lot of high peaks during the afternoon, evening hours and lower at night time when we're sleeping. It's quite a bit more predictable, it follows the demand curve. What I want to point out here, though is that my graph is still quite a bit volatile here, but it's only taking into consideration two specific sites. We only have one wind turbine and one solar array. But, if FirstEnergy were to take their resources and erect, um sorry, use the wind and solar throughout their entire area that they service. Solar, it's not going to be cloudy in all the areas that they service. That's exactly what the (Go to my summary slide, here) European Wind Energy Association in their annual report in 2009. They said exactly that. That as wind and solar is developed across the entire area, the volatility in one specific area does not infect the overall baseload that it's generating. That's another thing I'd like to point out in FirstEnergy's application for Renewal, they kept mentioning that solar and wind are not a good replacement because they can't satisfy a baseload. But, as Dr. Compaan mentioned in his speech, Davis-Besse only produces 8.3% of FirstEnergy's baseload. So, we're not trying to make these curves fit identical. It just has to back up the coal and everything else that's already being produced. So we're using a combination of wind, solar and all the other technologies that are out there. They'll be able to easily offset the production lost by Davis-Besse.

**Comment: 23-4-AL;** The second article I refer is the November, 2009 cover story in *Scientific American*. I bought this issue and bring it with me to almost everything I go to. This article is entitled "A Plan for Sustainable Future. How to Get All Energy from Wind, Solar and Water by 2030 using Present Technology." The article by Mark Z. Jacobsen of Stanford University and Mark A. Delucchi of University of California, Davis it is describe by the editors of *Scientific American* as a "pragmatic hard headed study." Supply 100% clean energy by 2030 at the same or lower cost of traditional fossil and nuclear resources. Frankly, I'm amazed by this article. This is something, I think, we've been waiting for, and something we should push.

**Comment: 25-4-AL;** We should come up with energy conservation and efficiency measures that replace that 8.3%. Forget creating any alternative fuels or advanced nuclear. Just energy in energy conservation efficiency alone, we make up for this. The system that requires that we maintain the amount of consumption that we currently have as part of the licensure relicensure application is absurd because so much of the future depends on our reduction of and our conservation and our efficient use of energy. It's absurd to perpetuate the existing system.

**Comment: 31-3-AL;** There are so many other clean ways to provide energy. Wind Solar geothermal there is no reason to bring a nuclear plant online. There would have to be some other agenda involved we hope that is not military agenda. But we know that we don't the electricity from that plant in this state.

**Comment: 35-2-AL;** I believe we should be going in different directions when it comes to supplying energy to our communities. Direction that is not destructive that can provide new green jobs. Thank you.

**Comment: 36-2-AL;** It is located there on the great lakes, the largest clean water source in the world and it seems extremely dangerous and unnecessary

**Comment: 39-3-AL;** We need to invest our money into green technologies that would create job and also help our economy which is leaving the toxic legacy for our children as well as these nuclear power plants.

**Comment: 41-1-AL;** I wish to join the wave of the future. Which is alternative energy sources. Fossil fuels and nuclear energy are part of the past.

**Comment: 30-4-AL, 34-6-AL, 39-9-AL, 43-7-AL, 44-5-AL, 50-4-AL, 51-4-AL, 53-4-AL, 54-4-AL, 57-4-AL, 58-4-AL, 59-4-AL, 60-4-AL, 62-4-AL, 65-4-AL, 66-4-AL, 67-4-AL, 69-4-AL, 70-4-AL, 71-A-AL, 72-4-AL, 73-4-AL, 74-4-AL, 75-4-AL, 76-4-AL, 77-4-AL, 78-4-AL, 79-4-AL, 80-4-AL, 81-4-AL, 81-9-AL, 82-4-AL, 83-4-AL, 84-4-AL, 85-4-AL, 86-4-AL, 87-4-AL, 88-4-AL, 89-4-AL, 90-4-AL;** I do not want Davis-Besse to continue generating electricity and want the Nuclear Regulatory Commission to end the operating license for the plant. I care about the environment and support clean energy solutions such as energy efficiency and renewable power, and I know that Davis-Besse compromises my safety and the safety of my loved ones.

**Comment: 55-4-AL;** I do not want Davis-Besse to continue generating electricity and want the Nuclear Regulatory Commission to end the operating license for the plant. I care about the environment and support clean energy solutions such as energy efficiency and renewable power, and I know that Davis-Besse compromises my safety and the safety of potentially everyone that lives in the entire Midwest. The risk is unacceptable.

**Comment: 52-4-AL;** I do not want Davis-Besse to continue generating electricity and want the Nuclear Regulatory Commission to end the operating license for the plant. I care about the environment and support clean energy solutions such as energy efficiency and renewable power, and I know that Davis-Besse compromises my safety and the safety of my loved ones. This concerns me much.

**Comment: 68-4-AL;** I do not want Davis-Besse to continue generating electricity and want the Nuclear Regulatory Commission to end the operating license for the plant. I care about the environment and support clean energy solutions such as energy efficiency and renewable power, and I know that Davis-Besse compromises my safety and the safety of my loved ones. So Please stop the relicense of this very dangerous power plant it is not worth risking the lives of millions of people for energy when there are safer and cheaper options out there.

**Comment: 61-4-AL;** I do not want Davis-Besse to continue generating electricity and want the Nuclear Regulatory Commission to end the operating license for the plant. I care about the environment and support clean energy solutions such as energy efficiency and renewable power, and I know that Davis-Besse compromises my safety and the safety of my loved ones. This plant has the worst safety record in the U.S.A. and should be closed! You have no right to continue operating this unsafe plant. We have two coal plants in the area that produce more than enough electricity for this area and are safe!

**Comment: 63-4-AL;** There have been too many near-disasters at this plant. This, because of its proximity to the Great lakes, is unconscionable! To continue to put resources into this risky plant and to continue to endure the toxic side effects is insane! We should be putting all our energy investments into clean, safe, green alternatives, and that does NOT include nuclear power!

**Comment: 64-4-AL;** It's high time we step up our efforts to help protect the future generations by doing what we can to ensure a safe environment for species diversity. We cannot live in this world without being connected to the web of life that exists in every ecosystem. The nuclear waste generated from this plant would not only effect ourselves, and our children, but every species that struggles to survive as well. As someone who is SUPPOSE to represent the

demands on their constituents I hope it is clear to you that Ohioans DON'T AGREE with this form of energy!

**Comment: 56-4-AL;** The Davis-Besse power plant must stop generating electricity and the Nuclear Regulatory Commission must end the operating license for the plant. In 2002, the Davis-Besse plant nearly melted down almost causing a nuclear disaster. Neither First Energy nor the Nuclear Regulatory Commission discovered an enormous rust hole in the reactor head until it was almost too late! According to the Nuclear Regulatory Commission, 2 of the top 5 most dangerous nuclear incidences since 1979 have happened at Davis-Besse. Nuclear power has too many problems from waste to extreme expense to oversight. This is not an environmentally sound solution. I support clean energy solutions such as energy efficiency and renewable power, and I know that Davis-Besse compromises my safety and the safety of my loved ones. Nuclear power uses and pollutes significant amounts of water, while the mining, transportation, and enriching of uranium is carbon intensive which contributes to global warming.

**Comment: 85-4-AL;** I do not want Davis Besse to continue generating electricity and want the Nuclear Regulatory Commission to end the operating license for the plant. I care about the environment and support clean energy solutions such as energy efficiency and renewable power, and I know that Davis Besse compromises my safety and the safety of my loved ones. In the early 80s Cincinnati's Zimmer Nuclear Plant was adjudged, according to the Wall Street Journal, to be the worst-built nuke plant in the U.S., for a number of reasons, one being that much of the crucial reactor steel was bought from a local scrap dealer. It could have ruined the Ohio River downstream from Cincinnati all the way to New Orleans. Davis-Besse could wreck Lake Erie and quite a land area around Toledo. Save us from that! We can do it cheaper, safer and cleaner with windmills in the lake.

**Response:** *These comments relate to the use of renewal sources of energy as an alternative to nuclear power. The NRC staff evaluated reasonable alternatives in Chapter 8, "Alternatives." In this chapter, the staff examines the potential environmental impacts of alternatives to license renewal for Davis-Besse, as well as alternatives that may reduce or avoid adverse environmental impacts from license renewal and when and where these alternatives are applicable.*

*In evaluating alternatives to license renewal, the NRC staff first selected energy technologies or options currently in commercial operation, as well as some technologies not currently in commercial operation but likely to be commercially available by the time the current Davis-Besse operating license expires in 2017. Second, the NRC staff screened the alternatives to remove those that cannot meet future system needs. Then, the NRC staff screened the remaining options to remove those whose costs or benefits do not justify inclusion in the range of reasonable alternatives. The remaining alternatives, constituted comprise the alternatives to the proposed action that the NRC staff evaluated in-depth in this Chapter 8 of the SEIS. The NRC staff considered 17 energy technology options and alternatives to the proposed action and then narrowed to the three alternatives considered.*

*The alternatives evaluated in-depth include the following:*

- *natural-gas-fired combined-cycle (NGCC);*
- *combination alternative (wind, solar, NGCC, and compressed air energy storage); and*
- *coal-fired power.*



*Other alternatives considered, but not evaluated further, are listed below:*

- *wind power,*
- *wind power with compressed air energy storage,*
- *solar power,*
- *solar power with compressed air energy storage,*
- *wood waste,*
- *conventional hydroelectric power,*
- *ocean wave and current energy,*
- *geothermal power,*
- *municipal solid waste (MSW),*
- *biofuels,*
- *oil-fired power,*
- *fuel cells,*
- *energy conservation and energy efficiency, and*
- *purchased power.*

*The NRC staff's alternatives analysis also involved consideration of combinations of alternatives including renewable technologies and conventional baseload technologies, as well as options not involving new generation capacity such as purchased power and conservation measures.*

**Comment: 20-11-AL;** They've been, leading the cost reductions. So if you look here, this is a study that was done by Deutsch Bank and updated in 2009. It doesn't go back, to 1998, which is when, when First Energy pulled their numbers, but, you can, you can extrapolate back further if you want. There, it was something on the order of 40 cents/kilowatt-hour for the levelized cost of electricity, as it's called. but in 2010, the cost is about 20 centers/kilowatt-hour for cadmium telluride. This is, this is the type of material in the panels that are made by First Solar. Some of the other kinds of solar panels are shown here, a little bit higher in cost. But what Deutsch Bank projected is that there's going to be a crossover, a convergence between the cost of solar-generated electricity, as you go out here to, what is the number, it's like 2017 or so, so, 2017, at about the time when, when FirstEnergy wants to extend the license on the plant, solar is going to be, completely competitive, if not lower cost than, the electricity, than the conventional electricity. Notice that Deutsch Bank is using an average over the United States. Now the cost of electricity in the FirstEnergy territory is actually higher, those of you who live in FirstEnergy territory, your home costs, your home electricity costs are something like 12 or 12 1/2 cents/kilowatt-hour, so the curve for us should really start a little bit higher, and that convergence will happen even sooner. So First Energy has the option of extending, a nuclear generating plant with all of its associated dangers and also its costs. The cost of nuclear generated power is high, higher than most of the baseload, generating capacity of FirstEnergy. And its costs is continuing to increase. The alternative is to jump on some of the new technology, jump on those bandwagons, and those costs are decreasing. So that's the kind of options that FirstEnergy has, and you'd think that if they really look at it seriously and look at the options that they ought to conclude, that some of these alternative forms of electricity are the ones that ought to be, the ones, that are developed for the long-term future of their, of their company. So, just to make one final point, and that is alternative, alternative energy resources generate lots of jobs. They actually generate, many more jobs than what nuclear power does.

**Comment: 16-28-AL;** There is good reason why there are no new nuclear power plants coming online to replace the old ones. Wall Street will not support them. The enormous up-front costs and 12-20 year length of time for completion makes them financially uncompetitive with wind and solar. And the latter are decentralized, meaning that jobs are being created all over the state. As compared to Davis Besse's extended shutdowns, if the wind stops blowing or the sun is behind a cloud somewhere, there is likely not to be a serious or long-term power shortage problem.

**Response:** *These comments oppose nuclear power based on the costs associated with construction and operation when compared to other alternative sources of power. The regulatory authority over licensee economics falls within the jurisdiction of the states and, to some extent, the Federal Energy Regulatory Commission (FERC). The proposed rule for license renewal included a cost-benefit analysis and consideration of licensee economics as part of the National Environmental Policy Act (NEPA) review. However, during the comment period, state, Federal, and licensee representatives expressed concern about the use of economic costs and cost-benefit balancing in the proposed rule and the GEIS. They noted that the President's Council on Environmental Quality (CEQ) regulations interpret NEPA to require only an assessment of the cumulative effects of a proposed Federal action on the natural and man-made environment, and the determination of the need for generating capacity has always been the states' responsibility.*

*For this reason, the purpose and need for the proposed action (i.e., license renewal) is defined in the GEIS as follows:*

*The purpose and need for the proposed action (renewal of an operating license) is to provide an option that allows for power generation capability beyond the term of a current nuclear power plant operating license to meet future system generating needs, as such needs may be determined by state, licensee, and, where authorized, Federal (other than NRC) decisionmakers.*

*Title 10 of the Code of Federal Regulations, Section 51.95(c)(2) (10 CFR 51.95(c)(2)) states the following:*

*The supplemental environmental impact statement for license renewal is not required to include discussion of need for power or the economic costs and economic benefits of the proposed action except insofar as such benefits and costs are either essential for a determination regarding the inclusion of an alternative in the range of alternatives considered or relevant to mitigation.*

*The NRC staff identified feasible technologies in the GEIS, and the staff will use information in the GEIS, updating it as necessary to reflect recent technological advancements, as the basis for its alternative analysis. Since 1996, many energy technologies have evolved significantly in capability and cost, while regulatory structures have changed to either promote or impede development of particular alternatives, of this SEIS.*

*As a result, the analyses include updated information from the following sources:*

- Energy Information Administration (EIA),*
- other offices within the Department of Energy (DOE),*
- U.S. Environmental Protection Agency (EPA),*
- industry sources and publications, and*
- information submitted by the applicant in the FENOC Environmental Report (ER).*

*The result of this analysis provided for three in-depth alternatives—Natural-gas-fired combined-cycle (NGCC), combination alternative (wind, solar, NGCC, and compressed air energy storage), coal-fired power. The details of this analysis can be viewed in Chapter 8, “Alternatives.”*

**Comment: 21-1-AL;** Hello everybody, my name is Katie Hopeful, student of Professor Compaan’s at the University of Toledo. I’m a major in physics. My research is in this renewable energy area. So, what I’m going to be talking about today is alternatives to nuclear power. In FirstEnergy’s license renewal application, they dismissed the possibility of almost any form of renewable energy to replace the power production that would be lost by the closing of Davis-Besse.

**Response:** *This comment questions FENOC’s evaluation of alternatives to relicensing Davis-Besse contained in the ER. The requirements associated with the analysis of alternatives for FENOC’s ER are based on NRC regulations.*

*Section 51.43(c) of 10 CFR states the following: “Analysis. The Environmental Report must include an analysis that considers and balances the environmental effects of the proposed action, the environmental impacts of alternatives to the proposed action, and alternatives available for reducing or avoiding adverse environmental effects...”*

*The acceptance review determines whether the application contains sufficient information to allow the NRC staff to proceed with the environmental review. On October 18, 2010, the NRC staff determined that the application was complete and acceptable for docketing, in accordance with 10 CFR 51.43. The acceptance of the application shows that the applicant met the regulatory requirements, but it does not reflect the opinion of the NRC in the selection of alternatives. The NRC conducts an independent review of alternatives, selected based on the technical experience of the agency, in accordance with NEPA. This review is documented in Chapter 8 of this SEIS. In contrast to the Davis-Besse ER, Chapter 8 reflects analysis in depth of a combination alternative that includes renewable energies.*

**Comment: 21-3-AL;** the only other thing that I was wanting to mention is the jobs that are going to be created. As he had already mentioned, the maintenance of the wind turbines; the installation of the protects; and also the forecasting that can be done. This was also mentioned in the European Wind Energy Association’s annual report. The new technologies. They are able to forecast four hours ahead exactly what the wind speeds are going to be. So that they can predict if they need to have boost up the coal or other forms of production. It makes it really a lot more stable. So, this argument of volatility doesn’t quite hold.

**Response:** *This comment relates to the benefit of creating jobs by supporting alternative energy sources. The NRC regulations at 10 CFR 51.71(d) require that a SEIS consider the environmental, economic, and technical impacts, and other benefits and costs of the proposed action and alternatives.*

*The evaluation of each alternative considers the environmental impacts across seven impact categories: (1) air quality, (2) groundwater use and quality, (3) surface water use and quality, (4) ecology, (5) human health, (6) socioeconomics, and (7) waste management.*

*Socioeconomic impacts are defined in terms of changes to the demographic and economic characteristics and social conditions of a region. For example, the number of jobs created by the construction and operation of an alternative could affect regional employment, income, and expenditures. The NRC acknowledges that job creation would result from alternatives.*

*Two types of job creation would likely result— construction-related jobs (transient, short in duration, and less likely to have a long-term socioeconomic impact) and operation-related jobs in support of operations (greater potential for permanent, long-term socioeconomic impacts).*

*Workforce requirements for the construction and operation of each in-depth alternative were evaluated in order to measure their possible effects on current socioeconomic conditions. The results of each analysis are documented in Chapter 8, “Alternatives.”*

**Comment: 23-2-AL;** I would first like to quote excerpts from an article in *The Nation* magazine dated February 15, 2010, “The Case for Grade Power.” This is generally referred to as using waste heat or cogeneration from large facilities of which Ohio has plenty. The article uses Ohio as an example for this opportunity. The article states that according to an analysis by Recycled Energy Development, the Libbey Glass Plant in Toledo, the Arselor (unintelligible) Middle School in Cleveland and the (unintelligible) Chemical Plant in Cincinnati together produces enough waste heat to produce between 145 and 185 megawatts of additional electricity. The study also indicates that Ohio has enough cogeneration potential to retire up to 8 nuclear power plants. According to Oak Ridge National Laboratory this strategy will cost less than half of a coal plant.

**Comment: 23-3-AL;** A recent report by Policy Matters of Ohio estimates that recycling 7.7 GigaWatts would require a \$10.5 billion investment with a three year payback. This would have the further effect of making Ohio industries more competitive, more profit, saving both jobs and the environment.

**Response:** *These comments request the NRC staff to consider cogeneration and energy recycling as alternatives to license renewal. Cogeneration, also known as combined heat and power (CHP) is the simultaneous production of both heat and power. Davis-Besse produces electricity but dispels the waste heat through the cooling water system, as described in Chapter 2. In cogeneration plants, the waste heat (typically in the form of steam) is captured for other uses such as industrial process requiring steam or district heating or both. District heating systems that transfer waste heat, in the form of steam, for residential and commercial heating, are currently in operation in cities such as New York, NY, Detroit, MI, and Boston, MA. Currently no district heating systems in the U.S. are supplied with nuclear reactors as the steam source; however, countries such as Russia, the Czech Republic, Slovakia, Hungary, Bulgaria, and Switzerland have nuclear powered district heating from cogeneration plants.*

*The NRC recognizes that cogeneration plants have the potential to offset power demand. In July 2008, the Ohio legislature passed Senate Bill 221, which established an energy-efficiency resource standard that requires electric utilities to implement an Energy-Efficiency and Peak Demand Reduction Program that will yield a cumulative electricity savings of 22 percent by the end of 2025, with specific annual benchmarks. Cogeneration can be retrofitted to existing power plants, and represents an option that states and utilities may use to reduce their need for power generation capability. The need for power may be determined by state, licensee, and, where authorized, Federal (other than NRC) decisionmakers. If the renewed license is issued, state regulatory agencies and FENOC will ultimately decide whether the plant will continue to operate based on factors such as the need for power or other matters within the state’s jurisdiction or the purview of the owners.*

*The NRC did not consider cogeneration specifically as an alternative but did evaluate energy efficiency and conservation. Further information can be found in Chapter 8, “Alternatives.”*

### **A.1.2 Air & Meteorology (AM)**

**Comment: 16-5-AM;** Added together, the disposal to support the industry’s nuclear power also comes with a heavy carbon price, which means that nuclear power will not address the pollution, global warming.

**Comment: 16-7-AM;** The argument of rising energy is irrational at best, and at worst, the resulting global warming would threaten our life support system and, yes, our way of life.

**Comment: 16-26-AM;** Enormous amounts of energy go into this process. Added together along with disposal, these supporting industries cause nuclear power to also come with a heavy carbon price, which means that nuclear power will not address but will worsen global warming.

**Comment: 23-6-AM;** It is not carbon free as claimed, and not sustainable.

**Comment: 39-2-AM;** The process of production of nuclear energy from mining through disposal of waste is very carbon intensive and would contribute heavily to global warming.

**Response:** *These comments represent concerns about greenhouse gases (GHGs), not specifically for the operation of the nuclear power plant but generally from impacts from the entire nuclear fuel cycle. A large number of technical studies, including calculations and estimates of the amount of GHGs emitted by nuclear and other power generation options, are available in literature. These studies, however, are inconsistent in their application of full lifecycle analyses, including plant construction, decommissioning, and resource extraction (uranium ore, fossil fuel). Almost every existing study has been critiqued, and its assumptions challenged by later authors. Therefore, no single study has been selected to represent definitive results in this SEIS. Instead, the results from a variety of the studies are presented in SEIS Tables 6.2-1, 6.2-2, and 6.2-3 to provide a weight-of-evidence argument comparing the relative GHG emissions resulting from the proposed Davis-Besse relicensing compared to the potential alternative use of coal-fired plants, natural gas-fired plants, and renewable energy sources. The NRC staff provides a more detailed discussion on GHGs in Chapter 6, where comparisons of GHG emissions are presented from a variety of energy generation technologies. The NRC staff's analysis of alternatives in Chapter 8 also addresses relative levels of GHG emissions for alternatives.*

**Comment: 14-21-AM;** Transformer fires cause unique pollutions such as dioxin. Since the cause of the 2009 Davis-Besse transformer fire has not been determined, the possibility of another fire must be considered. The EIS must include the impact of emissions created by transformer fires.

**Response:** *This comment expresses concerns regarding the air pollution created by a transformer fire and the potential release of toxins as a result of postulated future failures of the transformer. A polychlorinated biphenyls (PCB) transformer is a transformer that contains PCBs at concentrations greater than 500 parts per million (ppm). From 1929 through 1979, these transformers were installed in apartments, residential and commercial buildings, industrial facilities, campuses, and shopping centers. PCBs are used in electrical transformers because of their useful quality as being a fire retardant.*

*The EPA regulates the use, storage and disposal of PCB transformers in accordance with the Toxic Substances Control Act (15 USC 2605) promulgated under 40 CFR Part 761. PCB-contaminated transformers containing between 50 and 499 ppm PCBs are also subject to EPA's regulations. Davis-Besse, at the time of construction, had PCB transformers; however, in 1992, FENOC completed a program to eliminate PCB transformers onsite. Information relating to the transformer fire and air emissions can be found in Chapter 2 of this SEIS. Further information on the regulation of PCB transformers can be found at <http://www.epa.gov/epawaste/hazard/tsd/pcbs/index.htm>.*

### A.1.3 Aquatic Resources (AQ)

**Comment: 14-3-AQ;** Another is the possible effect on the seven-billion-dollar fishery in Lake Erie. Specifically, I think you should look at how the wastewater and how the temperature effluent from this plant would affect and possibly affect indicia species such as the Asian carp. In other words, does the operation of Davis-Besse make it more or less likely that indicia species could come in here and ruin our fishing.

**Comment: 22-2-AQ;** We need to protect our water resources first from the effects of nuclear forms of pollution. Lake Erie provides drinking water and other consumptive uses to millions of people and many different industries in northern Ohio. We rely on Lake Erie for recreation, and we are entrusted to care for and protect the Lake for future generations as well. They have as much a right to the use and enjoyment of Lake Erie as our present generation, even if the comments do not agree. Davis-Besse is one of the greatest threats to the health of our Lake. Davis-Besse was strategically located on Lake Erie to meet the tremendous needs of Davis-Besse for water as a coolant. This is great for Davis-Besse but not so good for the Lake. Davis-Besse uses water from the Lake and spews it back as thermal pollution. Over the years, this has had consequences for Lake Erie. We have once again had increasing algae problems for Lake Erie. the growth of *lyngbya wollei*, a toxic algae, has accelerated over the past few years along with *microcystis*. These toxic algae have numerous conditions which contribute to their growth. One, of course, is the presence of ample amount of phosphorous and nitrogen. Another ingredient is an abundance of warm water. We have billions of gallons of thermal pollution from the power plants surrounding Lake Erie.

**Comment: 22-3-AQ;** studies on water use, fish kills, and the thermal impacts at the bay shore park land are over 30 years old. The intake for Davis-Besse is in less than 30 feet of water in the Great Lakes...should have been...in the Great Lakes, in Lake Erie's shallowest most biologically productive waters. Davis-Besse uses an estimated 50 million gallons of water a day which causes fish kills and thermal impacts. While cooling towers at Davis-Besse limit water use and fish kills with the best available technology, there should be an assessment of water use and fish kills. This request is made as the number of walleye are declining from an ODNR estimate of 80 million about 5 years ago to less than 20 million in 2010.

**Comment: 22-5-AQ;** If Davis-Besse were to close on schedule, there would be fewer fish killed and no more warm water discharge. The estimated number of fish that would not be killed is unknown because there are no counts of fish impingement, that is, fish caught against screens, and entrainments, fish that go through screens. In assessing whether Davis-Besse should remain open or closed, an updated, independent analysis of the Davis-Besse water impacts, to fish impingement and entrainment and thermal impacts using Clean Water Act 316 A and B protocol needs to be conducted. If the incremental increase in fish kills and added temperature to the water in aiding algae growth and in decreasing walleye numbers, the environmental and economic impact of the fish kills and algae growth should be considered in the requested re-licensing of Davis-Besse. Furthermore, should the licensing go forward, the license needs to require periodic impingement and entrainment fish counts and thermal mixing zone plume impacts on algae growth and water quality.

**Comment: 26-9-AQ;** In addition, a scoping comment I have is the thermal pollution coming off the nuclear power plant. It's about a thousand nine hundred, about nine hundred megawatt facility. That's close to three thousand megawatts of thermal heat coming off of that. And, as we've seen, Lake Erie is beyond the tipping point when it comes to algal blooms. We are beyond that point. We have several facilities in the western basin of Lake Erie; several coal plants, and several nuke plants and the Lake cannot take the load. So I am requesting that the algal blooms that are occurring on Lake Erie, the *lyngbya wollei*, which is a toxic algae - - it's

leading to the eutrophication of Lake Erie, the death of Lake Erie, I am requesting that this concept of algal blooms be investigated, and thermal pollution from the nuclear power plant be considered.

**Comment: 16-17-AQ;** We are also concerned about fish and Lake Erie and the heat coming out of the plant.

**Comment: 19-10-AQ;** So, just to conclude, I'd like to leave you all with some hope that now license extensions are being seriously challenged, almost the minute that they're brought up. Another one to mention is Indian Point, New York, River Keeper, Hudson River Keeper headed by Bobby Kennedy Junior, has seriously challenged the Indian Point license extension. The State of New York has joined that proceeding. The Attorney General of New York, the Environmental Department of New York, they are also requiring now Indian Point to install cooling towers, to lessen the thermal damage to the Hudson River, just like the thermal damage, the catastrophic destruction of marine organisms going on at these plants that lack cooling towers. That's not an issue at Davis-Besse because they have a cooling tower. But as we raised Fermi III, we add up all the thermal impacts, of all power plants in this neck of the woods, and all the toxic chemicals they're releasing, I'm talking nuclear and coal and others. You got to look at even the thermal impacts going on now, the destruction of the eco-system in Lake Erie, especially when Fermi III is being proposed.

**Comment: 29-1-AQ;** Resource Center and talk about the rise in microcystine levels due to the thermal pollution. And how that. I mean are they aware that did anyone comment on that

**Comment: 29-2-AQ;** Are they aware! That did anyone comment on that for them.

**Comment: 29-4-AQ;** No they don't. I just wanted to make sure that someone said that to them. And realize that the microcystine levels are rising.

**Response:** *These comments express concern over the health of Lake Erie. The concerns cite the presence of nuisance species and thermal pollution in the lake.*

*The heated effluents of nuclear power plants can cause mortality among fish and other aquatic organisms from either thermal discharge effects or cold shock. Temperatures high enough to kill organisms are found in the cooling water systems, often in the area nearest the effluent discharge structure. Because thermal effects were among the earliest potential impacts identified for power plant operation, a great deal of research and regulatory effort has been aimed at understanding and controlling thermal discharges. Upper lethal temperatures (and various other expressions of temperature tolerance) have been determined for many important species and life stages. As a result, conditions that can lead to thermal discharge effects are relatively predictable.*

*A variety of nuisance organisms or nonnative species may become established or proliferate as a result of power plant operations, including fouling organisms such as the recently introduced zebra mussel, *Dreissena polymorpha*.*

*Mitigative measures have been employed at Davis-Besse to reduce the potential for thermal discharge effects. Davis-Besse is equipped with a cooling tower, offshore intake, closed intake canal, bottom intake, and a high-velocity discharge nozzle. The high-velocity discharge nozzle enhances the rapid mixing and heat dissipation of the heated effluent at the outfall.*

*Colonization of Lake Erie by zebra mussels resulted in several years of improved water clarity and dramatic food web changes, especially a shift in algal production from phytoplankton to bottom-dwelling algae and plants; however, recently, the zebra mussels have been linked to the blue-green alga (cyanobacteria) *Microcystis aeruginosa*. *Microcystis* had been a common species in Lake Erie for at least a century but recently has grown into nuisance bloom*

*proportions. Research performed by the Great Lakes Environmental Research Laboratory (GLERL) showed video evidence of zebra mussels' selective eating habits. GLERL was able to capture the zebra mussels filtering the water, regardless of the presence of microcystis, and releasing the microcystis aeruginosa back into the lake. The zebra mussels however continued to eat the other algae. Zebra mussels, in response to the consumption of the algae, release phosphorous that, in turn, feeds the microcystis, further facilitating their growth.*

*The concentrations of phosphorous, despite years of decline, have recently been showing a gradual increase. Phosphorous has been linked to microcystis; however, it has also been theorized, coupled with thermal pollution, to encourage the growth of lyngbya wollei, a toxic algae. In Maumee Bay, large populations of lyngbya wollei have recently emerged. Research indicates the concern was initially detected in 2006, and the population has since been growing. The Ohio EPA, Division of Surface Water, has the authority over the Maumee Bay. According to the Ohio EPA:*

*[L]ittle scientific information exists to determine the complicated biological processes that encourage the spread of Lyngbya wollei. In order to investigate this issue further, Ohio EPA has formed a Phosphorus Task Force to more formally review the phosphorus loading data from Ohio tributaries to Lake Erie; to consider possible relationships between trends in dissolved reactive phosphorus loading and in-lake conditions; to determine possible causes for increased soluble phosphorus loading; and, to evaluate possible management options for reducing soluble phosphorus loading.*

*Regarding studies under Sections 316(a) and 316(b) of the Clean Water Act, the Ohio EPA, and not the NRC, is responsible for regulating Davis-Besse's intake and discharge through the National Pollutant Discharge Elimination System (NPDES) permitting process and for implementing the requirements of Sections 316(a) and 316(b). Modifications to the NPDES permit are outside the regulatory authority of the NRC. The Ohio EPA will ultimately decide if modification to the permit is necessary in response to the presence of microcystis aeruginosa and lyngbya wollei.*

*The Davis-Besse discharge, however, is not a major contributor of phosphorous to Lake Erie. The source of nuisance populations of microcystis aeruginosa or lyngbya wollei or both have not been observed near the discharge location of Davis-Besse or the immediate surrounding area. The NRC staff acknowledges that Lake Erie is experiencing cumulative impacts to its water resources as a result of these species. These impacts have been included in Chapter 4 under cumulative impacts.*

**Comment: 45-2-AQ;** There are no Federal wilderness areas or designated critical habitat within the vicinity of the proposed site. Davis-Besse consists of 954 acres, of which approximately 733 acres are marshland that is leased to the U.S. Government as part of the Ottawa National Wildlife Refuge. In a letter dated December 16, 2009, we provided comments to FENOC on the proposed 20-year renewal of the operating license for Davis-Besse. At this time we have no additional comments.

**Response:** *This comment was provided by the USFWS. The NRC staff incorporated the USFWS's information provided in this comment into the draft SEIS, including the information in the referenced December 16, 2009, letter to FENOC, which was provided in Appendix C of FENOC's ER.*



#### A.1.4 Cultural Resources (CR)

**Comment: 46-1-AR;** The Peoria Tribe has no objection to the proposed construction. However, if any human skeletal remains and/or any objects falling under NAGPRA are uncovered during construction, the construction should stop immediately, and the appropriate persons, including state and tribal NAGPRA representatives contacted.

**Response:** *The staff addresses the potential impacts to Cultural Resources associated with renewing the Davis-Besse operating license in Chapter 2. Programs associated with new ground disturbance related to refurbishment and/or the inadvertent discovery of Cultural Resources is described and/or sited in Chapter 3 and Chapter 4 of this SEIS. Finally, the environmental impacts of alternatives evaluated in depth is discussed in Chapter 8 of the SEIS, including cultural resource impacts.*

#### A.1.5 Human Health (HH)

**Comment: 14-4-HH;** There are several safety issues that impact on the environmental questions. First of all, I personally know a first responder. We've had conversations about Davis-Besse. He told me that they have been told that in the event of some sort of accident, the only thing they have to worry about is radioactive iodine, and since they will be given pills for radioactive iodine, they don't even have to worry about that.

**Comment: 14-10-HH;** Also, downwind from Davis-Besse in the local communities here, there is a cancer cluster. The state studied this cluster and it was woefully inadequate. It consisted of dosimeters, given to about a fifth of the families. They went out in the yards and ran the dosimeters themselves looking at the sky. They didn't find anything, but I'm not sure they -- believe this happened when Davis-Besse wasn't actually running, and it doesn't address the fact that there may have been emissions in the past, and there could be emissions in the future. So, I think that any federal environmental impact statement would have to look at known emissions from Davis-Besse which are routine, such as I have, and correlate those with the cancer cluster in these local counties and look for cancers that are specifically known to correlate with the nucleates that we know of at least, such as thyroid cancer. I know I only have about five minutes here. I want to say that I know -- as an environmentalist, I know that the NRC is given an impossible task here. Any process that generates radioactive pollution that will be able to cause cancer, birth defects and hurt people for the next -- for millions of years in some cases, by definition, it can't be done safely.

**Comment: 26-5-HH;** And in fact there is a cancer cluster near Clyde, Ohio which is about 15 to 18 miles as the crow flies from Davis-Besse. So, the comment that I have on Scoping is that I am requesting that baseline epidemiological studies be done. And that we explore what is coming out of that nuclear power plant. They are allowed by licensing to release gaseous, liquid from the plant. Below "permissible" levels. But there are cancers over in Clyde, and families are decimated. And I would request that baseline epidemiological studies be done in the entire region.

**Comment: 28-1-HH;** I would go farther than to say the Nuclear Regulatory Commission is a "rogue" organization. I would call it a "terrorist" organization. And I would say that the cancer that people are suffering from in Clyde, Ohio, I know that Lucas County, when I left 10 years ago had the highest cancer rates of the State of Ohio. We're all facing cancer as our future. And this cancer, I would say is on the most part, is on the hands of...It's a legacy of industrial capitalism, but this cancer is on the Nuclear Regulatory Commission's hands because they

have done nothing to police or regulate or control this industry. It's disgusting, it makes me sick to my stomach.

**Comment: 28-2-HH;** I was listening to public radio the other day and they were talking about how they felt like "the Rust Belt" was kind of offensive terminology to use for this area of the country. And the thought crossed my mind well why not "The Cancer Belt" instead? Because that's the number one killer in this area. So, if the "rust belt" is too niccy-nice. You know, they want to consider it the "water belt" but the "water belt" is contaminated.

**Comment: 14-19-HH;** Something else I just wanted to mention that Tony Mangano, Anthony Mangno has pointed out that thyroid cancers in Ottawa County, right around the plant, went from below the national average before the plant started operating to above the national average now. And, in fact, research says that cancer rates, thyroid cancer rates particularly, just about double when you put a nuclear power plant in. So, iodine, radioactive iodine is very rare. Thyroid cancer is very rare. Pretty much you can count on the fact that those people who are dying from thyroid cancer are dying because of radioactive releases from the plant. Radioactive releases that are casual, that are average, that are "normal," part of their normal operations. So, people are dying. They're in the hundreds now. If we keep doing this plant and radioactive thyroid. Iodine, radioactive isotopes of Iodine stay radioactive for 20 million years. So the more we generate the more we'll be. People will die from the cancers caused by this radioactive Iodine. They're in the hundreds now. Another 20 years they'll be in the thousands. So what we are trying to do here is prevent thousands of people from being killed by an unnecessary form of energy. We've heard testimony here today about just exactly why that's so unnecessary.

**Comment: 43-3-HH;** Yeah I want to make a statement on behalf of kids whose environment is being destroyed. There used to be a lot more nature to go to and tromp around in and now kids don't have that we have urban environments that are polluted kids getting cancer because of this kind of stuff and it's really not ok. So this is Connie Gadwell Newton urging you to not renew the licensing for Davis-Besse. Thank you.

**Response:** *The NRC's primary mission is to protect the public health and safety and the environment from the effects of radiation from nuclear reactors, materials, and waste facilities. The NRC's regulatory limits for radiological protection are set to protect workers and the public from the harmful health effects (i.e., cancer and other biological impacts) of radiation on humans. Radiation standards reflect extensive scientific study by national and international organizations. The NRC actively participates and monitors the work of these organizations to keep current on the latest trends in radiation protection.*

*Recently, the NRC asked the National Academy of Sciences (NAS) to perform a state-of-the-art study on cancer risk for populations surrounding nuclear power facilities. The NAS study will update the 1990 U.S. National Institutes of Health—NCI report, "Cancer in Populations Living near Nuclear Facilities."*

*The study will be carried out in two consecutive phases. A Phase 1 scoping study will identify scientifically sound approaches for carrying out an epidemiological study of cancer risks. This scoping study began on September 1, 2010, and will last for 15 months. The result of this Phase 1 study will be used to inform the design of the cancer risk assessment, which will be carried out in a future Phase 2 study.*

*The Sandusky County Health Department (SCHD) and the Ohio Department of Health (ODH) conducted a study of childhood cancer incidence, from the years 1996 through 2006, in the city of Clyde and Green Creek Township, both located within 50 miles of Davis-Besse. The study's objective was to identify factors that may have contributed to the higher-than-expected*

childhood cancer rates found in that area. The families of 21 childhood cancer patients participated in the study, responding to questionnaires administered by SCHED staff. The questionnaires addressed a variety of topics, including possible exposure to ionizing radiation. The report concluded that there were no exposures or variables that were common to the 21 children with cancer who participated in this profile. The report can be viewed online at: <http://www.sanduskycohd.org/Template/Childhood%20Cancer%20in%20Eastern%20Sandusky%20County%20a%20Profile%205%2026%2011.pdf>

Although radiation may cause cancers at high doses, currently there are no data to unequivocally establish the occurrence of cancer following exposure to low doses, below about 10 rem (0.1 Sv). However, radiation protection experts conservatively assume that any amount of radiation may pose some risk of causing cancer or a severe hereditary effect and that the risk is higher for larger radiation exposures. Therefore, a linear, no-threshold dose response relationship is used to describe the relationship between radiation dose and detriments such as cancer induction; simply stated, any increase in dose, no matter how small, is assumed to result in an incremental increase in health risk. This theory is accepted by the NRC as a conservative model for estimating health risks from radiation exposure, recognizing that the model probably over-estimates those risks. Based on this theory, the NRC conservatively establishes limits for radioactive effluents and radiation exposures for workers and members of the public. While the public dose limit is 100 mrem (1 mSv) for all facilities licensed by the NRC (10 CFR Part 20), the NRC has imposed additional constraints on nuclear power reactors. Each nuclear power reactor, including Davis Besse, has license conditions that limit the total annual whole body dose to a member of the public outside the facility to 25 mrem (0.25 mSv). In addition, there are license conditions to limit the dose to a member of the public from radioactive material in gaseous effluents to an annual dose of 15 mrem (0.15 mSv) to any organ; for radioactive liquid effluents, a dose limit of 3 mrem (0.03 mSv) to the whole body, and 10 mrem (0.1 mSv) to any organ.

The amount of radioactive material released from nuclear power facilities is well measured, well monitored, and known to be very small. The doses of radiation that are received by members of the public as a result of exposure to nuclear power facilities are so low (i.e., less than a few millirem) that resulting cancers attributed to the radiation have not been observed and would not be expected.

A number of studies have been performed to examine the health effects around nuclear power facilities. The following is a list of some of the studies that have been conducted:

- In 1990, at the request of Congress, the National Cancer Institute (NCI) conducted a study of cancer mortality rates around 52 nuclear power plants and 10 other nuclear facilities. The study covered the period from 1950 through 1984 and evaluated the change in mortality rates before and during facility operations. The study concluded there was no evidence that nuclear facilities may be casually linked to excess deaths from leukemia or from other cancers in populations living nearby.
- Investigators from the University of Pittsburgh found no link between radiation released during the 1979 accident at the Three Mile Island Nuclear Station and cancer deaths among nearby residents. This study followed more than 32,000 people who lived within 5 miles (mi) (8 kilometers (km)) of the facility at the time of the accident.
- In January 2001, the Connecticut Academy of Sciences and Engineering issued a report on a study around the Haddam Neck Nuclear Power Plant in

*Connecticut and concluded that exposures to radionuclides were so low as to be negligible and found no meaningful associations to the cancers studied.*

- *In 2001, the American Cancer Society concluded that, although reports about cancer clusters in some communities have raised public concern, studies show that clusters do not occur more often near nuclear plants than they do by chance elsewhere in the population. Likewise, there is no evidence linking the isotope strontium-90 with increases in breast cancer, prostate cancer, or childhood cancer rates.*
- *In 2001, the Florida Bureau of Environmental Epidemiology reviewed claims that there are striking increases in cancer rates in southeastern Florida counties caused by increased radiation exposures from nuclear power plants. However, using the same data to reconstruct the calculations on which the claims were based, Florida officials did not identify unusually high rates of cancers in these counties compared with the rest of the state of Florida and the nation.*
- *In 2000, the Illinois Public Health Department compared childhood cancer statistics for counties with nuclear power plants to similar counties without nuclear plants and found no statistically-significant difference.*

*In summary, there are no studies to date that are accepted by the nation's leading scientific authorities that indicate a causative relationship between radiation dose from nuclear power facilities and cancer in the general public. The amount of radioactive material released from nuclear power facilities is well measured, well monitored, and known to be very small.*

*These comments provided no new and significant information. Therefore, no changes have been made to the SEIS.*

**Comment: 20-4-HH;** So tritium is an isotope of hydrogen, it's hydrogen-3, which means one proton and two neutrons, and, it is not naturally occurring and has a half-life of 12.3 years. so it is produced in all nuclear reactors by a neutron bombardment either of lithium-6, or boron-10. And, some of you may remember boron is the acid, well, there's boron in the cooling water that is in the pressure vessel, and it was that leaking of boric acid, that was responsible for going through 6 inches of carbon steel in the reactor head. So, the presence of that boron is, under neutron, impact, can produce the, tritium. It's radioactive, it decays, in 12.3 years half-life, and it emits a high-energy electron which is, known as a beta particle, and, and there's another particle which is an anti-neutrino, which almost interacts, so, so, so little that, neutrinos can, pass completely through the earth. So we don't worry about the neutrinos or the anti-neutrinos, but the beta particle is 5.7 kilo, uh...KEV, kilo electron volts, and, this also has a fairly, fairly low penetration. It, it barely gets into your skin, it stops almost with the dead layers of the skin. However, if you ingest it, or you breath it, then it's very dangerous because it, it has a very short, penetration distance in your lungs or, or in your intestinal tract. So, bec...it's likely to be ingested either as water vapor, as, hydrogen, actually it would be an analog...isotope, one atom of hydrogen, one atom of normal hydrogen, one atom of tritium, or it, it forms, H<sub>2</sub>O, water, as, hydrogen, one atom of tritium, or it, it forms, H<sub>2</sub>O, water, as most likely a normal hydrogen isotope and a tritium isotope together with oxygen, so you will ingest it if you drink water from one of these contaminated wells. So, just a couple of things to remind us of the danger of, of these reactors. Even if there is not a catastrophic meltdown, there are ever-present dangers in these, in the operation of these nuclear reactors.

**Comment: 26-7-HH;** In addition, it was mentioned earlier that there were Tritium leaks in 2009. There was also a Tritium leak in 2008. The grounds are contaminated. I'm concerned about

the buried piping at the Davis-Besse plant, about the leaking of Tritium, about the potential of flooding externally, the potential of flooding internally at the Davis-Besse plant. This is an aging plant. And with that Tritium leak and as you run a nuclear power plant into the ground, which is being proposed, another 20 years there are going to be increasing leaks, increasing contamination.

**Response:** *These comments are concerned with tritium in the groundwater. NRC regulations require licensees to control and limit radioactive releases, including tritium, to the environment (the air and water). As part of the NRC requirements for operating a nuclear power facility, licensees must comply with radiation dose limits for the public in 10 CFR Part 20 and keep releases of radioactive material into the environment during normal operations as low as is reasonably achievable (ALARA), in accordance with 10 CFR 50.36a..*

*Information on FENOC's groundwater monitoring program is contained in Chapters 2 and 4 of this draft SEIS.*

*No new and significant information is provided in these comments. Therefore, no changes have been made to the SEIS because of these comments.*

**Comment: 22-4-HH;** In addition, the amount of toxic algae has increased over the last, 10 to 15 years, so much that the Ohio EPA reports that physical contact with the toxic algae in Lake Erie probably causes illnesses, probably caused illnesses to 10 people in the summer of 2010.

**Comment: 29-3-HH;** It's not a question! I just want the panel to know that inadvertently when people start dying or getting sick because the levels occur. Is there any way that they could possibly be held responsible or get sued?

**Response:** *These comments express concerns relating to the nuisance organisms in Lake Erie as they apply to Human Health. Lyngbya wollei and Microcystis aeruginosa are two different species of cyanobacteria. Both currently exist in Lake Erie and have become a nuisance in the Maumee Bay area. When conditions are present to facilitate a rapid growth, a dense population forms, known as a bloom. Some Blooms are harmless; however, when these organisms contain toxins, other noxious chemicals, or pathogens, it is referred to as harmful algal blooms (HAB). HABs may cause health concerns dependant on the method an individual comes in contact with the toxin produced.*

*Thermal pollution has been referenced as a contributor to the growth of HABs. Davis-Besse's thermal effluent is warmer than the receiving waters. HABs, however, require calm, low-flow water conditions in order to facilitate their growth. The Davis-Besse outflow is equipped with a high-velocity discharge nozzle. The high-velocity discharge nozzle, as part of the NPDES permit, is intended to enhance the rapid mixing and heat dissipation of the heated effluent at the outfall. As referenced in 2.2.6, Aquatic Resources, of this SEIS, the regulation of surface waters is within the regulatory authority of the Ohio EPA. In addition, the thermal discharges, regulated by the NPDES permit, are also under the authority of the Ohio EPA.*

*NRC staff did not discover any studies linking Davis-Besse as a direct contributor to the formation of HABs. The health impacts associated with HABs and the impairment of Lake Erie are discussed in the "Cumulative Health Impacts," section of Chapter 4.*

### **A.1.6 Hydrology (HY)**

**Comment: 20-3-HY;** This is a study by Davis-Besse. In Appendix E, that's the Environmental Report, on this page (Page 2.3-2), I quote here, they're, they're required, by their operating license to have monitoring wells to monitor the quality of the groundwater in the, within the

perimeter. And one of their wells in 2..., in the spring of 2009 showed a tritium level that was rising, 4000, pico curies/liter. And, this is a quote from their study. "As a result, the First Energy Nuclear Operating, Company," notice that's a separate operating company from First Energy, from the rest of First Energy, "is pursuing a root cause approach to identify the source of the tritium in the wells. No tritium concentrations of...have been detected above the, US EPA drinking water limit of 20,000 picocuries." But, this to me is very troubling. Even though the, the, concentration is not that high yet, but is an increasing amount, the question is where does it come from?

**Response:** *The comment expresses concern relating to the source of the tritium noted in FENOC's ER.*

*The NRC staff describes the groundwater resources at Davis-Besse and the effects of plant operations on groundwater hydrology and quality in Chapters 2 and 4 of this SEIS. Chapter 2 summarizes the results of NRC's review of Davis-Besse's Groundwater Protection Program, including the placement of site groundwater monitoring wells. As part of this evaluation, the NRC staff specifically reviewed the conceptual groundwater model prepared for Davis-Besse in 2007 and 2008. All studies reviewed by the NRC staff are cited in Chapter 2 of this SEIS, including analysis of tritium information.*

*No new and significant information is provided in this comment. Therefore, no changes have been made to the SEIS because of this comment.*

**Comment: 26-6-HY;** Earlier again, this week, I got several documents from Connie Klein who was one of the interveners at Davis-Besse on the first Operating. And she shared with me photos of the flooding of the Davis-Besse in 1972. This was during construction. The entire site was flooded for two to three weeks. Um I have concerns about the Davis-Besse flooding. As you all know Lake Erie is very shallow. The western basin is very very shallow, and it is subject to something called a seiches where the wind blows out the water, blows it east. Then the water comes back, like a bathtub, and floods the western shore. I'm concerned about the potential flooding of that Davis-Besse Plant.

**Response:** *This comment expresses concern regarding the potential of flooding at Davis-Besse. As part of the initial design of Davis-Besse, consideration for flooding was required to ensure the safety of structures and continued operation of the plant. The plants design basis included the determination of the probable maximum surge flood level and is documented in the final safety analysis report (FSAR).*

*The static water levels in the western basin of Lake Erie are subject to long term, annual cyclical variation, and short period variations. These variations are due to wind tides and seiches. Seiches are a movement on the surface of an enclosed body of water, in this case Lake Erie, usually caused by intense storm activity.*

*The short period variations in the daily level from the monthly mean level are due to both a lengthwise wind tide which produces the greatest disturbance of water level and a transverse seiche in the west end of Lake Erie which can oscillate between the northern and southern shores. A traverse seiche of 0.8 ft has been recorded but for design purposes, 1.0 ft has been used in the design considerations.*

*Based on collected and available data since 1860, the maximum variations in the mean monthly water level are 4.2 feet above datum and 1.2 feet below datum. Not included in this range were two occurrences in 1973 and 1974, when an all-time high lake level was recorded at 4.9 ft above datum. Davis-Besse, in its design considerations, used a probable maximum variation of 4.8 feet above and 1.5 feet below datum. Although 4.8 ft is less than the recorded 4.9 ft, the 0.1 ft difference is accounted by the rounding up of the daily level variation from 0.8 ft to 1.0 ft.*

*A probable maximum meteorological event was used to determine the maximum rise in lake level due to wind tides. This meteorological event would have a maximum ENE wind at anyone location of 100 miles per hour for a 10-minute period, and the wind speed could exceed 70 miles per hour during the six-hour period both before and after the maximum wind speed. The force or push of the wind driving the water level up, resulted in a maximum wind tide rise of 9.3 ft.*

*The probable maximum surge flood level that could occur at Davis-Besse would be a combination of all these occurrences, for both the cumulative high and the cumulative low. For flooding concerns, the design would relate to the cumulative high. Thus, the 4.8 high monthly mean, 1.0 ft seiche, and the 9.3 ft wind tide would result in a 15.1 ft rise in low water datum to reach a static high elevation of 583.7 ft. Davis-Besse has a finished floor elevation set above the static high and is further protected by an earthfill breakwall built up to an elevation of 591.0 ft to further protect the site from potential wave action.*

*As a result of the 2011 earthquake and tsunami that struck Japan, resulting in extensive damage to the nuclear power reactors at the Fukushima Dai-ichi facility, the NRC has taken significant action to enhance the safety of reactors in the United States. Operating nuclear reactors were directed to use present-day information to reevaluate the flooding hazards that could impact their site and to submit their reevaluations to the NRC for evaluation in a Hazard Reevaluation Report. Information on the NRC's actions relating to Fukushima Dai-ichi accident can be found at: <http://www.nrc.gov/reactors/operating/ops-experience/japan-dashboard.html>.*

#### **A.1.7 License Renewal and its Process (LR)**

**Comment: 14-1-LR;** Good evening. Like most people in the Northwest Ohio area, I first found out about the scoping meeting earlier in the week when there was a story in the Blade. So, I had not had an opportunity to completely read the Environmental Impact Statement that's been prepared with the application for the license renewal. But, I think that is one of the issues that should be dealt with in the scoping process at either another later meeting or perhaps further announcements, and at the very least, I would like to request a hard copy also be placed in the Wood County Library in Bowling Green, Ohio.

**Comment: 16-1-LR;** My name is Patricia Marida. I'm the Chair of the Nuclear Issues Committee of the Ohio Sierra Club. And, we had a whopping four days to know about this meeting. I had four days ahead. I learned about it this morning and have come up from Columbus here.

**Comment: 14-15-LR;** And though...I felt at the time, those people should be at this hearing, but most people didn't even know it happened. It went by before people could get their thoughts together. And so we asked the NRC to hold another one here in Toledo, they refused, but we have decided to hold our own and that's what this is...that's what this is about.

**Comment: 16-23-LR;** First let me say that the Sierra Club is disappointed that the NRC only gave 10 days notice of these scoping meetings in the *Federal Register*, and that the public only had 3 days notice from an article in *The Toledo Blade*. The Davis-Besse Environmental Report and License Renewal Application were almost 2000 pages, not including the NRC Generic Environmental Impact Statement for Nuclear License Renewal. Therefore, we would like to request that the NRC hold at least one additional scoping meeting, and that this be held in Toledo, close to the population center with residents who are informed by *The Blade*. Also, setting the comment deadline during the holiday season makes it difficult for people to have

time to digest the material and comment. Therefore, we would also like to request an extension of the comment period, preferably until the end of January.

**Comment: 44-1-LR;** I would be very interested in a scoping meeting taking place in Toledo, Ohio where more people would be able to attend. I also think more time should be allotted for the comment period as December 27, 2010 falls in the middle of the holiday period. Perhaps an additional 30 day period would be appropriate.

**Comment: 49-1-LR;** The people of Northwest Ohio, Southeast Michigan, and other communities that would be the most adversely affected by an accident at Davis-Besse deserve a longer comment period and more hearings before the NRC automatically approves First Energy's request to re-license. Please attend our hearing, as outlined below. PUBLIC HEARING on re-licensing of the Davis-Besse Atomic Reactor Saturday Dec. 18 from 12 noon to 3 pm St. Mark's Episcopal Church 2272 Collingwood Blvd Toledo, Ohio 20 MORE Years of Radioactive Russian Roulette on the Great Lakes shore?! We are calling for input from all interested parties regarding First Energy's mismanagement of Davis-Besse, and the Nuclear Regulatory Commission's lack of oversight of that facility, in particular residents of Ohio, the Toledo area, South East Michigan, or residents of any community that would be directly adversely effected by an accident at Davis-Besse. Anyone can testify, sign in will be required. This hearing will be videotaped and presented to the NRC. FirstEnergy has applied to the U.S. Nuclear Regulatory Commission (NRC) for a 20-year operating license extension at its Davis-Besse nuclear power plant near Oak Harbor, Ohio, just over 20 miles east of Toledo. Davis-Besse is one of the most problem-plagued atomic reactors in the entire country: it has suffered six "significant accident sequence precursors," three times more than any other American nuclear plant. The original license was granted in 1977 and will expire in 2017. If the extension is approved Davis-Besse can operate until 2037. In the past 10 years NRC has rubber-stamped 60 or 60 license renewals sought by industry. The NRC Office of Inspector General has reported serious problems with NRC's license extension program: NRC staff have "cut and pasted" the nuclear utility's own work, sometimes word for word, falsely presenting it as an independent safety

**Comment: 14-13-LR;** So, I'd like to welcome you all. My name is Joe DeMare and I spoke at the official NRC hearing on November 4. And I have to tell you, it was a, a rather disappointing experience, because almost everyone there was either employed by Davis-Besse or they were from an organization that received money from Davis-Besse.

**Response:** *The environmental scoping period is an opportunity for the public, tribal governments, and local, state and Federal government entities to assist the NRC in identifying areas of concern, impacts, and alternatives as staff develops the SEIS for license renewal. The NRC announced the start of the scoping period by use of a Federal Register Notice, published on October 28, 2010. The 60-day review period for the environmental scoping period ended on December 27, 2010.*

*The purpose of the environmental scoping meeting was to provide a brief summary of the license renewal and scoping process and to allow the public an opportunity to provide comments. Although the NRC emphasizes the purpose for the solicitation of comments, it does not restrict the topic of those comments to those applicable to license renewal. As a result, the public, in some instances, takes this opportunity to voice their opinion in support or against the approval or denial of the renewed license.*

*The environmental scoping meeting was one method for providing scoping comments. Comments were also sent to the NRC in response to this draft SEIS by the following methods:*



- *Comments were submitted electronically via the Federal rulemaking Web site: <http://www.regulations.gov> and search for documents filed under Docket ID NRC-2010-0298.*
- *Comments were mailed to: Chief, Rulemaking and Directives Branch (RADB), Division of Administrative Services, Office of Administration, Mail Stop: TWB-05-B01M, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001. Comments were faxed to RADB at (301) 492-3446.*

*Additional details relating to the license renewal can be found in Chapter 1 of this draft SEIS or at <http://www.nrc.gov/reading-rm/doc-collections/nureqs/brochures/br0291/br0291-r2.pdf>.*

**Comment: 18-3-LR;** Now we're looking at what the NRC is doing in, in its laughable oversight of all the nuclear power plants but Davis-Besse in particular. And it occurs to me that, that...the NRC is a rogue agency and just as the, as the, SEC failed us, failed us, the citizens that it should be, watching out for, that is our goals, that is our tool, that is the thing that, the entity that we have put in place through our government to make sure that everybody plays by the rules. And that is what the, Nuclear Regulatory Commission is as well. However, it is failing to do that, it has, it has absolutely failed to do that. And what it has done in reference to Davis-Besse and the numerous problems that we have seen is, at Davis-Besse, demonstrates that very clearly.

**Comment: 25-2-LR;** We need to broaden the idea of what environmental consequences, environmental impact means when it comes to nuclear power and something like Davis-Besse, and other people who have spoken here today have done a better job at talking about what specifically, The common definition of what environmental impacts might be. But I'd like to say something about the political environment that is affected by the operation of nuclear power plants and Davis-Besse relicensing, the potential licensure of a plant down in Piketon a new power plant that our Democratic Governor invited in to this situation that Kucinich will probably go right along with and that is the credibility and the competency of something called the Nuclear Regulatory Commission. Already while the residents of this area would be most directly affected by the power plant, Cleveland is not that far away and the NRC should have solicited input from people from a broader radius around the power plant including Michigan and Indiana. Because what we've found from the Chernobyl accident is that radioactive waste doesn't stop at municipal boundaries or national boundaries. And the environmental impact is much broader than how some fish that get caught in an intake pipe or the other kind of more immediate sort of environmental impacts that people might think of. The fact that the NRC didn't hold multiple hearings on this is a problem, but they shouldn't and I'm speaking directly to the NRC at this point. The NRC shouldn't take as the expression of the people of Ohio the testimony of just those people who attended the hearing on November 6th or 4th or whenever it was right after election day. That the people are economically benefitting from the conduct of FirstEnergy by the operation of that power plant whether it's through their jobs or through charitable contributions, that is not a legitimate expression. We have a political problem in this country of disengagement and alienation and generally, the government and its regulatory bodies are treated with contempt by the mass media. And a culture of contempt is built among the people for our government and for the mechanisms that we as people use collectively to monitor things like the banking industry or the nuclear industry. It's not to our benefit that that is happening, but it is. So that small group of people who testified in favor of this relicensing is not a complete or an inclusive representation of the people that are concerned with this. And I would suggest that most of the people that are concerned with this are disengaged and are not paying attention. And the credibility of the NRC is at stake.

**Comment: 26-4-LR;** So the lesson I take out of this was I learned that the NRC is incapable of learning lessons. As mentioned earlier, they are indeed a rogue agency. This past week, the

61st nuclear power plant that had applied for relicensing was relicensed. They are now batting 1000%. 1000, Batting 1000. 61 for 61 on relicensing applications. So, the NRC has not a shred of credibility with the public, and they are there, running interference, keeping the people away from confronting these utilities when they run these abysmal plants.

**Comment: 28-3-LR;** I don't have any faith in the Nuclear Regulatory Commission to do anything about the issue, but, thanks. That's all I have to say.

**Comment: 26-10-LR;** So, I do not have confidence in the NRC to force about proper equipment, maintenance. Perpetually, there are exemptions that are requested and just as a matter of rubberstamping - - the Nuclear Regulatory Commission, the Nuclear Rubberstamp Commission, allows them exemption time after time. Again. Production over safety. Profit over people.

**Response:** *These comments express a lack of confidence relating to NRC's oversight and regulation. To ensure that U.S. nuclear power plants are operated safely, the NRC licenses the plants, licenses the plant operators, and establishes license conditions for the safe operation of each plant.*

*In addition, the safe operation of nuclear power plants is not limited to license renewal but is and will be dealt with on a daily basis as a part of the current operating license. The NRC, on an ongoing basis, at every nuclear power plant, addresses safety issues and concerns. The NRC conducts safety inspections throughout the operating life of the plant, whether during the original or renewed operating license. If the NRC discovers safety issues at a nuclear power plant, they are addressed immediately, and any necessary changes are incorporated under the current operating license. As such, the regulatory safety oversight of Davis-Besse is ongoing.*

**Comment: 18-4-LR;** This is the beginning. Certainly, we don't have enough people in this room. We never do when we try to do something like this. We fit it in between all of the things that we do as, as mothers, as fathers, as, as parts of families, as parts of communities, we fit it in with our jobs, and we are determined to make a change. So as we approach that process here, in, in making comments, that the Nuclear Regulatory Commission will do their utmost to ignore, as, as we approach this process, we have to understand that this is the beginning of the process. This is the beginning of the process of us as citizens, and I believe that "We the People" is one of the most powerful statements that anybody can make. And "We the People" embodies our democracy, so "We the People" will be the ones who will have to challenge not only Davis-Besse but the NRC.

**Comment: 23-1-LR;** Hi folks. Um I prepared written comments for the NRC. I'm really pleading with you all because I'm not sure they'll listen or read them.

**Response:** *These comments express a lack of confidence over the NRC's ability to address and incorporate scoping comments. To further enhance the development of the SEIS, public participation is solicited as part of the license renewal scoping process. NRC held two public meetings on November 4, 2010, to solicit comments from the public.*

*Two additional meetings, not sponsored by the NRC, were also conducted to obtain comments from the public. The People's Hearing, held by the Green Party of Ohio, represented by Anita Rios and Joseph DeMare, was held on December 17, 2010. The Sierra Club, represented by Patricia Marida, also held a separate meeting on December 11, 2010. Prior to the Davis-Besse scoping period, scoping comments in video format had never been submitted. The Peoples Hearing provided a transcript of the meeting, in addition to the video submission, to ensure the accurate capture of their comments. The NRC, to provide complete representation of the comments, developed an unofficial transcript of the Sierra Club meeting. Comments are*

*both welcomed and encouraged as part of the Draft SEIS comment period for incorporation into the final SEIS.*

*The NRC makes a conscious effort to address public concerns provided in the scoping comments. The NRC acknowledges there is public dissatisfaction when comments, are categorized as out of scope. The Scoping Summary Report and Appendix A of this SEIS, however, has included expansive responses. Where the comments were deemed in scope, a summarized response is provided and the reader is directed to the appropriate section within the SEIS to gain additional details. Where the comments are categorized as out of scope, staff responded to the comments and redirected the reader to where the comments are addressed.*

**Comment: 26-2-LR;** We've heard that there are several alternatives to Davis-Besse. Replacement power is available now. Could be generated much cheaper. It is about the consecration of wealth and a cartel of the utilities that like the monopoly status that they enjoy, and they are locking out the people. It is not power, not energy for the people. It is power and political power against the people.

**Comment: 16-25-LR;** The environmental effects that occur in other parts of the United States should come under consideration when the NRC develops the Environmental Impact Statement.

**Response:** *These comments request evaluation of the cumulative effects of license renewal on the United States. The cumulative effects of license renewal are evaluated in this SEIS. A detailed discussion can be found in Chapter 4.*

**Comment: 16-32-LR;** Even the 40-year time frame for operation of a power plant does not have an engineering basis, but was based on the time needed to pay off construction bonds. What happened to the engineering responsibility to oversee and advice an operation of this magnitude of danger?

**Response:** *The Atomic Energy Act provides the NRC with the regulatory authority for to issue licenses for commercial power reactors to operate for up to 40 years and allows these licenses to be renewed for another 20 years. A 40-year license term was selected based on economic and antitrust considerations -- not technical limitations. The NRC has established a license renewal with clear requirements to assure safe plant operation for an additional 20 years of plant life.*

*The license renewal rule, 10 CFR Part 54, establishes the technical and administrative requirements for renewing a reactor operating license. Part 54 focuses the staff's review on managing the adverse effects of aging to ensure that important systems, structures and components will continue to perform their intended function during the 20-year period of extended operation. An applicant must provide the NRC with an evaluation that addresses the technical aspects of plant aging and describes the ways those effects will be managed. The NRC reviews the application and documents the conclusions in the safety evaluations.*

*The applicant must also prepare an evaluation of the potential impact on the environment if the plant operates for another 20 years. The NRC performs plant-specific reviews of the environmental impacts of license renewal in conformance with the National Environmental Policy Act and the requirements of 10 CFR Part 51. To facilitate the environmental review for license renewal, certain issues were evaluated generically for all plants rather than separately in each plant's renewal application. The generic evaluation, NUREG-1437, Generic Environmental Impact Statement for License Renewal of Nuclear Plants, (GEIS) assesses the scope and impact of environmental effects that would be associated with license renewal at any nuclear power plant site. A plant-specific supplement to the GEIS, commonly referred to as the SEIS, is prepared for each licensee that applies for license renewal.*

*Before a new license is issued, the NRC will ensure that there is a technically credible and legally sufficient basis for granting a renewed license for an extended 20 years as reflected in the NRC's safety evaluation report, final environmental impact statement supplement, and the proposed renewed license.*

### **A.1.8 Opposition to License Renewal (OL)**

**Comment: 7-1-OL;** FirstEnergy should not be allowed to continue to operate Davis-Besse after 2017.

**Comment: 14-12-OL;** In this specific case, Davis-Besse has one of the worst operating records in the industry. That's widely known. This will actually be a very interesting test case to see if the NRC is able to deny any license. I think if any license should be denied, it would be Davis-Besse.

**Comment: 16-2-OL;** The Sierra Club opposes nuclear energy in its entirety, citing serious environmental health and public expense issues throughout the nuclear fuel cycle.

**Comment: 14-14-OL;** And I know that there are many people, thousands of people, in the Northwest Ohio area, that don't want this license renewed and think it's an insane gamble with our health and safety to run this plant for another 20 years.

**Comment: 14-16-OL;** So, we have a lot of very educated, very well-informed speakers. And we have people that are just plain citizens that, but I think most of the people that we've scheduled to speak...feel that Davis-Besse should not be renewed. We have opened this up to the public and if anyone here wants to, to speak that hasn't been asked to already, you just need to sign up, there's a little sheet outside, I'll ask you to sign.

**Comment: 18-1-OL;** And Davis-Besse is about 20 miles from here. And, I have been opposed to nuclear power for a very long time. But as I was thinking about, what we are doing here today and, what I wanted to talk about today, it kept, coming back to me that I think that even if I was in favor of nuclear power, this is still a nuclear power plant that I would want shut down.

**Comment: 18-7-OL;** And in the face of that, in the face of that lack of responsibility and lack of planning for the future, the NRC has continued to do nothing. They just slapped them on the wrist for that, they slapped them on the wrist, they fined them. But if you look at, FirstEnergy's profits, they have gone up, they have, they have never gone down, they never had to really pay for, for what they did here at Davis-Besse. They have shown, a complete lack of responsibility to the people they serve. And the NRC has failed to hold them accountable.

**Comment: 18-8-OL;** Now the other thing about FirstEnergy is, First Energy holds a corporate charter from here in Ohio. And I think that one of the next steps that, that we should be pushing towards is to revoke that corporate charter for FirstEnergy. They are, they are a rogue corporation. They have failed to, to provide oversight of their own facilities, and they have failed to, show any real determination to actually learn from that situation that transpired back when the, Davis-Besse almost, melted down actually. So I hope that these proceedings are the first step towards preventing, a nuclear meltdown. In the face of the failure of First Energy to be vigilant and maintain its, its facilities appropriately, and in the face of, of the failure of the Nuclear Regulatory Commission to provide adequate oversight, and I would invite each of you to be a part of that next step because certainly we must grow this movement if we are to be effective. Thank you.

**Comment: 19-8-OL;** And there's ongoing problems with Davis-Besse, to the present day. I'd like to just share some figures for, what might happen if there were a major radioactivity release

at Davis-Besse. This comes from a 1982 NRC report entitled "Calculation of Reactor Accident Consequences," or CRAC, which is a nice little acronym the NRC came up with. So, if there were a major radioactivity release from Davis-Besse, the NRC and the Sandia National Lab in New Mexico, which conducted the study, determined that there could be 1,400 peak early fatalities, they call them, 1,400 peak early fatalities, 73,000 peak early injuries, and 10,000 peak cancer deaths. And they attributed a dollar figure of 84 billion dollars for property damage. So, that study came out in 1982. NRC tried to cover it up. Congressman Ed Markey of Massachusetts, got it ousted by subpoena by holding a hearing and out came the figures. So if you increase, all those casualties due to the increase in population since 1982, if you, increase, due to inflation the, property value damages, that would go up to \$185 billion dollars. And a little update to mention, just came out in, mid-September, "Inside the EPA," which is a trade press, publication in Washington, DC, scooped the story that they did a freedom of information act release to the NRC, the EPA, and the Federal Emergency Management Agency, and discovered, internal e-mails between the agencies, the lawyers of the agencies, fighting with each other over a little minor detail of after a major radioactivity release who would, be in charge of the clean-up and how would it be paid for. So it turns out that the lawyers at these 3 agencies, were discussing how Price-Anderson, the national liability, coverage for major nuclear power plant accidents, will not cover the cleanup costs. It would cover other things, property damage and, and some very strictly controlled categories, but not clean up costs. So, that's a little issue.

**Comment: 19-9-OL;** Davis-Besse, which is deteriorated with age, has already had so many close calls, 2 major accidents. So, you can see things are pretty out of control. Anita mentioned the, NRC as a rogue agency. And we keep trying to figure out what the NRC stands for. Is it Nobody Really Cares? Is it Nuclear Rubberstamp Commission? it might be Nuclear Rubberstamp Commission, because of, the 60 license extension applications they've considered so far, they have rubberstamped every single one of them. And, these are oldest reactors in the country with major problems.

**Comment: 14-17-OL;** OK, so while Al's setting up, I just want to mention that, technically what these comments are going to be is part of the Environmental scoping comments for the Environmental Impact Statement, which is part of the application for the 20-year renewal. So part of that process is that if we could show that there are cheaper, safer, more environmentally friendly alternatives to doing nuclear power, to renewing this license for another 20 years, technically the NRC is supposed to say "OK, you're right, nuclear power isn't that, we won't extend this, licensing application."

**Comment: 22-1-OL;** Water is the foundation of life. And it's our most precious resource in Ohio. Nuclear energy is not needed for life here in northwest, Ohio.

**Comment: 22-7-OL;** Davis-Besse should not be re-licensed. The other question that has to be considered - is the safety culture within Davis-Besse changed? And if one were to assess the safety culture in personnel...Technology doesn't fail on its own, technology fails...People operate technology.

**Comment: 23-2-OL;** So, we urge the Commissioners to deny the 20 year relicensing. If there ever was a candidate for the first denial of a relicense, this is it. As the history of the facility proves, it is too dangerous and expensive to continue this operation, especially since it is too dangerous and expensive to continue this operation, especially since it is not needed for present or future power generation. I would like to refer the Commissioners to two articles quoting studies that support this latter statement.

**Comment: 23-5-OL;** It's past time to admit that we can no longer afford this complicated and dangerous technology - - not the feed-in tariff, I'm referring to Davis-Besse.

**Comment: 24-3-OL;** As a very senior citizen, I would like to encourage the members of the audience who are opposing the relicensing of the plant to keep fighting. It can sometimes get discouraging, but the opposition that was mounted to the original building of nuclear plants in the 1960s and 70s did result in enough added expense for the electrical industry to put a halt to the building of new plants, although Davis-Besse was approved.

**Comment: 25-1-OL;** Some people may remember me from the early 90s. I know at least Mike Leonardi was here in the room. There he is! That's when we fought off the whole proposition to build a low level radioactive waste dump here in Ohio. I'm sorry I wasn't here in the 70s to resist against the Davis-Besse, but if I lived in Ohio then, I would've.

**Comment: 26-1-OL;** We are blessed in that we live in 20% of the world's surface freshwater here in the Great Lakes the most precious resource on the planet. Without it, life is not possible. And yet we have a nuclear power plant that has an abysmal record, Davis-Besse. But I'm here to tell you that it's not about the generation of energy. It's about the concentration of wealth and power. Political economy.

**Comment: 26-12-OL;** Now we've got to stop the production of this material, and I say do not relicense this and the plant should be shut down immediately.

**Comment: 27-2-OL;** So, I just agree that they should not get relicensing whatsoever. They have done the worst job in managing this plant. They do not follow good engineering principles. They're making the same mistakes all over again. They should be shut down permanently, and they should not be relicensed.

**Comment: 14-18-OL;** We haven't done enough. We haven't killed this monster yet. But, I think I had hopes that it would die a natural death. That as each plant reached the end of its operating license it would simply be pulled off the market for economic reasons. Now they're trying to give us undead nuclear power plants. Nuclear zombie power plants.

**Comment: 14-20-OL;** So, I wanted to thank everyone here for keeping up the fight. And I think Kevin has one more comment about the next step would be after this comment period is over. We'll submit comments. But after this is finished then we're going to have interventions. Once they grant the license. We're expecting they'll grant it. We'll be able to perhaps put in one last line of defense to stop this monster. Let it die a natural death. So, here's Kevin one last time.

**Comment: 31-1-OL;** Hello my name is Suzanne Patser and I live in Columbus Ohio and I'm very concerned about the Davis-Besse plant coming back online. I can't think of anything that would be a worse idea for our state.

**Comment: 31-5-OL;** So I am absolutely 100% against any nuclear plant opening anywhere. It is not the type of energy that our country needs, our State needs, that Toledo needs that anybody needs that lives or works in that area.

**Comment: 33-1-OL;** Hello my name is Scott Robinson from Worthington Ohio and I'm opposed to the relicensing of the Davis-Besse nuclear power plant. Thank you.

**Comment: 34-2-OL;** It puts people in Toledo especially in danger and could possibly extend as far south as Columbus. So I really do not think that this should be renewed.

**Comment: 35-1-OL;** I'm Emily Journey and I'm from Westerville Ohio. I'd like you to know that I do not support the relicensing of the Davis-Besse Atomic reactor.

**Comment: 36-4-OL;** So because of the ongoing contamination and the inherent nature of the radioactive contamination in the process of it being mined and transported. I would like the commission to look very closely at this and do what we all know is correct and keep Davis-Besse closed.

**Comment: 37-1-OL;** Alright. I'm totally against the nuclear power. I just I'm an old guy and I've been around for many years and I know the history damages that it can cause and I'm really opposed to it. That's why I'm on camera here. That's why I'm on camera and I will do whatever I can to support the cause against it. The actions, take actions against it. That what all I got to say. Thank you very much.

**Comment: 38-2-OL;** By all means please do not approve the relicensure of Davis-Besse. Thank you

**Comment: 39-5-OL;** I'm very disconcerted for the future of our children and future generations in terms of the toxicity and global warming. Also we don't need this energy and it is just not a good way for our country to be going. Thank You

**Comment: 40-1-OL;** My name is Bernadine Kent and I'm from Columbus Ohio and I have been informed of the Davis-Besse power plant in Toledo. I'm concerned about this plant extending their license for the next 20 years. To me that doesn't make any sense especially since they have problems.

**Comment: 42-1-OL;** My name is Pete Johnson I'm associated with the Columbus free press and citizens alliance for secure elections and I'm definitely opposed to relicensing Davis-Besse.

**Comment: 43-1-OL;** Basically I mean I've heard a lot of the science about it and I can't really say a whole lot about that. But what I can say is that you it's going to be relicensed supposedly for 20 more years and that would be to 2037, I believe, so I'm opposed to the relicensing of Davis-Besse because I think it's a youth issue and basically this is an important youth issue its important to the young people who are not allowed to vote and be politically active and children and the future generations.

**Comment: 16-14-OL;** Hi my name is Patricia Marida. I'm the chair of the nuclear issues committee at the Ohio Sierra Club. I gave a presentation before the Nuclear Regulatory Commission on November 4, 2010, as to why the Sierra Club opposes the extension of a license at Davis-Besse.

**Comment: 16-15-OL;** Tonight I'm going to give my personal statement. I think that it's well recorded there are 10 pages of documentation of very serious violations and illegalities, and actually nuclear accidents at Davis-Besse. It is the most accident ridden power plant, nuclear power plant in the nation. It is very clear that we have a serious problem here also because the Nuclear Regulatory Commission has been very lax in enforcing Davis-Besse. In fact allowing them to, allowing FirstEnergy and Davis-Besse Operating Company to continue operating the plant when it was supposed to be shut down for an inspection. And the reactor head came within 1/8" or metal left between containment and a nuclear holocaust. So It is very clear that the regulatory and the supervision is lacking were also would like the NRC to be sure to cover the safety issues there, there are many safety issues.

**Comment: 47-1-OL;** First Energy should not be allowed to continue to operate Davis-Besse after 2017. The people of Northeast Ohio are familiar with First Energy's pathetic record in protecting the safety of people who live in the region.

**Comment: 48-1-OL;** We are area residents near the Davis-Besse plant as we live in Wood County. We would like to have this nuclear power plant eliminated. We say the article about it in our local paper, the *Sentinel-Tribune*. It is an old plant and has had a history of accidents/problems.

**Comment: 14-14-OL, 14-16-OL, 14-17-OI, 14-18-OL, 14-20-OL, 16-14-OL, 16-15-OL, 30-1-OL, 34-3-OI, 34-7-OL, 39-6-OL, 39-10-OL, 43-4-OL, 44-2-OL, 50-1-OL, 51-1-OL, 52-1-OL, 53-1-OL, 54-1-OL, 55-1-OL, 56-1-OL, 57-1-OL, 58-1-OL, 59-1-OL, 60-1-OL, 61-1-OL,**

**62-1-OL, 63-1-OL, 64-1-OL, 65-1-OL, 66-1-OL, 67-1-OL, 68-1-OL, 69-1-OL, 70-1-OL, 71-1-OL, 72-1-OL, 73-1-OL, 74-1-OL, 75-1-OL, 76-1-OL, 77-1-OL, 78-1-OL, 79-1-OL, 80-1-OL, 81-1-OL, 81-6-OL, 82-1-OL, 83-1-OL, 84-1-OL, 85-1-OL, 86-1-OL, 87-1-OL, 88-1-OL, 89-1-OL, 90-1-OL;** Ohioans are concerned about the environment, the rising costs of energy, and the dangers associated with nuclear power! However, that has not stopped First Energy from irresponsibly pursuing to get the Davis-Besse nuclear plant on Lake Erie relicensed to continue operation until 2037.

**Comment: 30-5-OL, 43-8-OL, 44-6-OL, 50-5-OL, 51-5-OL, 52-5-OL, 54-5-OL, 55-5-OL, 56-5-OL, 57-5-OL, 58-5-OL, 59-5-OL, 60-5-OL, 61-5-OL, 62-5-OL, 63-5-OL, 64-5-OL, 65-5-OL, 66-5-OL, 67-5-OL, 68-5-OL, 70-5-OL, 71-5-OL, 72-5-OL, 73-5-OL, 76-5-OL, 77-5-OL, 78-5-OL, 79-5-OL, 80-5-OL, 81-10-OL, 82-5-OL, 83-5-OL, 84-5-OL, 85-5-OL, 86-5-OL, 87-5-OL, 88-5-OL, 89-5-OL, 90-5-OL;** Dear Nuclear Regulatory Commission, please say NO to Davis-Besse! Make them accountable for the lapses in safety and help protect Ohioans from a potential disaster at Davis-Besse.

**Comment: 53-5-OL;** Until nuclear power can be made safe for the environment by solving the waste problem, I do not want it to continue in operation. Dear Nuclear Regulatory Commission, please say NO to Davis-Besse! Make them accountable for the lapses in safety and help protect Ohioans from a potential disaster at Davis-Besse.

**Comment: 69-5-OL;** Now is not the time to expand nuclear energy in Ohio. Dear Nuclear Regulatory Commission, please say NO to Davis-Besse! Make them accountable for the lapses in safety and help protect Ohioans from a potential disaster at Davis-Besse.

**Comment: 70-5-OL;** These plants have been a financial leach on the people long enough! Dear Nuclear Regulatory Commission, please say NO to Davis-Besse! Make them accountable for the lapses in safety and help protect Ohioans from a potential disaster at Davis-Besse.

**Comment: 74-5-OL;** Davis-Besse is not safe and we seem to want to wait until something really disastrous happens before anything is done—when it is too late! Nuclear energy is NOT clean energy and we have the perpetual problem of what to do with nuclear waste. Dear Nuclear Regulatory Commission, please say NO to Davis Besse! Make them accountable for the lapses in safety and help protect Ohioans from a potential disaster at Davis Besse.

**Comment: 77-5-OL;** Davis-Bess is far too dangerous. Dear Nuclear Regulatory Commission, please say NO to Davis-Besse! Make them accountable for the lapses in safety and help protect Ohioans from a potential disaster at Davis-Besse.

**Comment: 81-5-OL;** We are moving to Westlake, Oh. soon and don't want to have to worry about unsafe Davis-Besse blowing up near us. I have read this petition and agree with it all. Dear Nuclear Regulatory Commission, please say NO to Davis Besse! Make them accountable for the lapses in safety and help protect Ohioans from a potential disaster at Davis Besse.

**Comment: 81-10-OL;** Thank you for your prompt action on this matter for the safety and health of the People of Ohio. I have read this petition and agree with it all!!!! Dear Nuclear Regulatory Commission, please say NO to Davis-Besse! Make them accountable for the lapses in safety and help protect Ohioans from a potential disaster at Davis-Besse.

**Response:** *These comments are general in nature and express opposition to FENOC, nuclear power, the license renewal of Davis-Besse, or all of these. The majority of these comments express opposition for reasons outside the scope of license renewal. Expanded responses to these comments are documented in the Davis-Besse Scoping Summary Report. Those comments that express opposition for in-scope reasons are documented in the applicable*



*technical area within this appendix. The NRC did not evaluate these comments in the development of the SEIS, as they did not provided any new and significant information.*

### **A.1.9 Postulated Accidents & SAMA (PA)**

**Comment: 14-8-PA;** I think an environmental review needs to look at what would happen if the concrete wall either collapsed from radiation or if the perimeter was destroyed through the attack of a plane or through the attack of some motorist or some terrorist group planting explosives. What would happen to the radioactive dust and the containment structure because of the weakening?

**Comment: 16-12-PA;** And, I would like to add also that the pools of radioactive waste are extremely vulnerable to terrorists attacks or to other explosions. So, that certainly should be a consideration of the NRC to look at; that is, how are we going to protect those pools of radioactive waste?

**Response:** *These comments express concern for the potential adverse environmental impacts associated with postulated accidents. The comments also raise concerns that the GEIS and SEIS do not adequately evaluate the possible impacts of beyond-design-basis accidents initiated by terrorist attacks or sabotage. Under 10 CFR 51.53(c)(3)(ii)(L), license renewal applicants must consider alternatives to mitigate severe accidents if the staff has not previously evaluated SAMAs for the applicant's plant in an environmental impact statement or related supplement or in an environmental assessment. The purpose is to ensure that potentially cost-beneficial, aging-related plant changes (i.e., hardware, procedures, and training) with the potential for improving severe accident safety performance are identified and evaluated.*

*An analysis was developed to support offsite consequence estimates for Level 3 probabilistic risk assessments of severe accidents at light water reactors. Such assessments have long served as the foundation for NRC regulatory decisions, which include analyses of health and safety, land contamination, and economic consequences (NRC, 2009). A description of the code that was used to perform the calculations of the offsite consequences of a severe accident for Davis-Besse can be found in NUREG/CR 6613, Code Manual for MACCS2: Volumes 1 and 2 (NRC, 1998). It is beyond the scope of the Environmental Report (ER) and the SEIS to describe in detail the code's analytical process. However, a description of the application of the MACCS2 code for the Davis-Besse analysis has been provided in the relevant portions in Appendix F of this SEIS.*

*The SEIS provides a site-specific evaluation of SAMAs in Chapter 5 and Appendix F. However, in the GEIS, the NRC staff did evaluate existing impact assessments performed by the NRC and by industry at 44 nuclear plants in the United States and concluded that the risk from beyond-design-basis accidents at existing nuclear power plants would be small.*

*With respect to spent fuel pool accidents, onsite storage of spent fuel is considered a Category 1 issue, which was evaluated in the GEIS; therefore, accidents would be encompassed by the analysis of the Category 1 issue of onsite spent fuel storage. As such, the need for mitigation alternatives within the context of renewal has been considered, and the Commission concludes that its regulatory requirements already in place provide adequate mitigation incentives for onsite storage of spent fuel. No discussion of mitigation alternatives is needed in an LRA because the Commission has generically concluded that additional site specific mitigation alternatives are unlikely to be beneficial (NRC, 1996). In addition, the NRC staff did not find any new and significant information that would call the analysis of the Category 1 issue into question.*

## Appendix A

*A detailed discussion of Postulated Accidents and SAMAs can be found in Chapter 5 and Appendix F of this SEIS.*

**Comment: 14-9-PA;** We are in an area of the country that could be affected by the fault if there is a large earth quake, and I think this may not have been examined sufficiently in the environmental impact study.

**Response:** *The comment expresses concern for the seismic design of Davis-Besse. The seismic design of the plant is outside the scope of the environmental review; however, structures that are in scope of license renewal are examined and the results are documented in the publication of NRC's Davis-Besse safety evaluation report (SER).*

*Results of prior geologic, seismologic, and subsurface investigations indicate no evidence of fault traces, offset geomorphic features, shear zones, faults, sand boils, soil flows, or any other direct or indirect physical effects of prior earthquakes. The nearest fault is the Bowling Green Fault, which is located 35 miles west of the site. Geologic, including seismic, information is presented in Chapter 2 of this SEIS.*

*Insofar as the comments suggest that a seismic event during the period of license renewal could result in environmental impacts, such impacts were considered as part of the SEIS discussion of severe accidents initiated by external phenomena and by the GEIS in its "Review of Existing Impacts." As discussed in Chapter 5 of the draft SEIS, the NRC staff evaluated the risk of beyond-design-basis earthquakes at existing nuclear power plants, and determined that the risk from such events is SMALL; further, the NRC determined that the risks from other external events are adequately addressed by the generic consideration of internally-generated severe accidents in the GEIS, and that this issue should be considered on a site-specific basis in a plant's SAMA analysis. FENOCs SAMA analysis included a search for mitigation measures for accident scenarios initiated by fire and seismic external events. A detailed discussion can be found in Chapter 5 and Appendix F of this SEIS.*

*Additionally, the NRC has directed operators of nuclear power plants to reaffirm their existing ability to resist earthquakes and flooding as a result of the accident at the Fukushima Dai-ichi nuclear power plants in 2011. Plant-specific actions taken in response to lessons learned from the Fukushima Dai-ichi accident can be found at:*

*<http://www.nrc.gov/reactors/operating/ops-experience/japan-dashboard/japan-plants.html>.*

### **A.1.10 Radioactive & Non-Radioactive Waste (RW)**

**Comment: 20-2-RW;** Kevin already mentioned this, but, the expectation when Davis-Besse and all the other nuclear reactors were built was that would mean that there would be a federal repository for all of the high-level nuclear waste and that is not available. And as Kevin mentioned, the Yucca Mountain, facility has been, the funding for it has been discontinued, it has no operating license. That means that for 33 years, all of the high-level radioactive waste generated at Davis-Besse are still being stored on-site, initially in a cooling pool, as I understand it, and then, a few years ago, they, they constructed above-ground containers for the fuel after it cools off, in this pool. So, my, position would be that no nuclear plant license extensions should be granted until there's a long-term storage facility available for these nuclear wastes. And, one of the troubling indicators, I think, is I read through the Environmental Study that is, is mandated for this license extension.

**Comment: 23-7-RW;** There's no place to put the waste and we believe that it is immoral to burden our children and generations far into the future with deadly waste.

**Comment: 24-1-RW;** At that time, planning for the long term containment of the radioactive waste was to be done in the future. We now know that we still do not have any methods approved for the long term storage and isolation of the tons of spent radioactive rods and other radioactive material that is made during the mining and processing of the fuel. This material will be dangerously radioactive to humans and other living things for hundreds of thousands of years. To put that into perspective, we will be starting on the year 2011 of the common era on January 1st.

**Comment: 26-11-RW;** In addition there is a ISFSI. It's dry cask storage of high level nuclear waste. High level nuclear waste is currently stored outside at the Davis-Besse. This has a..there..No one wants this nuclear waste. Yucca Mountain is not going to happen. It's not geologically sound. It's not scientifically sounds. It's not going to happen. Nobody wants this stuff. Yet, the NRC runs a con game. They have "confidence" a "waste confidence" decision. It is a con game. They're asking the public, the folks of Toledo, of Ohio, "Please accept our promise to take this waste at some point. We don't know what to do with it just yet. But, we'll figure it out later on. But, in the meantime just let us go and make more." It's been said that nuclear power is the gift that keeps on giving. It keeps on giving the radioactive waste, and the power is fleeting. But we are left with the deadly lethal legacy for tens of thousands of years.

**Comment: 39-1-RW;** My name is Connie Hammond I live in Columbus Ohio. I'm a member of the Sierra Club nuclear issues committee and the Ohio Green party. My primary concern is with the toxic legacy that we are leaving for our Children and Grandchildren. Beyond the obvious radioactivity and pollution that these plants produce.

**Response:** *These comments address concerns regarding the management of radioactive waste at the Davis-Besse site.*

*No new and significant information is provided in these comments. Therefore, no changes have been made to the SEIS because of these comments. The management of radiological and non-radiological waste is discussed in Chapter 2 of this SEIS. In addition, Chapter 6 of this SEIS contains information on spent nuclear fuel.*

**Comment: 24-4-RW;** Originally nuclear power was touted as power that would be produced so cheaply that it would not even have to be metered. Now we are being told that it will solve the problem of pollution generated by using fossil fuels. We will be replacing carbon problems of pollution, generated by using fossil fuels, with problems of radioactive pollution for which there is no cleanup but time.

**Comment: 36-1-RW;** Hi my name is Bob Patraicus, I have a PhD in political Science. I am a JD. My concerns with Davis-Besse begin with the obvious. There has been contamination. Radioactive contamination at that plant in the past it continues to occur. Moreover the entire process of mining transporting and allowing radioactivity as a fuel source is inherently contaminating.

**Comment: 43-2-RW;** A lot of the people who are working to relicense this nuclear facility are going to have died of old age by the time its finished and then when it's finished we are going to need to worry about cleaning it up keeping it in repair and I don't think that people are really looking ahead to the future and considering you know the work that is going to be involved to make sure that its safe. Nuclear waste and radioactivity has a half life of gabillion years to put it in kids terminology and you know a lot of the people who are going to be effected by nuclear waste are not even born yet. And so speaking on behalf of the youth, babies, people who cannot speak for themselves. I just wanted to say that relicensing Davis-Besse and using nuclear energy is wrong. It may be expedient for the people who are only planning on living you know 10 or 20 more years then fine but they don't care if the world is going to be destroyed. But

there are people who that effects and I would just urge the people who are making this decision to think of the future generations and to be able to think about somebody other than yourselves really.

**Comment: 16-4-RW;** Contamination occurs throughout the milling, refining, transport and conversion of uranium to uranium hexafluoride and then enrichment in which the gaseous diffusion process took as much energy as a large city to enrich the uranium. Then additional uranium must be formulated to ground. An enormous waste - - uranium hexafluoride which is 99 percent of the original uranium but is not fissionable and, therefore, not useable for energy. However, it is just as radioactive and must be then converted back to the more stable uranium oxide. A newly-operated plant at Piketon will take 25 years running around the clock to deconvert the 40,000, 14-ton canisters containing hexafluoride that are already on the site, and that is not counting how much more that might be generated from other conventional facilities, enormous amounts of energy due to this process.

**Comment: 16-24-RW;** The Sierra Club opposes nuclear energy in its entirety, citing serious environmental, health, and public expense issues throughout the nuclear fuel cycle. The time frames needed to guard the radioactive nuclear waste generated from this process are geologic in nature. Isolating the radioactive nuclear waste will consume public time and money for generations to come. The only viable solution for radioactive waste is to stop generating it. Radioactive contamination and waste are a major reason to discontinue the use of nuclear power. The risk and reality is that radioactive contamination has occurred, is occurring and will continue to occur throughout the nuclear power cycle. Mining is leaving radioactive tailings exposed to the air and water on First Nations land in the US, Canada, and Australia. Contamination occurs throughout the milling, refining, transport, conversion of uranium to uranium hexafluoride (UF<sub>6</sub>), and then enrichment - which in the gaseous diffusion process at Piketon, Ohio, took as much energy as a large city. Then the fissionable uranium must be formulated into rods. An enormous waste stream is the depleted uranium hexafluoride (DUF<sub>6</sub>), which is 99% of the original uranium but is not fissionable and therefore not usable for energy. However, it is just as radioactive and must be deconverted back to the more stable uranium oxide. A newly operating plant at Piketon will take 25 years running round-the-clock to deconvert the 40,000 14-ton canisters of DUF<sub>6</sub> already on the site, not counting how much more will be generated from other enrichment facilities.

**Comment: 32-1-RW;** Hi my name is James Whitaker and I'm from in Columbus Ohio and as far as the creation of more radioactive waste here in the state of Ohio I don't think we need to do that I think that the any of the fuels that we have as far as fossil fuels is adequate if it's done properly. But I certainly don't want to create more nuclear waste.

**Comment: 16-18-RW;** So the fleeting use of electricity in the past has left us with a legacy of nuclear waste. But however we understand that the Nuclear Regulatory Commission does not have to even consider that when they are deciding whether or not to license Davis-Besse because in the past the Nuclear Regulatory Commission has made a decision that they are not going to, that this doesn't have anything to do with a new license despite the fact that much more of this dangerous radioactivity is going to be stored at the plant there is no solution for it there is no magic solution that will turn lead into gold it will remain radioactive for millions of years and will gradually spread itself around. It is so important for the Nuclear Regulatory Commission to look at issues of the onsite storage and to look at containing at least in the near future making this waste safe. The new waste is going to be generated there really does need to be a plan for isolating it onsite. We are not asking for a plan to isolate it for a hundred million years because we all know that's an impossibility. We are asking for some sort of a plan working with Doctor Arjun Makhijani of the Institute for Environmental and Economic Research in Washington DC, we are asking for you the NRC to work with him and look at some serious

ways of isolating this waste in canister that are hidden in bunkers where they are safe from terrorist attack.

**Comment:** 30-3-RW, 34-5-RW, 39-8-RW, 43-6-RW, 44-4-RW, 50-3-RW, 51-3-RW, 52-3-RW, 53-3-RW, 54-3-RW, 55-3-RW, 56-3-RW, 57-3-RW, 58-3-RW, 59-3-RW, 60-3-RW, 61-3-RW, 62-3-RW, 63-3-RW, 64-3-RW, 65-3-RW, 66-3-RW, 67-3-RW, 68-3-RW, 69-3-RW, 70-3-RW, 71-3-RW, 72-3-RW, 73-3-RW, 74-3-RW, 75-3-RW, 76-3-RW, 77-3-RW, 78-3-RW, 79-3-RW, 80-3-RW, 81-3-RW, 81-8-RW, 82-3-RW, 83-3-RW, 84-3-RW, 85-3-RW, 86-3-RW, 87-3-RW, 88-3-RW, 89-3-RW, 90-3-RW; NUCLEAR ENERGY IS NOT CLEAN OR GREEN ENERGY! Every nuclear reactor generates about 20 tons of highly radioactive waste per year, and after 40 years of nuclear power, the U.S. still has not found an acceptable solution for the waste. The waste can cause cancer, birth defects, and even death. Nuclear power uses and pollutes significant amounts of water, while the mining, transportation, and enriching of uranium is carbon intensive which contributes to global warming.

**Response:** *These comments express concern over the uranium fuel cycle and of the management of nuclear waste. The environmental impacts of the uranium fuel cycle and solid waste management are contained in Chapter 6 of this SEIS.*

*No new and significant information is provided in these comments. Therefore, no changes have been made to the SEIS because of these comments.*

#### **A.1.11 Socioeconomics (SE)**

**Comment:** 1-1-SE; Good afternoon. My name is Mark Stahl, and I'm the President of Ottawa County Commissioners. Ottawa County is successful because we surround ourselves with successful community partners, and Davis-Besse is one of those community partners, who we look very favorably upon. You will hear from some other agencies, the nonprofits, the contributions that you make back to our community helps us tremendously, and we greatly appreciate that. We also as Commissioners appreciate our NRC partnership. We have had conversations with you, I know, through the years, and we appreciate those unbiased conversations that we've had in regard to Davis-Besse.

**Comment:** 2-3-SE; Many of the Davis-Besse employees live in the community and are important assets to Ottawa County. I think it's very important that the corporate structure that's been put in place to oversee the operations of Davis-Besse continue, and I think it's a good structure.

**Comment:** 4-1-SE; I'm Chris Galvin, Director of the United Way in Ottawa County. The Davis-Besse Nuclear Power Station and on a larger scale the First Energy Corporation are a tremendous community partner to the local United Way. Since 1993, First Energy has contributed more than 13.5 million dollars to United Way of Greater Toledo which serves Ottawa, Wood and Lucas Counties. 3.1 million came from corporate gifts, 10.4 million from its incredibly generous employees. First Energy has also earned United Way's Pillar Award each year since at least 1992. Our data doesn't go back any further than that. It seems they consistently give more than a hundred thousand dollars each year to the Greater Toledo campaign. Not only does this community consistently get solid financial support from First Energy and its employees, but executive leadership has also demonstrated exceptional personal commitment to our work. In 1993, Don Saunders chaired the local United Way campaign, raising 12.5 million Dollars. In 2005, Jim Murray, now retired, but formerly First Energy President of Ohio Operations, chaired the local United Way campaign. Under Mr. Murray's leadership, the campaign raised 13.3 million Dollars. We also presented

## Appendix A

Mr. Murray with our Prestigious Caring Award in 2006 for demonstrating value and concern for our community through vision, leadership, service and commitment to the people of our community. In 2009, Trent Smith, Regional President of Toledo Edison First Energy, became chairman of the United Way of Greater Toledo's Board of Trustees and has drawn to a close on his second year of service. Mr. Smith has gone above and beyond the level of service, dedication and commitment we typically see from board chairs. He has become involved in virtually every level of our work, digging in and helping find real solutions. In addition to these executive leaders, numerous upper-level management have supported United Way by using their voice and relationships to help secure financial and volunteer support as well as advocating on behalf of the United Way and the Northwest Ohio Region. In addition to Don Saunders, Jim Murray, and Trent Smith, some of the stand-out employees include Debbie Paul, Mike Adams, and Mel Lomack. Additionally, in the 1990s Jennifer Schreiber served five years as the chair of our community impact cabinet, the highest level of community impact volunteers who decide how money is allocated in this community. Also joining her on the cabinet was Jenny Ammadon. Both are not retired. First Energy also demonstrates incredible commitment to the communities through sponsorships and/or participation in programs and events. In 1993 and 1994, Davis-Besse sponsored our loaned executive program. Jim Ferris, now retired from Davis-Besse, was the landed executive in those two years. First Energy has also sponsored loaned executives over the years, from 1996 continuing for 11 years. Employees consistently contribute to and participate in Stamp Out Hunger and/or Scouting for Food efforts each year. They were a major sponsor of our Family Food Fund in 2008. First Energy was the sponsor of our Community Building event in 2005, and was the initiator and sponsor of the Veterans Appreciation Event in 2006, which continued until 2009.

**Comment: 5-1-SE;** On behalf of the Union, I would like to voice our support in this public. A renewal of this license will not only promote and maintain employment for our members who live and shop and send their children to school in that area, but it will also assure the delivery of reliable electric service to our customers.

**Comment: 8-2-SE;** We also because we have the mandate but we do not receive government funds, I can speak to what Chris Galvin of United Way said with regards to the money that comes into the United Way. We are a United Way Agency, but even besides that, we have profited, the Red Cross organization, from financial support on many levels from First Energy and Davis-Besse as well as from the volunteer aspect of the employees that respond through the involvement of their families. We have three or four blood drives that we conduct at Davis-Besse that are very successful. We have had a lot of leadership that has come out of the Davis-Besse plant. Chuck Witt was a six-year chairman for our local advisory board. Currently, Terry Mortis, who is the Regional Manager also of the Ottawa County District with First Energy that provides a lot of leadership, a lot of guidance to the Red Cross.

**Comment: 9-2-SE;** Davis-Besse over the years has provided a good living, a good income for many residents of Ottawa County and surrounding counties and especially now in a time when unemployment is high.

**Comment: 10-1-SE;** Davis-Besse has been very generous with their donations to the Food Pantry in the past years. I also would like to say that if it were to close, they may be coming to our Food Pantry, and I would hate to see that.

**Comment: 11-2-SE;** It is also important from a license renewal aspect, 20 additional years of this asset to provide for the employment opportunities for the local community, and many of our young engineers are graduating from college today who wonder if nuclear power is a viable

future and a career path. It's important to know that plants such as Davis-Besse and others are undergoing renewal process have a future that they can depend on.

**Comment: 12-4-SE;** By extending the license here at Davis-Besse, it would continue to provide good clean power that's critical. In addition to that, also supporting the much-needed tax base, not only to this area but to the State, and I'm confident along with our members, that IBEW, Local 245, that Davis-Besse will continue to be safe, not only for the employees but also for the area.

**Comment: 1-3-SE;** And, the county isn't successful unless you're surrounded by successful community partners, and I can tell you that Brush-Romley (ph) is one of those partners. They contribute tremendously to the good of this community. We also cherish the NRC's partnership that we have. You are our eyes and our ears. You are what helps us maintain the public safety here, and we appreciate that as well.

**Comment: 2-5-SE;** So I've had some broad experience with the Davis-Besse people and with the Nuclear Regulatory Commission, and I think this process and the processes that the NRC uses are great processes, but I think it's important to know that when we look at what Davis-Besse has done over the years and how they have responded to Ottawa County as a community, we couldn't have asked for anything more.

**Comment: 15-2-SE;** The renewal of this license will promote maintaining employment of not only our members who live and shop and send their children to the schools in this area, but it will also ensure the delivery of reliable electric service to all of our customers.

**Comment: 11-5-SE;** We have long-term employment opportunities for the surrounding communities. Younger engineers graduating from college need to know that the nuclear power is very efficient and is a great career. Davis-Besse has a significant impact on the economy of the local area, providing folks, several hundred people employment, providing materials and service in support of the operation of the plant. We have always had a commitment to ensure public safety and a protection of the environment, and that commitment continues today. As you have already heard from several of those speakers, we enjoy a good relationship with the surrounding communities, and we look forward to sustaining this relationship for an additional 20 years.

**Comment: 4-3-SE;** The Davis Besse Nuclear Power Station, and on a larger scale, the First Energy Corporation, are the tremendous community partner to the local United Way. Since 1993, First Energy has contributed more than \$13.5 million to United Way of Greater Toledo which serves Ottawa, Wood, and Lucas counties. \$3.1 million came from corporate gifts. \$10.4 million from its incredibly generous employees: First Energy has also earned United Way's Pillar Award each year since at least 1992...which means they consistently give more than \$100,000 each year to the greater Toledo campaign. Not only does this community consistently get solid financial support from First Energy and its employees, but executive leadership has also demonstrated exceptional personal commitment to our work. In 1993, Don Saunders chaired the local United Way campaign, raising \$12.5 million. In 2005, Jim Murray, now retired, but formerly First Energy President of Ohio Operations, chaired the local United Way campaign. Under Mr. Murray's leadership, the campaign raised \$13.3 million. We also presented Mr. Murray with our prestigious Spirit of Caring award in 2006 for demonstrating value and concern for our community through vision, leadership, service, and commitment to the people of our community. In 2009, Trent Smith, regional president of Toledo Edison/First Energy, became chairman of United Way of Greater Toledo's Board of Trustees and is drawing to a close on his second year of service. Mr. Smith has gone above and beyond the level of service, dedication, and commitment we typically see from Board chairs. He has become involved in virtually every level of our work, digging in and helping find real solutions. In

addition to these executive leaders, numerous upper level management have supported United Way by using their voice and relationships to help secure financial and volunteer support as well as advocating on behalf of United Way and the NW Ohio region. In addition to Don Saunders, Jim Murray, and Trent Smith, some of these standout employees include Debbie Paul, Meg Adams, and Mel Womack. Additionally, in the 1990s, Jennifer Shriver served five years as the chair of our Community Impact Cabinet, the highest level of community impact volunteers who decide how money is allocated in the community. Also joining her on the cabinet was Jenny Amidon. Both are now retired. First Energy also demonstrates incredible commitment to the community through sponsorships of or participation in programs and events. In 1993 and 1994, Davis Besse sponsored our Loaned Executive program, a program that provides United Way with temporary campaign employees. First Energy began sponsoring this program in 1996 and continued for 11 years. Employees consistently contribute to and participate in Stamp Out Hunger and/or Scouting for Food efforts each year. They were a major sponsor of our Family Food Fund in 2008. First Energy was a sponsor of our Community Building Event in 2005 and was the initiator and sponsor of our Veterans' Appreciation Event in 2006 which continued until 2009.

**Comment: 15-6-SE;** A renewal of this license will promote and maintain employment of not only our members, who live and shop and send their children to schools in this area, but...it will assure the delivery of reliable electric service to all our customers.

**Comment: 25-5-SE;** And economically, as we all know, and others have testified to, nuclear power does not make economic sense. In as much as our economy is the management of our household, I think it relates directly to the ecology of our house or our State or our community here, and that ecological system that we are all part of and that this nuclear power plant and the NRC and the other governmental leaders and the other citizens that aren't here, that ecosystem is very much a part of the environment, and any hearing that focuses on environmental impacts has to include all of that as the one ecosystem or environmental that we're in.

**Response:** *These comments concern the socioeconomic impact of Davis-Besse. The majority of the comments are supportive of license renewal, the applicant, in general, and describe the socioeconomic benefits of Davis-Besse. Comment 25-5-SE expresses opposition to license renewal because of the environmental costs. The socioeconomic impacts of renewing the Davis-Besse operating license are discussed in Chapters 2 and 4. In addition, the socioeconomic impact of not renewing the operating license (no action alternative) is discussed in Chapter 8.*

#### **A.1.12 Support of License Renewal (SL)**

**Comment: 1-2-SL;** So, I will let these two gentlemen fill you in, but as President of the Ottawa County Commissioners, I'm here to offer our support to you, Davis-Besse, in your application process.

**Comment: 2-4-SL;** We look forward to a license renewal. Ottawa County wants Davis-Besse to stay, and welcome them in the future and urge the NRC to move forward with this license renewal.

**Comment: 3-2-SL;** So, really, all this adds up to the fact that our relationship in Ottawa County with Davis-Besse is a benefit to the residents of Ottawa County

**Comment: 4-2-SL;** Davis-Besse and First Energy are a valued community partner, both philanthropically and economically. They have been incredible contributors to our community over the past 20 years, and we only hope that this will continue for at least another 20 years.



**Comment: 6-3-SL;** So, it is opinion of the Black Swamp Bird Observatory that the Davis-Besse Nuclear Power Plant is a critical player in bird conservation in the entire region of the western hemisphere.

**Comment: 8-3-SL;** I ask hard questions and I sometimes like the answers, sometimes I'm not so sure about the answers, but I am confident in the safety of the Davis-Besse plant and the good that it does in the community for the people that are involved.

**Comment: 9-3-SL;** We support the license renewal, and we ask the NRC to support it as well.

**Comment: 12-2-SL;** In addition to that, we not only work out local issues but something more important or just as important. We work together on issues in Washington also through our labor management committee. A lot of people probably aren't aware of that, but we do that through our Land Pact Committee.

**Comment: 1-4-SL;** With that said, we're going to have a few people from the Agency describe what Davis-Besse does for Ottawa County, and on behalf of the Ottawa County Commissioners, I would like to extend our full support in regards to their application.

**Comment: 15-1-SL;** And, on behalf of the Union, I would like to voice our support at this public meeting for a multitude of reasons.

**Comment: 11-4-SL;** This effort is important to us for several reasons. This licensing extension will allow us to continue to provide safe, reliable environmentally friendly electricity to our customers for years to come. Davis-Besse is an important asset, and the Company's generation portfolio shows we have a good mix of power generation service.

**Comment: 4-4-SL;** Davis Besse and First Energy are a valued community partner, both philanthropically and economically. They have been incredible contributors to our community over the past 20 years and we only hope this will continue for at least another 20.

**Comment: 15-5-SL;** My name is Jane Ridenour and I am President of OPEIU Local 19. OPEIU stands for Office & Professional Employees International Union and we represent the clerical support staff at Davis Besse. On behalf of the Union I'd like to voice our support at this public meeting.

**Response:** *These comments are general in nature and express support for nuclear power or the license renewal of Davis-Besse or both. The comments provide no new and significant information and will not be evaluated further.*

### **A.1.13 Terrestrial Resources (TR)**

**Comment: 6-1-TR;** Our organization has been conducting migratory bird regions in this area for more than 20 years, and we really take pride in this marriage, and we work hard like a good spouse to maintain it. The marsh represents a critical stop-over habitat for millions of migratory birds. And, in fact, many the world's leading bird experts consider this marsh to be one of the most critical areas of stop-over habitat in the entire western hemisphere.

**Comment: 6-2-TR;** The observatory in these 20 years have had the full support of First Energy and Davis-Besse to conduct this critical research and, in fact, during a very exciting tumultuous time in this country's history, we were very afraid that our consistent effort meaning that seven days a week, spring and fall, during song bird migration, our research staff was out at that marsh in front of the power tank conducting this research seven days a week for more than 20 years. When the tragedy occurred on 9/11, we were very concerned for, of course, the human tragedy, but also concerned that our research would be interrupted. And, in fact,

## Appendix A

Davis-Besse really fully understood the importance of this research, and the importance of conserving the integrity of the data set, and we didn't miss a single day. And, perhaps nothing else, no other event in our history or recent history speaks more to how much they have said they understand the critical role that they play in local environmental and conservation issues than that event. So, based on our long-standing relationship, it is our opinion the Davis-Besse and First Energy have not only worked to fully understand and fully support the environmental issues for this local community, but have also fully embraced the role that they play in all of these issues.

**Response:** *The NRC staff agrees with the Black Swamp Bird Observatory in its characterization of Davis-Besse marsh habitat as critical stop-over habitat. Additionally, the NRC staff incorporated the Black Swamp Bird Observatory's publically available research publications into Chapter 2 of the draft SEIS.*

**Comment: 45-1-TR;** There are no Federal wilderness areas or designated critical habitat within the vicinity of the proposed site. Davis-Besse consists of 954 acres, of which approximately 733 acres are marshland that is leased to the U.S. Government as part of the Ottawa National Wildlife Refuge. In a letter dated December 16, 2009, we provided comments to FENOC on the proposed 20-year renewal of the operating license for Davis-Besse. At this time we have no additional comments.

**Response:** *The NRC staff incorporated the U.S. Fish and Wildlife Services' information provided in this comment into the draft SEIS, including the information in the referenced December 16, 2009, letter to FENOC, which was provided in Appendix C of FENOC's ER.*

### **A.2 Comment Letters and Meeting Transcripts**

The following pages contain the comments, identified by commenter designation (from Table A-1) and comment number, from letters, e-mails, public scoping meeting transcripts and the transcript from the People's Hearing.

COMMENTER: MARK STAHL

1 are Mark Stahl of the Ottawa City Commission, and then  
2 Jere Witt of Ottawa County, and Fred Petersen of the  
3 Ottawa County EMA.

4 If you would like to speak from this  
5 microphone, that would be fine. Go ahead and lead  
6 off.

7 MR. STAHL: Thanks, Mark.

8 Good afternoon. My name is Mark Stahl, and  
9 I'm the President of Ottawa County Commissioners.  
10 Ottawa County is successful because we surround  
11 ourselves with successful community partners, and  
12 Davis-Besse is one of those community partners, who we  
13 look very favorably upon.

14 You will hear from some the other agencies,  
15 the nonprofits, the contributions that you make back to  
16 our community helps us tremendously, and we greatly  
17 appreciate that.

18 We also as Commissioners appreciate our NRC  
19 partnership. We have had conversations with you, I  
20 know, through the years, and we appreciate those  
21 unbiased conversations that we've had in regard to  
22 Davis-Besse.

23 So, I will let these two gentlemen fill you  
24 in, but as President of the the Ottawa County  
25 Commissioners, I'm here to offer our support to you,

1-1-SE

1-2-SL

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**COMMENTER: JERE WITT**

1 Davis-Besse, in your application process.

2 Thank you.

3 MR. WITT: Thanks, Mark. I appreciate you  
4 putting Mark before Fred and I because he's our boss.  
5 I'm Jere Witt. Many of you know me. I'm County  
6 Administrator for Ottawa County. I've been with the  
7 County for 32 years, and ironically when I looked at the  
8 dates on there, I started with the County on July 20,  
9 1978, and I believe the plant began operating in on July  
10 31, 1978. So, we're pretty close on our birth dates  
11 there.

12 I've been involved, as I said earlier, many  
13 years with Davis-Besse and especially within the last  
14 five to ten years. I was part of the restart overview  
15 panel that worked for two years on the head issues. I  
16 got my nuclear degree during that two years. I much  
17 appreciated, and I really got a better feeling for  
18 Davis-Besse and the nuclear industry.

19 I currently serve on the Company Nuclear  
20 Review Board to ensure that Davis-Besse continues to  
21 operate safely, and there's a bunch of nuclear experts  
22 on there and then there's me, but it's easy for me a use  
23 their expertise to see if Davis-Besse operates safely,  
24 and I'm happy to say that every time we've met, we have  
25 concluded that Davis-Besse does continue to operate

} 2-1-OS

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} 2-1-OS  
continued

1 safely.

2 I attend and participate in the NRC quarterly  
3 exit meetings of Davis-Besse, and those have been  
4 another way for Ottawa County to keep informed on what's  
5 going on with Davis-Besse.

6 I receive many, many, many more than I really  
7 want to see daily e-mails from the plant, but the most  
8 important one is the morning e-mail that I get every  
9 morning that tells the current status of the plant and  
10 the issues that are going on, and it's an easy way for  
11 me to keep up daily. I'm kept informed by plant  
12 management. I think I get calls in the middle of the  
13 night any time there is an issue, and we appreciate that  
14 because it's showing their concern that Ottawa County is  
15 able to keep inform.

16 As Mark mentioned, we work closely with the  
17 NRC. We've been meeting with them quarterly just to  
18 bring us up to speed, hear what's going on at  
19 Davis-Besse, and get the NRC's side of that.

20 I actually have a vested interest in the  
21 plant. I own property that abuts the plant, and it's  
22 very important to me that they keep that plant operating  
23 safely. I have a cottage there that my -- when the head  
24 incident happened, my grandchildren and their mother and  
25 dad were living there, and my wife kept asking me if I

} 2-2-OS

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1 knew what I was talking about, that it was safe, and I  
2 was assuring her that I did.

3           We continue to watch closely to see that the  
4 plant does operate safely. I have personally witnessed  
5 the transformation of the site personnel in the new  
6 safety culture, and they continue to maintain that  
7 culture, and I think that is one of the most important  
8 things that any nuclear power plant has to do.

9           I believe that the people who work at  
10 Davis-Besse and have witnessed how they challenge each  
11 other for safe plant operation. I don't think that was  
12 necessarily always true years ago, but today they do, in  
13 fact, and at many of my visits out there, I have  
14 witnessed how they challenge each other.

15           Many of the Davis-Besse employees live in the  
16 community and are important assets to Ottawa County. I  
17 think it's very important that the corporate structure  
18 that's been put in place to oversee the operations of  
19 Davis-Besse continue, and I think it's a good structure.

20           Davis-Besse has been a great asset to the  
21 community and are very involved in Ottawa County. We in  
22 Ottawa County will continue to watch and make sure the  
23 plant operates safely, but through my past involvement,  
24 I have no concerns for the safety of Davis-Besse.

25           We look forward to a license renewal. Ottawa

2-2-OS  
continued

2-3-SE

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COMMENTER: FRED PETERSEN

1 County wants Davis-Besse to stay, and welcome them in  
 2 the future and urge the NRC to move forward with this  
 3 license renewal.

} 2-4-SL

4 Thank you very much.

5 MR. BARKLEY: Thank you Jere.

6 Fred?

7 MR. PETERSEN: Thank you. My name is Fred  
 8 Petersen. I'm the Director of the Ottawa County  
 9 Emergency Management Agency. I've been involved in the  
 10 EMA for 16 years and ten months.

11 I want to talk specifically about the Ottawa  
 12 County EMA's good working relationship with Davis-Besse  
 13 Power Station. Largely because of that relationship we  
 14 provide a lot of benefits.

15 All of our plans and procedures are thorough  
 16 and well maintained and are regularly exercised. Those  
 17 exercises are conducted specifically on the radiological  
 18 side biannually. So, every two years, FEMA comes in and  
 19 evaluates our performance plan to keep us in compliance.

20 Over the years that I have been associated  
 21 with the agency and even prior to that, we have had no  
 22 significant issue on our exercises, and they perform  
 23 very well.

24 Our emergency operation center and our risk  
 25 management agency are generally better equipped, more

} 3-1-OS

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1 well maintained and larger and larger staffed than most  
2 counties of our size throughout the State of Ohio. And,  
3 that is because of our partner.

4           We feel like we're very well prepared for  
5 anything that happens here in the county, specifically  
6 radiological rescue emergency preparedness. But, some  
7 of the things that we do on the radiological side that  
8 really benefit us are lot of spill-over benefits on  
9 preparedness work review at Davis-Besse. Those would  
10 include, we have a great relationship with our fire,  
11 EMS, law enforcement, private response orientation in  
12 the county, and that's because we regularly exercise  
13 training and work with them.

14           So, all the events that have happened in the  
15 county, we have been very successful with our response,  
16 and a lot of that is because of everything we do with  
17 Davis-Besse, and how it helps with our relationship.

18           An example of that would be the tornado this  
19 past June. Everyone that was involved had some sort of  
20 role in the radiological response program. A lot of the  
21 response procedures that we use for Davis-Besse are very  
22 applicable to some of the things that we had to do like  
23 HAZMAT.

24           The tangible things that we have is because  
25 of Davis-Besse. One of the things that is very

3-1-OS  
continued

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COMMENTER: CHRIS GALVIN

1 noticeable in the county is we have county-wide siren  
 2 system. A large part of that is at the Davis-Besse  
 3 plant, and is available to us for any number of outdoor  
 4 notifications that need to be relayed; specifically,  
 5 weather, very, very important to the community.

6 We also do a brochure calendar for our  
 7 particular State of Ohio, Lucas County, that goes to all  
 8 of our residents and provides them a plethora of  
 9 information about all types of emergency response and  
 10 what they can do in response to tornadoes, floods,  
 11 HAZMAT and radiological emergency.

12 So, really, all this adds up to the fact that  
 13 our relationship in Ottawa County with Davis-Besse is a  
 14 benefit to the residents of Ottawa County.

15 Thank you.

16 MR. BARKLEY: Thank you.

17 The next three people I would like to call  
 18 are: Chris Galvin of the United Way; followed by Jackie  
 19 VanTress of OPEIU, Local 19; and following, Kimberly  
 20 Kaufman of the Black Swamp Bird Observatory.

21 Thank you.

22 MS. GALVIN: I'm Chris Galvin, Director of  
 23 the United Way in Ottawa County. The Davis-Besse  
 24 Nuclear Power Station and on a larger scale the First  
 25 Energy Corporation are a tremendous community partner to

3-1-OS  
continued

3-2-SL

4-1-SE

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1 the local United Way. Since 1993, First Energy has  
2 contributed more than 13.5 Million Dollars to United Way  
3 of Greater Toledo which serves Ottawa, Wood and Lucas  
4 Counties. 3.1 Million came from corporate gifts, 10.4  
5 Million from its incredibly generous employees.

6 First Energy has also earned United Way's  
7 Pillar Award each year since at least 1992. Our data  
8 doesn't go back any further than that. It seems they  
9 consistently give more than a hundred thousand dollars  
10 each year to the Greater Toledo campaign.

11 Not only does this community consistently get  
12 solid financial support from First Energy and its  
13 employees, but executive leadership has also  
14 demonstrated exceptional personal commitment to our  
15 work.

16 In 1993, Don Saunders chaired the local  
17 United Way campaign, raising 12.5 Million Dollars.

18 In 2005, Jim Murray, now retired, but  
19 formerly First Energy President of Ohio Operations,  
20 chaired the local United Way campaign. Under Mr.  
21 Murray's leadership, the campaign raised 13.3 Million  
22 Dollars. We also presented Mr. Murray with our  
23 Prestigious Caring Award in 2006 for demonstrating value  
24 and concern for our community through vision,  
25 leadership, service and commitment to the people of our

4-1-SE  
continued

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1 community.

2           In 2009, Trent Smith, Regional President of  
3 Toledo Edison First Energy, became chairman of the  
4 United Way of Greater Toledo's Board of Trustees and has  
5 drawn to a close on his second year of service. Mr.  
6 Smith has gone above and beyond the level of service,  
7 dedication and commitment we typically see from board  
8 chairs. He has become involved in virtually ever level  
9 of our work, digging in and helping find real solutions.

10           In addition to these executive leaders,  
11 numerous upper-level management have supported United  
12 Way by using their voice and relationships to help  
13 secure financial and volunteer support as well as  
14 advocating on behalf of the United Way and the Northwest  
15 Ohio Region.

16           In addition to Don Saunders, Jim Murray and  
17 Trent Smith, some of the stand-out employees include  
18 Debbie Paul, Mike Adams, and Mel Lomack. Additionally,  
19 in the 1990's Jennifer Schreiber served five years as  
20 the chair of our community impact cabinet, the highest  
21 level of community impact volunteers who decide how  
22 money is allocated in this community. Also joining her  
23 on the cabinet was Jenny Ammadon. Both are now retired.

24           First Energy also demonstrates incredible  
25 commitment to the communities through sponsorships and/

4-1-SE  
continued

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**COMMENTER: JACKIE VANTRESS**

1 or participation in programs and events.

2           In 1993 and 1994, Davis-Besse sponsored our  
3 loaned executive program. Jim Ferris, now retired from  
4 Davis-Besse, was the loaned executive in those  
5 two years. First Energy has also sponsored loaned  
6 executives over the years, from 1996 continuing for  
7 11 years.

8           Employees consistently contribute to and  
9 participate in Stamp Out Hunger and/or Scouting for Food  
10 efforts each year. They were a major sponsor of our  
11 Family Food Fund in 2008.

12           First Energy was the sponsor of our Community  
13 Building event in 2005, and was the initiator and  
14 sponsor of the Veterans Appreciation Event in 2006,  
15 which continued until 2009.

16           Davis-Besse and First Energy are a valued  
17 community partner, both philanthropically and  
18 economically. They have been incredible contributors to  
19 our community over the past 20 years, and we only hope  
20 that this will continue for at least another 20 years.

21           Thank you.

22           MR. BARKLEY: Thank you, Chris.

23           Jackie?

24           MS. VANTRESS: Good afternoon. My name is  
25 Jackie VanTress, and I am representing OPEIU, Local 19.

} 4-1-SE  
continued

} 4-2-SL

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COMMENTER: KIMBERLY KAUFMAN

1 "OPEIU" stands for Office and Professional Employees  
2 International Union, and we represent the clerical  
3 support staff at Davis-Besse.

4 On behalf of the Union, I would like to voice  
5 our support in this public meeting. A renewal of this  
6 license will not only promote and maintain employment  
7 for our members who live and shop and send their  
8 children to school in that area, but it will also assure  
9 the delivery of reliable electric service to our  
10 customers.

} 5-1-SE

11 Research has shown that nuclear power is  
12 clean, is efficient and produces more energy at a lower  
13 cost than any other means of generation. So, it is  
14 important that we keep this plant in operation.

} 5-2-AL

15 Local 19 is proud of the safety record and  
16 operations at Davis-Besse as well as the work we do here  
17 and the service we provide to the public. OPEIU, Local  
18 19, would like to continue to be a part of the team for  
19 at least the next 20 years.

} 5-3-OS

20 Thank you.

21 MR. BARKLEY: Thank you, Jackie.

22 MS. KAUFMAN: Good afternoon everybody. My  
23 name is Kimberly Kaufman, and I'm the Executive Director  
24 of Black Swamp Bird Observatory, and while I understand  
25 the seriousness nature of this hearing, I'm actually

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1 really pleased to have this opportunity to address this  
2 group.

3 My organization represents a somewhat unique  
4 marriage, if you will, between a conservation  
5 organization and a nuclear power plant. The general  
6 public and, of course, all of you in the room are  
7 certainly familiar with the fact that the nuclear power  
8 plant resides in this part of Ottawa County, but very  
9 few are actually aware that the power plant co-exists  
10 with the thriving marsh that just sort of forms a hub  
11 around the power plant.

12 Our organization has been conducting  
13 migratory bird regions in this area for more than  
14 20 years, and we really take pride in this marriage, and  
15 we work hard like a good spouse to maintain it.

16 The marsh represents a critical stop-over  
17 habitat for millions of migratory birds. And, in fact,  
18 many the world's leading bird experts consider this  
19 marsh to be one of the most critical areas of stop-over  
20 habitat in the entire western hemisphere.

21 The observatory in these 20 years have had  
22 the full support of First Energy and Davis-Besse to  
23 conduct this critical research and, in fact, during a  
24 very exciting tumultus time in this country's history,  
25 we were very afraid that our consistent effort meaning

6-1-TR

6-2-TR

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1 that seven days a week, spring and fall, during song  
 2 bird migration, our research staff was out at that marsh  
 3 in front of the power tank conducting this research  
 4 seven days a week for more than 20 years.

5           When the tragedy occurred on 9/11, we were  
 6 very concerned for, of course, the human tragedy, but  
 7 also concerned that our research would be interrupted.  
 8 And, in fact, Davis-Besse really fully understood the  
 9 importance of this research, and the importance of  
 10 conserving the integrity of the data set, and we didn't  
 11 miss a single day.

12           And, perhaps nothing else, no other event in  
 13 our history or recent history speaks more to how much  
 14 they have said they understand the critical role that  
 15 they play in local environmental and conservation issues  
 16 than that event.

17           So, based on our long-standing relationship,  
 18 it is our opinion the Davis-Besse and First Energy have  
 19 not only worked to fully understand and fully support  
 20 the environmental issues for this local community, but  
 21 have also fully embraced the role that they play in all  
 22 of these issues.

23           So, it is opinion of the Black Swamp Bird  
 24 Observatory that the Davis-Besse Nuclear Power Plant is  
 25 a critical player in bird conservation in the entire

6-2-TR  
continued

6-3-SL

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**COMMENTER: STEVE INCHAK**

} 6-3-SL  
continued

1 region of the western hemisphere.

2 Thank you.

3 MR. BARKLEY: Thank you, Kimberly.

4 The next three people I would like to call  
5 are Steven Inchak, who is representing Congressman  
6 Dennis Kucinich; Beth Leggett with the American Red  
7 Cross; and Brad Goetz of the IBEW, Local 1413.

8 Welcome, Steve.

9 MR. INCHAK: Good afternoon.

10 Thank you for the opportunity to speak. My  
11 name is Steve Inchak, and I work for Congressman  
12 Kucinich, and what I'm going to do is simply read a  
13 letter that the Congressman sent to the NRC chairman  
14 today, and it reads as follows. And, I would also like  
15 to ask that you consent to include the article  
16 referenced in the official record, which I will provide  
17 after I read the letter. It reads as follows:

18 "Dear Chairman Jackstow: First energy should  
19 not be allowed to continue to operate Davis-Besse  
20 after 2017. The people of Northeast Ohio are  
21 familiar with First Energy's pathetic record in  
22 protecting the safety of people who live in this  
23 region. In a series of recent articles in the  
24 Toledo Blade, which I am enclosing, the people of  
25 our Region are reminded about the 12-minute

} 7-1-OL

} 7-2-OS

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1 interruption to the feed water flow to the steam  
2 generators on June 9, 1985, which was cited as a  
3 'potential catastrophe.'

4 "The people of our region are reminded of  
5 Davis-Besse's reactor head 'weakened by years of  
6 neglect' which nearly burst in 2002. The people  
7 of our region are reminded that your predecessor,  
8 Harold Denton, stated in 2004 that these two  
9 incidents represent 'the nuclear industry's  
10 second and third lowest points after three-mile  
11 Island.'

12 The people of our region are reminded that  
13 First Energy employees tried to conceal the truth  
14 of the 2002 incident from the Nuclear Regulatory  
15 Agency, using tricks, 'schemes or devices' to  
16 deliberately mislead your Agency.

17 "The people of our region are reminded that  
18 David Pullman, Chief of the Justice Department's  
19 Environmental Crime Section, said that First  
20 Energy showed 'brazen arrogance' and 'breached the  
21 public trust by withholding information about the  
22 reactor head incident.

23 "The people are reminded that federal  
24 prosecutors described the reactor head incident as  
25 'one of the biggest coverups in US nuclear

7-2-OS  
continued

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history.'

"The people of our region are reminded that First Energy paid a record fine of \$33.45 Million as a result of its actions. Of that amount, a record \$28 Million was a fine that First Energy paid to 'avoid being criminally prosecuted for lying to the government about the dangerous condition of Davis-Besse's reactor head' according to then US Attorney Greg White in 2006.

"While these fines were record fines at the time they were imposed, I pointed out then that the total fine was merely one percent of First Energy's profit in 2004. While these fines may have been record fines, they were a mere slap on the wrist for First Energy and did nothing near to what would have been necessary to change its corporate culture.

"The corrosion of the reactor head started because the Davis-Besse reactor head was made of an alloy that would not withstand this kind of corrosion. All of the other operators and nuclear reactors with similar heads confronted the situation by replacing their reactor heads with new heads of a different alloy that would not be subject to this kind of corrosion.

7-2-OS  
continued

1            "In 2004 First Energy chose cost over safety,  
 2            and it replaced the corroded reactor head with  
 3            another reactor head made of exactly the same  
 4            material.

5            "Six years later First Energy made us shocked  
 6            to discover that the corrosion was forming on that  
 7            inferior reactor head as well. Still, First  
 8            Energy had not learned its lesson. They wanted  
 9            to postpone the final replacement of the reactor  
 10           head with a new head made with a noncorroding  
 11           alloy until 2014.

12           "First Energy did not abandon that 2014  
 13           replacement date until the NRC threatened to  
 14           require Davis-Besse to shut down for an inspection  
 15           of the old reactor head every year until it was  
 16           replaced.

17           "Only as a result of that threat is First  
 18           Energy finally going to install a noncorroding  
 19           reactor head in 2011.

20           "Recent events suggest that First Energy  
 21           still has a corporate culture that is more focused  
 22           on costs and profits than on its safety.

23           "In 2009 Davis-Besse suffered an explosion  
 24           and fire in the power switching gear located  
 25           outside of the reactor building which First Energy

7-2-OS  
 continued

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failed to report and did not declare an alert.

"The evidence shows that this culture exists in First Energy beyond its operation of Davis-Besse. The NRC has been keeping a 'close watch' on First Energy's operation at its Perry reactor in Northeast Ohio as well. The NRC remains concerned that Perry's safety culture is not up to industry standards and has maintained a close watch there for the last two years.

"Davis-Besse has been operating for 33 years. It has experienced two of the industry's most serious nuclear incidents during those years. This is not just bad luck. The problems at Davis-Besse are a direct result of First Energy's mismanagement and disregard for the safety of people who live and work in the area and who would be affected by any nuclear incident.

"The NRC should not grant a license to a company that only operates safely while a 'special' inspection team is monitoring its day-to-day activities and when a 'close watch' is being kept on it.

"The NRC must continue to keep a close watch on Davis-Besse between now and 2017 and then to ensure that, first, this aging reactor with a

7-2-OS  
continued

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COMMENTER: BETH LEGGETT

1 deplorable history of operations and maintenance  
2 be safely shut down and decommissioned at the end  
3 of its current license.

} 7-2-OS  
continued

4 "Sincerely, Dennis J. Kucinich, member of  
5 congress."

6 Thank you.

7 MR. BARKLEY: Thank you, Steven. We will  
8 receive that letter into the record.

9 Beth?

10 MS. LEGGETT: My name is Beth Leggett.  
11 I'm the Director of the American Red Cross in Ottawa  
12 County, part of the greater Toledo area chapter which is  
13 a regional chapter for all of Northwest Ohio.

14 Through my position with the Red Cross, I  
15 have seen cooperation that is envied between the  
16 Emergency Management Agency and First Energy Davis-Besse  
17 amongst the agency's first responders because of the  
18 emergency preparedness that we do, we have been educated  
19 to do over my 22 years in this position.

} 8-1-OS

20 In Northwest Ohio, we're envied because of  
21 the readiness that we have from the Red Cross standpoint  
22 as well as from the whole county and the agencies that  
23 are involved.

24 We have a congressional mandate to prepare,  
25 prevent and respond to emergencies through the Red

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1 Cross. I think the Emergency Management Agency, Fred  
 2 Petersen, spoke to the cooperation with all things that  
 3 we do to help us be ready and to protect the citizens of  
 4 Ottawa County.

} 8-1-OS  
 continued

5 We also because we have the mandate but we do  
 6 not receive government funds, I can speak to what Chris  
 7 Galvin of United Way said with regards to the money that  
 8 comes into the United Way. We are a United Way Agency,  
 9 but even besides that, we have profited, the Red Cross  
 10 organization, from financial support on many levels from  
 11 First Energy and Davis-Besse as well as from the  
 12 volunteer aspect of the employees that respond through  
 13 the involvement of their families.

} 8-2-SE

14 We have three or four blood drives that we  
 15 conduct at Davis-Besse that are very successful. We  
 16 have had a lot of leadership that has come out of the  
 17 Davis-Besse plant. Chuck Witt was a six-year chairman  
 18 for our local advisory board.

19 Currently, Terry Mortis, who is the Regional  
 20 Manager also of the Ottawa County District with First  
 21 Energy that provides a lot of leadership, a lot of  
 22 guidance to the Red Cross.

23 And, I'm going to take my Red Cross hat off,  
 24 and I want to say that May 15, 1979, I became a new mom  
 25 for the very first time, and when my daughter was

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COMMENTER: BRAD GOETZ

1 two years old, had not the rain storm come the afternoon  
2 of the protest march in front of Davis-Besse, I would  
3 have been in it.

4           And, I sat here today and thought how far  
5 I've come and how grateful I am to have had the  
6 exposure, educationally through the community, through  
7 my friends to see the Davis-Besse plant in a whole  
8 different light. I was young in the Nineties. I'm a  
9 little bit smarter now about how those things work, and  
10 I ask hard questions and I sometimes like the answers,  
11 sometimes I'm not so sure about the answers, but I am  
12 confident in the safety of the Davis-Besse plant and the  
13 good that it does in the community for the people that  
14 are involved.

} 8-3-SL

15           Thank you.

16           MR. BARKLEY: Thank you, Beth.

17           Brad?

18           MR. GOETZ: Good afternoon. My name is  
19 Brad Goetz, and I'm the Business Manager of the  
20 International Brotherhood of Electrical Workers, Local  
21 1413. We represent security at Davis-Besse.

22           I just want to say that I'm a 26-year  
23 employee at Davis-Besse, and over the years, the safety  
24 culture has improved greatly and continues to improve  
25 every day. The plant is well protected, not only for

} 9-1-OS

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**COMMENTER: ANN HECKERD**

1 the safety inside the plant but also for the members of  
2 1413.

} 9-1-OS  
continued

3           Davis-Besse over the years has provided a  
4 good living, a good income for many residents of Ottawa  
5 County and surrounding counties and especially now in a  
6 time when unemployment is high.

} 9-2-SE

7           We support the license renewal, and we ask  
8 the NRC to support it as well.

} 9-3-SL

9           MR. BARKLEY:     Thank you, Brad.

10           There are three people who are still signed  
11 up to speak.  If there are any other people who would  
12 like a speak, please come and see me.

13           The last three people I would like to call up  
14 are Ann Heckerd of the St. Vincent de Paul Food Pantry,  
15 Brian Boles of FENOC, and Larry Tscherne of IBEW, Local  
16 245.

17           MS. HECKERD:     I am Ann Heckerd, the Food  
18 Coordinator for the St. Vincent de Paul Food Pantry, and  
19 I'm going to talk more on the economic aspect.

20           Davis-Besse has been very generous with their  
21 donations to the Food Pantry in the past years.  I also  
22 would like to say that if it were to close, they may be  
23 coming to our Food Pantry, and I would hate to see that.

} 10-1-SE

24           MR. BARKLEY:     Thank you, Ann.

25           Brian?

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COMMENTER: BRIAN BOLES

1 MR. BOLES: Good afternoon. My name is  
2 Brian Boles. I'm the Plant Manager of Davis-Besse.

3 Our license renewal is a high priority item  
4 for the state and for the county. We have had a number  
5 of people working on this project now for well over a  
6 year -- I see a number of those members are here -- to  
7 put together a good product which we have submitted to  
8 the NRC for their review.

9 It's a priority for us as a company because  
10 Davis-Besse is a significant asset to our company. It  
11 provides a large source of safe, reliable, environmental  
12 friendly electricity to the surrounding area.

13 It is also important from a license renewal  
14 aspect, 20 additional years of this asset to provide for  
15 the employment opportunities for the local community,  
16 and many of our young engineers are graduating from  
17 college today who wonder if nuclear power is a viable  
18 future and a career path. It's important to know that  
19 plants such as Davis-Besse and others are undergoing  
20 renewal process have a future that they can depend on.

21 At Davis-Besse we do commit to ensuring the  
22 public safety and protecting the environment. I'm sure  
23 the review as we go through this license renewal process  
24 will bear that out, and as evidenced by a number of the  
25 speakers here, we do enjoy a very good relationship with

11-1-AL

11-2-SE

11-3-OS

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**COMMENTER: LARRY TSCHERNE**

1 the surrounding community. We look forward to extending  
2 that relationship for another 20 years.

3 Thank you.

4 MR. BARKLEY: Thank you, Brian.

5 Finally, Larry?

6 MR. TSCHERNE: Thank you and good  
7 afternoon. My name is Larry Tscherne. I'm the Business  
8 Manager for IBEW, Local 245, the International  
9 Brotherhood of Electrical Workers.

10 We represent 22 counties here in the  
11 Northwest Ohio, including Ottawa County here. But, in  
12 addition to that, we also represent over 200 physical  
13 workers at Davis-Besse that provide operations,  
14 maintenance, chemistry, radiation and protection of the  
15 plant.

16 Now, what I'm going to talk about here  
17 briefly isn't an opinion. It's a fact. I know that  
18 from our members and the involvement that I have with  
19 the plant, and not only with the plant but with senior  
20 management. I'll go as far as the President of FENOC,  
21 Jim Lynch, who includes all the other business managers,  
22 the leadership of the local unions from the entire  
23 FENOC. We meet on a regular basis a couple times a year  
24 with the President. We share and open up any type of  
25 discussion that we have. Nothing is held back, open

} 11-3-OS  
continued

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1 communication all the way through.

2 We do the same thing with the Plant Manager  
3 at Davis-Besse, with the Maintenance Manager at  
4 Davis-Besse.

5 We have worked over a number of issues, going  
6 into outages, we have heard testimony here about the  
7 head incident. Let me tell you the type of relationship  
8 that we have been able to develop in the goal of working  
9 together in a good labor-management relationship which  
10 is important and critical, especially in this type of  
11 industry.

12 During that incident, the plant, as you know,  
13 was down for, what, two years, maybe a little less.  
14 Over that period of time and the hundreds of man hours  
15 that were involved, multiple shift changes. You can't  
16 imagine what we had to go through to get that plant back  
17 up and running. We had four grievances filed; four out  
18 of the entire period of time.

19 I only use that as an example because when we  
20 meet, we continue to talk about the safety culture and  
21 good maintenance practices which leads me to my next  
22 point.

23 The safety culture, the dedication of the  
24 employees, training and the craftsmanship are second to  
25 none. Again, that's not an opinion. That's a fact. We

12-1-OS

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1 had the opportunity to review all of that and we  
2 participate not only in the training but in the  
3 development of the training.

4           So, with that said, I would have to say that  
5 First Energy has been open and honest in all of their  
6 discussions with us. There's never been a time where I  
7 haven't been able to call either Akron or the plant and  
8 get an answer. It's just been terrific.

9           In addition to that, we not only work out  
10 local issues but something more important or just as  
11 important. We work together on issues in Washington  
12 also through our labor management committee. A lot of  
13 people probably aren't aware of that, but we do that  
14 through our Land Pact Committee.

15           By extending the license here at Davis-Besse,  
16 it would continue to provide good clean power that's  
17 critical. In addition to that also supporting the  
18 much-needed tax base, not only to this area but to the  
19 state, and I'm confident along with our members, that  
20 IBEW, Local 245, that Davis-Besse will continue to be  
21 safe, not only for the employees but also for the area.

22           Thank you.

23           MR. BARKLEY:    Thank you.

24           I'll make one last call for anyone who would  
25 like to make a statement.

} 12-2-SL  
}  
} 12-3-AL  
}  
} 12-4-SE  
}  
} 12-5-OS

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COMMENTER: MARK STAHL

1 leave here tonight, please do not hesitate to contact  
2 us.

3 This concludes my presentation. Mr.  
4 Barkley?

5 MR. BARKLEY: Okay, thanks very much.

6 The first three people I would like to  
7 call are Mark Stahl, Ottawa City Commissioner; Jere  
8 Witt, Ottawa County Commissioner; and Mike Drusbacky  
9 of Ottawa County EMS. Thank you.

10 MR. STAHL: Good evening, ladies and  
11 gentlemen, and thank you for coming out on such a  
12 rainy night. My name is Mark Stahl. I'm the  
13 President of the Ottawa County Board of Commissioners.

14 And, the county isn't successful unless  
15 you're surrounded by successful community partners,  
16 and I can tell you that Brush-Romley (ph) is one of  
17 those partners. They contribute tremendously to the  
18 good of this community. We also cherish the NRC's  
19 partnership that we have. You are our eyes and our  
20 ears. You are what helps us maintain the public  
21 safety here, and we appreciate that as well.

22 With that said, we're going to have a few  
23 people from the Agency describe what Davis-Besse does  
24 for Ottawa County, and on behalf of the Ottawa County  
25 Commissioners, I would like to extend our full support

1-3-SE

1-4-SL

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COMMENTER: JERE WITT

1 in regards to their application.

2 Thank you.

3 MR. WITT: Thank you, Mark. It's not  
4 proper to correct your boss, but you meant  
5 Davis-Besse.

6 Now, most of you were here at the first  
7 session, so I will make my comments brief and not  
8 repeat everything I said. The one thing I think I  
9 want to make sure everyone understands, and for those  
10 of you who were not here, I am the County  
11 Administrator for Ottawa County. I also serve on the  
12 County Nuclear Review Board for Davis-Besse, I also  
13 was a part of the restart overview panel when they had  
14 the head issue.

15 So I've had some broad experience with the  
16 Davis-Besse people and with the Nuclear Regulatory  
17 Commission, and I think this process and the processes  
18 that the NRC uses are great processes, but I think  
19 it's important to know that when we look at what  
20 Davis-Besse has done over the years and how they have  
21 responded to Ottawa County as a community, we couldn't  
22 have asked for anything more.

23 And, we certainly fully support how they  
24 have changed their safety culture; frankly, how they  
25 have changed many, many personnel from the days when

} 1-4-SL  
continued

} 2-5-SE

} 2-6-OS

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**COMMENTER: MIKE DRUSBACKY**

20

1 they had issues, and those people are not there any  
 2 longer. This is a new company. It has better  
 3 oversight from the corporate level, and I think most  
 4 importantly as we urge the NRC to approve this  
 5 process, let's remember that this is the lives of  
 6 people in Ottawa County and not let people with  
 7 political agendas somehow impede that process. The  
 8 people in Ottawa County have and will support  
 9 Davis-Besse, and we as a county on behalf of the Board  
 10 of Commissioners certainly do support them.

} 2-6-OS  
 continued

11 Thank you.

12 MR. DRUSBACKY: It stinks to get old.  
 13 My name is Mike Drusbacky, Deputy Director of the  
 14 Ottawa County Emergency Management Agency.  
 15 Commissioner Stahl and Jere Witt are a couple of my  
 16 bosses.

17 I've been with the Ottawa County Emergency  
 18 Management for 21 years, and I would like to speak  
 19 today on what Davis-Besse has meant to us as not only  
 20 the Emergency Management Agency but what Davis-Besse  
 21 and what we do affects Ottawa County as a whole, not  
 22 just on the nuclear side.

23 Our plans and procedures that we have for  
 24 Davis-Besse are very thorough, well maintained and  
 25 tested regularly because of the requirements of the

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1 plant. This ultimately makes us better able to  
 2 respond to other types of natural disasters,  
 3 technological hazards.

4 Unfortunately, we have had our share of  
 5 natural disasters with tornados in our community, and  
 6 we had one just this past June. And, we had  
 7 Davis-Besse's support in our Emergency Management  
 8 Agency and our emergency operation center in helping  
 9 to mitigate and respond to that disaster. We've had  
 10 train derailments, we've had electrical outages, and  
 11 we have had very good support from the plant.

12 So, the emergency operating center of the  
 13 EMA are better equipped, we're better prepared and we  
 14 have one of the largest staffs than those of other  
 15 counties in Ohio. This has been very good for our  
 16 radiological preparedness requirements. We exercise  
 17 regularly because of these requirements of the plant.

18 Other benefits also have been a very good  
 19 working relationship through Ottawa County's emergency  
 20 response departments, our local fire departments, our  
 21 local EMS departments, law enforcement, other  
 22 organizations because of the training and exercise  
 23 that we do to meet the requirements that we have for  
 24 Davis-Besse.

25 We have a county-wide siren warning system

13-1-OS

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COMMENTER: JOSEPH DEMARE

1 that is used for all hazards, not just Davis-Besse,  
2 not just for the emergency planning zone, but all our  
3 county is covered by alternate warning sirens.

4 All these I've mentioned, the training,  
5 the preparedness and responses that we do, all this  
6 ends up in that we have a very solid relationship and  
7 that relationship has benefited the residents of  
8 Ottawa County.

9 Thank you very much.

10 MR. BARKLEY: Thank you, Mike.

11 Okay, the next three people I want to call  
12 are Joseph DeMarr, the Green Party at Wood County;  
13 Jane Ridenour of OPEIU, Local 19, and then finally  
14 Patricia Marida of the Sierra Club.

15 MR. DEMARR: Good evening. Like most  
16 people in the Northwest Ohio area, I first found out  
17 about the scoping meeting earlier in the week when  
18 there was a story in the Blade. So, I had not had an  
19 opportunity to completely read the Environmental  
20 Impact Statement that's been prepared with the  
21 application for the license renewal.

22 But, I think that that is one of the  
23 issues that should be dealt with in the scoping  
24 process at either another later meeting or perhaps  
25 further announcements, and at the very least, I would

13-1-OS  
continued

14-1-LR

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1 like to request a hard copy also be placed in the Wood  
2 County Library in Bowling Green, Ohio.

} 14-1-LR  
continued

3 There are several unique aspects of the  
4 location of Davis-Besse that should be dealt with in  
5 any environmental review and proposed continuation of  
6 this plant, most of them having to do with being on  
7 the shores of the Lake.

8 One of them is that we must consider in  
9 the case of a worst case scenario, coordination with  
10 Canada in terms of the effect of an accident that  
11 might occur at this plant.

} 14-2-OS

12 Another is the possible effect on the  
13 seven-billion-dollar fishery in Lake Erie.  
14 Specifically, I think you should look at how the  
15 wastewater and how the temperature effluent from this  
16 plant would affect and possibly affect indicia species  
17 such is the Asian carp. In other words, does the  
18 operation of Davis-Besse make it more or less likely  
19 that indicia species could come in here and ruin our  
20 fishing.

} 14-3-AQ

21 There are several safety issues that  
22 impact on the environmental questions. First of all,  
23 I personally know a first responder. We've had  
24 conversations about Davis-Besse. He told me that they  
25 have been told that in the event of some sort of

} 14-4-HH

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1 accident, the only thing they have to worry about is  
 2 radioactive iodine, and since they will be given pills  
 3 for radioactive iodine, they don't even have to worry  
 4 about that.

14-4-HH  
continued

5 This suggests to me that the front line  
 6 first responders may not have an adequate idea of how  
 7 dangerous, meaning the radioactive nuclear heads are,  
 8 even to neutrons to spot them, and this could lead to  
 9 bad decision-making in the event of an accident which  
 10 could lead to increased contamination of the earth.

14-5-OS

11 The siren system, I have lived in  
 12 northwestern Ohio off and on for 20-some years, and  
 13 about 24 years when my son was about one year old,  
 14 there was a short circuit at Davis-Besse, and the  
 15 evacuation sirens were all sounding, and no one  
 16 reacted at all in Northwest Ohio. I finally called  
 17 the state police and asked why the sirens were going,  
 18 and they told me, "Oh, it's just a short-circuit at  
 19 Davis-Besse." I believe the siren system is  
 20 completely adequate.

14-6-OS

21 The plant has been operating long enough  
 22 with the nuclear radiation weakening the structure.  
 23 We've learned at Chernobyl that eventually this  
 24 weakening can proceed to such an extent that the  
 25 concrete or a portion of the concrete can actually

14-7-OS

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1 fail, collapse.

2 I think an environmental review needs to  
3 look at what would happen if the concrete wall either  
4 collapsed from radiation or if the perimeter was  
5 destroyed through the attack of a plane or through the  
6 attack of some motorist or some terrorist group  
7 planting explosives. What would happen to the  
8 radioactive dust and the containment structure because  
9 of the weakening?

14-8-PA

10 We are in an area of the country that  
11 could be affected by the fault if there is a large  
12 earth quake, and I think this may not have been  
13 examined sufficiently in the environmental impact  
14 study.

14-9-PA

15 Also, downwind from Davis-Besse in the  
16 local communities here, there is a cancer cluster.  
17 The state studied this cluster and it was woefully  
18 inadequate. It consisted of dosimeters, given to  
19 about a fifth of the families. They went out in the  
20 yards and ran the dosimeters themselves looking at the  
21 sky. They didn't find anything, but I'm not sure they  
22 -- I believe this happened when Davis-Besse wasn't  
23 actually running, and it doesn't address the fact that  
24 there may have been emissions in the past, and there  
25 could be emissions in the future.

14-10-HH

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COMMENTER: JANE RIDENOUR

1                   So, I think that any federal environmental  
 2 impact statement would have to look at known emissions  
 3 from Davis-Besse which are routine, such as I have,  
 4 and correlate those with the cancer cluster in these  
 5 local counties and look for cancers that are  
 6 specifically known to correlate with the nucleates  
 7 that we know of at least, such as thyroid cancer.

8                   I know I only have about five minutes  
 9 here. I want to say that I know -- as an  
 10 environmentalist, I know that the NRC is given an  
 11 impossible task here. Any process that generates  
 12 radioactive pollution that will be able to cause  
 13 cancer, birth defects and hurt people for the next --  
 14 for millions of years in some cases, by definition, it  
 15 can't be done safely.

16                   In this specific case, Davis-Besse has one  
 17 of the worst operating records in the industry.  
 18 That's widely known. This will actually be a very  
 19 interesting test case to see if the NRC is able to  
 20 deny any license. I think if any license should be  
 21 denied, it would be Davis-Besse.

22                   But, thank you for your attention and have  
 23 a good night.

24                   MR. BARKLEY:     Thank you, Joseph.

25                   MS. RIDENOUR:     Thank you. Good evening.

} 14-10-HH  
 continued

} 14-11-OS

} 14-12-OL

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1 My name is Jane Ridenour, and I am President of the  
 2 OPEIU, Local 19. OPEIU stands for Office and  
 3 Professional Employees International Union, and we  
 4 represent the clerical support staff at Davis-Besse.

5 And, on behalf of the Union, I would like  
 6 to voice our support at this public meeting for a  
 7 multitude of reasons. The renewal of this license  
 8 will promote maintaining employment of not only our  
 9 members who live and shop and send their children to  
 10 the schools in this area, but it will also ensure the  
 11 delivery of reliable electric service to all of our  
 12 customers.

13 Research has shown that nuclear power is  
 14 clean, it is efficient and it produces more energy at  
 15 a lower cost than any other means of generation. So,  
 16 it is important that we keep this plant in operation.

17 Local 19 is proud of their safety record  
 18 and their operations at Davis-Besse as well as the  
 19 work that we do here and the service that we provide  
 20 to the public. OPEIU, Local 19, would like to  
 21 continue to be a part of that team for the next 20  
 22 years.

23 Thank you.

24 MR. BARKLEY: Thank you, Jane.

25 We'll call Patricia Marida.

15-1-SL

15-2-SE

15-3-AL

15-4-OS

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COMMENTER: PATRICIA MARIDA

1 MS. MARIDA: My name is Patricia Marida.  
 2 I'm the Chair of the Nuclear Issues Committee of the  
 3 Ohio Sierra Club. And, we had a whopping four days to  
 4 know about this meeting. I had four days ahead. I  
 5 learned about it this morning and have come up from  
 6 Columbus here.

16-1-LR

7 The Sierra Club opposes nuclear energy in  
 8 its entirety, citing serious environmental health and  
 9 public expense issues throughout the nuclear field  
 10 cycle.

16-2-OL

11 The time frames needed to guard the  
 12 radioactive nuclear waste generated from this process  
 13 are geologic in nature. Isolating the radioactive  
 14 nuclear waste will consume all our time and money for  
 15 generations to come. The only viable solution for  
 16 radioactive waste is to stop generating it.

17 Radioactive contamination and waste are a  
 18 major reason to discontinue the use of nuclear power,  
 19 and I might add that the environmental effects occur  
 20 across the United States, and all of this should be  
 21 come under NRC's consideration.

16-3-OS

22 The risk and reality is that radioactive  
 23 contamination has occurred, is occurring and will  
 24 continue to occur throughout the nuclear power cycle.  
 25 Mining is leaving radioactive plants exposed to the

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1 air and water of our First Nation Plan in the United  
 2 States, Canada and Australia. The story in Australia  
 3 that's devastating.

} 16-3-OS  
 continued

4 Contamination occurs throughout the  
 5 milling, refining, transport and conversion of uranium  
 6 to uranium hexafluoride and then enrichment in which  
 7 the gaseous diffusion process took as much energy as  
 8 a large city to enrich the uranium. Then additional  
 9 uranium must be formulated to ground.

10 An enormous waste -- uranium hexafluoride  
 11 which is 99 percent of the original uranium but is not  
 12 cushionable and, therefore, not useable for energy.  
 13 However, it is just as radioactive and must be then  
 14 converted back to the more stable uranium oxide. A  
 15 newly-operated plant at Piketon will take 25 years  
 16 running around the clock to deconvert the 40,000,  
 17 14-ton canisters containing hexafluoride that are  
 18 already on the site, and that is not counting how much  
 19 more that might be generated from other conventional  
 20 facilities, enormous amounts of energy due to this  
 21 process.

} 16-4-RW

22 Added together, the disposal to support  
 23 the industry's nuclear power also comes with a heavy  
 24 carbon price, which means that nuclear power will not  
 25 address the pollution, global warming. Centralized

} 16-5-AM

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1 electric power complete with centralized corporate  
 2 profits for the nuclear and coal industry has been  
 3 heavily subsidized by corporate for many years.  
 4 Without corporate subsidies, loan guarantees and  
 5 liability limits for which the public must bear the  
 6 burden, no nuclear power plant would ever have been  
 7 built.

8 In Ohio, the use of electricity has been  
 9 increasing for a number of years. Now, with  
 10 progressive legislation and Ohio Senate Bill 221,  
 11 energy efficiency and conservation combined with the  
 12 renewable sources of solar, wind and geothermal, these  
 13 are providing so much additional and conserve energy  
 14 to all plants and new coal plants in our state have  
 15 been cancelled, and there's a strong movement to shut  
 16 down the old polluting coal-fired plants.

17 The argument of rising energy is  
 18 irrational at best, and at worst, the resulting global  
 19 warming would threaten our life support system and,  
 20 yes, our way of life.

21 There is good reason why there are no  
 22 nuclear power plants coming on line to replace the old  
 23 ones. Wall Street will not support them. The normal  
 24 up-front cost and a 12- to 20-year length of time for  
 25 completion makes it financially uncompetitive with

} 16-6-AL  
 } 16-7-AM  
 } 16-8-AL

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1 wind and solar. On the latter, decentralize, meaning  
 2 that jobs are being created all over the state. As  
 3 compared to Davis-Besse's extended shut-downs, if the  
 4 wind stops blowing or the sun is behind a cloud  
 5 somewhere, it is likely not too serious or a long-term  
 6 power shortage problem.

16-8-AL  
 continued

7 A 20-year extension of the Davis-Besse  
 8 operating license is unfounded on the grounds of  
 9 future electric generating needs. Even without the  
 10 afore- mentioned problems plaguing nuclear power in  
 11 general, the Davis-Besse facility is in a tenuous  
 12 condition to continue operation even at the present.  
 13 Continuing for 20 years past 2017 would constitute  
 14 reckless disregard for public safety and environmental  
 15 integrity.

16-9-OS

16 The history of failures and dangers at  
 17 this plant is well known and well documented, so I  
 18 will not reiterate that here. However, the process by  
 19 which First Energy and the Nuclear Regulatory  
 20 Commission allowed an inspection of the ractor head in  
 21 2002 coming within one-eighth of an inch of a nuclear  
 22 disaster that would have left the Midwest  
 23 uninhabitable and the Great Lakes, the world's largest  
 24 fresh water supply, filled with radioactive  
 25 contamination shows that the public should have no

16-10-OS

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1 confidence whatsoever in the ability of First Energy  
 2 to self regulate or in the NRC to rigorously enforce  
 3 and inspect so dangerous an operation of a nuclear  
 4 reactor.

5           They were willing to take these incredible  
 6 risks based simply on profit. Not only that, the  
 7 corporate culture makes it difficult for any one  
 8 person to wreck the system or feel responsible for  
 9 anything other than following the order of their  
 10 immediate superiors.

11           So, I live in Columbus, but this could  
 12 still affect me. Even the 40-year time frame for  
 13 operations of a parkland does not have an engineering  
 14 basis, but it was based on the time needed to pay off  
 15 construction costs. What happened to the engineering  
 16 responsibility to oversee and advise an operation of  
 17 this magnitude of danger?

18           Last but not least, nuclear power is being  
 19 used to keep the nuclear weapons industry afloat.  
 20 Facilities and research for nuclear power can be  
 21 transferred to weapons usage. The USEC, formerly the  
 22 United States Enrichment Corporation, now calling  
 23 itself USEC, the enrichment plant at Pikeville under  
 24 construction is a prime example. More importantly,  
 25 however, is the need for legitimating the nuclear

16-10-OS  
 continued

16-11-OS

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1 industry. Without nuclear power, the nuclear industry  
 2 would be only about weapons of mass destruction, taken  
 3 in a very different light to university research  
 4 recruiting bright, young scholars to other jobs in  
 5 research in the industry. The time to protect the  
 6 current generation from nuclear power plants shutting  
 7 down approaches. The weapons industry desperate to  
 8 have a nonmilitary front is the tail wagging the dog  
 9 in the push for renewed and continued nuclear power.

16-11-OS  
continued

10 And, I would like to add also that the  
 11 pools of radioactive waste are extremely vulnerable to  
 12 terrorists attacks or to other explosions. So, that  
 13 certainly should be a consideration of the NRC to look  
 14 at; that is, how are we going to protect those pools  
 15 of radioactive waste?

16-12-PA

16 And, the Sierra Club believes that on-site  
 17 storage is the most practical way. Instead of  
 18 shipping these high, most highly radioactive materials  
 19 somewhere else in the country, that they should stay  
 20 as reasonably local as possible and put in canisters  
 21 that are hidden inside buffers.

16-13-OS

22 Thank you.  
 23 MR. BARKLEY: Okay, thank you.  
 24 The other two people who have signed up to  
 25 talk who are Brian Boles, the Davis-Besse plant

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**COMMENTER: BRIAN BOLES**

1 manager, and Matthew Heyrman, Lucas County EMS.

2 MR. BOLES: Good evening. My name is  
3 Brian Boles, and I am the plant manager of the  
4 Davis-Besse nuclear reactor.

5 The licensing renewal effort is a current  
6 company and safety priority. A number of individuals  
7 from the license renewal team are present, and they  
8 have worked hard the last year to provide a quality  
9 submittal to the NRC.

10 This effort is important to us for several  
11 reasons. This licensing extension will allow us to  
12 continue to provide safe, reliable environmentally  
13 friendly electricity to our customers for years to  
14 come. Davis-Besse is an important asset, and the  
15 Company's generation portfolio shows we have a good  
16 mix of power generation service.

17 We have long-term employment opportunities  
18 for the surrounding communities. Younger engineers  
19 graduating from college need to know that the nuclear  
20 power is very efficient and is a great career.

21 Davis-Besse has a significant impact on  
22 the economy of the local area, providing folks,  
23 several hundred people employment, providing materials  
24 and services in support of the operation of the plant.  
25 We have always had a commitment to ensure public

11-4-SL

11-5-SE

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**COMMENTER: MATTHEW HEYRMAN**

1 safety and a protection of the environment, and that  
2 commitment continues today.

3 As you have already heard from several of  
4 those speakers, we enjoy a good relationship with the  
5 surrounding communities, and we look forward to  
6 sustaining this relationship for an additional 20  
7 years.

8 Thank you.

9 MR. BARKLEY: Thank you.

10 Matthew?

11 MR. HEYRMAN: My name is Matthew  
12 Heyrman. I'm the Director of Lucas County Emergency  
13 Management Agency. I just want to add to the things  
14 that were said by the Ottawa County representatives.

15 Davis-Besse has -- although my tenure is  
16 not 21 years, it's four. And, the four years that I  
17 have worked with them, they have always been a partner  
18 to us in our planning, our preparedness and our  
19 equipment. I can honestly say that we would not be as  
20 prepared for radiological issues or other emergency  
21 planning issues, nor would we be as equipped as we are  
22 today if Davis-Besse was not there to assist us and  
23 push us in ways we probably wouldn't push ourselves.

24 I'm not sure but I believe every two years  
25 we test our plans, our emergency response plans.

11-5-SE  
continued

17-1-OS

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1 Throughout the two years, we exercise those plans, we  
 2 review those plans, and Davis-Besse provides us a  
 3 liaison to work through those plans at a desk in our  
 4 office.

5 So, Davis-Besse has always been a very  
 6 great partner of ours with regard to emergency  
 7 preparedness and we look forward to working with them.

8 Thank you.

9 MR. BARKLEY: Thank you, Matthew.

10 That was the last person who had asked to  
 11 speak. Is there anyone else who still wants to speak?

12 (No Response)

13 MR. BARKLEY: Okay, thank you for being  
 14 very concise with your remarks. We have heard a  
 15 number of the good comments this evening, and I would  
 16 like to turn it over to Dave Wrona who will talk to  
 17 you just for the last minute.

18 MR. WRONA: Thank you, Rich.

19 I would just like to thank everybody for  
 20 coming out tonight and participating in our  
 21 environmental scoping process. There were a lot of  
 22 good comments. I would like to reiterate that there  
 23 was an earlier slide that indicates this meeting is  
 24 not the only way to give us scoping comments.

25 There are several methods listed on this

} 17-1-OS  
 continued

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### **The People's Hearing on Davis-Besse Relicensing**

The following comments were recorded on December 18, 2010 at St. Mark's Episcopal Church, 2272 Collingwood Blvd., Toledo, Ohio. They are hereby submitted to the Nuclear Regulatory Commission as Public Comments as part of the Scoping Process for the Environmental Impact Statement submitted by First Energy Nuclear Operating Company as part of its Application for operating its Davis-Besse Nuclear Power Station, Unit 1 for an Additional 20-Year Period.

[Docket No. 50-346; NRC-2010-0298]

Speaker	Start	Finish
Anita Rios/ Joe DeMare	00:30	4:20
Anita Rios	4:23	13:40
Kevin Kamps	13:53	33:11
Al Compaan	35:03	57:20
Katie Hoepfl	58:00	1:05:00
Tony Szilagye	1:06:30	1:15:25
Ed McArdle	1:16:08	1:26:13
Phyllis Oster	1:28:04	1:31:15
David Ellison	1:31:42	1:41:00
Michael Keegan	1:41:30	1:53:30
Ralph Semrock	1:54:00	2:02:00
Mike Leonardi	2:02:30	2:09:14
Joe DeMare	2:09:30	2:15:14
Kevin Kamps	2:15:15	

Ms. Rios

...and an activist here in Toledo area and, um. Joe DeMare and myself are going to do our best to facilitate this meeting, make sure things will



**COMMENTER: JOSEPH DEMARE**

go smoothly and make sure that everybody who wishes to speak can speak.

We are trying to record these proceedings because it is very important that our audio be very clear...um...so that the NRC doesn't have any excuses..[shhhhhh]...Thank you...um, and I would say I know there's going to be a lot of, um, um. communing and a lot of people sharing information so if you...if you feel like you need to do that, you can always step into the hallway because it is very important that the quality of the sound be absolutely as good as we can get it because we don't want to give the NRC any excuse for discounting this testimony.

Um, I don't know if any of you are, um, aware, but they...they have said that they have never taken video testimony before so this is unprecedented, and with the kind of hoops that they have been making us jump through in order just to have a voice in this process, I think it's probably inevitable that they will try to discount these proceedings. So, for that reason, we are trying to record as...as, um, best as we can with the equipment that we have so let's all be very patient with each other. I'm going to, um, give the mike over to Joe.

Mr. DeMare

OK, thanks, so, uh, if you're one of the scheduled speakers, this is the microphone, this little one here, this is the one that's, uh, actually making the recording for the NRC. So this, this one is for our benefit, so you need to...you need to hit both. So just, uh, a little bit of...imagine it's paparazzi, and, uh, you know, a crowd of reporters that really want to hear it.

So, um, I'd like to welcome you all. Uh, my name is Joe DeMare and I spoke at the official NRC hearing on November 4. And I have to tell you, it was a, uh, a rather disappointing experience, because almost everyone there was either employed by Davis-Besse or they were from an organization that received money from Davis-Besse. And I, I know

} 14-13-LR

**COMMENTER: ANITA RIOS**

that there are many people, thousands of people, in the Northwest Ohio area, that don't want this license renewed and think it's an insane gamble with our health and safety to run this plant for another 20 years. And though...I felt at that time, those people should be at this hearing, but most people didn't even know it happened. It went by before people could get their thoughts together. And so we asked the NRC to hold another one here in Toledo, they refused, but we have decided to hold our own and that's what this is..that's what.this is about.

} 14-14-OL

} 14-15-LR

So, uh, we have a lot of very educated, very well-informed speakers. And we have people that are just plain citizens that, uh, but I think most of the people that we've scheduled to speak...feel that Davis-Besse should not be renewed. Uh, we have opened this up to the public and if anyone here wants to, to speak that hasn't been asked to already, you just need to sign up, there's a little sheet outside, I'll ask you to sign.

} 14-16-OL

And, I think, we're going to learn, we're all going to learn a lot here. I've already learned a lot about Davis-Besse that I didn't know just talking to people as we all organized this. And I just want to publicly thank both the Green Party and the Sierra Club of Ohio, because without them this event would not have been put together. And, uh, and, of course, Beyond Nuclear with Kevin Kamps, and Coalition for a Nuclear-Free Great Lakes, and, uh... Am I missing any organization... I think, that's all the organizations, and all the individuals that have come here to, to work on this. So thank you very much, and, uh, let's get started with, uh, Anita, who's going to give a few words. Anita?

Ms. Rios

OK, so, um, a couple of things, a little bit of background about myself and, and, um, just to...put my comments in context. Sorry, I was just forgetting the first thing. Um, just to put my comments in context, um, I was born about 5 miles from here. I live about a mile from here, and, um, a couple years ago, I googled, you know now that we have computers and we can figure things out so easily, how far Davis-Eesse

was from me. And Davis-Besse is about 20 miles from here. And, um, I...I have been opposed to nuclear power for a very long time. But as I was thinking about, um, what we are doing here today and, um, what I wanted to talk about today, it kept, um, coming back to me that I think that even if I was in favor of nuclear power, this is still a nuclear power plant that I would want shut down.

18-1-OL

It has had numerous problems, and the other thing that kept occurring to me is, in the context of the, um, the, um, financial meltdown that, um, so many of our government entities were, if not having a hand in at least complicit in not, um, in the fact that they did not follow through in the type of vigilance that they were supposed to, um, be making, to keep unscrupulous individuals from gutting our economic system. And we saw what happened with the SEC, we saw what happened with the banking system, and the mortgage loan system, and that was truly a, a, a financial meltdown.

18-2-OS

Now we're looking at what the NRC is doing in, in its laughable oversight of all the nuclear power plants but Davis-Besse in particular. And it occurs to me that, that...the NRC is a rogue agency and just as the, as the, SEC failed us, failed us, the citizens that it should be, um, watching out for, that is our goals, that is our tool, that is the thing that, the entity that we have put in place through our government to make sure that everybody plays by the rules. And that is what the, um, Nuclear Regulatory Commission is as well. However, it is failing to do that, it has, it has absolutely failed to do that. And what it has done in reference to Davis-Besse and the numerous problems that we have seen is, at Davis-Besse, demonstrates that very clearly.

18-3-LR

So, um, as, as I consider my comments, as I consider my motivations for being here today, and, that they're, they're all motivations of an activist, an activist who, who cares about this community, who is a life-long Toledoan, who has raised my children in this community. My children went to pre-school in this church, and, um, they're grown now. But everytime I think about that, and I think about the proximity of that

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nuclear power plant, and what it would have done to my children and everybody else's children, there's a certain sense of outrage. And, um, I, I absolutely refuse to feel helpless about this. I think that we, we must speak out.

This is the beginning. Certainly, we don't have enough people in this room. We never do when we try to do something like this. We fit it in between all of the things that we do as, as mothers, as fathers, as, as parts of families, as parts of communities, we fit it in with our jobs, and we are determined to make a change. So as we approach that process here, in, in making comments, that the Nuclear Regulatory Commission will do their utmost to ignore, as, as we approach this process, we have to understand that this is the beginning of the process. This is the beginning of the process of us as citizens, and I believe that "We the People" is one of the most powerful statements that anybody can make. And "We the People" embodies our democracy, so "We the People" will be the ones who will have to challenge not only Davis-Besse but the NRC.

18-4-LR

And what I hope that comes out today is: 1) how dangerous that nuclear power plant is; and 2) how lax the NRC is in its oversight of that, that nuclear power plant. And as I said, I believe that the NRC is a rogue agency. And I think that one of the, the most crucial next steps that each of us must take is to put pressure on all of our elected officials to take a stand on, on this issue, and not just about the relicensing of this nuclear power plant, but on the, the way that the NRC has simply failed, it has simply failed to, to live up to, um, to live up to what it must do in order to keep us safe.

18-5-OS

So, um, a couple of things about Davis-Besse. Um, we, we all remember when it, um, when it corroded to the point where it, um, almost sprang a hole in the nuclear vessel head. And what happened in response to that, um, was that, the first step was they held hearings, they had open hearings.

18-6-OS

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I attended most of those hearings. Um, they're usually held out in, in Oak Harbour. And certainly anybody who, who depends on public transportation cannot go out there. But I attended all of those hearings. And I recall hearing over and over and over again from, um, FirstEnergy in response to how did this happen and what would they do in response, their, in response to future problems. Their response, again and again, was "It's a learning process," "It's a learning process." And, you know, to me that seemed like the flimsiest of, of reasons, the flimsiest of justifications, the flimsiest of plans for the future, in terms of what they could do to make all of us safer. Um, and, as they kept on, "We're learning," "This is the learning process," um, it occurred to me that if they were criminals, and I consider them criminals. I think that their lack of oversight of the nuclear power plant has been absolutely criminal. If we had somebody, um, who was, who was on trial and they went up before a judge and said "Oh, well, I robbed that bank, but it was a learning experience." I don't think anybody would accept that. Nobody would accept that as justification. We wouldn't just slap them on the wrist and say "Oh, well, now you know better."

18-6-OS  
continued

Um, and in the face of that, in the face of that lack of responsibility and lack of planning for the future, the NRC has continued to do nothing. They just slapped them on the wrist for that, they slapped them on the wrist, they fined them. But if you look at, uh, First Energy's profits, they have gone up, they have, they have never gone down, they never had to really pay for, for what they did here at Davis-Besse. They have shown, uh, a complete lack of responsibility to the people they serve. And the NRC has failed to hold them accountable.

18-7-OL

Now the other thing about FirstEnergy is, First Energy holds a corporate charter from here in Ohio. And I think that one of the next steps that, that we should be pushing towards is to revoke that corporate charter for FirstEnergy. Um, they are, they are a rogue corporation. They have failed to, um, to provide oversight of their own facilities, and they have failed to, um, show any real determination to actually learn from that situation that transpired back when the, um, Davis-Besse almost, um,

18-8-OL

**COMMENTER: KEVIN KAMPS**

melted down actually. So I hope that these proceedings are the first step towards preventing, um, a nuclear meltdown. In the face of the failure of First Energy to be vigilant and maintain its, its facilities appropriately, and in the face of, of the failure of the Nuclear Regulatory Commission to provide adequate oversight, and I would invite each of you to be a part of that next step because certainly we must grow this movement if we are to be effective. Thank you.  
(Appause)

18-8-OL  
continued

OK, our next speaker is Kevin Kamps. And I'm sorry but we don't have a microphone stand so you just have to hold this one and speak into that one.

Mr. Kamps

Hello everybody, Uh, I'm Kevin Kamps. I work for Beyond Nuclear, uh, based in Washington, DC. And, uh, I just wanted to start by saying thanks so much to Anita, and to Joe, uh, to the Sierra Club, to the Green Party, for pulling this event together so quickly, and to, you know, many others who I look forward to meeting and working with, uh, uh, folks running the video cameras so we can get this official public comment to the NRC. [pause] Man, where to start! [laugh]

Um, first thing I'll do is hold this up. [Holds up report entitled, "Davis-Besse Atomic Reactor: 20 *MORE* Years of Radioactive Russian Roulette on the Great Lakes shore?!"] If you haven't heard about this, uh, these handouts are available on the table in the hallway there and, um.... When I heard about Davis-Besse's move to get a 20-year license extension on top of its original 40-year operating license, the first thing I realized I needed to do was to, uh, educate myself on the past history of this reactor. I had heard bits and pieces from several colleagues, uh, Michael Keegan who's in the back here from Don't Waste Michigan and Coalition for a Nuclear-Free Great Lakes, uh, Terry Lodge, she works with the Toledo Coalition for Safe Energy. But I didn't have it, um, in my head all the near-misses and not so near-misses, and, uh, leaks, and

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accidents, and incidents, problems that this reactor Davis-Besse has had over the decades. And, uh, so I tried, uh, to get it in here, what I thought was going to be a two-pager ended up being in the end a seven-and-a-half-pager with two and a half pages of footnotes, just in case sceptics thought we were making this stuff out of thin air. And, uh, there were some doozies in there, that I'll just go over them real quickly here. Um, a lot of dodged bullets, a lot of, uh, really scary events. And, uh, you know, credit to Tom Henry of *The Blade* for his extensive coverage, uh, especially since the, the hole in the head incident. So you can see in the footnotes that I, I, um, I cite his work in *The Blade* quite a bit.

Um, the first one that's on this list is the Three-Mile Island meltdown pre-cursor incident of September 1977, about 18 months before Three-Mile Island suffered its 50% meltdown. Uh, Davis-Besse is a twin reactor to Three-Mile Island Unit II and had the exact same accident sequence, uh, underway 18 months earlier. And long story short, fortunately one of the, uh, operators in Davis-Besse's control room recognized what was going on and ended it before, uh, a meltdown occurred. But incredibly, that news, that, uh, "learning experience," as, uh, Anita [laugh] mentioned there from the NRC's perspective, uh, was not communicated to the industry. It was not communicated to the Three-Mile Island, uh, despite the best efforts of an inspector from the NRC's Chicago office, um... So, 18 months later, we have a 50% meltdown at a, at a US atomic reactor. And, uh, for the 30th anniversary of that incident, uh, Three-Mile Island over there, it held a press conference in preparation in Harrisburg. Uh, Harvey Gunderson, who is an expert witness, a nuclear engineer who's working with us up at Fermi III to oppose that new reactor proposal up there, uh, spoke at the press conference for TMI's 30th anniversary. Uh, did a re-evaluation of how much radioactivity, uh, he calculated got out from the meltdown, and take the official version and multiply it by 100 is what Harvey Gunderson says. So, were there health, uh, effects of that? You bet there were. Steve Wayne at the University of North Carolina at Chapel Hill, epidemiologist, uh, has documented several increases in different

19-1-OS

cancers downwind of Three-Mile Islands and the near proximity, including lung cancer. The official version of things, uh, don't recognize this, unfortunately.

} 19-1-OS  
continued

So, moving on in, uh, Davis-Besse's history, um, "the worst accident since TMI" was a loss of coolant to the reactor core for 12 minutes, that was in June of '85. Uh, moving on, a direct hit by a tornado in June of '98, where, uh, the emergency diesel generators were breaking down and had to be jerry-rigged time and time again, uh, for the course of 24 to 48 hours, with a very hot reactor core despite being shut down already. And a pool full of irradiated nuclear fuel that was in danger of heating up.

} 19-2-OS

Uh, the next one down was the hole in the head, that's been mentioned already, uh, within 3/16 of an inch of a breach of the reactor pressure vessel. And as Tom Henry put it in *The Blade*, that would be, uh, the first time since Three-Mile Islands that radioactive steam would, uh, form in a reactor containment building. So all of these threats to the reactor core, you better hope that the reactor containment building functions as designed. But if the meltdown is bad enough and it melts through the foundations of the containment building, the radioactivity is going to get out.

} 19-3-OS

Uh, in accidents and that are a habit here is the Northeast blackout of 2003. Um, did Davis-Besse's hole in the head expenses and distraction have anything to do with, uh, lack of maintenance on its infrastructure, such as, uh, power lines sagging into trees, which, whoa, just so happens to be the, uh, the start of the Northeast blackout. What do you know? Huh! Wonder if there's any connection there.

} 19-4-OS

Uh, more recently, March of 2010, a new leak in a reactor lid at Davis-Besse. This, uh, replacement lid is from Midland Nuclear Power Plant in Michigan, which was nearly completely built but never fired up, and it wasn't an exact fit on Davis-Besse's, uh, reactor pressure vessel. But, um, you know, I wanted to mention that there have been victories

} 19-5-OS



over the years, and one of the victories was when the first lid leak at Davis-Besse occurred, the first proposal by First Energy, and the NRC is pretty infamous for just rubberstamping what companies want, was a plug. They were going to plug the, uh, corrosion hole in the lid. And so a lot of folks showed up with, uh, giant bandaid bumper stickers, and, you know, giant banners that looked like bandaids, and the public pressure had a lot to do with that proposal not flying. But we've got, you know, a new, a new leak in the lid. So they have another replacement lid on the way. Something that should be mentioned about that, speaking of NRC's lack of enforcement of the safety regulations. In the aftermath of Davis-Besse, uh, six lids have been replaced in the United States at pressurized water reactors. Uh, Peach Bottom would be one.

19-5-OS  
continued

Uh, something that we had learned that has not seen the light of day in the media to this point, the New York Times was sniffing around a story, we did a lot of groundwork for them to try to get them what they needed to run the story, it still has not run, and that groundwork we did was back in early 2007. So, this story has remained silent. The story is that at Palisades in southwest Michigan, a pressurized water reactor with a badly-corroded lid, needing a replacement, the company said by July 2007 the lid needed to be replaced. Well, here we are, how long? Three and a half years later? That lid has not been replaced. Why hasn't that lid been replaced? Well, it turns out that the replacement lid from a company called Babcock and Wilcox Canada was defective. The replacement lid, brand-new lid, fabricated especially for Palisades, had cracks in its bolt holes. And the inspector from Palisades who went up to the factory to check it out let them know that this was the case, and for doing his job, he was fired by the owner of Palisades, because he was messing with the schedule. There was a mutiny of the lid replacement crew. They said, "Hire him back or we're, we're not going to do any work" and they did hire him back. So for a brief period of time, this whistleblower was in communication with Dave Lochbaum of the Union of Concerned Scientists.

19-6-OS

There were six lids replaced with Babcock and Wilcox Canada lids in this country. They were put on at the other nuclear power plants. So the question is: How are those bolt holes on those other lids? So you can see there are serious problems in this industry. Um, moving on down the schedule, I mentioned in here, um, radioactive risks piling up. It should say "on the Lake Erie shoreline," I put "Lake Michigan." There's been problems with that, too, though. I've got Lake Michigan on the mind, here.

19-6-OS  
continued

So the current amount of waste at Davis-Besse is 557 tons of irradiated nuclear fuel. The only reason we know that figure is because spring of 2010 was a magic date in the history of radioactive waste in this country. It's when Yucca Mountain, Nevada, would have been full if it had ever opened. So, uh, spring of 2010, there, there existed 63,000 metric tons of commercial irradiated nuclear fuel in this country, the legal capacity for Yucca Mountain, Nevada, to have accepted as a national dumpsite. So, uh, that's how much, uh, was at Davis-Besse at that time. 557 tons. So it could have been said that every ton of waste generated after spring of 2010 would have been excess to Yucca. The thing is, every ton of waste ever generated in this country is excess to Yucca, because Yucca Mountain is not going to happen. It's geologically unsuitable. It's an earthquake zone. It's a volcanic zone. There's a drinking water aquifer below. If waste is ever buried there, would have ever been buried there, it would have leaked massively over time, ending up in that drinking water supply, created a nuclear sacrifice area over a, a wide region of agricultural land, Native American land, national parkland, national wildlife refuge, all that is downstream. It's not happening. Uh, President Obama and Energy Secretary Chu have canceled the Yucca Mountain dump. They have zeroed out the funding as of last February. That fight is still on. The other side is pushing back. And just last week in federal court in DC, uh, appeals court, the second highest court in the land, agreed to hear a suit brought by the state of Washington, which has a lot of military hi-level radioactive waste, the state of South Carolina, which also has military hi-level radioactive waste, not to mention a lot of commercial waste within its borders. That court case is

19-7-OS

((

now proceeding in, uh, appeals court. So that fight is still on. But President Obama, who will at least be in office for 2 more years, has decided to, uh, zero out the funding.

19-7-OL  
continued

And there's ongoing problems with Davis-Besse, um, to the present day. Um, I'd like to just share some figures for, um, what might happen if there were a major radioactivity release at Davis-Besse. This comes from a 1982 NRC report entitled "Calculation of Reactor Accident Consequences," or CRAC, which is a nice little acronym the NRC came up with. So, if there were a major radioactivity release from Davis-Besse, the NRC and the Sandia National Lab in New Mexico, which conducted the study, uh, determined that there could be 1,400 peak early fatalities, they call them, 1,400 peak early fatalities, 73,000 peak early injuries, and 10,000 peak cancer deaths. And they attributed a dollar figure of 84 billion dollars for property damage. So, that study came out in 1982. NRC tried to cover it up. Uh, Congressman Ed Markey of Massachusetts, uh, got it outed by subpoena by holding a hearing and out came the figures. So if you increase, uh, all those casualties due to the increase in population since 1982, if you, uh, increase, due to inflation the, uh, property value damages, that would go up to \$185 billion dollars. And a little update to mention, just came out in, uh, mid-September, uh, "Inside the EPA," which is a trade press, uh, publication in Washington, DC, [cough] uh, scooped the story that they did a freedom of information act release to the NRC, the EPA, and the Federal Emergency Management Agency, and discovered, uh, internal emails between the agencies, the lawyers of the agencies, uh, fighting with each other over a little minor detail of after a major radioactivity release who would, uh, be in charge of the clean-up and how would it be paid for. So it turns out that the lawyers at these 3 agencies, uh, were discussing how Price-Anderson, the national liability, uh, coverage for major nuclear power plant accidents, will not cover the clean up costs. It would cover other things, property damage and, and some very strictly controlled categories, but not clean up costs. So, that's a little issue.

19-8-OL

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Uh, Davis-Besse, which is deteriorated with age, has already had so many close calls, 2 major accidents. So, you can see things are pretty out of control. Anita mentioned the, uh, NRC as a rogue agency. And we keep trying to figure out what the NRC stands for. Is it Nobody Really Cares? Is it Nuclear Rubberstamp Commission? Uh, it might be Nuclear Rubberstamp Commission, because of, uh, the 60 license extension applications they've considered so far, they have rubberstamped every single one of them. And, uh, these are oldest reactors in the country with major problems.

19-9-OL

Uh, for a long time, groups like this gathered today stopped challenging these license extensions because it was such an obvious rigged process and such waste of time that they didn't even engage with it. There may be other avenues to fight these things. Well, when it came to Palisades in Michigan, first of all we were shocked that the company would even try to get a license extension because this plant, Palisades, was a lemon before it even, even started up. So it was incredible that they, uh, ... and they got it. We, we fought them, we got steamrolled. But the silver lining, I think, uh, was that we learned some things. So Paul Gunter, my coworker at Beyond Nuclear, learned a thing or two about the NRC license extension procedure. And the next one up was Oyster Creek, New Jersey. And, uh, he gave them hell and shined a bright spotlight on Oyster Creek, on a major technical problem, a corrosion of the radiological containment barrier. Had an excellent lawyer from Rutgers University, Richard Webster. Had a great expert witness, uh, who had served us at Palisades in the past, a corrosion expert, a metallurgist named Rudolph Housner. And the 3-man team there really took on Oyster Creek. Got a split decision from the licensing board, which is very rare, a 2 to 1 vote in favor of license extension. Got a split decision at the NRC commission itself, a 3 to 1 vote. And the man who voted against the license extension at Oyster Creek is currently the NRC Chairman, Greg Jaczko. So, that was a huge victory.

Uh, we just learned within the last few days that Oyster Creek, New Jersey, uh, Exelon Corporation of Chicago, under pressure from not only

citizen groups but the state of New Jersey itself, has said "OK, OK, OK, we're not going to operate for 60 years, we'll only operate for 50 years, but don't make us build a cooling tower, we don't want to spend the 200 million, the 300 million on a cooling tower." So unfortunately, a deal's been brokered. They're going to go for 10 more years into the future, but they're not going to go for 20. And so we still need to fight them on the 10, because that plant has so many problems that should require its immediate shutdown. One that I'll mention is that its, uh, waste storage pool is very vulnerable to accident or terrorist attack.

So, just to conclude, I'd like to leave you all with some hope that now license extensions are being seriously challenged, almost the minute that they're brought up. Uh, another one to mention is Indian Point, New York, River Keeper, Hudson River Keeper headed by Bobby Kennedy Junior, has seriously challenged the Indian Point license extension. The state of New York has joined that proceeding. The Attorney General of New York, uh, the Environmental Department of New York, they are also requiring now Indian Point to install cooling towers, uh, to lessen the thermal damage to the Hudson River, just like the thermal damage, the, uh, just, uh, catastrophic destruction of marine organisms going on at these plants that lack cooling towers. That's not an issue at Davis-Besse because they have a cooling tower. But as we raised at Fermi III, we add up all the thermal impacts, of all power plants in this neck of the woods, and all the toxic chemicals they're releasing, I'm talking nuclear and coal and others. Uh, you got to look at ever the thermal impacts going on now, the destruction of the, of the eco-system in Lake Erie, um, especially when Fermi III is being proposed.

19-10-AQ

And, uh, there was another, uh, license extension, that I wanted to mention, that's being challenged. I brought some things to look at over here, some old posters from Seabrook New Hampshire, in the mid-1970s. Uh, you know, fifteen hundred people got arrested on a single day in 1977 trying to block the construction of Seabrook. Well, Seabrook has gone for a 20-year license extension and they've gone for it 20 years early, incredibly. They're only 20 years old. They have 20

19-11-AL

**COMMENTER: JOSEPH DEMARE**

more years on their license, and they've asked for a 20-year license extension. So Paul Gunter, my coworker, has challenged this 20-year early application, uh, and his main challenge is the wind power potential off the gulf of Maine, which is tremendous. So showing that wind power is a great alternative. And, I'll just close now, uh, by saying that the wind power potential of the Great Lakes is there. That will be one of our contentions against Davis-Besse for 20 more years. And add to that the solar potential, with the biggest solar, uh, panel manufacturing factory in the country right here in Toledo. Add to that the efficiency potential, and there's no need for 20 more years of radioactive Russian roulette on the Lake Erie shoreline. Thank you very much. (Applause)

19-11-AL  
continued

Ms. Rios

OK, just, just a couple of things. I just wanted to remind people that this microphone down here, that's the crucial one, OK? We, we have to make sure we speak into that one. Um, I'm also going to go over the list of speakers, just so everybody knows, OK? Um so that was Kevin Kamps. Our next speaker's going to be Al Compaan. The next person's going to be Kate Hoepfl. Um, then Tony Szylagye, um, Ed McArdle, um, David Ellison, um, did Ralph Semrock ever come? OK, um, Phyllis Oster, and then Michael Keegan. Did Bev Apel come? OK, so that's just so you folks know what our roster looks like so far. So our next speaker is going to be Al Compaan.

Mr. DeMare

OK, so while Al's setting up, I just want to mention that, um, technically what these comments are going to be is part of the Environmental Scoping comments for the Environmental Impact Statement, which is part of the application for the 20-year renewal. So part of that process is that if we could show that there are cheaper, safer, more environmentally friendly alternatives to doing nuclear power, to renewing this license for another 20 years, technically the NRC is supposed to say "OK, you're right, uh, nuclear power isn't that, we won't extend this, uh, licensing

14-17-OL

**COMMENTER: AL COMPAAN**

application." So right now, uh, Al Compaan's going to give the talk and I think he's going to speak to some of this...to some of these very issues.

Dr. Compaan

Thanks, Joe. Uh, I wonder if we could, could we turn these lights down? It may be...the screen may be a little more visible if we turn the lights down. [Turns on Slide Projector] OK, uh, so, uh, Kevin has anticipated, uh, much of what I'm going to say actually. Uh, but let me just give you my background. Uh, I recently retired from the University of Toledo, I'm an Emeritus professor at this point, although I'm maintaining an active research program and my, uh, research area is in, uh, photo-voltaic, so in solar electricity. Um, so what I'd like to focus on are, are the alternatives to, to Davis-Besse, and, uh, uh, first I'll give you an overview of, uh, what, I just want to make a couple of, uh, comments about the history of Davis-Besse which Kevin, uh, actually covered in very nice detail, and his, uh, position paper is, uh, was eye opening to me as well. Uh, one of the things that, uh, that, oops...

One of the things that I think is important to keep in mind is that First Energy and Davis-Besse, um, provides about 8.3% of, uh, First Energy's baseload power generation, so, uh, that's important to recognize in terms of the alternatives. Now, um, in Ohio, Senate bill 221, which was passed in the spring of 2008, uh, mandates for the investor-owned utilities that they should, um, achieve a higher efficiency by reducing demand by 2025 by 22%, a much larger number than the 8.3%, uh, generation that's provided by Davis-Besse. And in addition, achieve 12 1/2% generation from renewals by 2025 and another 12 1/2% generation from so-called advanced energy, which may include new, new advanced nuclear, uh, but, uh, but continuation of Davis-Besse would not qualify for that, uh, additional gen..., for that 12 1/2%.

Distributed generation will also qualify for a, a credit under that Senate bill 221. And, um, alternative sources are very attractive for...wind, as Kevin mentioned, and also solar. Uh, so, uh, Kevin already mentioned

20-1-AL

this, but, uh, the expectation when Davis-Besse and all the other nuclear reactors were built was that would mean that there would be a federal repository for all of the hi-level nuclear waste and that is not available. And as Kevin mentioned, uh, the Yucca Mountain, uh, facility has been, uh, the funding for it has been discontinued, it has no operating license. That means that for 33 years, all of the high-level radioactive waste generated at Davis-Besse are still being stored on-site, initially in a cooling pool, as I understand it, and then, uh, a few years ago, they, they constructed above-ground containers for the fuel after it cools off, uh, in this pool.

20-2-RW

So, uh, my, uh, position would be that no nuclear plant license extensions should be granted until there's a long-term storage facility available for these nuclear wastes. And, one of the troubling indicators, I think, is I read through the Environmental Study that is, is mandated for this license extension. This is a study by Davis-Besse. In Appendix E, that's the Environmental Report, on this page (Page 2.3-2), uh, I quote here, they're, they're required, uh, by their operating license to have monitoring wells to monitor the quality of the groundwater in the, uh, within the perimeter. And one of their wells in 2..., in the spring of 2009 showed a tritium level that was rising, uh, 4000, uh, pico curies/liter. And, uh, this is a quote from their study. "As a result, the First Energy Nuclear Operating, uh, uh, Company," notice that that's a separate operating company from First Energy, from the rest of First Energy, "is pursuing a root cause approach to identify the source of the tritium in the wells. Uh, no tritium concentrations of...have been detected above the, uh, US EPA drinking water limit of 20,000 picocuries." But, this to me is very troubling. Even though the, the, uh, concentration is not that high yet, but it's an increasing amount, the question is where does it come from?

20-3-HY

So tritium is an isotope of hydrogen, it's hydrogen-3, which means one proton and two neutrons, and, uh, it is not naturally occurring and has a half, half-life of 12.3 years. Um, so it is produced in nuc...in all nuclear reactors by a neutron bombardment either of lithium-6, uh, or bchron-10.

20-4-HH



And, uh, some of you may remember boron is the acid, uh, well, there's boron in the, the cooling water that is in the pressure vessel, and it was that leaking of boric acid, uh, that was responsible for going through 6 inches of carbon steel in the reactor head. So, the presence of that boron is, uh, uh, under neutron, uh, uh, impact, uh, can produce the, uh, tritium. It's radioactive, it decays, uh, in 12.3 years half-life, and it emits a high-energy electron which is, uh, known as a, a beta particle, um, and, and there's another particle which is an anti-neutrino, which, which almost interacts, uh, uh, so, so, so little that, uh, neutrinos can, pass completely through the earth. So we don't worry about the neutrinos or the anti-neutrinos, but the beta particle is 5.7 kilo, uh...KEV, kilo electron volts, and, uh, this also has a fairly, fairly low penetration. It, it barely gets into your skin, uh, it stops almost with the dead layers of the skin. However, if you ingest it, uh, or you breathe it, then it's very dangerous because it, it has a very short, uh, penetration distance in your lungs or, or in your intestinal tract. So, bec...it's likely to be ingested either as water vapor, as, uh, hydrogen, actually it would be an analog ...isotope, one, one, uh, one atom of hydrogen, one atom of, of normal hydrogen, one atom of tritium, or it, it forms, uh, H<sub>2</sub>O, water, as, uh, most likely a normal hydrogen isotope and a tritium isotope together with oxygen, so you will ingest it if you drink water from one of these contaminated wells. So, just a couple of things to, uh, to remind us of the danger of, of these reactors. Even if there is not a catastrophic meltdown, there are ever-present dangers in these, in the operation of these nuclear reactors.

20-4-HH  
continued

Let's talk about the, uh, alternatives. So, I would argue that, uh, certainly before you extend the 40-year license, this is the design, uh, uh, intended design life for the nuclear reactors, 40 years, uh, uh, Davis-Besse, uh, First Energy wants to extend it by another 20 years. The incident and the accident record that, uh, Kevin talked about should be enough to, uh, not ask for any, any further justification for not renewing their license. But we, uh, should also know that there some very good alternatives for, uh, generating electricity, and one of those normally not thought about as generation, but it's energy conservation.

20-5-OS

20-6-AL

And that is now widely accepted as the cheapest way to get more effectively, to get more energy, it's to use our energy more, uh, more wisely. And then there's a very strong wind resources and solar resources. So, the important thing that, uh, we need to recognize is that, is that these components, energy conservation, wind and solar, are already mandated by Senate bill 221 in the state of Ohio. And, uh, windmills are, uh, used by the, uh, uh, the publicly-owned, uh, utilities, uh, they are allowed by Ohio law to pass through, to pass those costs on to the customers, so, on to the consumers of the electricity. That, that might not have been my favorite way of doing it, but that's the way, uh, the legislators have decided in the Public Utility Commission of Ohio.

20-6-AL  
continued

So, just a couple of details about Senate bill 221. One component of that is the alternative energy portfolio standard, that's, uh, now embedded in the Ohio Revised Code, this, uh, this, uh, paragraph. It requires, uh, as I've mentioned, 25% electricity generation by advanced energy by 2025, 12 1/2% by renewables, the rest 12 1/2% may be, uh, uh, done through, uh, alternatives such as clean coal, that is, coal-fired power plants that, uh, the carbon dioxide is sequestered, for example. It may be done by advanced nuclear, and that's requiring, uh, NRC Generation III. Uh, Davis-Besse, I believe, is Generation II technology, but Generation III incorporates a passive safety, uh, systems. So even if the power goes out, such as when the tornado came through and disconnected the power plant from its, uh, uh, emergency diesel generators, uh, there would be passive safety equipment in the Gen-II, Gen-III design. And the Gen-III design would be for 60 years of operation instead of 40 years. ORC, the second part of the Ohio Revised Code allows net metering, which, uh, has been implemented. Uh, my home, for example, has photo-voltaics on the rooftop and we can feed power back into the, uh, into the grid and get, uh, full retail value for the power. That's been in place for several years now. And then there's an energy efficiency standard, uh, embedded in another of the Ohio Revised Code paragraphs which requires a 20...22% reduction in, uh, the use of energy from each one of the public, uh, utilities. Furthermore, there is a 7%, uh, requirement for a 7% reduction in peak

20-7-AL

20-8-AL

demand, um, that is the siphoning of power as it increases through the day and decreases at night. Again, these costs may be passed through to the customers, and so there are some very good business reasons why First Energy ought to be doing this, but I think they tend to be stuck in the past, in the technologies of the past.

Here are some additional details, um, that we're going to...that were in the presentation available to the, the NRC. But you can see how the, uh, the requirement for the renewable portfolio standard advanced energy standard increases year by year. And we've now started on that process. There are penalties. If First Energy does not meet those requirements, they will have to pay a penalty. This year, I think it's \$400. \$400 per megawatt-hour, which is equivalent to 40 cents per kilowatt-hour, First Energy will have to pay. And if they have to pay a fine, they are not allowed to pass that on to the ratepayers. If they stimulate the demand for electricity, whether it's...sorry, demand for renewable electricity, then they provide incentives to homeowners or for businesses or for large, uh, utility-scale installations of solar, wind, they are allowed to pass those costs on to the ratepayers.

20-8-AL  
continued

So, let's take a little bit closer look at the resources that are available for wind. Uh, Lake Erie and the Lake Erie shore, as well as all of the Great Lakes, are great resources for, um, for wind energy. So, I, I'm showing here this, uh, wind energy map. This is for the average wind power across the United States. And it may be hard to see from there, but, uh, we hear a lot about the, the wind corridor in the Great Midwest, from Texas through to North Dakota. That's this, uh, region of the Great Plains. But now, the wind, uh, resources uh, in...increase, the average wind power increases as you go from white, actually the key is down here, from white to the light blue to the darker blue and still darker, and you can see that, uh, Ohio, for the most part, has a lot of wind resources that are similar to Texas.

20-9-AL

We hear about Texas because it has the most wind power of any of the, uh, any of the states. And Ohio has similar resources. But if you look

at, in Lake Erie and on the near shore and, uh, up to the border with Canada, you can see it's a very dark blue, and that's similar to some of these mountain passes here. So wind, uh, resource availability in Lake Erie is really, really prime. Uh, much higher than almost any of the places in, in Texas, for example. So that's an indication that there really are tremendous resources out there and wind power is very competitive in terms of, uh, rates for electricity generated by wind power. The big, uh...let me just back up...One of the big issues with Texas, which is now struggling with getting the power, of course they have some major cities, but they can generate more than what can be used in their cities, is how you are going to get the power out to the big metropolitan areas like Chicago and Cleveland and Toledo and so on, and Detroit. That is not a problem when you generate the power in Lake Erie, we have a lot of major metropolitan areas that are very nearby.

20-9-AL  
continued

For solar, Ohio has, uh, actually very good solar insolation as well. Uh, and I want to point out that in this, in this Environmental Report, uh, that's part of the First Energy petition for the renewal, there are some errors in that, in that report. For example, they, they say that the amount of sunlight in Ohio is less than half of what it is in some of the best areas in the country. Uh, that's a bit of a, uh, an error and I'll point out why in just a moment. And then, they also used some data for the costs, which came from back in 1988, and the costs for solar photo-voltaic electricity has come down dramatically since 1988.

One of the mistakes that is commonly, uh, made when you think about solar, is you think about being able to see a sun, uh, the sun in a clear day. And you think, you think, that, well, it's only on those clear days that photo-voltaics will generate usable power. And this is the kind of map that you would use if you were really worried only about direct sunlight, being able to have a clear sky, and being able to see a clear sun out there. And then when you take and you compare Toledo or, or Lake Erie with some areas in the Southwest, and I did the numbers here. Actually, for the...for the South. Uh, when you compare Toledo with Orlando, even when you consider only direct sunshine, Toledo gets 75%

20-10-AL

of what Orlando does, down here in Florida. But it's not as good as San Diego, it's almost 60% of San Diego, ????. Uh, and if you go out to the Mojave Desert, Toledo gets about 45%. So that's a number that's consistent with what, uh, First Energy claimed in that report. However, the real data that you need to look at are the, uh, the full sky radiation.

The point of...Most solar panels are flat panels and they will accept light which is indirect, that is, as it comes scattered in hazy days or light cloudy days and light is scattered from those clouds and still make it to those panels. And so this is the appropriate math that needs to be looked for, uh, the amount of electricity that can be produced by solar panels over the years. So, in that case, if you compared Toledo with Orlando, or Toledo with San Diego, uh, Toledo gets 86% of what, uh, Orlando gets, 79% of what San Diego gets. So the argument that the solar resources in Ohio, in Northern Ohio, are not very good, and actually you can see that the best resources here are Western Ohio and in certain...that's an argument that doesn't, uh, work when you address solar. And the last point that I'd like to make about solar is that there are huge changes that have been happening in the last several years in terms of the costs of solar panels. And the cost driver on this is actually FirstEnergy, uh, First Solar, sorry, First Solar, which is, uh, started here in Toledo, by Toledo industrialists such as Harold, Harold McMaster, and our only US generating, uh, US manufacturing facility is in Perrysburg.

They've been, uh, leading the cost reductions. So if you look here, this is a study that was done by Deutsch Bank and updated in 2009. It doesn't go back, uh, to 1998, which is when, when First Energy pulled their numbers, but, uh, you can, you can extrapolate back further if you want. There, it was something on the order of 40 cents/kilowatt-hour for the levelized cost of electricity, as it's called. Um, but in 2010, the cost is about 20 cents/kilowatt-hour for cadmium teluride. This is, this is the type of material in the panels that are made by First Solar. Some of the other kinds of solar panels are shown here, a little bit higher in cost. But what Deutsch Bank projected is that there's going to be a crossover,

20-10-AL  
continued

20-11-AL

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a convergence between the cost of solar-generated electricity, as you go out here to, what is the number, it's like 2017 or so, so, 2017, at about the time when, when FirstEnergy wants to extend the license on the plant, solar is going to be, uh, completely competitive, if not lower cost than, uh, the electricity, than the conventional electricity. Notice that Deutsch Bank is using an average over the United States. Now the cost of electricity in the FirstEnergy territory is actually higher, those of you who live in FirstEnergy territory, your home costs, your home electricity costs are something like 12 or 12 1/2 cents/kilowatt-hour, so the curve for us should really start a little bit higher, and that convergence will happen even sooner.

So, FirstEnergy has the option of extending, uh, a nuclear generating plant with all of its associated dangers and also its costs. The cost of nuclear generated power is high, higher than most of the baseload, um, generating capacity of FirstEnergy. And its cost is continuing to increase. The alternative is to jump on some of the new technology, jump on those bandwagons, and those costs are decreasing. So that's the kind of options that FirstEnergy has, and you'd think that if they really look at it seriously and look at the options that they ought to conclude, that some of these alternative forms of electricity are the ones that ought to be, uh, the ones, uh, that are developed for the long-term future of their, of their company. So, just to make one final point, and that is alternative, uh, alternative energy resources generate lots of jobs. They actually generate, uh, many more jobs than what nuclear power does. Energy conservation, retro-fitting of homes and businesses and so with the more energy-efficient lights, uh, and motors, uh, and thermal efficiency saves, saves, saves energy for everyone. It reduces the need for, uh, uh, generating capacity. Uh, Ohio has a lot of manufacturers that supply components for wind turbines. The maintenance of wind turbines generates many jobs. Uh, I've already mentioned, First Solar is the largest manufacturer in the world. So manufacturing creates jobs. And there are several other PV manufacturers that are beginning, uh, in Ohio, most of them actually in northwest Ohio, in the Toledo area. PV design and insulation creates a num...a large set of jobs.

20-11-AL  
continued

20-12-AL

**COMMENTER: KATIE HOEPFL**

So this is the final slide with some references for where I pulled some of the data. And, uh, uh, places where you can go for finding the backup material that will support the comments that I just made. Thank you. (Applause)

Ms. Rios

Thank you, Dr. Compaan. And again, I would like, folks, this is, this is the microphone that it's very important to speak into. Um, we will double-check on all this though. If you have your, uh, comments in writing, we would like to submit those along with this, um, this videotape, OK? Our next speaker is going to be Kate, Kate, Hoepfl, Hoepfl.

Ms. Hoepfl

Hello everybody, my name is Katie Hoepfl, student of Professor Compaan's at the University of Toledo. I'm a major in physics. My research is in this renewable energy area. So, what I'm going to be talking about today is alternatives to nuclear power. In FirstEnergy's license renewal application, they dismissed the possibility of almost any form of renewable energy to replace the power production that would be lost by the closing of Davis-Besse. [Displays Slides]

} 21-1-AL

A lot of the reasons that they used for this dismissal is that intermittency or the volatility of power production by wind and solar, the large-land requirements that are used to produce the same equivalent amounts of energy that is produced by Davis-Besse with wind and solar. They mentioned the low wind and low light compared to other states which Professor Compaan has already disputed for us, the associated aesthetic impacts of wind, and the high cost per kilowatt of capacity for solar which, again, Professor Compaan has already disputed for us.

So, what I have done is looked at specific resources here in Ohio, and

this better understanding of systems that are already in place will help us see that their reasons for dismissal aren't exactly correct.

So what I have done is done some statistical modelling using systems that are already in place here in northwest Ohio. I used one of the wind turbines in Bowling Green, owned by Bowling Green municipalities, and a solar array mounted on the home of Professor Compaan.

This model is a little bit confusing. What it is here is on the X axis we have the volatility or the intermittency of the system that FirstEnergy mentioned. So what that means is that at some points throughout the day it can be high, it can be low. It's unexpected, the power production that would be produced. On here [indicating the Y axis] it's the actual output of the system. So along our curve here we have an entire wind, only wind system, and at the other end we have only solar. And, along the middle is a combination of the two.

So, what I'm going to show you today is that it's not a matter of using one or the other. The combination of these different forms of renewable energy that's really going to help us offset the loss of nuclear power by closing Davis-Besse. So over here on the end of the curve is where we have the least volatility in the system. For this specific northwest Ohio that turned out to be about half wind and half solar that's going to produce the best outcome for us.

Just an example here of what I mean by this. So in a 100% wind system has a volatility something like this. This is the power production over the course of the week by the Bowling Green wind turbine. You can see it's pretty unexpected what it's going to produce throughout the day. And on the opposite end, a 100% solar system, follows a pattern, you only get power production during the day, but even throughout the day you not sure if you're going to get a sunny day, cloudy day things like that are unexpected...So, by optimizing the system, using similar rating, say one megaWatt wind turbine farm and one megaWatt solar array, you get something that's quite a bit more predictable.

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21-2-AL



Now put this here against a demand curve. This is from EBCOT it's in Texas, but the demand curve for any big city is gonna look about the same. A lot of high peaks during the afternoon, evening hours and lower at night time when we're sleeping. It's quite a bit more predictable, it follows the demand curve.

What I want to point out here, though is that my graph is still quite a bit volatile here, but it's only taking into consideration two specific sites. We only have one wind turbine and one solar array. But, if FirstEnergy were to take their resources and erect, um sorry, use the wind and solar throughout their entire area that they service. Solar, it's not going to be cloudy in all the areas that they service. It's not going to be not windy in all the areas that they service. That's exactly what the (Go to my summary slide, here) European Wind Energy Association in their annual report in 2009. They said exactly that. That as wind and solar is developed across the entire area, the volatility in one specific area does not infect the overall baseload that it's generating.

That's another thing I'd like to point out in FirstEnergy's application for Renewal, they kept mentioning that solar and wind are not a good replacement because they can't satisfy a baseload. But, as Dr. Compaan mentioned in his speech, Davis-Besse only produces 8.3% of FirstEnergy's baseload. So, we're not trying to make these curves fit identical. It just has to back up the coal and everything else that's already being produced. So we're using a combination of wind, solar and all the other existing technologies that are out there. They'll be able to easily offset the production lost by Davis-Besse.

The only other thing that I was wanting to mention is the jobs that are going to be created. As he had already mentioned, the maintenance of the wind turbines; the installation of the projects; and also the forecasting that can be done. This was also mentioned in the European Wind Energy Association's annual report. The new technologies. They are able to forecast four hours ahead exactly what the wind speeds are

21-2-AL  
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21-3-AL

**COMMENTER: TONY SZILAGYE**

going to be. So that they can predict if they need to have boost up the coal or other forms of production. It makes it really a lot more stable. So, this argument of volatility doesn't quite hold.

So, if FirstEnergy acts now, we can be prepared for the energy production loss by closing Davis-Besse in 2017. We can also have a head start on meeting the requirements of Ohio Senate Bill 221.

And that's that. (Applause)

Mr. DeMarc

Alright, thank you Kate. That was excellent. I think that a lot of people know and believe the points that you guys are making, but it's wonderful to have the actual numbers provided to us. It's very heartening to not only know that you're right, but to actually see it proved scientifically.

Our next speaker is going to be Tony Szilagye. Tony is a member of the Sierra Club, and I would like to say that the only other person at the hearing that spoke out against the license renewal was named Pat Marida. She was also from the Ohio Sierra Club, and she has also gotten testimony from other people. She has recorded the comments, I think, of 15 other people, who couldn't make it here today. People who live in places like Columbus and Cleveland, and so those will also be entered into the record along with these comments. So um, the depth of opposition to this is very deep.

Thank you, Tony for coming.

Mr. Szilagye

Water is the foundation of life. Um, And it's our most precious resource in Ohio. Nuclear energy is not needed for life here in northwest, Ohio. We need to protect our water resources first from the effects of nuclear forms of pollution. Lake Erie provides drinking water and other

} 21-3-AL  
continued

} 22-1-OL

} 22-2-AQ

consumptive uses to millions of people and many different industries in northern Ohio. We rely on Lake Erie for recreation, and we are entrusted to care for and protect the Lake for future generations as well. They have as much a right to the use and enjoyment of Lake Erie as our present generation, even if the comments do not agree.

Davis-Besse is one of the greatest threats to the health of our Lake. Davis-Besse was strategically located on Lake Erie to meet the tremendous needs of Davis-Besse for water as a coolant. This is great for Davis-Besse but not so good for the Lake. Davis-Besse uses water from the Lake and spews it back as thermal pollution. Over the years, this has had consequences for Lake Erie. We have once again had increasing algae problems for Lake Erie. The growth of *lyngbya wollei*, a toxic algae, has accelerated over the past few years along with *microcystis*. These toxic algae have numerous conditions which contribute to their growth. One, of course, is the presence of ample amount of phosphorous and nitrogen. Another ingredient is an abundance of warm water. We have billions of gallons of thermal pollution from the power plants surrounding Lake Erie.

22-2-AQ  
continued

Now, part of these comments were also, um, written by Sandy Benz and below are Sandy's comments.

Um, studies on water use, fish kills, and the thermal impacts at the bay shore park land are over 30 years old. The intake for Davis-Besse is in less than 30 feet of water in the Great Lakes...should have been...in the Great Lakes, in Lake Erie's shallowest most biologically productive waters. Davis-Besse uses an estimated 50 million gallons of water a day which causes fish kills and thermal impacts. While cooling towers at Davis-Besse limit water use and fish kills with the best available technology, there should be an assessment of water use and fish kills. This request is made as the number of walleye are declining from an ODNR estimate of 80 million about 5 years ago to less than 20 million in 2010.

22-3-AQ

In addition, the amount of toxic algae has increased over the last, uh, 10 to 15 years, so much that the Ohio EPA reports that physical contact with the toxic algae in Lake Erie probably causes illnesses, probably caused illnesses to 10 people in the summer of 2010. If Davis-Besse were to close on schedule, there would be fewer fish killed and no more warm water discharge. The estimated number of fish that would not be killed is unknown because there are no counts of fish impingement, that is, fish caught against screens, and entrainments, fish that go through screens. In assessing whether Davis-Besse should remain open or closed, an updated, independent analysis of the Davis-Besse water impacts, uh, to fish impingement and entrainment and thermal impacts using Clean Water Act 316 A and B protocol needs to be conducted. If the incremental increase in fish kills and added temperature to the water in aiding algae growth and in decreasing walleye numbers, the environmental and economic impact of the fish kills and algae growth should be considered in the requested re-licensing of Davis-Besse. Furthermore, um, should the licensing go forward, the license needs to require periodic impingement and entrainment fish counts and thermal mixing zone plume impacts on algae growth and water quality.

22-4-HH

22-5-AQ

My comments will continue. Um, there are many different incidents that can be used to demonstrate a lack of, of oversight by the NRC and Davis-Besse failures. The following are quotes from the Lessons Learned Report in regard to the hole in the reactor head.

The NRC and the industry regarded the boric acid deposits on the RPV head as an issue that required attention. However, the NRC and the industry did not regard the presence of boric acid deposits on the RPV head as a significant safety concern. The recurring nature of alloy 600 nozzle cracking and boric acid corrosion events indicates that industry actions in general, and Davis-Besse Nuclear Power Plant actions in particular, were less than adequate. Similarly, given that the NRC has issued multiple generic communications addressing these two issues, the recurring nature of these events also indicates the NRC failed to effectively review, assess, and follow up on [unintelligible] operating

22-6-OS

experience. The NRC's AIT concluded that Davis-Besse staff missed several opportunities to identify the boric acid corrosion of the RPV head at an earlier time. In the task force's view this means that Davis-Besse Nuclear Power Station staff missed these opportunities because Davis-Besse staff failed to assure that the plant safety issues would receive appropriate attention. The NRC missed prior opportunities to identify the VHP nozzle leaks and the RPV head degradation. In the task force view, the NRC failed to integrate known or available information into a safety assessment. Babcock and, and Wilcox and CE plants appear to be highly susceptible to boric acid leakage and corrosion. One hundred percent of their plants have reported boric acid leakage-related problems. Given the high incidence rate of boric acid leakage problems, problems at B&W plants, uh, Davis-Besse should have been alerted and taken appropriate, appropriate corrective actions prior to the discovery of the leaking VHP nozzles and the degraded RPV head.

22-6-OS  
continued

Um, and there's other quotes too, but I'll move on. To summarize the meaning of these quotes, um, the NRC spoke about these leaks and they gave warnings of the leaks, and at the same time, relaxed in their oversight of Davis-Besse. The question about lessons learned, um, is not whether, uh, they will learn. Uh, it's, it's also whether we should entrust Davis-Besse to be operated safely and is it safe now? The answer is no. Davis-Besse should not be re-licensed. The other question that has to be considered - is the safety culture within Davis-Besse changed? And if one were to assess the safety culture in personnel...Technology doesn't fail on its own, technology fails...People operate technology. Is the safety culture at Davis-Besse different today? The answer is no. And we believe this should be taken into account in any re-licensing. It is well known that the economic concerns are top priority for the NRC and First Energy, no matter how many of us are fried in a major safety blunder.

22-7-OL

22-8-OS

Here are a few suggestions. In the year 2021, Senate bill 221 will eliminate or generate as much power as Davis-Besse produces. If First

22-9-AL

**COMMENTER: ED MCARDLE**

Energy takes seriously the opportunities available for generating power through energy efficiency and making agreements for a better payoff for exceeding the energy efficiency targets the Senate bill 221 mandates, they can be more profitable without Davis-Besse. If they take an aggressive look at the potential of combined heat and power, wind, compressed air storage, solar, they can generate either through efficiency or through greater uses of existing resources, the needed capacity that the loss of Davis-Besse will create. There are solutions for generating capacity. For every one cent invested in elec...in energy efficiency, three cents profit is gained. The solutions and incentives...alternative to the continuation of nuclear power to the elimination of nuclear power are already out there. Thank you. (Applause)

} 22-9-AL  
continued

Mr. DeMare

Alright, thank you very much, Tony. And I just wanted to give credit, right now. The idea of this People's Hearing was actually, initially Kevin Kamps' from from uh. This was his notion. He mentioned, "Well we could just hold a hearing. If they're not gonna give us one" And I'm really glad we did. I've already learned a ton so far, and I'm grateful to everyone who has spoken so far. And our next speaker is Ed McArdle.

Mr. McArdle

Hi folks. Um I prepared written comments for the NRC. I'm really pleading with you all because I'm not sure they'll listen or read them.

} 23-1-LR

My name is Ed McCardle I'm a Michigan resident that resides within the approximate 50 mile radius of the Davis-Besse nuclear installation. I'm speaking today for approximately 22,000 members and supporters of the Sierra Club of Michigan. Which I point out, I'm not a staff persor. I'm a volunteer. I've been working on various pollution issues for a long time. I am the Chapter, the Michigan Chapter Conservation Chair, and I'm just recently getting involved in the nuclear issues. I'm trying to pull more of the Sierra Club to this um crucial issue.

So, we urge the Commissioners to deny the 20 year relicensing. If there ever was a candidate for the first denial of a relicense, this is it. As the history of this facility proves, it is too dangerous and expensive to continue this operation, especially since it is not needed for present or future power generation. I would like to refer the Commissioners to two articles quoting studies that support this latter statement.

23-2-OL

I would first like to quote excerpts from an article in *The Nation* magazine dated February 15, 2010, "The Case for Grade Power." This is generally referred to as using waste heat or cogeneration from large facilities of which Ohio has plenty of. The article uses Ohio as an example for this opportunity. The article states that according to an analysis by Recycled Energy Development, the Libbey Glass Plant in Toledo, the Arselor (unintelligible) Middle School in Cleveland and the (unintelligible) Chemical Plant in Cincinnati together produces enough waste heat to produce between 145 and 185 megaWatts of additional electricity. The study also indicates that Ohio has enough cogeneration potential to retire up to 8 nuclear power plants. According to Oak Ridge National Laboratory this strategy will cost less than half of a coal plant.

23-3-AL

A recent report by Policy Matters of Ohio estimates that recycling 7.7 GigaWatts would require a \$10.5 billion investment with a three year payback. This would have the further effect of making Ohio industries more competitive, more profit, saving both jobs and the environment.

The second article I refer is the November, 2009 cover story in *Scientific American*. I bought this issue and bring it with me to almost everything I go to. This article is entitled "A Plan for Sustainable Future. How to Get All Energy from Wind, Solar and Water by 2030 using Present Technology." The article by Mark Z. Jacobsen of Stanford University and Mark A. Delucchi of University of California, Davis it is describe by the editors of *Scientific American* as a "pragmatic hard headed study." Supply 100% clean energy by 2030 at the same or lower

23-4-AL

cost of traditional fossil and nuclear resources. Frankly, I'm amazed by this article. This is something, I think, we've been waiting for, and something we should push.

Um. Ok. Besides adding all the GigaWatts and the TetraWatts, the article discusses, "How do we get there?" and the answer is we need the political will to pass legislation to give incentives to producers of clean energy. The most effective strategy is based on the feed-in tariff concept. That's f\*e\*c\*d-i\*n-t\*a\*r\*i\*f\*f\*. This is a concept that is kind of foreign to Americans, but this is what the rest of the world calls it. We were thinking of calling it "clean mobile energy", but then we'll have to refer to it as "like the feed-in tariff" in Europe and Asia so I may as well go with the feed-in tariff or FIT. You can check this concept out at FITcoalition.com or .org. There's a lot of it on the Internet um I'll be talking more about that but let me continue with comments.

Okay um feed-in tariff has been widely, wildly successful in Europe, Asia and now, most recently in Ontario. Germany claims that they created over 300,000 jobs with their version of a feed-in tariff. They have cancelled new coal plants and they have a moratorium on new nuclear proposals. Although there is debate to remove the moratorium. The cost to the German rate payer, the public, is approximately \$3 to \$4 a month, about the price of a beer.

Since the passage of the Ontario feed-in tariff last year, the Province has promised to shut down the largest coal plant in North America at Nanticoke and has cancelled several new nuclear proposals. I'm not sure if it's four that are cancelled or six because two are maybe refurbished. So, I'm not sure about that. But they've already started shutting down two coal units at Nanticoke. The articles coming out of Canada are just amazing for this type of legislation.

More than 70 countries and a few states have passed versions of this legislation. I think it's far more than 70 countries, now. But Vermont has passed it's version. There's the Gaines bill for the utility for the State



owned utility that's passed for feed-in tariff solar. Consumer's power in Michigan passed a very teeny-tiny one and it was filled up within hours.

Okay according to a report by the National Renewable Energy Laboratory, U.S. Department of Energy, "a well-designed feed-in tariff is far more effective and less costly than the renewable portfolio standard."

23-4-AL  
(continued)

It's past time to admit that we can no longer afford this complicated and dangerous technology--not the feed-in tariff, I'm referring to Davis-Besse. It is not carbon free as claimed, and not sustainable. There's no place to put the waste and we believe that it is immoral to burden our children and generations far into the future with deadly waste. Thank You.

23-5-OL  
23-6-AM  
23-7-RW

But, I do want to say one more thing about the feed-in tariff. I've been following this issue ever since our state legislator in Michigan, who got term limited and didn't get re-elected, Kathleen Law introduced the first feed-in tariff legislation in North America. And Dr. Herman Schearer from Germany who instituted the concept in the German Parliament long before the United States. She had the same as well as I did. Dr. Schearer died this past year I'm sorry to say. She introduced the first feed-in tariff in the Michigan Legislature. She says she got calls from all over the world. People wanting to, you know, companies wanted to located whoever had passed the feed-in tariff. Because the feed-in tariff actually guarantees not only do you get the capital costs and a fifteen to twenty year contract, usually, and a profit, a modest profit.

Boy. You know, let's go get 'em. Let's get that money. But it's especially well suited to a um to solar, because then you don't have to build out the grid. You can have more distributed power and therefore you don't have to have a big utility be part of the feed-in tariff until an excess is given. Extra power is produced. But, you know, anyone can do it. Anyone can get one of these contracts, if they can get the finance them. That includes farmers, that includes, you know communities, towns, villages,

churches, individuals, etc. So this is really the most effective thing that we can do, and we need to do this.

Thank You. (Applause)

Ms. Rios

Okay, just to let you know, we have um one, four more speakers scheduled and I don't think we're going to have anybody else coming in um if we have somebody else coming in we'll certainly accomodate them. But then we will be able to take a break to share information, and also to let you know that one of the things that we're hoping to do today, before you all leave is that Kevin has um some information that um.. He has a contention. Which is a part of the next process in front of you. The process after we oppose the licensing.

But those of us who live within fifty miles of Davis-Besse have to validate what Kevin and Beyond Nuclear are saying for that for them to have standing. We'll talk about that. We'll bring Kevin up again before we finish up so that he can explain that process so that those of us who are willing to go ahead and sign on to his contentions.

Mr. DeMare (interrupting)

Uh Anita?

Ms. Rios

Yes?

Mr. DeMare

Um we need to swap out our video card. It will take about 5 minutes.

Ms. Rios

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**COMMENTER: PHYLLIS OSTER**

Do we want to take a five minute break?

Mr. DeMare

For technical reasons, yes, I do.

Ms. Rios

Okay, we'll take a five minute break. Bathrooms are out in the hallway.

Ms. Oster

I had been involved in the initial opposition to granting a license for the building of Davis-Besse and I certainly didn't expect to be at a relicensing opposition meeting.

My husband was a geneticist in the biological sciences department Bowling Green State University, and his research focused on the effects of radiation and chemical mutagens on the genetic material of *Drosophila Melanogaster*, commonly known as fruit flies. A group from Bowling Green State University came to the hearings to testify in opposition. Opposition to the building of the plant was based on the fact that tons of radioactive waste would be generated in order to produce electricity. At that time, planning for the long term containment of the radioactive waste was to be done in the future. We now know that we still do not have any methods approved for the long term storage and isolation of the tons of spent radioactive rods and other radioactive material that is made during the mining and processing of the fuel.

This material will be dangerously radioactive to humans and other living things for hundreds of thousands of years. To put that into perspective, we will be starting on the year 2011 of the common era on January 1st.

Davis-Besse has proven to be one of the most unreliable plants in the

} 24-1-RW  
}  
} 24-2-OS

**COMMENTER: DAVIS ELLISON**

U.S. as other people have testified here. FirstEnergy has been very negligent in maintaining the safety of the plant. Renewing the license of this aging facility will place the population of northwest Ohio and probably parts of lower Michigan in great danger.

} 24-2-OS  
continued

As a very senior citizen, I would like to encourage the members of the audience who are opposing the relicensing of the plant to keep fighting. It can sometimes get discouraging, but the opposition that was mounted to the original building of nuclear plants in the 1960's and 70's did result in enough added expense for the electrical industry to put a halt to the building of new plants, although Davis-Besse was approved.

} 24-3-OL

Originally nuclear power was touted as power that would be produced so cheaply that it would not even have to be metered. Now we are being told that it will solve the problem of pollution generated by using fossil fuels. We will be replacing carbon problems of pollution, generated by using fossil fuels, with problems of radioactive pollution for which there is no cleanup but time. (Applause)

} 24-4-RW

Ms. Rios

Thank you, Phyllis. Okay, our next speaker is going to be David Ellison from um Cleveland.

Mr, Ellison

Good Afternoon. I'm going to try and make a few remarks before my voice completely goes out. My name is David Ellison. I live in Cleveland. I'm an architect. I just finished a race for the newly created Cuyahoga County Executive, a position that replaces the three County Commissioners in Cuyahoga County.

I ran on the Green Party ticket because this year was the first year that the Green Party was actually on Ohio's ballot, and uh if there was better representation from either the Republican or Democratic parties we

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might not be having to have this hearing today.

Um the uh. Some people may remember me from the early 90's. I know at least Mike Leonardi was here in the room. There he is! That's when we fought off the whole proposition to build a low level radioactive waste dump here in Ohio. I'm sorry I wasn't here in the 70's to resist against the Davis-Besse, but if I lived in Ohio then, I would've. Um.

25-1-OL

We need to broaden the idea of what environmental consequences, environmental impact means when it comes to nuclear power and something like Davis-Besse, and other people who have spoken here today have done a better job at talking about what specifically those.. the common definition of what environmental impacts might be. But I'd like to say something about the political environment that that is affected by the operation of nuclear power plants and Davis-Besse and the NRC in Ohio at this time. In relationship to the Davis-Besse relicensing, the potential licensure of a plant down in Piketon a new power plant that our Democratic Governor invited in to this uh situation that Kasich will probably go right along with and that is the credibility and the competency of something called the Nuclear Regulatory Commission.

And Uh. Already while the residents of this area would be most directly affected by the power plant, Cleveland is not that far away and the NRC should have solicited input from people from a broader radius around the power plant including Michigan and Indiana. Because what we've found from the Chernyoble accident is that radioactive waste doesn't stop at municipal boundaries or national boundaries. And the environmental impact is much broader than how some fish that get caught in an intake pipe or the other kind of more immediate sort of environmental impacts that people might think of.

25-2-LR

The fact that the NRC didn't hold multiple hearings on this is a problem, but they shouldn't and I'm speaking directly to the NRC at this point. The NRC shouldn't take as the expression of the people of Ohio the testimony of just those people who attended the hearing on November

6th or 4th or whenever it was right after after election day. That the people that are economically benefitting from the conduct of FirstEnergy by the operation of that power plant whether it's through their jobs or through charitable contributions, that is not a legitimate expression. We have a political problem in this country of disengagement and alienation and generally, the government and its regulatory bodies are treated with contempt by the mass media. And a culture of contempt is built among the people for our government and for the mechanisms that we as people use collectively to monitor things like the banking industry or the nuclear industry. It's not to our benefit that that is happening, but it is. So that small group of people who testified in favor of this relicensing is not a complete or an inclusive representation of the people that are concerned with this. And I would suggest that most of the people that are concerned with this are disengaged and are not paying attention. And the credibility of the NRC is at stake.

25-2-LR  
continued

When it comes to evaluating power plants for relicensure, this power plant is one that should be denied relicensure on the grounds of its past performance. It hasn't performed well enough to bother relicensing, and it should be taken off line.

25-3-OS

We should come up with energy conservation and efficiency measures that replace that 8.3%. Forget creating any alternative fuels or advanced nuclear. Just energy in energy conservation efficiency alone, we make up for this. The system that requires that we maintain the amount of consumption that we currently have uh as part of the licensure relicensure application is absurd because so much of the future depends on our reduction of and our conservation and our efficient use of energy. It's absurd to perpetuate the existing system.

25-4-AL

So when and if there's a problem, when and if they relicense Davis-Besse, their credibility notche notches, ratchets down. Already the public is disengaged and doesn't have a lot of respect or a lot of confidence in the over all system. We saw at Chernyoble when you take 800 people from around the Soviet Union, and you put them to work

**COMMENTER: MICHAEL KEEGAN**

cleaning up that mess and then send them all back home, it doesn't take long for the competency and the credibility of the federal government to fail to exist. And what we have now is a much different government and a much different country in the former Soviet Union than existed prior to the Chernybole accident. And I propose that it was that evidence of incompetence in the government that ultimate, through exhibited through their reaction to Chernybole that eventually to their collapse.

And economically, as we all know, and others have testified to, nuclear power does not make economic sense. In as much as our economy is the management of our household, I think it relates directly to the ecology of our household or our State or our community here, and that ecological system that we are all part of and that this nuclear power plant and the NRC and the other governmental leaders and the other citizens that aren't here, that ecosystem is very much a part of the environment, and any hearing that focuses on environmental impacts has to include all of that as the one ecosystem or environment that we're in.

} 25-5-SE

And uh I think that will be about what I have to say. Thanks for listening. (Applause)

Mr. DeMare

Alright, Thank You. And uh next up we have Michael Keegan who um was one of the people, who along with Anita and Kevin and myself, one of the main people who planned this event and brought it all together. So come on up, Mike.

Mr. Keegan

Thank you, Joe.

We are...My name is Michael Keegan I'm with the Coalition for a Nuclear Free Great Lakes and I'm also with the organization Don't Waste Michigan and Davis-Besse is just about 15 miles from Michigan,

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obviously.

We are blessed in that we live in 20% of the world's surface freshwater here in the Great Lakes the most precious resource on the Planet. Without it life is not possible. And yet we have a nuclear power plant that has an abysmal record, Davis-Besse. But I'm here to tell you that it's not about the generation of energy. It's about the concentration of wealth and power. Political economy.

26-1-OL

We've heard that there are several alternatives to Davis-Besse. Replacement power is available now. Could be generated much cheaper. It is about the consecration of wealth and a cartel of the utilities that like the monopoly status that they enjoy, and they are locking out the people. It is not power, not energy for the people. It is power and political power against the people.

26-2-LR

We looked at the Davis-Besse in 2002 and we saw the hole in the head the size of a football, ate through six inches of carbon steel down to the stainless steel liner which was now bulging through that hole and started to show signs of cracking as well, 3/16ths of an inch. And the NRC came in and said, "Well there's got to be lessons learned here. We're going to learn lessons and we're really going to put the thumb, put the foot down and things are gonna, got to improve. We won't allow a relicensing, a reopening of the plant without proper scrutinization." A series of meetings, dog and pony shows, were held, and the last one was, "Wow, they really turned it around. They really surprised us and turned it around. Doing a good job and we're going to allow them to put on this compromised lid that they got from the Midland nuclear power plant and operate."

26-3-OS

And six years later, we learn, I think this past March, We learned about the cracks in the control rod mechanisms. And the lessons that I learned are that the NRC is incapable of learning lessons.

The reason Davis-Besse did not shut down to examine the head back in

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2001 when the NRC had told the entire industry that they must all shut down and inspect, the utility, FirstEnergy, pushed forward because it was profit over safety, production over safety. And the NRC promised us that would not happen again. But, lo and behold, now we see again a compromised lid at the Davis-Besse plant. And, once again the NRC allows production over safety, profit over people.

} 26-3-OS  
continued

So the lesson I take out of this was I learned that the NRC is incapable of learning lessons. As mentioned earlier, they are indeed a rogue agency. This past week, the 61st nuclear power plant that had applied for relicensing was relicensed. They are now batting 1000%. 1000, Batting 1000. 61 for 61 on relicensing applications. So, the NRC has not a shred of credibility with the public, and they are there, running interference, keeping the people away from confronting these utilities when they run these abysmal plants.

} 26-4-LR

Earlier this week I got a e-mail from a woman who lives near Fermi nuclear power plant, and she shared with me a story about living next to Fermi, in the shadow, and all her neighbors having cancers, leukemias, thyroids, early deaths, lymphomas and that this is epidemic through that area. I've spoken with a number of health care persons over the last year who are very concerned about the cancer rates in the western basin, the horseshoe around Lake Erie beginning from down river area which is north of Monroe right through Sandusky area.

And in fact there is a cancer cluster near Clyde, Ohio which is about 15 to 18 miles as the crow flies from Davis-Besse. So, the comment that I have on Scoping is that I am requesting that baseline epidemiological studies be done. And that we explore what is coming out of that nuclear power plant. They are allowed by licensing to release gaseous, liquid from the plant. Below "permissible" levels. But there are cancers over in Clyde, and families are decimated. And I would request that baseline epidemiological studies be done in the entire region.

} 26-5-HH

Earlier again, this week, I got several documents from Connie Klein

} 26-6-HY

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who was one of the intervenors at Davis-Besse on the first Operating. And she shared with me photos of the flooding of the Davis-Besse in 1972. This was during construction. The entire site was flooded for two to three weeks. Um I have concerns about the Davis-Besse flooding. As you all know Lake Erie is very shallow. The western basin is very very shallow, and it is subject to something called a seiche where the wind blows out the water, blows it east. Then the water comes back, like a bathtub, and floods the western shore. I'm concerned about the potential flooding of that Davis-Besse Plant.

26-6-HY  
continued

In addition, it was mentioned earlier that there were Tritium leaks in 2009. There was also a Tritium leak in 2008. The grounds are contaminated. I'm concerned about the buried piping at the Davis-Besse plant, about the leaking of Tritium, about the potential of flooding externally, the potential of flooding internally at the Davis-Besse plant. This is an aging plant. And with that Tritium leak and as you run a nuclear power plant into the ground, which is being proposed, another 20 years there are going to be increasing leaks, increasing contamination.

26-7-HH  
(HY)

So I'm requesting that the NRC, my comments of Scoping are such that there needs to be an increased decommissioning fund for the next 20 years that they're proposing. That there needs to be a mechanism put in place that comes out of their bottom line, not the ratepayers. Because the more, and longer they run that plant the larger the cost of decontaminating, decommissioning will be. We saw this phenomenon over at the Yankee, the Vermont-Yankee plant. The decommissioning costs are soaring there. There's not enough money that's been set aside to decommission the plants properly and the longer they run, the higher the price tag goes for decommissioning.

26-8-OS

In addition, a scoping comment I have is the thermal pollution coming off the nuclear power plant. It's about a thousand nine hundred, about nine hundred megaWatt facility. That's close to three thousand megaWatts of thermal heat coming off of that. And, as we've seen, Lake

26-9-AQ

Erie is beyond the tipping point when it comes to algal blooms. We are beyond that point. We have several facilities in the western basin of Lake Erie; several coal plants, and several nuke plants and the Lake cannot take the load.

So I am requesting that the algal blooms that are occurring on Lake Erie, the *lyngbya wollei*, which is a toxic algae--it's leading to the eutrophication of Lake Erie, the death of Lake Erie, I am requesting that this concept of algal blooms be investigated, and thermal pollution from the nuclear power plant be considered.

In years past, about five years back, we challenged the nuclear power plant, the Pallasades on their relicensing. They made several promises to the Advisory Committee on Reactor Safeguards. They made promises that they would upgrade equipment, that there would be replacement on major components. They have not done so. With that promise, the NRC, the regulator, allowed them to relicense. They have not done the work since. The plant got sold to an Entergy Company which has now ten nuclear power plants that they basically buy like used cars and run them into the ground. They do not do proper maintenance, the proper repairs. These are limited liability companies that once they have a major accident, they will walk away and leave the public to with the clean up.

So, I do not have confidence in the NRC to force about proper equipment, maintenance. Perpetually, there are exemptions that are requested and just as a matter of rubberstamping--the Nuclear Regulatory Commission, the Nuclear Rubberstamp Commission, allows them exemption time after time. Again. Production over safety. Profit over people.

In addition there is a IFSC, IFFSC. It's dry cask storage of high level nuclear waste. High level nuclear waste is currently stored outside at the Davis-Besse. This has a.. there's..No one wants this nuclear waste. Yucca Mountain is not going to happen. It's not geologically sound. It's not scientifically sound. It's not going to happen. Nobody wants this

} 26-9-AQ  
continued

} 26-10-LR

} 26-11-RW

**COMMENTER: RALPH SEMROCK**

stuff. Yet, the NRC runs a con game. They have "confidence" a "waste confidence" decision. It is a con game. They're asking the public, the folks of Toledo, of Ohio, "Please accept our promise to take this waste at some point. We don't know what to do with it just yet. But, we'll figure it out later on. But, in the meantime just let us go and make more."

} 26-11-RW  
continued

It's been said that nuclear power is the gift that keeps on giving. It keeps on giving the radioactive waste, and the power is fleeting. But we are left with the deadly lethal legacy for tens of thousands of years. Now we've got to stop the production of this material, and I say do not relicense this and the plant should be shut down immediately. Thank You. (applause)

} 26-12-OL

Mr. DeMare

Okay, alright, next up is Ralph Semrock.

Mr. Semrock

I'm Associate Professor over at Owens. And, um It's very interesting. I'm so glad to see a lot of people here, and I want to thank Joe for um inviting me. Um my wife, Lee, and I, we live 12 miles from Davis-Besse. Out in Ottawa County.

And I was one of the few people, I guess, that actually took one of four tours they had back in 1977 when it was opening. And, I don't know how many of you have been able to take a tour through there, but the word "awesome" is so often over used. It is truly awesome to see the extent, the scope, the size of the systems that they're talking about.

I remember, just what you said [pointing to audience member] the lady here in front, the tour guide said, "The power is going to be so cheap, they won't be able to meter it." We all wondered about that, in awe.

Of course, it's been anything but that. And um, I guess the thing that

} 27-1-OS

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irritates me, I teach CAD, I'm more technically involved. Um and what really irritates me when I look at the history of their um operating procedures is that they cared so little for safety, as the previous speaker indicated. And the fact that they cared so little that, um to the point when this terrible pineapple, football sized hole occurred, they should have been monitoring that. The engineers should have been monitoring that. And yet, I'm quoting now. It says, this is from *The Cleveland Plain Dealer*, "For more than two years, the radiation detectors at the Davis-Besse nuclear power plant insistently signalled that something was wrong inside the reactor that houses the reactor." It says, "Although they suspected a coolant leak somewhere, Davis-Besse personnel couldn't find one. So, instead of pursuing the cause, they moved the monitors' intakes to a different spot. So that they don't get these signals. But finally, they even bypassed one of the device's three sensors because it kept triggering alarms and they didn't want to listen to it anymore."

That just scares the heck out of me, because as we've all seen with Chernyoble, this is going to continue for a quarter of a million years. At least over there. And, as close as we were, they cared so little about safety, and all they cared about was keeping the plant running.

Now what further irritates me is that, when they finally did open 't up in 2002 and found this hole at the site, even Babcock-Wilcox, the manufacturer of the plant, recommended to them "You shouldn't replace the head." And um. Because the one that they got from the middle of Michigan had the same, poor quality alloy, steel in the control nozzles that are welded on to the top of the reactor head for where the control rods go down.

It had the same steel! As what was made originally. Davis-Besse had ordered a replacement head from Europe, but it wasn't going to be done until 2014. Well, they didn't want to wait twelve more years. It was back in 2002. So what'd they do? Go get the one that wasn't quite finished from Midland Michigan. And bring that down. Against Babcock-Wilcox's advice, they put it on.

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27-1-OS  
continued

So guess what? They're seeing the same cracks as was mentioned before. The same cracks with the lower alloy quality steel, around the openings, the nozzles. And they're having trouble. And they're having to repair those expensively and when they dye checked them, after the repairs, they're still finding a few leaks.

This is what we have to look forward to, because they *did not wait to do it right*. If they were going to replace it. The one that they're supposed to get in 2014 has the higher quality alloy steel that can take the heat, four, five hundred degrees and 650 pounds per square inch pressure. But no, they won't do that. They had to get it in now. They had to spend \$220 million doing it. So now, this is what we have, six years later, eight years later.

And they said that... This is very interesting to me. As other people have mentioned, you can't trust the NRC. I certainly don't trust them. But as they said back in 2002, all misinformation and the cover ups that FirstEnergy did to the NRC, they said that that was the worst in the nuclear industry in America. The worst!

And then they make a scapegoat out of the engineer who was a whistle-blower. And the NRC, I don't know if you... I did some research. I didn't know it but I found out that they banned him from working in the nuclear industry for five years. The engineer! Did they do anything to the people above him? No. They still have their jobs. Maybe FirstEnergy fired a few, I don't know. But they blamed it on this guy. Like he was the sole cause of this horrible, potentially horrible, accident. Really. Really. One person.

That just amazes me. That right there that just loses the credibility right away. Now. They want to license it for another 20 years. Do you know why? They want to get their money back from the head that they put on, obviously. But, assuming they can even get that working correctly, and safely as mentioned previously again, what about all the other

27-1-OS  
continued

**COMMENTER: MIKE LEONARDI**

equipment? All the other, the piping, steam generator, everything?  
What's going to happen for another 20 years with that?

They have a miserable record. They do not care about public safety.  
They say they do, but their actions speak differently. The very fact that  
they tried to cover things up speaks differently. So.

And the fact that after the accident and everything after 2002, 2004 and  
into 2005 the NRC had this wonderful policy, making potassium iodide  
pills available to everyone. Within a ten mile radius. They were  
contacting all the pharmaceutical, all the pharmacies, to make sure that  
you could get, you'd get a coupon in the mail. And, then you'd go to the  
pharmacy and get your two pills. To help you. In case a...what did they  
call it euphamistically?..an "incident" happened. An incident.

That pisses me off. So, I just agree that they should not get relicensing  
whatsoever. They have done the *worst* job in managing this plant. They  
*do not* follow good engineering principles. They're making the same  
mistakes all over again. They should be shut down permanently, and  
they should not be relicensed. Thank you. (applause)

Mr. DeMare

Alright, we just have one more speaker, and then I'll have a few,  
concluding comments, and then this official People's Hearing will be  
done. But right now, we'd like to hear from Mike Leonardi.

Mr. Leonardi,

Good afternoon, everybody. I've been living in Italy for about nine  
years since, um...I remember just before leaving we organized a  
demonstration to shut Davis-Besse down. It was in a park in the shadow  
of the uh um plant. A few years before that we organized the Zebra  
Mussel Alliance, taking the name from the mussels that had clogged the  
intake valves, to try to shut down Fermi II nuclear power plant. We were

} 27-1-OS  
continued

} 27-2-OL

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successful in shutting it down for a day.

My wife who's from Naples, Italy (indicated on this map right over here). You can see. Italy is one of the only countries in Europe that is nuclear free. And the reason why it is nuclear free is because they voted by citizen's referendum in 1994 to not allow the generation of nuclear power within the country. Um It did have nuclear plants, before.

Where I'm coming from most recently is in the South of Italy, Calabria. A region in the south where there is no industry to speak of. There were textile mills that are all shut down. Other than that, there are no um major industrial plants of any kind. It's a rural, agricultural area.

Along the river valley in Calabria called Fume Oliva, the river Oliva that flows directly into the Mediterranean Sea -- a beautiful coastline. They found Cesium-137. Nuclear waste. High level nuclear waste. It can only be found in nuclear power plants.

This was brought there and dumped illegally by a network of Mafia and State governments that have used the south of Italy and the South of the World as a virtual dumping ground, a real dumping ground, of high level radioactive and hazardous wastes.

In Basilicata, which is a region right to the north of Calabria in the south of Italy, they discovered that there are high level radioactive wastes, spent fuel rods, from a nuclear power plant in the United States. I believe the nuclear power plant is called Falls Creek. But, I'm not sure. I can't be sure of this. And it's stored in Basilicata in the South of Italy. So under the Nuclear Regulatory Commission's so called "watch" high level radioactive waste has ended up in the South of Italy. From the United States. Italy which doesn't have nuclear power plants. Basilicata which does not have a nuclear power plant. It has a mothballed plant.

I would go farther than to say the Nuclear Regulatory Commission is a "rogue" organization. I would call it a "terrorist" organization. And I

} 28-1-HH



would say that the cancer that people are suffering from in Clyde, Ohio, I know that Lucas County, when I left ten years ago had the highest cancer rates of the State of Ohio. We're all facing cancer as our future. And this cancer, I would say is on the most part, is on the hands of... It's a legacy of industrial capitalism, but this cancer is on the Nuclear Regulatory Comissions hands because they have done nothing to police or regulate or control this industry. It's disgusting, it makes me sick to my stomach.

} 28-1-HH  
continued

When I tell people stories about living between Fermi II and Davis-Besse, they think of Toledo as something out of "The Simpsons" a popular TV show in across the world, and that's how they imagine it. It's like a colonization of the people's minds that live here, as well. There is this disengagement. The people don't have time to think in this, you know...

I was listening to public radio the other day and they were talking about how they felt like "the Rust Belt" was kind of offensive terminology to use for this area of the country. And the thought crossed my mind well why not "The Cancer Belt" instead? Because that's the number one killer in this area. So, if the "rust belt" is too nicey-nice. You know, they want to consider it the "water belt" but the "water belt" is contaminated.

} 28-2-HH

I was hearing on NPR a couple days ago, too, Mike Keegan, and I'm pretty sure there's something going on. They said that there was a low level radioactive waste leak from the Fermi II nuclear power plant. They interviewed some guy that representeing Fermi saying, "Oh yes. It was just a minor leak into the water supply. We can guarantee that it won't happen again. We're sure that there's not going to be any releases that are gonna endanger the public in the future." This is what we were trying to shut Fermi II down about, what fifteen years ago, twelve years ago. The same radioactive releases that they were doing then.

I want to thank Tom Henry and his work at *The Blade* because I've been following the situation at Davis-Besse like a horror story from Italy.

**COMMENTS: JOSEPH DEMARE**

And, you know, I'm really happy to be back. And I want to also say that *The Blade* when I was talking to John Robinson Blach years ago, he suggested doing something that I think that we might try to do. Which is to do a maybe in cooperation with the urban affairs department at the University of Toledo and the sociology department is a scientific poll of the citizens of northwest Ohio, Ohio in general, get their opinions on nuclear power. For Toledo, it might just be the Toledo residents. John Robinson Blach was quite confident that the majority of people would be opposed to nuclear power here, especially having watched the story unfold in the paper. Even though I don't think that the majority of the people read the paper anymore. But, it's something worthwhile doing. I think that the majority of the citizens are opposed.

I don't have any faith in the Nuclear Regulatory Commission to do anything about the issue, but, thanks. That's all I have to say. (applause)

} 28-3-LR

Mr. DeMare

Alright, well, I just have one or two things to add to all the excellent comments and observations that were made here all afternoon.

I want to thank everyone here for having the patience to sit through the process, and for having the patience to keep dogging this industry for more than forty years. Because without that dogged opposition I'm confident, I'm certain that by now we would have had at least one nuclear power plant melt down. Um you know, as hard as it is, I believe that environmentalists have prevented disasters from occurring.

We haven't done enough. We haven't killed this monster yet. But I think I had hopes that it would die a natural death. That as each plant reached the end of its operating license it would simply be pulled off the market for economic reasons. Now they're trying to give us undead nuclear power plants. Nuclear zombie power plants.

} 14-18-OL

I have just a few very quick observations. First of all I've been asked to

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**COMMENTER: UNIDENTIFIABLE WOMAN**

tell everyone my e-mail. Especially if you made comments and if you have a written version you can e-mail me for inclusion in the submission to the NRC. My e-mail is electricity2.. That's the number 2 as in you know, other electricities. electricity2@cs.com. "C" "s" That's short for compuserve. Oh question, Yes?

Unidentifiable Woman

Um. I just wanted to. All the comments that this is going to be played um in front of a panel. The comments recorded.

Mr. DeMare

These comments will be submitted to the NRC, and the other thing I wanted to tell everyone is that I'm going to take the film and the video that we've made and create a compilation of it, and I'm going to have it available. I'm going to put it on TransferBigFiles.com, and I'll send e-mails around to interested people so that they can download it and review it. Because there's been a ton of information. I know I haven't absorbed it all. I've tried my best but, uh. There's been a lot. Yes?

Unidentifiable Woman

I just wanted to know, um, I don't know if we have a scientist here or anyone from the Lake Erie um I'm so sorry. But the Lake Erie um

Mr. Compaan

Resource Center?

Unidentifiable Woman

Resource Center and talk about the rise in microcystine levels due to the thermal pollution. And how that. I mean are they aware that did anyone comment on that

} 29-1-AQ

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Mr. DeMare

Yes...

Unidentifiable Woman(Interrupting)

Are they aware! That did anyone comment on that for them.

Mr. DeMare

Yes we've had comments on Microcystine.

Unidentifiable Woman

levels.

Mr. DeMare

Levels.

Unidentifiable Woman (Interrupting)

I mean I know that inadvertently...

Mr. DeMare (Interrupting)

If you have questions maybe you could ask Anita...

Unidentifiable Woman (Shouting)

It's not a question! I just want the panel to know that inadvertently when people start dying or getting sick because the levels occur. Is there any way that they could possibly be held responsible or get sued?

} 29-2-AQ

} 29-3-HH

**COMMENTER: JOSEPH DEMARE**

Mr. DeMare

Well that's a good question. I hope so. (laughter) And I don't know the answer. Um if you have...

Unidentifiable Woman. (Interrupting)

Because there...

Mr. DeMare

If you want want to ask, if you want to ask what we've been over for the last three hours...

Unidentifiable Woman.

No they don't. I just wanted to make sure that someone said that to them. And realize that the microcystine levels are are rising.

} 29-4-AQ

Mr. DeMare

Yes. Someone has said that. Tony Szilagye mentioned that in his comments.

Unidentifiable Woman

I'm sorry. It's like I just mention

Mr. DeMare

Now another question from the back. Oh. Ok. Well. Um. Actually. Let's see. I think we're reaching the point of winding up here. So. Um.

Something else I just wanted to mention that Tony Mangano, Anthony Mangno has pointed out that thyroid cancers in Ottawa County, right

} 14-19-HH

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**COMMENTER: KEVIN KAMPS**

around the plant, went from below the national average before the plant started operating to above the national average now.

And, in fact, research says that cancer rates, thyroid cancer rates particularly, just about double when you put a nuclear power plant in.

So, Iodine, radioactive iodine is very rare. Thyroid cancer is very rare. Pretty much you can count on the fact that those people who are dying from thyroid cancer are dying because of radioactive releases from the plant. Radioactive releases that are casual, that are average, that are "normal," part of their normal operations.

So, people are dying. They're in the hundreds now. If we keep doing this plant and radioactive thyroid, uh. Iodine, radioactive isotopes of Iodine stay radioactive for 20 million years. So the more we generate the more we'll be. People will die from the cancers caused by this radioactive Iodine. They're in the hundreds now. Another 20 years they'll be in the thousands.

So what we are trying to do here is prevent thousands of people from being killed by an unnecessary form of energy. We've heard testimony here today about just exactly why that's so unnecessary.

So, I wanted to thank everyone here for keeping up the fight. And um I think Kevin has one more comment about the next step would be after this comment period is over. We'll submit comments. But after this is finished then we're going to have interventions. Once they grant the license. We're expecting they'll grant it. We'll be able to perhaps put in one last line of defense to stop this monster. Let it die a natural death. So, here's Kevin one last time.

Mr. Kamps,

Thank you again for organizing this Joe and Anita really appreciate it. Thanks everybody for coming out today to come out.

14-19-HH  
continued

14-20-OL

55

So on this intervention deadline, we face a December 27th deadline to file our contentions, our intervention against the 20 year license extension. It's also the deadline for environmental scoping comments.

Umm.. the um *Federal Register* Notice appeared on October 24th. They have a very short window of Intervention opportunity of sixty days which fell on December 24th which is an official holiday, and the technical rule is the next business day. That becomes the deadline. That's December 27th. So, it's an indication, gives you an idea of how brutal the NRC's process is. That extends right into the technical requirements of intervening.

One of those is to obtain standing, and that's the main thing I'd like to talk about. Anyone who lives within 50 miles of Davis-Besse could, almost automatically, receive Standing to be a Party to this proceeding. And it's important for a group like Beyond Nuclear. We do not live that close, we're about 500 miles away. So for us to enter a contention and get standing, we're gonna need supporters in the local area. And if you're a member of another environmental group you could encourage that group to join with Beyond Nuclear and become a Party to the proceedings as well.

So if you are interested and you do live within 50 miles, please afterwards come see me. I'd love to get your contact information. We can discuss it further. You don't need to decide today.

It's a simple form; it's a one sheet form. We already have the language. Not with us; we didn't have enough time to pull it together. But we've used it in other proceedings like Fermi III, like Pallsades, and all you have to do is agree to it. It gets you individual standing, and it also gets organizations standing. We can actually file this paperwork in time.

And, um just to close, I would like to say that Italy was mentioned, and I took a lot of inspiration several years ago from (if I pronounce it

correctly) Scanzano, Italy where Berlesconi came out of the blue and said, "We've figured out where we're going to put all the nuclear waste. We're going to put it in Scanzano." Just announced it one day, and within couple weeks, there were hundreds of thousands of people in the streets: blocking the train tracks; occupying the site that was targeted; and um two weeks later, Berlesconi said, "Well, we're going to study it some more." (laughter from audience) He reversed himself.

In Germany, what I was getting to here, in Germany the Angela Merkle Government has reneged on a ten year old agreement called the "nuclear consensus" that the Social Democrats and the Greens prioritized to phase out nuclear power plants at the end of their operating licenses. And so, what Merkle has done is to push for extensions at certain of the reactors. Just like as proposed at Davis-Besse. And what this has led to is just incredibly large protests in the streets.

Several months ago, 120,000, 150,000 people formed a human chain between two nuclear power plants. It stretched 75 miles long. More recently, a few months back, about 100,000 people in the streets of Berlin, protesting the license extensions.

Then most recently, there's annual protests against radioactive waste shipments to um they call it a "centralized interim storage site." A warehouse which is right next door to a targeted deep geological disposal site. What a coincidence, Ha! And every year there's protests. I was there in 2001 there were 10,000 protestors 15,000 police.

So, it takes police state tactics to move a few containers of waste. At a huge cost. We're talking \$100,000,000 for one of these shipments. And this past protest was 50,000 people.

So, I just wanted to leave on the hopeful note that, in other places where license extensions are proposed there are huge groundswells of opposition. So, inspiring stuff. Thanks. (Applause)



Eric Britton

If it helps anyone, we have space at the Perrysburg library reserved for the first Wednesday night in January. For a follow up meeting.

Ms. Rios

Okay, that's the first Wednesday night in January. If we have your e-mail address you'll get that in the e-mail. That's the Sierra Club. Okay Thank you for everyone. (Applause)

Mr. DeMare

And if anyone is concerned about the issue of transporting nuclear wastes across the Great Lakes, Ed McArdle is....

(Unintelligible)

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**COMMENTER: SUZANNE PATSER, JAMES WHITAKER**

Suzanne Patser

Hello my name is Suzanne Patser and I live in Columbus Ohio and I'm very concerned about the Davis-Besse plant coming back online. I can't think of anything that would be a worse idea for our state.

} 31-1-OL

I believe that we have plenty of electricity. We do not need to bring this power plant back online. I don't care how many jobs you think it might create or how much you want to justify the expense of building the plant to begin with but nothing is worth the lives of the people that are going to live near that plant and all of us because it's going to affect everybody if there was any type of accident.

} 31-2-OS

I know there is always just radioactive leakage anyway that we aren't even told about.

There are so many other clean ways to provide energy. Wind Solar geothermal there is no reason to bring a nuclear plant online. There would have to be some other agenda involved we hope that is not military agenda. But we know that we don't the electricity from that plant in this state.

} 31-3-AL

And we know that it had a hole in a very vulnerable spot earlier. We don't trust the people that run these type of plants that the safety is there and regardless if it takes a million years to get rid of radioactive waste how is that a benefit to anybody and human kind or on this planet.

} 31-4-OS

So I am absolutely 100% against any nuclear plant opening anywhere. It is not the type of energy that our country needs, our state need, that Toledo needs that anybody needs that lives or works in that area.

} 31-5-OL

James Whitaker

Hi my names is James Whitaker and I'm from in Columbus Ohio and as far as the creation of more radioactive waste here in the state of Ohio I don't think we need to do that I think that the any of the fuels that we have as far as fossil fuels is adequate if it's done properly. But I certainly don't want to create more nuclear waste.

} 32-1-RW

**COMMENTS: SCOTT ROBINSON, SIMONE MORGEN,  
EMILY JOURNEY, BOB PATRAICUS**

Scott Robinson

Hello my name is Scott Robinson from Worthington Ohio and I'm opposed to the relicensing of the Davis-Besse nuclear power plant. Thank you.

} 33-1-OL

Simone Morgen

Hi my name is Simone Morgen I'm a Columbus resident and I just want to say that a facility such as Davis Besse that has had numerous failures cumulating in that lovely hole that endangered people with a possible meltdown has no business having a renewal without stringent oversight if it should have renewal at all.

} 34-1-OS

It puts people in Toledo especially in danger and could possibly extend as far south as Columbus. So I really do not think that this should be renewed.

} 34-2-OL

Emily Journey

I'm Emily Journey and I'm from Westerville Ohio. I'd like you to know that I do not support the relicensing of the Davis-Besse Atomic reactor.

} 35-1-OL

I believe we should be going in different directions when it comes to supplying energy to our communities. Direction that is not destructive that can provide new green jobs. Thank You.

} 35-2-AL

Bob Patraicus

Hi my name is Bob Patraicus, I have a PhD in political Science. I am a JD. My concerns with Davis-Besse begin with the obvious. There has been contamination. Radioactive contamination at that plant in the past it continues to occur.

} 36-1-RW

Moreover the entire process of mining transporting and allowing radioactivity as a fuel source is inherently contaminating.

It is located there on the great lakes, the largest clean water source in the world and it seems extremely dangerous and unnecessary since there is other alternative fuel sources to allow for Davis-Besse to ever be reopened with its incredibly bad history safety history with its dome.

} 36-2-AL

} 36-3-OS

**COMMENTER: BOB PATRAICUS, KEVIN MALCOLM, DOUG TODD, CONNIE HAMMOND**

Bob Patraicus (continued)

So because of the ongoing contamination and the inherent nature of the radioactive contamination in the process of it being mined and transported. I would like the commission to look very closely at this and do what we all know is correct and keep Davis-Besse closed.

} 36-4-OL

Kevin Malcolm

Alright. I'm totally against the nuclear power. I just I'm an old guy and I've been around for many years and I know the history damages that it can cause and I'm really opposed to it. That's why I'm on camera here. That's why I'm on camera and I will do whatever I can to support the cause against it. The actions, take actions against it. That what all I got to say. Thank you very much.

} 37-1-OL

My name is Kevin Malcolm Jones originally from Cleveland Ohio but I've been here in Columbus for 6 years.

Doug Todd

Hi my name is Doug Todd I'm from Columbus Ohio. I'm very concerned about the Davis-Besse Plant. From what little I know the most recent containment failure a few years ago was a result of lax inspection. I'm aware that FirstEnergy had requested a delay in inspection on the plant. And it was this delay that almost led to the containment break down which would have been a Chernobyl type disaster for Northern Ohio. By all means please do not approve the relicensure of Davis-Besse. Thank You

} 38-1-OS  
} 38-2-OL

Connie Hammond

My name is Connie Hammond I live in Columbus Ohio. I'm a member of the Sierra Club nuclear issues committee and the Ohio Green party. My primary concern is with the toxic legacy that we are leaving for our Children and Grandchildren. Beyond the obvious radioactivity and pollution that these plants produce.

} 39-1-RW

The process of production of nuclear energy from mining through disposal of waste is very carbon intensive and would contribute heavily to global warming.

} 39-2-AM

**COMMENTS: BERNADINE KENT, UNKNOWN, PETE JOHNSON**Connie Hammond (continued)

We need to invest our money into green technologies that would create job and also help our economy which is leaving the toxic legacy for our children as well as these nuclear power plants.

} 39-3-AL

Davis-Besse is not a safe plant it has a very bad track record and the Nuclear Regulatory Commission has been lax in its inspections. I really am concerned I'm very disconcerted for the future of our children and future generations in terms of the toxicity and global warming. Also we don't need this energy and it is just not a good way for our country to be going. Thank You

} 39-4-OS  
 } 39-5-OL

Bernadine Kent

My name is Bernadine Kent and I'm from Columbus Ohio and I have been informed of the Davis-Besse power plant in Toledo. I'm concerned about this plant extending their license for the next 20 years. To me that doesn't make any sense especially since they have problems.

} 40-1-OL

Rather than extending the license there should be some type of investigation or some kind of attempt to resolve these problems instead of just saying ok for the next 20 years these problems can continue. So my concern is that anyone that anyone that would allow this license to continue is not acting in the best interest of the citizens.

} 40-2-OS

Unknown

I wish to join the wave of the future. Which is alternative energy sources. Fossil fuels and nuclear energy are part of the past.

} 41-1-AL

Pete Johnson

My name is Pete Johnson I'm associated with the Columbus free press and citizens alliance for secure elections and I'm definitely opposed to relicensing Davis-Besse.

} 42-1-OL

It's dangerous, it's been mismanaged for a long time and I'm definitely opposed to the relicensure of Davis-Besse. Thank you. I live in Franklin County, Ohio.

} 42-2-OS

**COMMENTER: CONSTANCE GADWELL-NEWTON ESQ**

Constance Gadwell-Newton Esq

This is Connie Gadwell-Newton I'm an attorney. I'm active with the Ohio Green party and I wanted to express my opposition to the relicensing of Davis-Besse for 20 years.

Basically I mean I've heard a lot of the science about it and I can't really say a whole lot about that. But what I can say is that you know it's going to be relicensed supposedly for 20 more years and that would be to 2037, I believe, so I'm opposed to the relicensing of Davis-Besse because I think it's a youth issue and basically this is an important youth issue its important to the young people who are not allowed to vote and be politically active and children and the future generations. A lot of the people who are working to relicense this nuclear facility are going to have died of old age by the time its finished and then when it's finished we are going to need to worry about cleaning it up keeping it in repair and I don't think that people are really looking ahead to the future and considering you know the work that going to be involved to make sure that its safe.

43-1-OL

Nuclear waste and radioactivity has a half life of gabillion years to put it in kids terminology and you know a lot of the people who are going to be effected by nuclear waste are not even born yet. And So speaking on behalf of the youth, babies, people who cannot speak for themselves. I just wanted to say that relicensing Davis-Besse and using nuclear energy is wrong. It may be expedient so for the people who are only planning on living you know 10 or 20 more years then fine but they don't care if the world is going to be destroyed. But there are people who that effects and I would just urge the people who are making this decision to think of the future generations and to be able to think about somebody other than yourselves really.

43-2-RW

Yeah I want to make a statement on behalf of kids whose environment is being destroyed. There used to be a lot more nature to go to and tromp around in and now kids don't have that we have urban environments that are polluted kids getting cancer because of this kind of stuff and it's really not ok. So this is Connie Gadwell Newton urging you to not renew the licensing for Davis-Besse. Thank you.

43-3-HH

**COMMENTER: PATRICIA MARIDA**Patricia Marida

Hi my name is Patricia Marida. I'm the chair of the nuclear issues committee at the Ohio Sierra Club. I gave a presentation before the Nuclear Regulatory Commission on November 4, 2010 as to why the Sierra Club opposes the extension of a license at Davis-Besse.

16-14-OL

Tonight I'm going to give my personal statement. I think that it's well recorded there are 10 pages of documentation of very serious violations and illegalities, and actually nuclear accidents at Davis-Besse. It is the most accident ridden power plant, nuclear power plant in the nation. It is very clear that we have a serious problem here also because the Nuclear Regulatory Commission has been very lax in enforcing Davis-Besse. In fact allowing them to, allowing FirstEnergy and Davis-Besse Operating Company to continue operating the plant when it was supposed to be shut down for an inspection. And the reactor head came within 1/8" of metal left between containment and a nuclear holocaust. So It is very clear that the regulatory and the supervision is lacking were also would like the NRC to be sure to cover the safety issues there, there are many safety issues.

16-15-OL

Apparently when an accident, when there is an alarm there is no response. People say oh that's just a false alarm. So no one seems to get very excited, when an alarm goes off at Davis-Besse.

16-16-OS

We are also concerned about fish and Lake Erie and the heat coming out of the plant.

16-17-AQ

Even more we are concerned about the possibility of contamination of all the water in the great lakes from a reactor accident. This would be a nightmarish...

So the fleeting use of electricity in the past has left us with a legacy of nuclear waste. But However we understand that the nuclear regulatory commission does not have to even consider that when they are deciding whether or not to license Davis-Besse because in the past the Nuclear Regulatory Commission has made a decision that they are not going to, that this doesn't have anything to do with a new license despite the fact that much more of this dangerous radioactivity is going to be stored at the plant there is no solution for it there is no magic solution that will turn lead into gold it will remain radioactive for millions of years and will gradually spread itself around. It is so important for the Nuclear Regulatory Commission to look at issues of the onsite storage and to look at containing and at least in the near future making this waste safe. The new waste is going to be generated there

16-18-RW

Patricia Marida (continued)

really does need to be a plan for isolating it onsite. We are not asking for a plan to isolate it for a hundred million years because we all know that's an impossibility.

We are asking for some sort of a plan working with Doctor Arjune Macajohny of the institute for environmental and economic research in Washington DC, we are asking for you the NRC to work with him and look at some serious ways of isolating this waste in canister that are hidden in bunkers where they are safe from terrorist attack.

So this fleeting use of electricity when we don't even need any more electricity. What happened when Davis-Besse was shut down? We got along fine.

We are closing down Coal plants now because Ohio is actually using less electricity than they used to. We've got efficiency we've got solar we have wind we have geothermal we have all kinds of sustainable ways.

We don't need more nuclear power and we need to have the Nuclear Regulatory Commission look at whether or not more electric is needed especially the large amount that Davis-Besse produces because we think it could be shut down today we think it should be shut down today.

Dr. David Lochbaum has sent you a very well documented statement as to why that this plant needs to be shut down now, it is dangerous to operate and the NRC dismissed it out of hand with what Dr. Lauchbaum characterized as superfluous reasons.

} 16-18-RW  
continued  
  
} 16-19-OS  
  
} 16-20-AL  
  
} 16-21-OS  
  
} 16-22-OS



**COMMENTER: PATRICIA MARIDA**

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Patricia A. Marida

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**Docket ID: NRC-2010-0298**

**Subject: Proposed 20-year operating extension for the Davis Besse nuclear reactor**

This is the cover letter for 2 further pages being submitted by the Ohio Sierra Club. This letter includes testimony given at the Nov. 4 environmental scoping meeting held at Camp Perry, plus further comments.

Thank you.

*Patricia A. Marida*

Patricia A. Marida, Chair  
Ohio Sierra Club Nuclear Issues Committee

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US Nuclear Regulatory Commission  
Washington DC 20555

**Docket ID: NRC-2010-0298**

**Subject: Proposed 20-year operating extension for the Davis Besse nuclear reactor**

My name is Patricia Marida and I am the chair of the Nuclear Issues Committee of the Ohio Sierra Club.

First let me say that the Sierra Club is disappointed that the NRC only gave 10 days notice of these scoping meetings in the Federal Register, and that the public only had 3 days notice from an article in *The Toledo Blade*. The Davis-Besse Environmental Report and License Renewal Application were almost 2000 pages, not including the NRC Generic Environmental Impact Statement for Nuclear License Renewal. Therefore, we would like to request that the NRC hold at least one additional scoping meeting, and that this be held in Toledo, close to the population center with residents who are informed by the *Blade*. Also, setting the comment deadline during the holiday season makes it difficult for people to have time to digest the material and comment. Therefore, we would also like to request an extension of the comment period, preferably until the end of January.

16-23-LR

The Sierra Club opposes nuclear energy in its entirety, citing serious environmental, health, and public expense issues throughout the nuclear fuel cycle. The time frames needed to guard the radioactive nuclear waste generated from this process are geologic in nature. Isolating the radioactive nuclear waste will consume public time and money for generations to come. The only viable solution for radioactive waste is to stop generating it. Radioactive contamination and waste are a major reason to discontinue the use of nuclear power.

The risk and reality is that radioactive contamination has occurred, is occurring and will continue to occur throughout the nuclear power cycle. Mining is leaving radioactive tailings exposed to the air and water on First Nations land in the US, Canada and Australia. Contamination occurs throughout the milling, refining, transport, conversion of uranium to uranium hexafluoride (UF6), and then enrichment—which in the gaseous diffusion process at Piketon Ohio took as much energy as a large city. Then the fissionable uranium must be formulated into rods. An enormous waste stream is the depleted uranium hexafluoride (DUF6), which is 99% of the original uranium but is not fissionable and therefore not usable for energy. However, it is just as radioactive and must be deconverted back to the more stable uranium oxide. A newly operating plant at Piketon will take 25 years running round-the-clock to deconvert the 40,000 14-ton canisters of DUF6 already on the site, not counting how much more will be generated from other enrichment facilities.

16-24-RW

The environmental effects that occur in other parts of the United States should come under consideration when the NRC develops the Environmental Impact Statement.

16-25-LR

Enormous amounts of energy go into this process. Added together along with disposal, these supporting industries cause nuclear power to also come with a heavy carbon price, which means that nuclear power will not address but will worsen global warming.

16-26-AM

- continued -

Centralized electric power, complete with centralized corporate profits for the nuclear and coal industries, has been heavily subsidized by the public for many years. Without public subsidies, loan guarantees and liability limits, for which the public must bear the burden, no nuclear power plant would have ever been built.

In Ohio, the use of electricity has been decreasing for a number of years. Now with progressive legislation like Ohio's SB 221, energy efficiency and conservation, combined with the renewable sources of solar, wind, and geothermal, are providing so much additional and conserved energy that all plans for new coal plants in our state have been cancelled and there is a strong movement to shut down the old polluting coal-fired plants. The argument of US rising energy needs is irrational at best and at worst the resulting global warming would threaten our life-support system, and yes, our "way of life".

16-27-AL

There is good reason why there are no new nuclear power plants coming online to replace the old ones. Wall Street will not support them. The enormous up-front costs and 12-20 year length of time for completion makes them financially uncompetitive with wind and solar. And the latter are decentralized, meaning that jobs are being created all over the state. As compared to Davis Besse's extended shutdowns, if the wind stops blowing or the sun is behind a cloud somewhere, there is likely not to be a serious or long-term power shortage problem.

16-28-AL

A 20-year extension of the Davis Besse operating license is unfounded on the grounds of future electric-generating needs.

16-29-OS

Even without the aforementioned problems plaguing nuclear power in general, the David Besse facility is in tenuous condition to continue operation, even at the present. Continuing for 20 years past 2017 would constitute reckless disregard for public safety and environmental integrity. The history of failures and dangers at this plant is well known and well documented, so the Sierra Club will not reiterate them here.

16-30-OS

However, the process by which First Energy and the Nuclear Regulatory Commission allowed a delay in the inspection of the reactor head in 2002, coming within 1/8 inch of a nuclear disaster that would have left the Midwest uninhabitable and the Great Lakes, the world's largest supply of fresh water, filled with radioactive contamination shows that the public should have no confidence whatsoever in the ability of First Energy to self-regulate or in the NRC to rigorously enforce and inspect so dangerous an operation as a nuclear reactor. They were willing to take these incredible risks simply based on profits. Not only that, but corporate culture makes it difficult for any one person to buck the system or feel responsible for anything other than following the orders of their immediate superiors.

16-31-OS

Even the 40-year time frame for operation of a power plant does not have an engineering basis, but was based on the time needed to pay off construction bonds. What happened to the engineering responsibility to oversee and advise an operation of this magnitude of danger?

16-32-LR

The NRC should take into consideration that spent fuel rods at the site must be secured from terrorist attack or accident. The pools and casks holding the rods constitute by far the most vulnerable area at the plant for attack. Some canisters are old and brittle. Any loss of water from the pools, by accident, earthquake or terrorist attack, would have catastrophic results. Most nuclear organizations around the country recommend hardened onsite storage (HOSS) for spent fuel rods. This technology consists of isolating cooled rods in canisters, but these canisters have much stronger specifications than the casks that are currently used. The filled canisters would be secured behind earthen bunkers. The NRC can get information on this process from Dr. Arjun Makhijani at the Institute for Energy and Environmental Research ([www.ieer.org](http://www.ieer.org)).

16-33-OS

Last but not least, nuclear power is being used to keep the nuclear weapons industry afloat. Facilities and research for nuclear power can be transferred to weapons uses. The USEC enrichment plant at Piketon is a prime example. More importantly, however, is the need for "legitimizing" the nuclear industry. Without nuclear power, the nuclear industry would be only about weapons of mass destruction, giving a very different light to university research, recruiting bright young students, and other jobs and research in the industry. As the prospect of the current generation of nuclear power plants shutting down approaches, a weapons industry desperate for a non-military front is the tail wagging the dog of the push for new and continued nuclear power.

16-34-OS

- end -

COMMENTER: LEE BLACKBURN

# PUBLIC SUBMISSION

<b>As of:</b> December 07, 2010
<b>Received:</b> December 02, 2010
<b>Status:</b> Pending_Post
<b>Tracking No.</b> 80baca30
<b>Comments Due:</b> December 27, 2010
<b>Submission Type:</b> Web

**Docket:** NRC-2010-0298  
Receipt and Availability of Application for License Renewal

**Comment On:** NRC-2010-0298-0003  
FirstEnergy Nuclear Operating Company; Notice of Intent to Prepare an Environmental Impact Statement and Conduct the Scoping Process for Davis-Besse Nuclear Power Station, Unit 1

**Document:** NRC-2010-0298-DRAFT-0001  
Comment on FR Doc # 2010-27276

## Submitter Information

**Name:** Lee Blackburn

## General Comment

I would be very interested in a scoping meeting taking place in Toledo, Ohio where more people would be able to attend. I also think more time should be allotted for the comment period as December 27, 2010 falls in the middle of the holiday period. perhaps an additional 30 day period would be appropriate.

} 44-1-LR

75 FR 57299  
9/20/10 (2)

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2010 DEC -7 AM 8:47

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E-RIDS = ADM-03  
Add = P. Cooper (PEC)

COMMENTER: MARY KNAPP



United States Department of the Interior

RULES AND DIRECTIVES  
BRANCH  
USNRC

FISH AND WILDLIFE SERVICE

2010 DEC 27 PM 2:23

Ecological Services  
4625 Morse Road, Suite 104  
Columbus, Ohio 43230

(614) 416-8993 / FAX (614) 416-8994

December 16, 2010

RECEIVED

Cindy Bladey, Chief RADB  
Division of Administrative Services  
Office of Administration  
Mail Stop: TWB-05-B01M  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

10/28/10  
75 FA 166399  
[Stamp] (2)

Subject: Docket ID NRD-2010-0298

Dear Ms. Bladey:

TAILS #: 31420-2011-TA-0097

This is in response to the Nuclear Regulatory Commission's October 28, 2010 Federal Register Notice of Intent to Prepare an Environmental Impact Statement (EIS) and to conduct the scoping process for Davis-Besse Nuclear Power Station, Unit 1. FirstEnergy Nuclear Operating Company (FENOC) has submitted an application for renewal of Facility Operating License No. NPF-003 for an additional 20 years of operation at Davis-Besse Nuclear Power Station, Unit 1, located in Oak Harbor, Ottawa County, Ohio. The EIS is being prepared as part of this application process.

There are no Federal wilderness areas or designated critical habitat within the vicinity of the proposed site. Davis-Besse consists of 954 acres, of which approximately 733 acres are marshland that is leased to the U.S. government as part of the Ottawa National Wildlife Refuge.

45-1-TR  
45-2-AQ

In a letter dated December 16, 2009, we provided comments to FENOC on the proposed 20-year renewal of the operating license for Davis-Besse. At this time we have no additional comments.

These comments have been prepared under the authority of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), the Endangered Species Act of 1973 (ESA), as amended, and are consistent with the intent of the National Environmental Policy Act of 1969 and the U. S. Fish and Wildlife Service's Mitigation Policy.

If you have questions, or if we may be of further assistance in this matter, please contact Angela Boyer at extension 22 in this office.

Sincerely,

Mary Knapp

Mary M. Knapp, Ph.D.  
Field Supervisor

cc: ODNR, DOW, SCEA Unit, Columbus, Ohio

SUNSI Review Complete  
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E-RIS - ADM-03  
Add = P. Cooper (spec)

**COMMENTER: JOHN P. FROMAN**



**PEORIA TRIBE OF INDIANS OF OKLAHOMA**

118 S. Eight Tribes Trail (918) 540-2535 FAX (918) 540-2538  
P.O. Box 1527  
MIAMI, OKLAHOMA 74355

RULES AND DIRECTIVES

CHIEF  
John P. Froman

SECOND CHIEF  
Jason Dollarhide

2010 DEC 21 AM 8:55

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December 8, 2010

Chief, Rules and Directives Branch  
Division of Administrative Services  
Office of Administration  
Mailstop TWB-05-B01M  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555-0001

③  
9/20/10  
75 FR 57299

RE: Request for scoping comments concerning the Davis-Besse Nuclear Power Plant, Unit No. 1,  
License renewal application review

Thank you for notice of the referenced project. Please note that the contact person has changed, Frank Hecksher is the new Section 106/NAGPRA representative. The Peoria Tribe of Indians of Oklahoma is currently unaware of any documentation directly linking Indian Religious Sites to the proposed construction. In the event any items falling under the Native American Graves Protection and Repatriation Act (NAGPRA) are discovered during construction, the Peoria Tribe request notification and further consultation.

The Peoria Tribe has no objection to the proposed construction. However, if any human skeletal remains and/or any objects falling under NAGPRA are uncovered during construction, the construction should stop immediately, and the appropriate persons, including state and tribal NAGPRA representatives contacted.

46-1-AR

John P. Froman  
Chief

xc: Bud Ellis, Repatriation/NAGPRA Committee Chairman

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Add = P. Cooper (PEC)

TREASURER  
John Sharp

SECRETARY  
Hank Downum

FIRST COUNCILMAN  
Carolyn Ritchey

SECOND COUNCILMAN  
Jenny Rampey

THIRD COUNCILMAN  
Alan Goforth

COMMENTER: CHRIS GALVIN



United Way of Greater Toledo

First Energy's United Way Involvement

November 4, 2010

- The Davis Besse Nuclear Power Station, and on a larger scale, the First Energy Corporation, are a **tremendous community partner** to the local United Way.
- Since 1993, First Energy has **contributed more than \$13.5 million** to United Way of Greater Toledo which serves Ottawa, Wood, and Lucas counties.
  - o \$3.1 million came from corporate gifts.
  - o \$10.4 million from its incredibly generous employees.
  - o First Energy has also earned **United Way's Pillar Award** each year since at least 1992... which means they consistently give more than \$100,000 each year to the greater Toledo campaign.
- Not only does this community consistently get solid financial support from First Energy and its employees, but executive leadership has also demonstrated exceptional personal commitment to our work.
  - o In 1993, **Don Saunders** chaired the local United Way campaign, raising \$12.5 million.
  - o In 2005, **Jim Murray**, now retired, but formerly First Energy President of Ohio Operations, chaired the local United Way campaign. Under Mr. Murray's leadership, the campaign raised \$13.3 million.
    - We also presented Mr. Murray with our prestigious **Spirit of Caring** award in 2006 for demonstrating value and concern for our community through vision, leadership, service, and commitment to the people of our community.
  - o In 2009, **Trent Smith**, regional president of Toledo Edison/First Energy, became chairman of United Way of Greater Toledo's Board of Trustees and is drawing to a close on his second year of service.
    - Mr. Smith has gone above and beyond the level of service, dedication, and commitment we typically see from Board chairs.
    - He has become involved in virtually every level of our work, digging in and helping find real solutions.
  - o In addition to these executive leaders, numerous upper level management have supported United Way by using their voice and relationships to help secure financial and volunteer support as well as advocating on behalf of United Way and the NW Ohio region.
    - In addition to Don Saunders, Jim Murray, and Trent Smith, some of these standout employees include **Debbie Paul, Meg Adams, and Mel Womack**.
    - Additionally, in the 1990s, **Jennifer Shriver** served five years as the chair of our Community Impact Cabinet, the highest level of community impact volunteers who decide how money is allocated in the community. Also joining her on the cabinet was **Jenny Amidon**. Both are now retired.

9/20/2010  
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4-3-SE

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Continued on page 2...

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Call = J. Cooper (pec)

- First Energy also demonstrates incredible commitment to the community through sponsorships of or participation in programs and events.
  - In 1993 and 1994, Davis Besse sponsored our **Loaned Executive program**, a program that provides United Way with temporary campaign employees. First Energy began sponsoring this program in 1996 and continued for 11 years.
  - Employees consistently contribute to and participate in **Stamp Out Hunger** and/or **Scouting for Food** efforts each year. They were a major sponsor of our **Family Food Fund** in 2008.
  - First Energy was a sponsor of our **Community Building Event** in 2005 and was the initiator and sponsor of our **Veterans' Appreciation Event** in 2006 which continued until 2009.
  
- Davis Besse and First Energy are a valued community partner, both philanthropically and economically. They have been incredible contributors to our community over the past 20 years and we only hope this will continue for at least another 20.

} 4-3-SE  
continued

} 4-4-SL



COMMENTER: JANE RIDENOUR

President of

My name is: Jane Ridenour and I am representing OPEIU Local 19. OPEIU stands for Office & Professional Employees Internation Union and we represent the clerical support staff at Davis Besse. On behalf of the Union I'd like to voice our support at this public meeting. A renewal of this license will promote and maintain employment of not only our members, who live and shop and send their children to schools in this area, but... it will assure the delivery of reliable electric service to all our customers.

15-5-SL

15-6-SE

Research has shown that nuclear power is clean. It is efficient and produces more energy at a lower cost than any other means of generation so it is important that we keep this plant in operation.

15-7-AL

Local 19 is proud of the safety record and operations at Davis-Besse as well as the work we do here and the service we provide to the public. OPEIU Local 19 would like to continue to be part of the team for the next 20 years.

15-8-OS

9/20/2010

75 FR 57299

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Add = P. Cooper (pec)

COMMENTER: JOSEPH DEMARE

9/20/2010  
75 FR 57299

9

Additional Comment from Joseph DeMare,  
11/4/10

Transformer fires cause unique pollutants such as dioxin. Since the cause of the 2009 Davis-Besse transformer fire has not been determined, the possibility of another fire must be considered. The EIS must include the <sup>impact</sup> of emissions created by transformer fires.

14-21-AM

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Cell = p. Cooper (pec)

COMMENTER: DENNIS KUCINICH

DENNIS J. KUCINICH  
10TH DISTRICT, OHIO

2445 RAYBURN HOUSE OFFICE BUILDING  
WASHINGTON, D.C. 20515  
(202) 225-5871

14400 DETROIT AVENUE  
LAKEWOOD, OHIO 44107  
(216) 228-8850

PARMATOWN MALL  
7904 DAY DRIVE  
PARMA, OH 44129  
(440) 845-2707



Congress of the United States  
House of Representatives  
www.kucinich.house.gov

CHAIRMAN,  
SUBCOMMITTEE ON DOMESTIC POLICY  
COMMITTEE ON OVERSIGHT AND  
GOVERNMENT REFORM  
COMMITTEE ON EDUCATION AND LABOR

November 4, 2010

The Honorable Gregory B. Jaczko  
Chairman  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555-0001

9/22/2010  
75 FR 57299

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2011 MAR -7 PM 5: 51

RULES AND DIRECTIVES  
BRANCH  
USNRC

Dear Chairman Jaczko:

10

First Energy should not be allowed to continue to operate Davis-Besse after 2017. The people of Northeast Ohio are familiar with First Energy's pathetic record in protecting the safety of people who live in the region.

47-1-OL

In a series of recent articles in the Toledo Blade, which I am enclosing, the people of our region are reminded about the 12-minute interruption in the feedwater flow to the steam generators on June 9, 1985, which was cited as a "potential catastrophe."

The people of our region are reminded of Davis-Besse's reactor head, "weakened by years of neglect," which nearly burst in 2002.

The people of our region are reminded that your predecessor Harold Denton stated in 2004 that these two incidents represent the nuclear "industry's second and third-lowest points after Three Mile Island."

The people of our region are reminded that First Energy's employees tried to conceal the truth of the 2002 incident from the Nuclear Regulatory Agency (NRC) using "tricks, schemes, or devices . . . to deliberately mislead" your agency.

47-2-OS

The people of our region are reminded that David Uhlmann, chief of the Justice Department's environmental crimes section, said that First Energy showed "brazen arrogance" and "breached the public trust" by withholding information about the reactor head incident.

The people are reminded that federal prosecutors described the reactor head incident "as one of the biggest cover-ups in U.S. nuclear history."

The people of our region are reminded that First Energy paid a record fine of \$33.45 million as a result of its actions. Of that amount, a record \$28 million was the fine that First Energy paid "to avoid being criminally prosecuted for lying to the government about the dangerous condition of Davis-Besse's old reactor head," according to then-U.S. Attorney Greg White in 2006.

While both of those fines were record fines at the time they were imposed, I pointed out then that the total fine was merely 1% of First Energy's profits in 2004. While these fines may have been

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Add = P. Cooper (pec)

record fines, they were a mere slap on the wrist for First Energy and nothing near what would have been necessary to change its corporate culture.

The corrosion of the reactor head started because the Davis-Besse reactor head was made of an alloy that would not withstand this kind of corrosion. All of the other operators of nuclear reactors with similar heads confronted this situation by replacing their reactor heads with new heads of a different alloy that would not be subject to this kind of corrosion. In 2004, FirstEnergy chose cost over safety, and it replaced the corroded reactor head with another reactor head made of exactly the same material. Six years later, First Energy feigned shock to discover that corrosion was forming on that inferior reactor head also.


Still, First Energy had not learned its lesson. It wanted to postpone the final replacement of the reactor head, with a new head made of the safe, non-corroding alloy, until 2014. First Energy did not abandon that 2014 replacement date until the NRC threatened to require Davis-Besse to shut down for inspection of the old reactor head every year until it was replaced. Only as a result of that threat is First Energy finally going to install a non-corroding reactor head in 2011.

Recent events suggest that First Energy still has a corporate culture that is more focused on costs and profits than it is on safety. In 2009, Davis-Besse suffered an explosion and fire in a power-switching gear located outside of the reactor building, which First Energy failed to report and did not declare an alert.

The evidence shows that this culture exists in First Energy beyond its operation of Davis-Besse. The NRC has been keeping a "close watch" on First Energy's operation of its Perry reactor in Northeast Ohio as well. The NRC remains concerned that Perry's safety culture is not up to industry standards and has maintained a close watch there for the last two years.

Davis-Besse has been operating for 33 years. It has experienced two of the industry's most serious nuclear incidents during those years. This is not just bad luck. The problems at Davis-Besse are a direct result of First Energy's mismanagement and disregard for the safety of people who live and work in the area and who would be affected by any nuclear accident. The NRC should not extend the license of a company that only operates safely while a "special inspection team" is monitoring its day-to-day activities and when a "close watch" is being kept on it. The NRC must continue to keep a close watch on Davis-Besse between now and 2017, and then should ensure that First this aging reactor with a deplorable history of operations and maintenance be safely shut down and decommissioned at the end of its current license.

Sincerely,



Dennis J. Kucinich  
Member of Congress

DJK: mg

47-2-OS  
continued

**COMMENTER: MARILYN & PAUL NESSER**

**Cooper, Paula**

**From:** Paul Nusser [1537onthelake@freeway.net]  
**Sent:** Monday, December 13, 2010 9:38 PM  
**To:** Cooper, Paula  
**Subject:** Davis-Besse

Paula -

We are area residents near the Davis-Besse plant as we live in Wood County. We would like to have this nuclear power plant eliminated. We say the article about it in our local paper, the *Sentinel-Tribune*. It is an old plant and has had a history of accidents/problems.

} 48-1-OL

Marilyn & Paul Nusser  
1040 Carol Road  
Bowling Green, OH 43402

9/22/2010  
75 FR 57299

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2011 MAR -7 PM 5:51

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Add = J. Cooper (pec)

**COMMENTER: JESSICA LILLIAN WEINBERG**

**Cooper, Paula**

---

**From:** Jessica Lillian Weinberg [jessicaweinberg23@gmail.com]  
**Sent:** Sunday, December 05, 2010 2:39 PM  
**To:** Cooper, Paula  
**Subject:** Please come and hear what the people have to say about Davis-Besse, Sat. Dec 18

The people of Northwest Ohio, Southeast Michigan, and other communities that would be the most adversely affected by an accident at Davis-Besse deserve a longer comment period and more hearings before the NRC automatically approves First Energy's request to re-license. Please attend our hearing, as outlined below.

**PUBLIC HEARING**  
**on re-licensing of the Davis-Besse Atomic Reactor**  
**Saturday Dec. 18 from 12 noon to 3 pm**  
**St. Mark's Episcopal Church**  
**2272 Collingwood Blvd**  
**Toledo, Ohio**  
**20 MORE Years of Radioactive Russian Roulette on**  
**the Great Lakes shore?!**

**We are calling for input from all interested parties regarding First Energy's mismanagement of Davis-Besse, and the Nuclear Regulatory Commission's lack of oversight of that facility, in particular residents of Ohio, the Toledo area, South East Michigan, or residents of any community that would be directly adversely effected by an accident at Davis-Besse.**

49-1-LR

**Anyone can testify, sign in will be required.**

**This hearing will be videotaped and presented to the NRC.**

**For more information contact: Anita Rios 419-243-8772, [rhannon@toast.net](mailto:rhannon@toast.net)**

- FirstEnergy has applied to the U.S. Nuclear Regulatory Commission (NRC) for a 20-year operating license extension at its Davis-Besse nuclear power plant near Oak Harbor, Ohio, just over 20 miles east of Toledo.
- Davis-Besse is one of the most problem-plagued atomic reactors in the entire country: it has suffered six "significant accident sequence precursors", three times more than any other American nuclear plant.
- The original license was granted in 1977 and will expire in 2017. If the extension is approved Davis-Besse can operate until 2037.
- In the past 10 years NRC has rubber-stamped 60 of 60 license renewals sought by industry.

- The NRC Office of Inspector General has reported serious problems with NRC's license extension program: NRC staff have "cut and pasted" the nuclear utility's own work, sometimes word for word, falsely presenting it as an independent safety

**sponsoring organizations:**

**The Green Party of Ohio ([ohiogreens.org](http://ohiogreens.org))**

**The Ohio Sierra Club ( [ohiosierraclub.org](http://ohiosierraclub.org) )**

**Beyond Nuclear ( [beyondnuclear.org](http://beyondnuclear.org) )**

**Coalition for a Nuclear-Free Great Lakes**

} 49-1-LR  
continued

COMMENTER: ERIC BRITTON

RULES AND DIRECTIVES  
PAGE 4

Gallagher, Carol

From: Sierra Club Membership Services [membership.services@sierraclub.org] on behalf of Eric Britton [ericb\_perrysburg@yahoo.com]  
Sent: Friday, December 03, 2010 5:03 PM  
To: Gallagher, Carol  
Subject: Davis-Besse Relicense Docket ID: NRC-2010-0298

Dec 3, 2010

Carol Gallagher

To Gallagher,

9/20/2010  
75 FR 57299  
(5)

RECEIVED

Ohioans are concerned about the environment, the rising costs of energy, and the dangers associated with nuclear power! However, that has not stopped First Energy from irresponsibly pursuing to get the Davis-Besse nuclear plant on Lake Erie relicensed to continue operation until 2037.

30-1-OL

NO NUCLEAR POWER PLANT IS SAFE AND DAVIS-BESSE IS ONE OF THE WORST!  
In 2002 the Davis-Besse plant nearly melted down almost causing a nuclear disaster. Neither First Energy nor the Nuclear Regulatory Commission discovered an enormous rust hole in the reactor head until it was almost too late! According to the Nuclear Regulatory Commission, 2 of the top 5 most dangerous nuclear incidences since 1979 have happened at Davis-Besse.

30-2-OS

NUCLEAR ENERGY IS NOT CLEAN OR GREEN ENERGY!  
Every nuclear reactor generates about 20 tons of highly radioactive waste per year, and after 40 years of nuclear power, the U.S. still has not found an acceptable solution for the waste. The waste can cause cancer, birth defects, and even death. Nuclear power uses and pollutes significant amounts of water, while the mining, transportation, and enriching of uranium is carbon intensive which contributes to global warming.

30-3-RW

I do not want Davis-Besse to continue generating electricity and want the Nuclear Regulatory Commission to end the operating license for the plant. I care about the environment and support clean energy solutions such as energy efficiency and renewable power, and I know that Davis-Besse compromises my safety and the safety of my loved ones.

30-4-AL

Dear Nuclear Regulatory Commission, please say NO to Davis-Besse! Make them accountable for the lapses in safety and help protect Ohioans from a potential disaster at Davis-Besse.

30-5-OL

Sincerely,

Eric Britton  
745 Heathermoor Ln  
Perrysburg, OH 43551-2931

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ERIDS = ADM-03  
Add = f. Cooper (pec)



COMMENTER: MATT TROKAN

RULES AND DIRECTIVES  
SEARCH

Gallagher, Carol

**From:** Sierra Club Membership Services [membership.services@sierraclub.org] on behalf of Matt Trokan [matttrokan@gmail.com]  
**Sent:** Sunday, December 05, 2010 1:07 PM  
**To:** Gallagher, Carol  
**Subject:** Davis-Besse Relicense Docket ID: NRC-2010-0298

DEC -6 AM 11: 38

Dec 5, 2010

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Carol Gallagher

To Gallagher,

Ohioans are concerned about the environment, the rising costs of energy, and the dangers associated with nuclear power! However, that has not stopped First Energy from irresponsibly pursuing to get the Davis-Besse nuclear plant on Lake Erie relicensed to continue operation until 2037.

90-1-OL

**NO NUCLEAR POWER PLANT IS SAFE AND DAVIS-BESSE IS ONE OF THE WORST!**  
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90-2-OS

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90-3-RW

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90-4-AL

Dear Nuclear Regulatory Commission, please say NO to Davis-Besse! Make them accountable for the lapses in safety and help protect Ohioans from a potential disaster at Davis-Besse.

90-5-OL

Sincerely,

Matt Trokan  
5375 Sultana Dr  
Cincinnati, OH 45238-5225  
(443) 889-7222

**COMMENTER: LEE BLACKBURN**

**Gallagher, Carol**

RULES AND DIRECTIVES  
BRANCH

**From:** Sierra Club Membership Services [membership.services@sierraclub.org] on behalf of Lee Blackburn [leeblackburn@live.com]  
**Sent:** Sunday, December 05, 2010 3:07 PM  
**To:** Gallagher, Carol  
**Subject:** Davis-Besse Relicense Docket ID: NRC-2010-0298

DEC 06 -6 AM 11:38

Dec 5, 2010

RECEIVED

Carol Gallagher

To Gallagher,

Ohioans are concerned about the environment, the rising costs of energy, and the dangers associated with nuclear power! However, that has not stopped First Energy from irresponsibly pursuing to get the Davis-Besse nuclear plant on Lake Erie relicensed to continue operation until 2037.

} 44-2-OL

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} 44-3-OS

**NUCLEAR ENERGY IS NOT CLEAN OR GREEN ENERGY!**  
Every nuclear reactor generates about 20 tons of highly radioactive waste per year, and after 40 years of nuclear power, the U.S. still has not found an acceptable solution for the waste. The waste can cause cancer, birth defects, and even death. Nuclear power uses and pollutes significant amounts of water, while the mining, transportation, and enriching of uranium is carbon intensive which contributes to global warming.

} 44-4-RW

I do not want Davis-Besse to continue generating electricity and want the Nuclear Regulatory Commission to end the operating license for the plant. I care about the environment and support clean energy solutions such as energy efficiency and renewable power, and I know that Davis-Besse compromises my safety and the safety of my loved ones.

} 44-5-AL

Dear Nuclear Regulatory Commission, please say NO to Davis-Besse! Make them accountable for the lapses in safety and help protect Ohioans from a potential disaster at Davis-Besse.

} 44-6-OL

Sincerely,

Lee Blackburn  
2261 Valley Chapel Rd  
Jackson, OH 45640-8941

COMMENTER: BOB GREENBAUM

RULES AND DIRECTIVES  
BRANCH  
JAN 2010

Gallagher, Carol

**From:** Sierra Club Membership Services [membership.services@sierraclub.org] on behalf of Bob Greenbaum [bombhumbug@att.net]  
**Sent:** Sunday, December 05, 2010 5:38 PM  
**To:** Gallagher, Carol  
**Subject:** Davis-Besse Relicense Docket ID: NRC-2010-0298

DEC 5 11:38

RECEIVED

Dec 5, 2010

Carol Gallagher

To Gallagher,

Ohioans are concerned about the environment, the rising costs of energy, and the dangers associated with nuclear power! However, that has not stopped First Energy from irresponsibly pursuing to get the Davis-Besse nuclear plant on Lake Erie relicensed to continue operation until 2037.

59-1-OL

**NO NUCLEAR POWER PLANT IS SAFE AND DAVIS-BESSE IS ONE OF THE WORST!**

In 2002 the Davis-Besse plant nearly melted down almost causing a nuclear disaster. Neither First Energy nor the Nuclear Regulatory Commission discovered an enormous rust hole in the reactor head until it was almost too late! According to the Nuclear Regulatory Commission, 2 of the top 5 most dangerous nuclear incidences since 1979 have happened at Davis-Besse.

59-2-OS

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59-4-AL

Dear Nuclear Regulatory Commission, please say NO to Davis-Besse! Make them accountable for the lapses in safety and help protect Ohioans from a potential disaster at Davis-Besse.

59-5-OL

Sincerely,

Bob Greenbaum  
4105 Stillmore Rd  
Cleveland, OH 44121-3129  
(216) 382-4321

**COMMENTER: ROBERT KYLE**

RULES AND DIRECTIVES  
ENCH

**Gallagher, Carol**

**From:** Sierra Club Membership Services [membership.services@sierraclub.org] on behalf of Robert Kyle [rkyle@wideopenwest.com]  
**Sent:** Sunday, December 05, 2010 9:38 PM  
**To:** Gallagher, Carol  
**Subject:** Davis-Besse Relicense Docket ID: NRC-2010-0298

DEC -6 AM 11: 38

Dec 5, 2010

RECEIVED

Carol Gallagher

To Gallagher,

Ohioans are concerned about the environment, the rising costs of energy, and the dangers associated with nuclear power! However, that has not stopped First Energy from irresponsibly pursuing to get the Davis-Besse nuclear plant on Lake Erie relicensed to continue operation until 2037.

71-1-OL

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71-2-OS

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71-4-AL

Dear Nuclear Regulatory Commission, please say NO to Davis-Besse! Make them accountable for the lapses in safety and help protect Ohioans from a potential disaster at Davis-Besse.

71-5-OL

Sincerely,

Robert Kyle  
1161 Riva Ridge Blvd  
Gahanna, OH 43230-3810  
(614) 855-1600

COMMENTER: TIM WAGNER

RULES AND DIRECTIVES  
BRANCH  
UNIT

Gallagher, Carol

**From:** Sierra Club Membership Services [membership.services@sierraclub.org] on behalf of Tim Wagner [sid@shortnorth.org]  
**Sent:** Tuesday, December 07, 2010 7:51 PM  
**To:** Gallagher, Carol  
**Subject:** Davis-Besse Relicense Docket ID: NRC-2010-0298

DEC 07 AM 7:50

RECEIVED

Dec 7, 2010

Carol Gallagher

To Gallagher,

Ohioans are concerned about the environment, the rising costs of energy, and the dangers associated with nuclear power! However, that has not stopped First Energy from irresponsibly pursuing to get the Davis-Besse nuclear plant on Lake Erie relicensed to continue operation until 2037.

78-1-OL

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78-2-OS

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78-4-AL

Dear Nuclear Regulatory Commission, please say NO to Davis-Besse! Make them accountable for the lapses in safety and help protect Ohioans from a potential disaster at Davis-Besse.

78-5-OL

Sincerely,

Tim Wagner  
3089 Ontario St  
Columbus, OH 43224-4251

**COMMENTER: JIM WAGNER**

RULES AND DIRECTIVES  
COMMITTEE

**Gallagher, Carol**

**From:** Sierra Club Membership Services [membership.services@sierraclub.org] on behalf of Jim Wagner [jimwagner@safe-mail.net]  
**Sent:** Tuesday, December 07, 2010 8:21 PM  
**To:** Gallagher, Carol  
**Subject:** Davis-Besse Relicense Docket ID: NRC-2010-0298

DEC 07 2010 7:50

RECEIVED

Dec 7, 2010

Carol Gallagher

To Gallagher,

Ohioans are concerned about the environment, the rising costs of energy, and the dangers associated with nuclear power! However, that has not stopped First Energy from irresponsibly pursuing to get the Davis-Besse nuclear plant on Lake Erie relicensed to continue operation until 2037.

75-1-OL

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75-4-AL

Dear Nuclear Regulatory Commission, please say NO to Davis-Besse! Make them accountable for the lapses in safety and help protect Ohioans from a potential disaster at Davis-Besse.

75-5-OL

Sincerely,

Jim Wagner  
4897 E Walnut St  
Westerville, OH 43081-9610

COMMENTER: SANDY BIHN

RULES AND DIRECTIVES  
COUNCIL  
BOARD

Gallagher, Carol

**From:** Sierra Club Membership Services [membership.services@sierraclub.org] on behalf of Sandy Bihn [sandylakeerie@aol.com]  
**Sent:** Tuesday, December 07, 2010 8:54 PM  
**To:** Gallagher, Carol  
**Subject:** Davis-Besse Relicense Docket ID: NRC-2010-0298

DEC 07 11 7: 50

RECEIVED

Dec 7, 2010

Carol Gallagher

To Gallagher,

Ohioans are concerned about the environment, the rising costs of energy, and the dangers associated with nuclear power! However, that has not stopped First Energy from irresponsibly pursuing to get the Davis-Besse nuclear plant on Lake Erie relicensed to continue operation until 2037.

58-1-OL

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58-4-AL

Dear Nuclear Regulatory Commission, please say NO to Davis-Besse! Make them accountable for the lapses in safety and help protect Ohioans from a potential disaster at Davis-Besse.

58-5-OL

Sincerely,

Sandy Bihn  
6565 Bayshore Rd  
Oregon, OH 43616-4477

**COMMENTER: ELISA YOUNG**

RULES AND DIRECTIVES  
BRANCH

**Gallagher, Carol**

**From:** Sierra Club Membership Services [membership.services@sierraclub.org] on behalf of Elisa Young [elisayoung1@yahoo.com]  
**Sent:** Tuesday, December 07, 2010 11:55 PM  
**To:** Gallagher, Carol  
**Subject:** Davis-Besse Relicense Docket ID: NRC-2010-0298

DEC 8 AM 7:51

RECEIVED

Dec 7, 2010

Carol Gallagher

To Gallagher,

Ohioans are concerned about the environment, the rising costs of energy, and the dangers associated with nuclear power! However, that has not stopped First Energy from irresponsibly pursuing to get the Davis-Besse nuclear plant on Lake Erie relicensed to continue operation until 2037.

89-1-OL

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89-2-OS

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89-4-AL

Dear Nuclear Regulatory Commission, please say NO to Davis-Besse! Make them accountable for the lapses in safety and help protect Ohioans from a potential disaster at Davis-Besse.

89-5-OL

Sincerely,

Elisa Young  
48360 Carmel Rd  
Racine, OH 45771-9643



COMMENTER: LINDA MILLIGAN

RULES AND DIRECTIVES  
SEARCH

Gallagher, Carol

**From:** Sierra Club Membership Services [membership.services@sierraclub.org] on behalf of Linda Milligan [xflowers@aol.com]  
**Sent:** Wednesday, December 08, 2010 5:23 AM  
**To:** Gallagher, Carol  
**Subject:** Davis-Besse Relicense Docket ID: NRC-2010-0298

RECEIVED

Dec 8, 2010

Carol Gallagher

To Gallagher,

Ohioans are concerned about the environment, the rising costs of energy, and the dangers associated with nuclear power! However, that has not stopped First Energy from irresponsibly pursuing to get the Davis-Besse nuclear plant on Lake Erie relicensed to continue operation until 2037.

88-1-OL

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88-4-AL

Dear Nuclear Regulatory Commission, please say NO to Davis-Besse! Make them accountable for the lapses in safety and help protect Ohioans from a potential disaster at Davis-Besse.

88-5-OL

Sincerely,

Linda Milligan  
10620 Belmont PI  
Powell, OH 43065-8698

**COMMENTER: CONNIE HAMMOND**

RULES AND DIRECTIVES  
BRANCH  
LIST

**Gallagher, Carol**

**From:** Sierra Club Membership Services [membership.services@sierraclub.org] on behalf of Connie Hammond [chammon@columbus.rr.com]  
**Sent:** Wednesday, December 08, 2010 11:02 AM  
**To:** Gallagher, Carol  
**Subject:** Davis-Besse Relicense Docket ID: NRC-2010-0298

DEC 8 11:27

RECEIVED

Dec 8, 2010

Carol Gallagher

To Gallagher,

Ohioans are concerned about the environment, the rising costs of energy, and the dangers associated with nuclear power! However, that has not stopped First Energy from irresponsibly pursuing to get the Davis-Besse nuclear plant on Lake Erie relicensed to continue operation until 2037.

} 39-6-OL

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} 39-7-OS

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} 39-8-RW

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} 39-9-AL

Dear Nuclear Regulatory Commission, please say NO to Davis-Besse! Make them accountable for the lapses in safety and help protect Ohioans from a potential disaster at Davis-Besse.

} 39-10-OL

Sincerely,

Connie Hammond  
166 Acton Rd  
Columbus, OH 43214-3304  
(614) 531-4146

COMMENTER: PAUL WOJOSKI

RULES AND DIRECTIVES  
BRANCH

Gallagher, Carol

**From:** Sierra Club Membership Services [membership.services@sierraclub.org] on behalf of Paul Wojoski [pwojoski@hotmail.com]  
**Sent:** Wednesday, December 08, 2010 12:28 PM  
**To:** Gallagher, Carol  
**Subject:** Davis-Besse Relicense Docket ID: NRC-2010-0298

WED DEC -8 PM 1: 27

Dec 8, 2010

RECEIVED

Carol Gallagher

To Gallagher,

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87-4-AL

Dear Nuclear Regulatory Commission, please say NO to Davis-Besse! Make them accountable for the lapses in safety and help protect Ohioans from a potential disaster at Davis-Besse.

87-5-OL

Sincerely,

Paul Wojoski  
166 W Tulane Rd  
Columbus, OH 43202-1927

**COMMENTER: CAROL RAINEY**

RULES AND DIRECTIVES

**Gallagher, Carol**

**From:** Sierra Club Membership Services [membership.services@sierraclub.org] on behalf of Carol Rainey [rainey531@fuse.net]  
**Sent:** Thursday, December 09, 2010 6:39 AM  
**To:** Gallagher, Carol  
**Subject:** Davis-Besse Relicense Docket ID: NRC-2010-0298

DEC 13 AM 9:41

RECEIVED

Dec 9, 2010

Carol Gallagher

To Gallagher,

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60-5-OL

Sincerely,

Carol Rainey  
1497 Beacon St  
Cincinnati, OH 45230-2818

COMMENTER: MARGARET HOLFINGER

RULES AND DIRECTIVES  
SECTION

Gallagher, Carol

**From:** Sierra Club Membership Services [membership.services@sierraclub.org] on behalf of Margaret Holfinger [kenandpegh@aol.com]  
**Sent:** Thursday, December 09, 2010 8:41 AM  
**To:** Gallagher, Carol  
**Subject:** Davis-Besse Relicense Docket ID: NRC-2010-0298

DEC 13 AM 9:41

Dec 9, 2010

RECEIVED

Carol Gallagher

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66-4-AL

Dear Nuclear Regulatory Commission, please say NO to Davis-Besse! Make them accountable for the lapses in safety and help protect Ohioans from a potential disaster at Davis-Besse.

66-5-OL

Sincerely,

Margaret Holfinger  
2869 N Lake Ct  
Columbus, OH 43231-4017

**COMMENTER: SIMONE MORGEN**

RULES AND OBJECTIVES  
FACILITY

**Gallagher, Carol**

**From:** Sierra Club Membership Services [membership.services@sierraclub.org] on behalf of Simone Morgen [smorgen@juno.com]  
**Sent:** Saturday, December 11, 2010 12:39 AM  
**To:** Gallagher, Carol  
**Subject:** Davis-Besse Relicense Docket ID: NRC-2010-0298

11 DEC 13 AM 9:41

Dec 10, 2010

RECEIVED

Carol Gallagher

To Gallagher,

Ohioans are concerned about the environment, the rising costs of energy, and the dangers associated with nuclear power! However, that has not stopped First Energy from irresponsibly pursuing to get the Davis-Besse nuclear plant on Lake Erie relicensed to continue operation until 2037.

34-3-OL

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34-6-AL

Dear Nuclear Regulatory Commission, please say NO to Davis-Besse! Make them accountable for the lapses in safety and help protect Ohioans from a potential disaster at Davis-Besse.

34-7-OL

Sincerely,

Simone Morgen  
38 W Tulane Rd  
Columbus, OH 43202-1987

COMMENTER: CONSTANCE GADWELL-NEWTON ESQ

Gallagher, Carol

FULLS OF DEFECTIVES  
SPRING

**From:** Sierra Club Membership Services [membership.services@sierraclub.org] on behalf of Constance Gadell-Newton, Esq. [cngadell@yahoo.com]  
**Sent:** Saturday, December 11, 2010 6:11 PM  
**To:** Gallagher, Carol  
**Subject:** Davis-Besse Relicense Docket ID: NRC-2010-0298

DEC 13 AM 9:41

Dec 11, 2010

RECEIVED

Carol Gallagher

To Gallagher,

Ohioans are concerned about the environment, the rising costs of energy, and the dangers associated with nuclear power! However, that has not stopped First Energy from irresponsibly pursuing to get the Davis-Besse nuclear plant on Lake Erie relicensed to continue operation until 2037.

43-4-OL

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43-5-OS

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43-7-AL

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43-8-OL

Sincerely,

Constance Gadell-Newton, Esq.  
1021 E Broad St  
Columbus, OH 43205-1357

**COMMENTER: MARY BETH LOHSE**

RULES AND DIRECTIVES

**Gallagher, Carol**

**From:** Sierra Club Membership Services [membership.services@sierraclub.org] on behalf of Mary Beth Lohse [mb@sugarberryhill.com]  
**Sent:** Sunday, December 12, 2010 5:44 PM  
**To:** Gallagher, Carol  
**Subject:** Davis-Besse Relicense Docket ID: NRC-2010-0298

DEC 13 AM 9:41

Dec 12, 2010

RECEIVED

Carol Gallagher

To Gallagher,

Ohioans are concerned about the environment, the rising costs of energy, and the dangers associated with nuclear power! However, that has not stopped First Energy from irresponsibly pursuing to get the Davis-Besse nuclear plant on Lake Erie relicensed to continue operation until 2037.

80-1-OL

**NO NUCLEAR POWER PLANT IS SAFE AND DAVIS-BESSE IS ONE OF THE WORST!**  
In 2002 the Davis-Besse plant nearly melted down almost causing a nuclear disaster. Neither First Energy nor the Nuclear Regulatory Commission discovered an enormous rust hole in the reactor head until it was almost too late! According to the Nuclear Regulatory Commission, 2 of the top 5 most dangerous nuclear incidences since 1979 have happened at Davis-Besse.

80-2-OS

**NUCLEAR ENERGY IS NOT CLEAN OR GREEN ENERGY!**  
Every nuclear reactor generates about 20 tons of highly radioactive waste per year, and after 40 years of nuclear power, the U.S. still has not found an acceptable solution for the waste. The waste can cause cancer, birth defects, and even death. Nuclear power uses and pollutes significant amounts of water, while the mining, transportation, and enriching of uranium is carbon intensive which contributes to global warming.

80-3-RW

I do not want Davis-Besse to continue generating electricity and want the Nuclear Regulatory Commission to end the operating license for the plant. I care about the environment and support clean energy solutions such as energy efficiency and renewable power, and I know that Davis-Besse compromises my safety and the safety of my loved ones.

80-4-AL

Dear Nuclear Regulatory Commission, please say NO to Davis-Besse! Make them accountable for the lapses in safety and help protect Ohioans from a potential disaster at Davis-Besse.

80-5-OL

Sincerely,

Mary Beth Lohse  
33070 Cotterill Rd  
Pomeroy, OH 45769-9464



COMMENTER: JEAN PUCHSTEIN

RULES AND DIRECTIVES  
COMMISSION

Gallagher, Carol

**From:** Sierra Club Membership Services [membership.services@sierraclub.org] on behalf of Jean Puchstein [puch2\_1999@yahoo.com]  
**Sent:** Monday, December 13, 2010 9:14 AM  
**To:** Gallagher, Carol  
**Subject:** Davis-Besse Relicense Docket ID: NRC-2010-0298

DEC 13 AM 9:41

Dec 13, 2010

RECEIVED

Carol Gallagher

To Gallagher,

Ohioans are concerned about the environment, the rising costs of energy, and the dangers associated with nuclear power! However, that has not stopped First Energy from irresponsibly pursuing to get the Davis-Besse nuclear plant on Lake Erie relicensed to continue operation until 2037.

} 57-1-OL

**NO NUCLEAR POWER PLANT IS SAFE AND DAVIS-BESSE IS ONE OF THE WORST!**  
In 2002 the Davis-Besse plant nearly melted down almost causing a nuclear disaster. Neither First Energy nor the Nuclear Regulatory Commission discovered an enormous rust hole in the reactor head until it was almost too late! According to the Nuclear Regulatory Commission, 2 of the top 5 most dangerous nuclear incidences since 1979 have happened at Davis-Besse.

} 57-2-OS

**NUCLEAR ENERGY IS NOT CLEAN OR GREEN ENERGY!**  
Every nuclear reactor generates about 20 tons of highly radioactive waste per year, and after 40 years of nuclear power, the U.S. still has not found an acceptable solution for the waste. The waste can cause cancer, birth defects, and even death. Nuclear power uses and pollutes significant amounts of water, while the mining, transportation, and enriching of uranium is carbon intensive which contributes to global warming.

} 57-3-RW

I do not want Davis-Besse to continue generating electricity and want the Nuclear Regulatory Commission to end the operating license for the plant. I care about the environment and support clean energy solutions such as energy efficiency and renewable power, and I know that Davis-Besse compromises my safety and the safety of my loved ones.

} 57-4-AL

Dear Nuclear Regulatory Commission, please say NO to Davis-Besse! Make them accountable for the lapses in safety and help protect Ohioans from a potential disaster at Davis-Besse.

} 57-5-OL

Sincerely,

Jean Puchstein  
505 E Dominion Blvd  
Columbus, OH 43214-2216

**COMMENTER: ANDY TROKAN**

RULES AND DIRECTIVES  
BRANCH

**Gallagher, Carol**

**From:** Sierra Club Membership Services [membership.services@sierraclub.org] on behalf of Andy Trokan [matttrokan@gmail.com]  
**Sent:** Tuesday, December 14, 2010 2:17 PM  
**To:** Gallagher, Carol  
**Subject:** Davis-Besse Relicense Docket ID: NRC-2010-0298

DEC 16 AM 10:34

RECEIVED

Dec 14, 2010

Carol Gallagher

To Gallagher,

Ohioans are concerned about the environment, the rising costs of energy, and the dangers associated with nuclear power! However, that has not stopped First Energy from irresponsibly pursuing to get the Davis-Besse nuclear plant on Lake Erie relicensed to continue operation until 2037.

72-1-OL

**NO NUCLEAR POWER PLANT IS SAFE AND DAVIS-BESSE IS ONE OF THE WORST!**  
In 2002 the Davis-Besse plant nearly melted down almost causing a nuclear disaster. Neither First Energy nor the Nuclear Regulatory Commission discovered an enormous rust hole in the reactor head until it was almost too late! According to the Nuclear Regulatory Commission, 2 of the top 5 most dangerous nuclear incidences since 1979 have happened at Davis-Besse.

72-2-OS

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72-3-RW

I do not want Davis-Besse to continue generating electricity and want the Nuclear Regulatory Commission to end the operating license for the plant. I care about the environment and support clean energy solutions such as energy efficiency and renewable power, and I know that Davis-Besse compromises my safety and the safety of my loved ones.

72-4-AL

Dear Nuclear Regulatory Commission, please say NO to Davis-Besse! Make them accountable for the lapses in safety and help protect Ohioans from a potential disaster at Davis-Besse.

72-5-OL

Sincerely,

Andy Trokan  
4409 Franklin Ave  
Cincinnati, OH 45212-2905

COMMENTER: CHRISTIAN GEORGE

RULES AND DIRECTIVES  
BRANCH

Gallagher, Carol

**From:** Sierra Club Membership Services [membership.services@sierraclub.org] on behalf of Christian George [cjgeorge41@gmail.com]  
**Sent:** Wednesday, December 15, 2010 11:58 AM  
**To:** Gallagher, Carol  
**Subject:** Davis-Besse Relicense Docket ID: NRC-2010-0298

REC 16 AM 10:34

RECEIVED

Dec 15, 2010

Carol Gallagher

To Gallagher,

Ohioans are concerned about the environment, the rising costs of energy, and the dangers associated with nuclear power! However, that has not stopped First Energy from irresponsibly pursuing to get the Davis-Besse nuclear plant on Lake Erie relicensed to continue operation until 2037.

51-1-OL

**NO NUCLEAR POWER PLANT IS SAFE AND DAVIS-BESSE IS ONE OF THE WORST!**  
In 2002 the Davis-Besse plant nearly melted down almost causing a nuclear disaster. Neither First Energy nor the Nuclear Regulatory Commission discovered an enormous rust hole in the reactor head until it was almost too late! According to the Nuclear Regulatory Commission, 2 of the top 5 most dangerous nuclear incidences since 1979 have happened at Davis-Besse.

51-2-OS

**NUCLEAR ENERGY IS NOT CLEAN OR GREEN ENERGY!**  
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51-3-RW

I do not want Davis-Besse to continue generating electricity and want the Nuclear Regulatory Commission to end the operating license for the plant. I care about the environment and support clean energy solutions such as energy efficiency and renewable power, and I know that Davis-Besse compromises my safety and the safety of my loved ones.

51-4-AL

Dear Nuclear Regulatory Commission, please say NO to Davis-Besse! Make them accountable for the lapses in safety and help protect Ohioans from a potential disaster at Davis-Besse.

51-5-OL

Sincerely,

Christian George  
1490 Brookforest Dr  
Columbus, OH 43204-5029  
(614) 274-7157

**COMMENTER: DONNA EMIG**

RULES AND DIRECTIVES  
BRANCH

**Gallagher, Carol**

**From:** Sierra Club Membership Services [membership.services@sierraclub.org] on behalf of donna emig [donnaemig@sbcglobal.net]  
**Sent:** Thursday, December 16, 2010 10:12 AM  
**To:** Gallagher, Carol  
**Subject:** Davis-Besse Relicense Docket ID: NRC-2010-0298

THU DEC 16 AM 10:35

RECEIVED

Dec 16, 2010

Carol Gallagher

To Gallagher,

Ohioans are concerned about the environment, the rising costs of energy, and the dangers associated with nuclear power! However, that has not stopped First Energy from irresponsibly pursuing to get the Davis-Besse nuclear plant on Lake Erie relicensed to continue operation until 2037.

82-1-OL

**NO NUCLEAR POWER PLANT IS SAFE AND DAVIS-BESSE IS ONE OF THE WORST!**  
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82-2-OS

**NUCLEAR ENERGY IS NOT CLEAN OR GREEN ENERGY!**  
Every nuclear reactor generates about 20 tons of highly radioactive waste per year, and after 40 years of nuclear power, the U.S. still has not found an acceptable solution for the waste. The waste can cause cancer, birth defects, and even death. Nuclear power uses and pollutes significant amounts of water, while the mining, transportation, and enriching of uranium is carbon intensive which contributes to global warming.

82-3-RW

I do not want Davis-Besse to continue generating electricity and want the Nuclear Regulatory Commission to end the operating license for the plant. I care about the environment and support clean energy solutions such as energy efficiency and renewable power, and I know that Davis-Besse compromises my safety and the safety of my loved ones.

82-4-AL

Dear Nuclear Regulatory Commission, please say NO to Davis-Besse! Make them accountable for the lapses in safety and help protect Ohioans from a potential disaster at Davis-Besse.

82-5-OL

Sincerely,

donna emig  
30023 Young Dr  
Gibraltar, MI 48173-9455

COMMENTER: BEN SHAPIRO

RULES AND DIRECTIVES  
BRANCH

Gallagher, Carol

**From:** Sierra Club Membership Services [membership.services@sierraclub.org] on behalf of Ben Shapiro [bensshapiro@gmail.com]  
**Sent:** Thursday, December 16, 2010 5:12 PM  
**To:** Gallagher, Carol  
**Subject:** Davis-Besse Relicense Docket ID: NRC-2010-0298

RECEIVED

Dec 16, 2010

Carol Gallagher

To Gallagher,

Ohioans are concerned about the environment, the rising costs of energy, and the dangers associated with nuclear power! However, that has not stopped First Energy from irresponsibly pursuing to get the Davis-Besse nuclear plant on Lake Erie relicensed to continue operation until 2037.

67-1-OL

**NO NUCLEAR POWER PLANT IS SAFE AND DAVIS-BESSE IS ONE OF THE WORST!**  
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67-2-OS

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67-3-RW

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67-4-AL

Dear Nuclear Regulatory Commission, please say NO to Davis-Besse! Make them accountable for the lapses in safety and help protect Ohioans from a potential disaster at Davis-Besse.

67-5-OL

Sincerely,

Ben Shapiro  
2100 W 32  
cleveland, OH 44115  
(804) 543-4346

**COMMENTER: NICK MELLIS**

**Gallagher, Carol**

RULES AND DIRECTIVES

**From:** Sierra Club Membership Services [membership.services@sierraclub.org] on behalf of Nick Mellis [nickmellis@gpnj.org]  
**Sent:** Monday, December 20, 2010 3:26 PM  
**To:** Gallagher, Carol  
**Subject:** Davis-Besse Relicense Docket ID: NRC-2010-0298

2010 DEC 21 AM 8:00

Dec 20, 2010

RECEIVED

Carol Gallagher

To Gallagher,

Ohioans are concerned about the environment, the rising costs of energy, and the dangers associated with nuclear power! However, that has not stopped First Energy from irresponsibly pursuing to get the Davis-Besse nuclear plant on Lake Erie relicensed to continue operation until 2037.

86-1-OL

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86-2-OS

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86-3-RW

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86-4-AL

Dear Nuclear Regulatory Commission, please say NO to Davis-Besse! Make them accountable for the lapses in safety and help protect Ohioans from a potential disaster at Davis-Besse.

86-5-OL

Sincerely,

Nick Mellis  
135 Harmony Ave  
Lawrenceville, NJ 08648-4321  
(609) 791-9878

COMMENTER: KATHLEEN BODNAR

RULES AND DIRECTIVES  
BRANCH  
OFFICE

Gallagher, Carol

**From:** Sierra Club Membership Services [membership.services@sierraclub.org] on behalf of Kathleen Bodnar [kathybodnar@aol.com]  
**Sent:** Monday, January 03, 2011 11:24 AM  
**To:** Gallagher, Carol  
**Subject:** Davis-Besse Relicense Docket ID: NRC-2010-0298

2011 JAN -3 AM 11: 43

RECEIVED

Jan 3, 2011

Carol Gallagher

To Gallagher,

Ohioans are concerned about the environment, the rising costs of energy, and the dangers associated with nuclear power! However, that has not stopped First Energy from irresponsibly pursuing to get the Davis-Besse nuclear plant on Lake Erie relicensed to continue operation until 2037.

65-1-OL

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65-2-OS

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65-3-RW

I do not want Davis-Besse to continue generating electricity and want the Nuclear Regulatory Commission to end the operating license for the plant. I care about the environment and support clean energy solutions such as energy efficiency and renewable power, and I know that Davis-Besse compromises my safety and the safety of my loved ones.

65-4-AL

Dear Nuclear Regulatory Commission, please say NO to Davis-Besse! Make them accountable for the lapses in safety and help protect Ohioans from a potential disaster at Davis-Besse.

65-5-OL

Sincerely,

Kathleen Bodnar  
2386 Roth Dr  
Cuyahoga Falls, OH 44221-3026  
(330) 922-0290

**COMMENTER: JOAN DELAURO**

RULES AND DIRECTIVES  
BRANCH

**Gallagher, Carol**

**From:** Sierra Club Membership Services [membership.services@sierraclub.org] on behalf of Joan DeLauro [joandelauro@sbcglobal.net]  
**Sent:** Monday, January 03, 2011 7:39 PM  
**To:** Gallagher, Carol  
**Subject:** Davis-Besse Relicense Docket ID: NRC-2010-0298

2011 JAN -4 AM 7:40

RECEIVED

Jan 3, 2011

Carol Gallagher

To Gallagher,

Ohioans are concerned about the environment, the rising costs of energy, and the dangers associated with nuclear power! However, that has not stopped First Energy from irresponsibly pursuing to get the Davis-Besse nuclear plant on Lake Erie relicensed to continue operation until 2037.

73-1-OL

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73-2-OS

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73-3-RW

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73-4-AL

Dear Nuclear Regulatory Commission, please say NO to Davis-Besse! Make them accountable for the lapses in safety and help protect Ohioans from a potential disaster at Davis-Besse.

73-5-OL

Sincerely,

Joan DeLauro  
2434 Queenston Rd  
Cleveland Hts, OH 44118-4316



COMMENTER: VIRGINIA DOUGLAS

RULES AND DIRECTIVES  
BRANCH

Gallagher, Carol

From: Sierra Club Membership Services [membership.services@sierraclub.org] on behalf of Virginia Douglas [ginny133@aol.com]  
Sent: Monday, January 03, 2011 4:39 PM  
To: Gallagher, Carol  
Subject: Davis-Besse Relicense Docket ID: NRC-2010-0298

701 JAN -4 AM 7:40

RECEIVED

Jan 3, 2011

Carol Gallagher

To Gallagher,

Ohioans are concerned about the environment, the rising costs of energy, and the dangers associated with nuclear power! However, that has not stopped First Energy from irresponsibly pursuing to get the Davis-Besse nuclear plant on Lake Erie relicensed to continue operation until 2037.

79-1-OL

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79-2-OS

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79-3-RW

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79-4-AL

Dear Nuclear Regulatory Commission, please say NO to Davis-Besse! Make them accountable for the lapses in safety and help protect Ohioans from a potential disaster at Davis-Besse.

79-5-OL

Sincerely,

Virginia Douglas  
133 Brandtson Ave  
Elyria, OH 44035-3931  
(440) 366-1333

COMMENTER: JUNE DOUGLAS

RULES AND DIRECTIVES  
BOARDS  
COMMISSION

Gallagher, Carol

**From:** Sierra Club Membership Services [membership.services@sierraclub.org] on behalf of June Douglas [junedouglas1@yahoo.com]  
**Sent:** Friday, January 07, 2011 3:58 AM  
**To:** Gallagher, Carol  
**Subject:** Davis-Besse Relicense Docket ID: NRC-2010-0298

2011 JAN --7 AM 7:59

RECEIVED

Jan 7, 2011

Carol Gallagher

To Gallagher,

Ohioans are concerned about the environment, the rising costs of energy, and the dangers associated with nuclear power! However, that has not stopped First Energy from irresponsibly pursuing to get the Davis-Besse nuclear plant on Lake Erie relicensed to continue operation until 2037.

76-1-OL

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76-2-OS

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76-3-RW

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76-4-AL

Dear Nuclear Regulatory Commission, please say NO to Davis-Besse! Make them accountable for the lapses in safety and help protect Ohioans from a potential disaster at Davis-Besse.

76-5-OL

Sincerely,

June Douglas  
318 Garfield Dr  
Port Clinton, OH 43452-1619

COMMENTER: JEREMY BANTZ

RULES AND OBJECTIVES  
BRANCH

Gallagher, Carol

**From:** Sierra Club Membership Services [membership.services@sierraclub.org] on behalf of Jeremy Bantz [jeremybantz@yahoo.com]  
**Sent:** Saturday, January 08, 2011 4:31 AM  
**To:** Gallagher, Carol  
**Subject:** Davis-Besse Relicense Docket ID: NRC-2010-0298

FRI JAN 10 AM 9:00

RECEIVED

Jan 8, 2011

Carol Gallagher

To Gallagher,

Ohioans are concerned about the environment, the rising costs of energy, and the dangers associated with nuclear power! However, that has not stopped First Energy from irresponsibly pursuing to get the Davis-Besse nuclear plant on Lake Erie relicensed to continue operation until 2037.

55-1-OL

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55-2-OS

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55-3-RW

I do not want Davis-Besse to continue generating electricity and want the Nuclear Regulatory Commission to end the operating license for the plant. I care about the environment and support clean energy solutions such as energy efficiency and renewable power, and I know that Davis-Besse compromises my safety and the safety of potentially everyone that lives in the entire midwest. The risk is unacceptable.

55-4-AL

Dear Nuclear Regulatory Commission, please say NO to Davis-Besse! Make them accountable for the lapses in safety and help protect Ohioans from a potential disaster at Davis-Besse.

55-5-OL

Sincerely,

Jeremy Bantz  
6031 Perimeter Lakes Dr  
Dublin, OH 43017-5209

**COMMENTER: LEEZA PERRY**

RULES AND DIRECTIVES  
9 27 2011

**Gallagher, Carol**

**From:** Sierra Club Membership Services [membership.services@sierraclub.org] on behalf of Leeza Perry [leezajp4@yahoo.com]  
**Sent:** Thursday, January 13, 2011 4:43 PM  
**To:** Gallagher, Carol  
**Subject:** Davis-Besse Relicense Docket ID: NRC-2010-0298

JAN 14 AM 7:31

Jan 13, 2011

RECEIVED

Carol Gallagher

To Gallagher,

Ohioans are concerned about the environment, the rising costs of energy, and the dangers associated with nuclear power! However, that has not stopped First Energy from irresponsibly pursuing to get the Davis-Besse nuclear plant on Lake Erie relicensed to continue operation until 2037.

54-1-OL

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54-2-OS

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54-3-RW

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54-4-AL

Dear Nuclear Regulatory Commission, please say NO to Davis-Besse! Make them accountable for the lapses in safety and help protect Ohioans from a potential disaster at Davis-Besse.

54-5-OL

Sincerely,

Leeza Perry  
2339 Valley Rd  
Salem, OH 44460-9727  
(330) 942-7107

COMMENTER: LANCE WILSON

RULES AND DIRECTIVES  
DIVISION

Gallagher, Carol

**From:** Sierra Club Membership Services [membership.services@sierraclub.org] on behalf of Lance Wilson [wtool128@aol.com]  
**Sent:** Thursday, January 20, 2011 7:44 PM  
**To:** Gallagher, Carol  
**Subject:** Davis-Besse Relicense Docket ID: NRC-2010-0298

RECEIVED

Jan 20, 2011

Carol Gallagher

To Gallagher,

Ohioans are concerned about the environment, the rising costs of energy, and the dangers associated with nuclear power! However, that has not stopped First Energy from irresponsibly pursuing to get the Davis-Besse nuclear plant on Lake Erie relicensed to continue operation until 2037.

84-1-OL

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84-2-OS

NUCLEAR ENERGY IS NOT CLEAN OR GREEN ENERGY!  
Every nuclear reactor generates about 20 tons of highly radioactive waste per year, and after 40 years of nuclear power, the U.S. still has not found an acceptable solution for the waste. The waste can cause cancer, birth defects, and even death. Nuclear power uses and pollutes significant amounts of water, while the mining, transportation, and enriching of uranium is carbon intensive which contributes to global warming.

84-3-RW

I do not want Davis-Besse to continue generating electricity and want the Nuclear Regulatory Commission to end the operating license for the plant. I care about the environment and support clean energy solutions such as energy efficiency and renewable power, and I know that Davis-Besse compromises my safety and the safety of my loved ones.

84-4-AL

Dear Nuclear Regulatory Commission, please say NO to Davis-Besse! Make them accountable for the lapses in safety and help protect Ohioans from a potential disaster at Davis-Besse.

84-5-OL

Sincerely,

Lance Wilson  
53 Village Green Dr  
Crooksville, OH 43731-9763  
(740) 982-2445

**COMMENTS: ERIKA AGNER**

**Gallagher, Carol**

**From:** Sierra Club Membership Services [membership.services@sierraclub.org] on behalf of Erika Agner [erika\_lynn2006@hotmail.com]  
**Sent:** Wednesday, February 09, 2011 2:39 PM  
**To:** Gallagher, Carol  
**Subject:** Davis-Besse Relicense Docket ID: NRC-2010-0298

Feb 9, 2011

Carol Gallagher

To Gallagher,

Ohioans are concerned about the environment, the rising costs of energy, and the dangers associated with nuclear power! However, that has not stopped First Energy from irresponsibly pursuing to get the Davis-Besse nuclear plant on Lake Erie relicensed to continue operation until 2037.

50-1-OL

**NO NUCLEAR POWER PLANT IS SAFE AND DAVIS-BESSE IS ONE OF THE WORST!**  
In 2002 the Davis-Besse plant nearly melted down almost causing a nuclear disaster. Neither First Energy nor the Nuclear Regulatory Commission discovered an enormous rust hole in the reactor head until it was almost too late! According to the Nuclear Regulatory Commission, 2 of the top 5 most dangerous nuclear incidences since 1979 have happened at Davis-Besse.

50-2-OS

**NUCLEAR ENERGY IS NOT CLEAN OR GREEN ENERGY!**  
Every nuclear reactor generates about 20 tons of highly radioactive waste per year, and after 40 years of nuclear power, the U.S. still has not found an acceptable solution for the waste. The waste can cause cancer, birth defects, and even death. Nuclear power uses and pollutes significant amounts of water, while the mining, transportation, and enriching of uranium is carbon intensive which contributes to global warming.

50-3-RW

I do not want Davis-Besse to continue generating electricity and want the Nuclear Regulatory Commission to end the operating license for the plant. I care about the environment and support clean energy solutions such as energy efficiency and renewable power, and I know that Davis-Besse compromises my safety and the safety of my loved ones.

50-4-AL

Dear Nuclear Regulatory Commission, please say NO to Davis-Besse! Make them accountable for the lapses in safety and help protect Ohioans from a potential disaster at Davis-Besse.

50-5-OL

Sincerely,

Erika Agner  
215 W Main St  
Leipsic, OH 45856-1133

RECEIVED  
2011 FEB -9 PM 3:02  
RULES / COMPLIANCE  
REGISTRY

COMMENTER: LIZ LORING

Gallagher, Carol

From: Sierra Club Membership Services [membership.services@sierraclub.org] on behalf of Liz Loring [lizniche@gmail.com]
Sent: Sunday, February 13, 2011 10:23 AM
To: Gallagher, Carol
Subject: Davis-Besse Relicense Docket ID: NRC-2010-0298

Feb 13, 2011

Carol Gallagher

To Gallagher,

RECEIVED FEB 14 AM 8:21 RULES AND DIRECTIVES DIVISION

Ohioans are concerned about the environment, the rising costs of energy, and the dangers associated with nuclear power! However, that has not stopped First Energy from irresponsibly pursuing to get the Davis-Besse nuclear plant on Lake Erie relicensed to continue operation until 2037.

83-1-OL

NO NUCLEAR POWER PLANT IS SAFE AND DAVIS-BESSE IS ONE OF THE WORST!

In 2002 the Davis-Besse plant nearly melted down almost causing a nuclear disaster. Neither First Energy nor the Nuclear Regulatory Commission discovered an enormous rust hole in the reactor head until it was almost too late! According to the Nuclear Regulatory Commission, 2 of the top 5 most dangerous nuclear incidences since 1979 have happened at Davis-Besse.

83-2-OS

NUCLEAR ENERGY IS NOT CLEAN OR GREEN ENERGY!

Every nuclear reactor generates about 20 tons of highly radioactive waste per year, and after 40 years of nuclear power, the U.S. still has not found an acceptable solution for the waste. The waste can cause cancer, birth defects, and even death. Nuclear power uses and pollutes significant amounts of water, while the mining, transportation, and enriching of uranium is carbon intensive which contributes to global warming.

83-3-RW

I do not want Davis-Besse to continue generating electricity and want the Nuclear Regulatory Commission to end the operating license for the plant. I care about the environment and support clean energy solutions such as energy efficiency and renewable power, and I know that Davis-Besse compromises my safety and the safety of my loved ones.

83-4-AL

Dear Nuclear Regulatory Commission, please say NO to Davis-Besse! Make them accountable for the lapses in safety and help protect Ohioans from a potential disaster at Davis-Besse.

83-5-OL

Sincerely,

Liz Loring
2781 Westbrook Dr
Req
Cincinnati, OH 45211-7614
(513) 460-5022

COMMENTER: CATE RENNER

RULES AND DIRECTIVES  
BRANCH

Gallagher, Carol

From: Sierra Club Ohio Chapter [christian.george@sierraclub.org] on behalf of cate renner [flamingpi6@aol.com]  
Sent: Friday, April 22, 2011 12:50 PM  
To: Gallagher, Carol  
Subject: Davis-Besse Relicense Docket ID: NRC-2010-0298

2011 APR 22 PM 12:54

Apr 22, 2011

Carol Gallagher

To Gallagher,

9/20/2010  
75 FR 57299 (27)

RECEIVED

Ohioans are concerned about the environment, the rising costs of energy, and the dangers associated with nuclear power! However, that has not stopped First Energy from irresponsibly pursuing to get the Davis-Besse nuclear plant on Lake Erie relicensed to continue operation until 2037.

62-1-OL

NO NUCLEAR POWER PLANT IS SAFE AND DAVIS-BESSE IS ONE OF THE WORST!  
In 2002 the Davis-Besse plant nearly melted down almost causing a nuclear disaster. Neither First Energy nor the Nuclear Regulatory Commission discovered an enormous rust hole in the reactor head until it was almost too late! According to the Nuclear Regulatory Commission, 2 of the top 5 most dangerous nuclear incidences since 1979 have happened at Davis-Besse.

62-2-OS

NUCLEAR ENERGY IS NOT CLEAN OR GREEN ENERGY!  
Every nuclear reactor generates about 20 tons of highly radioactive waste per year, and after 40 years of nuclear power, the U.S. still has not found an acceptable solution for the waste. The waste can cause cancer, birth defects, and even death. Nuclear power uses and pollutes significant amounts of water, while the mining, transportation, and enriching of uranium is carbon intensive which contributes to global warming.

62-3-RW

I do not want Davis-Besse to continue generating electricity and want the Nuclear Regulatory Commission to end the operating license for the plant. I care about the environment and support clean energy solutions such as energy efficiency and renewable power, and I know that Davis-Besse compromises my safety and the safety of my loved ones.

62-4-AL

Dear Nuclear Regulatory Commission, please say NO to Davis-Besse! Make them accountable for the lapses in safety and help protect Ohioans from a potential disaster at Davis-Besse.

62-5-OL

Sincerely,

cate renner  
250 Henry St  
Dayton, OH 45403-2316  
(937) 222-2736

SUNSI Review Complete  
Template = ADM-013

E-RIDS = ADM-03  
Cdd = P. Cooper  
(pec)



COMMENTER: GEORGE M WILLIAMS

RULES AND DIRECTIVES  
BRANCH

Gallagher, Carol

From: Sierra Club Membership Services [membership.services@sierraclub.org] on behalf of George M. Williams [gwilliams59@woh.rr.com]  
Sent: Wednesday, January 05, 2011 3:56 PM  
To: Gallagher, Carol  
Subject: Davis-Besse Relicense Docket ID: NRC-2010-0298

2011 JAN --6 AM 7: 33

Jan 5, 2011

Carol Gallagher

To Gallagher,

9/20/2010 (21)  
75 FR 57299

RECEIVED

Ohioans are concerned about the environment, the rising costs of energy, and the dangers associated with nuclear power! However, that has not stopped First Energy from irresponsibly pursuing to get the Davis-Besse nuclear plant on Lake Erie relicensed to continue operation until 2037.

81-1-OL

NO NUCLEAR POWER PLANT IS SAFE AND DAVIS-BESSE IS ONE OF THE WORST!  
In 2002 the Davis-Besse plant nearly melted down almost causing a nuclear disaster. Neither First Energy nor the Nuclear Regulatory Commission discovered an enormous rust hole in the reactor head until it was almost too late! According to the Nuclear Regulatory Commission, 2 of the top 5 most dangerous nuclear incidences since 1979 have happened at Davis-Besse.

81-2-OS

NUCLEAR ENERGY IS NOT CLEAN OR GREEN ENERGY!  
Every nuclear reactor generates about 20 tons of highly radioactive waste per year, and after 40 years of nuclear power, the U.S. still has not found an acceptable solution for the waste. The waste can cause cancer, birth defects, and even death. Nuclear power uses and pollutes significant amounts of water, while the mining, transportation, and enriching of uranium is carbon intensive which contributes to global warming.

81-3-RW

I do not want Davis-Besse to continue generating electricity and want the Nuclear Regulatory Commission to end the operating license for the plant. I care about the environment and support clean energy solutions such as energy efficiency and renewable power, and I know that Davis-Besse compromises my safety and the safety of my loved ones.

81-4-AL

We are moving to Westlake, Oh. soon and don't want to have to worry about unsafe Davis-besse blowing up near us.

I have read this petition and agree with it all.

Thank you.

81-5-OL

Dear Nuclear Regulatory Commission, please say NO to Davis-Besse! Make them accountable for the lapses in safety and help protect Ohioans from a potential disaster at Davis-Besse.

Sincerely,

George M. Williams  
309 E Edgewood St  
Sidney, OH 45365-1603

SONSF Review Complete  
Temp Code = ADH-013

KRFS = ADH-03  
add = p. Cooper (pcc)

COMMENTER: AMANDA BALDINO

RULES AND DIRECTIVES  
BRANCH

Gallagher, Carol

From: Sierra Club Membership Services [membership.services@sierraclub.org] on behalf of  
Amanda Baldino [sunshineinmyeyes47@yahoo.com]  
Sent: Wednesday, January 05, 2011 10:56 PM  
To: Gallagher, Carol  
Subject: Davis-Besse Relicense Docket ID: NRC-2010-0298

2011 JAN -6 AM 7:33

Jan 5, 2011

Carol Gallagher

To Gallagher,

9/20/2010  
75FR 57299  
22  
RECEIVED

Ohioans are concerned about the environment, the rising costs of energy, and the dangers associated with nuclear power! However, that has not stopped First Energy from irresponsibly pursuing to get the Davis-Besse nuclear plant on Lake Erie relicensed to continue operation until 2037.

52-1-OL

**NO NUCLEAR POWER PLANT IS SAFE AND DAVIS-BESSE IS ONE OF THE WORST!**

In 2002 the Davis-Besse plant nearly melted down almost causing a nuclear disaster. Neither First Energy nor the Nuclear Regulatory Commission discovered an enormous rust hole in the reactor head until it was almost too late! According to the Nuclear Regulatory Commission, 2 of the top 5 most dangerous nuclear incidences since 1979 have happened at Davis-Besse.

52-2-OS

**NUCLEAR ENERGY IS NOT CLEAN OR GREEN ENERGY!**

Every nuclear reactor generates about 20 tons of highly radioactive waste per year, and after 40 years of nuclear power, the U.S. still has not found an acceptable solution for the waste. The waste can cause cancer, birth defects, and even death. Nuclear power uses and pollutes significant amounts of water, while the mining, transportation, and enriching of uranium is carbon intensive which contributes to global warming.

52-3-RW

I do not want Davis-Besse to continue generating electricity and want the Nuclear Regulatory Commission to end the operating license for the plant. I care about the environment and support clean energy solutions such as energy efficiency and renewable power, and I know that Davis-Besse compromises my safety and the safety of my loved ones.

52-4-AL

This concerns me much.

Dear Nuclear Regulatory Commission, please say NO to Davis-Besse! Make them accountable for the lapses in safety and help protect Ohioans from a potential disaster at Davis-Besse.

52-5-OL

Sincerely,

Amanda Baldino  
9645 Feather Wood Ln  
Dayton, OH 45458-9309

SONSI Review Complete  
Template = ADM-013

ERIDS = ADM-03  
Call - P. Cooper (pec)

COMMENTER: JOAN LANG

RULES AND DIRECTIVES  
BRANCH  
LISNSC

Gallagher, Carol

From: Sierra Club Membership Services [membership.services@sierraclub.org] on behalf of Joan Lang [jlang@csjoseph.org]  
Sent: Friday, January 07, 2011 9:59 AM  
To: Gallagher, Carol  
Subject: Davis-Besse Relicense Docket ID: NRC-2010-0298

2011 JAN -7 AM 10: 39

Jan 7, 2011

Carol Gallagher

To Gallagher,

9/22/2010  
75 FR 5/299

23

RECEIVED

Ohioans are concerned about the environment, the rising costs of energy, and the dangers associated with nuclear power! However, that has not stopped First Energy from irresponsibly pursuing to get the Davis-Besse nuclear plant on Lake Erie relicensed to continue operation until 2037.

74-1-OL

NO NUCLEAR POWER PLANT IS SAFE AND DAVIS-BESSE IS ONE OF THE WORST!  
In 2002 the Davis-Besse plant nearly melted down almost causing a nuclear disaster. Neither First Energy nor the Nuclear Regulatory Commission discovered an enormous rust hole in the reactor head until it was almost too late! According to the Nuclear Regulatory Commission, 2 of the top 5 most dangerous nuclear incidences since 1979 have happened at Davis-Besse.

74-2-OS

NUCLEAR ENERGY IS NOT CLEAN OR GREEN ENERGY!  
Every nuclear reactor generates about 20 tons of highly radioactive waste per year, and after 40 years of nuclear power, the U.S. still has not found an acceptable solution for the waste. The waste can cause cancer, birth defects, and even death. Nuclear power uses and pollutes significant amounts of water, while the mining, transportation, and enriching of uranium is carbon intensive which contributes to global warming.

74-3-RW

I do not want Davis-Besse to continue generating electricity and want the Nuclear Regulatory Commission to end the operating license for the plant.

74-4-AL

I care about the environment and support clean energy solutions such as energy efficiency and renewable power, and I know that Davis-Besse compromises my safety and the safety of my loved ones.

Davis-Besse not safe and we seem to want to wait until something really disastrous happens before anything is done--when it is too late!  
Nuclear energy is NOT clean energy and we have the perpetual problem of what to do with nuclear waste.

74-5-OL

Dear Nuclear Regulatory Commission, please say NO to Davis-Besse! Make them accountable for the lapses in safety and help protect Ohioans from a potential disaster at Davis-Besse.

Sincerely,

Joan Lang  
3430 Rocky River Dr  
Cleveland, OH 44111-2954

30 USE Review Complete  
Template = ADM-013

E-RIDS = ADM-03  
1. Call = P. Cooper (pec)

COMMENTER: SUSAN JONES

RULES AND DIRECTIVES  
BRANCH  
USNFC

Gallagher, Carol

From: Sierra Club Membership Services [membership.services@sierraclub.org] on behalf of Susan Jones [jones8204@roadrunner.com]  
Sent: Monday, January 17, 2011 1:25 AM  
To: Gallagher, Carol  
Subject: Davis-Besse Relicense Docket ID: NRC-2010-0298

2011 JAN 18 AM 10:27

RECEIVED

Jan 17, 2011

Carol Gallagher

To Gallagher,

9/20/2010  
75 FR 57299  
24

Ohioans are concerned about the environment, the rising costs of energy, and the dangers associated with nuclear power! However, that has not stopped First Energy from irresponsibly pursuing to get the Davis-Besse nuclear plant on Lake Erie relicensed to continue operation until 2037.

68-1-OL

NO NUCLEAR POWER PLANT IS SAFE AND DAVIS-BESSE IS ONE OF THE WORST!  
In 2002 the Davis-Besse plant nearly melted down almost causing a nuclear disaster. Neither First Energy nor the Nuclear Regulatory Commission discovered an enormous rust hole in the reactor head until it was almost too late! According to the Nuclear Regulatory Commission, 2 of the top 5 most dangerous nuclear incidences since 1979 have happened at Davis-Besse.

68-2-OS

NUCLEAR ENERGY IS NOT CLEAN OR GREEN ENERGY!  
Every nuclear reactor generates about 20 tons of highly radioactive waste per year, and after 40 years of nuclear power, the U.S. still has not found an acceptable solution for the waste. The waste can cause cancer, birth defects, and even death. Nuclear power uses and pollutes significant amounts of water, while the mining, transportation, and enriching of uranium is carbon intensive which contributes to global warming.

68-3-RW

I do not want Davis-Besse to continue generating electricity and want the Nuclear Regulatory Commission to end the operating license for the plant. I care about the environment and support clean energy solutions such as energy efficiency and renewable power, and I know that Davis-Besse compromises my safety and the safety of my loved ones. So Please stop the relicense of this very dangerous power power plant it is not worth risking the lives of millions of people for energy when there are safer and cheaper options out there.

68-4-AL

Dear Nuclear Regulatory Commission, please say NO to Davis-Besse! Make them accountable for the lapses in safety and help protect Ohioans from a potential disaster at Davis-Besse.

68-5-OL

Sincerely,

Susan Jones  
241 McKinley Ave  
Newcomerstown, OH 43832-1145

SUDSI Review Complete  
Template = ADM-013

ERDS = ADM-03  
Add = p. Crisper

COMMENTER: GEORGE M WILLIAMS

RULES AND DIRECTIVES  
BRANCH

Gallagher, Carol

From: Sierra Club Membership Services [membership.services@sierraclub.org] on behalf of George M. Williams [gwilliams59@woh.rr.com]  
Sent: Saturday, January 15, 2011 1:53 PM  
To: Gallagher, Carol  
Subject: Davis-Besse Relicense Docket ID: NRC-2010-0298

2011 JAN 18 AM 10:27

Jan 15, 2011

Carol Gallagher

To Gallagher,

9/20/2010  
75 FR 5799 (25)

RECEIVED

Ohioans are concerned about the environment, the rising costs of energy, and the dangers associated with nuclear power! However, that has not stopped First Energy from irresponsibly pursuing to get the Davis-Besse nuclear plant on Lake Erie relicensed to continue operation until 2037.

81-6-OL

**NO NUCLEAR POWER PLANT IS SAFE AND DAVIS-BESSE IS ONE OF THE WORST!**

In 2002 the Davis-Besse plant nearly melted down almost causing a nuclear disaster. Neither First Energy nor the Nuclear Regulatory Commission discovered an enormous rust hole in the reactor head until it was almost too late! According to the Nuclear Regulatory Commission, 2 of the top 5 most dangerous nuclear incidences since 1979 have happened at Davis-Besse.

81-7-OS

**NUCLEAR ENERGY IS NOT CLEAN OR GREEN ENERGY!**

Every nuclear reactor generates about 20 tons of highly radioactive waste per year, and after 40 years of nuclear power, the U.S. still has not found an acceptable solution for the waste. The waste can cause cancer, birth defects, and even death. Nuclear power uses and pollutes significant amounts of water, while the mining, transportation, and enriching of uranium is carbon intensive which contributes to global warming.

81-8-RW

I do not want Davis-Besse to continue generating electricity and want the Nuclear Regulatory Commission to end the operating license for the plant. I care about the environment and support clean energy solutions such as energy efficiency and renewable power, and I know that Davis-Besse compromises my safety and the safety of my loved ones.

81-9-AL

Thank you for your prompt action on this matter for the safety and health of the People of Ohio.

(I have read this petition and agree with it all !!!!)

81-10-OL

Dear Nuclear Regulatory Commission, please say NO to Davis-Besse! Make them accountable for the lapses in safety and help protect Ohioans from a potential disaster at Davis-Besse.

Sincerely,

George M. Williams  
309 E Edgewood St  
Sidney, OH 45365-1603

SOUSI Review Complete  
Template = ADH-013

ERIDS = ADH-03  
Call = J. Cooper (rec)

COMMENTER: LEONARD BILDSTEIN

RULES AND DIRECTIVES  
BRANCH

Gallagher, Carol

From: Sierra Club Membership Services [membership.services@sierraclub.org] on behalf of leonard bildstein [leonardbildstein@yahoo.com]  
Sent: Friday, January 21, 2011 12:45 PM  
To: Gallagher, Carol  
Subject: Davis-Besse Relicense Docket ID: NRC-2010-0298

2011 JAN 21 PM 1:50

Jan 21, 2011

Carol Gallagher

To Gallagher,

9/20/2010  
75 FR 57299  
26

RECEIVED

Ohioans are concerned about the environment, the rising costs of energy, and the dangers associated with nuclear power! However, that has not stopped First Energy from irresponsibly pursuing to get the Davis-Besse nuclear plant on Lake Erie relicensed to continue operation until 2037.

61-1-OL

NO NUCLEAR POWER PLANT IS SAFE AND DAVIS-BESSE IS ONE OF THE WORST!  
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61-2-OS

NUCLEAR ENERGY IS NOT CLEAN OR GREEN ENERGY!  
Every nuclear reactor generates about 20 tons of highly radioactive waste per year, and after 40 years of nuclear power, the U.S. still has not found an acceptable solution for the waste. The waste can cause cancer, birth defects, and even death. Nuclear power uses and pollutes significant amounts of water, while the mining, transportation, and enriching of uranium is carbon intensive which contributes to global warming.

61-3-RW

I do not want Davis-Besse to continue generating electricity and want the Nuclear Regulatory Commission to end the operating license for the plant. I care about the environment and support clean energy solutions such as energy efficiency and renewable power, and I know that Davis-Besse compromises my safety and the safety of my loved ones. This plant has the worst safety record in the U.S.A. and should be closed! You have no right to continue operating this unsafe plant. We have two coal plants in this area that produce more than enough electricity for this area, and our safe!

61-4-AL

Dear Nuclear Regulatory Commission, please say NO to Davis-Besse! Make them accountable for the lapses in safety and help protect Ohioans from a potential disaster at Davis-Besse.

61-5-OL

Sincerely,

leonard bildstein  
766 Centennial St  
Geneva, OH 44041-9221  
(440) 466-5952

SUNSI Review Complete  
Template = ADM-013

E-REDS = ADM-03  
Cell = J. Cooper (pec)

COMMENTER: MIKE FREMONT

RULES AND DIRECTIVES  
BRANCH  
USNRC

Gallagher, Carol

From: Sierra Club Membership Services [membership.services@sierraclub.org] on behalf of Mike Fremont [mike@mikefremont.org]  
Sent: Tuesday, December 07, 2010 11:23 PM  
To: Gallagher, Carol  
Subject: Davis-Besse Relicense Docket ID: NRC-2010-0298

2010 DEC -8 AM 7: 51

Dec 7, 2010

Carol Gallagher

To Gallagher,

9/20/2010  
75FR 57299

13

RECEIVED

Ohioans are concerned about the environment, the rising costs of energy, and the dangers associated with nuclear power! However, that has not stopped First Energy from irresponsibly pursuing to get the Davis-Besse nuclear plant on Lake Erie relicensed to continue operation until 2037.

85-1-OL

NO NUCLEAR POWER PLANT IS SAFE AND DAVIS-BESSE IS ONE OF THE WORST!  
In 2002 the Davis-Besse plant nearly melted down almost causing a nuclear disaster. Neither First Energy nor the Nuclear Regulatory Commission discovered an enormous rust hole in the reactor head until it was almost too late! According to the Nuclear Regulatory Commission, 2 of the top 5 most dangerous nuclear incidences since 1979 have happened at Davis-Besse.

85-2-OS

NUCLEAR ENERGY IS NOT CLEAN OR GREEN ENERGY!  
Every nuclear reactor generates about 20 tons of highly radioactive waste per year, and after 40 years of nuclear power, the U.S. still has not found an acceptable solution for the waste. The waste can cause cancer, birth defects, and even death. Nuclear power uses and pollutes significant amounts of water, while the mining, transportation, and enriching of uranium is carbon intensive which contributes to global warming.

85-3-RW

I do not want Davis-Besse to continue generating electricity and want the Nuclear Regulatory Commission to end the operating license for the plant. I care about the environment and support clean energy solutions such as energy efficiency and renewable power, and I know that Davis-Besse compromises my safety and the safety of my loved ones.

In the early 80's Cincinnati's Zimmer Nuclear Plant was adjudged, according to The Wall Street Journal, to be the worst-built nuke plant in the U.S., for a number of reasons, one being that much of the crucial reactor steel was bought from a local scrap dealer. It could have ruined the Ohio River downstream from Cincinnati all the way to New Orleans. Davis Besse could wreck Lake Erie and quite a land area around Toledo.

85-4-AL

Save us from that! We can do it cheaper, safer and cleaner with windmills in the lake.

Dear Nuclear Regulatory Commission, please say NO to Davis-Besse! Make them accountable for the lapses in safety and help protect Ohioans from a potential disaster at Davis-Besse.

85-5-OL

Sincerely,

Mike Fremont  
816 Van Nes Dr  
Cincinnati, OH 45246-4307  
(513) 258-1356

SUNSF Review Complete  
Template = ADM-013

R-REDS = ADM-03  
Add = f. Cooper (per)

# COMMENTER: STEPHEN & CONNIE CARUSO

RULES AND DIRECTIVES  
BRANCH  
USNRC

**Gallagher, Carol**

**From:** Sierra Club Membership Services [membership.services@sierraclub.org] on behalf of Stephen and Connie Caruso [dael4@columbus.rr.com]  
**Sent:** Wednesday, December 08, 2010 12:25 AM  
**To:** Gallagher, Carol  
**Subject:** Davis-Besse Relicense Docket ID: NRC-2010-0298

DEC -8 AM 7: 51

Dec 7, 2010

Carol Gallagher

To Gallagher,

*9/20/2010  
75 FR 57299*

RECEIVED

*14*

Ohioans are concerned about the environment, the rising costs of energy, and the dangers associated with nuclear power! However, that has not stopped First Energy from irresponsibly pursuing to get the Davis-Besse nuclear plant on Lake Erie relicensed to continue operation until 2037.

70-1-OL

**NO NUCLEAR POWER PLANT IS SAFE AND DAVIS-BESSE IS ONE OF THE WORST!**  
In 2002 the Davis-Besse plant nearly melted down almost causing a nuclear disaster. Neither First Energy nor the Nuclear Regulatory Commission discovered an enormous rust hole in the reactor head until it was almost too late! According to the Nuclear Regulatory Commission, 2 of the top 5 most dangerous nuclear incidences since 1979 have happened at Davis-Besse.

70-2-OS

**NUCLEAR ENERGY IS NOT CLEAN OR GREEN ENERGY!**  
Every nuclear reactor generates about 20 tons of highly radioactive waste per year, and after 40 years of nuclear power, the U.S. still has not found an acceptable solution for the waste. The waste can cause cancer, birth defects, and even death. Nuclear power uses and pollutes significant amounts of water, while the mining, transportation, and enriching of uranium is carbon intensive which contributes to global warming.

70-3-RW

I do not want Davis-Besse to continue generating electricity and want the Nuclear Regulatory Commission to end the operating license for the plant. I care about the environment and support clean energy solutions such as energy efficiency and renewable power, and I know that Davis-Besse compromises my safety and the safety of my loved ones.

70-4-AL

These plants have been a financial leach on the people long enough!

Dear Nuclear Regulatory Commission, please say NO to Davis-Besse! Make them accountable for the lapses in safety and help protect Ohioans from a potential disaster at Davis-Besse.

70-5-OL

Sincerely,

Stephen and Connie Caruso  
6463 Blacks Rd SW  
Pataskala, OH 43062-7756

*SUNSI Review Complete  
Template = ADM-013*

*ERIS = ADM-03  
Call = J. Cooper (pec)*



COMMENTER: LESLIE STANSBERY

RULES AND DIRECTIVES  
BRANCH  
USNRC

Gallagher, Carol

From: Sierra Club Membership Services [membership.services@sierraclub.org] on behalf of Leslie Stansbery [lpstansbery@wowway.com]  
Sent: Wednesday, December 08, 2010 1:22 AM  
To: Gallagher, Carol  
Subject: Davis-Besse Relicense-Docket ID: NRC-2010-0298

2010 DEC -8 AM 7: 51

Dec 8, 2010

Carol Gallagher

To Gallagher,

9/22/2010  
45 FR 57299

15

RECEIVED

Ohioans are concerned about the environment, the rising costs of energy, and the dangers associated with nuclear power! However, that has not stopped First Energy from irresponsibly pursuing to get the Davis-Besse nuclear plant on Lake Erie relicensed to continue operation until 2037.

69-1-OL

NO NUCLEAR POWER PLANT IS SAFE AND DAVIS-BESSE IS ONE OF THE WORST!  
In 2002 the Davis-Besse plant nearly melted down almost causing a nuclear disaster. Neither First Energy nor the Nuclear Regulatory Commission discovered an enormous rust hole in the reactor head until it was almost too late! According to the Nuclear Regulatory Commission, 2 of the top 5 most dangerous nuclear incidences since 1979 have happened at Davis-Besse.

69-2-OS

NUCLEAR ENERGY IS NOT CLEAN OR GREEN ENERGY!  
Every nuclear reactor generates about 20 tons of highly radioactive waste per year, and after 40 years of nuclear power, the U.S. still has not found an acceptable solution for the waste. The waste can cause cancer, birth defects, and even death. Nuclear power uses and pollutes significant amounts of water, while the mining, transportation, and enriching of uranium is carbon intensive which contributes to global warming.

69-3-RW

I do not want Davis-Besse to continue generating electricity and want the Nuclear Regulatory Commission to end the operating license for the plant. I care about the environment and support clean energy solutions such as energy efficiency and renewable power, and I know that Davis-Besse compromises my safety and the safety of my loved ones.

69-4-AL

Now is not the time to expand nuclear energy in Ohio.

Dear Nuclear Regulatory Commission, please say NO to Davis-Besse! Make them accountable for the lapses in safety and help protect Ohioans from a potential disaster at Davis-Besse.

69-5-OL

Sincerely,

Leslie Stansbery  
526 Van Heyde Pl  
Columbus, OH 43209-2271  
(614) 231-6954

SUNSI Review Complete  
Template = ADM-D3

E-RDS = ADM-D3  
All = J. Cooper (sec)

**COMMENTER: KAREN HANSEN**

RULES AND DIRECTIVES  
BRANCH  
USNRC

**Gallagher, Carol**

**From:** Sierra Club Membership Services [membership.services@sierraclub.org] on behalf of Karen Hansen [klh.ohio@gmail.com]  
**Sent:** Tuesday, December 07, 2010 8:53 PM  
**To:** Gallagher, Carol  
**Subject:** Davis-Besse Relicense Docket ID: NRC-2010-0298

2010 DEC -8 AM 7: 50

Dec 7, 2010

Carol Gallagher

To Gallagher,

9/20/2010  
15 FR 57299  
16

RECEIVED

Ohioans are concerned about the environment, the rising costs of energy, and the dangers associated with nuclear power! However, that has not stopped First Energy from irresponsibly pursuing to get the Davis-Besse nuclear plant on Lake Erie relicensed to continue operation until 2037.

63-1-OL

**NO NUCLEAR POWER PLANT IS SAFE AND DAVIS-BESSE IS ONE OF THE WORST!**  
In 2002 the Davis-Besse plant nearly melted down almost causing a nuclear disaster. Neither First Energy nor the Nuclear Regulatory Commission discovered an enormous rust hole in the reactor head until it was almost too late! According to the Nuclear Regulatory Commission, 2 of the top 5 most dangerous nuclear incidences since 1979 have happened at Davis-Besse.

63-2-OS

**NUCLEAR ENERGY IS NOT CLEAN OR GREEN ENERGY!**  
Every nuclear reactor generates about 20 tons of highly radioactive waste per year, and after 40 years of nuclear power, the U.S. still has not found an acceptable solution for the waste. The waste can cause cancer, birth defects, and even death. Nuclear power uses and pollutes significant amounts of water, while the mining, transportation, and enriching of uranium is carbon intensive which contributes to global warming.

63-3-RW

There have been too many near-disasters at this plant. This, because of its proximity to the Great Lakes, is unconscionable! To continue to put resources into this risky plant and to continue to endure the toxic side effects is insane! We should be putting all our energy investments into clean, safe, green alternatives, and that does NOT include nuclear power!

63-4-AL

Dear Nuclear Regulatory Commission, please say NO to Davis-Besse! Make them accountable for the lapses in safety and help protect Ohioans from a potential disaster at Davis-Besse.

63-5-OL

Sincerely,

Karen Hansen  
145 S Monroe Ave  
Columbus, OH 43205-1085

*SUNSI Review Complete  
Template = ADM-213*

*ERFDs = ADM-03  
Cell = J. Cooper (pec)*

COMMENTER: INEZ GEORGE

RULES AND DIRECTIVES  
BRANCH  
USNRC

Gallagher, Carol

From: Sierra Club Membership Services [membership.services@sierraclub.org] on behalf of Inez George [dg743@sbcglobal.net]  
Sent: Wednesday, December 08, 2010 8:27 AM  
To: Gallagher, Carol  
Subject: Davis-Besse Relicense Docket ID: NRC-2010-0298

2010 DEC -8 AM 8:45

Dec 8, 2010

Carol Gallagher

To Gallagher,

9/22/2010  
75 FR 57299 (17)

RECEIVED

Ohioans are concerned about the environment, the rising costs of energy, and the dangers associated with nuclear power! However, that has not stopped First Energy from irresponsibly pursuing to get the Davis-Besse nuclear plant on Lake Erie relicensed to continue operation until 2037.

53-1-OL

NO NUCLEAR POWER PLANT IS SAFE AND DAVIS-BESSE IS ONE OF THE WORST!  
In 2002 the Davis-Besse plant nearly melted down almost causing a nuclear disaster. Neither First Energy nor the Nuclear Regulatory Commission discovered an enormous rust hole in the reactor head until it was almost too late! According to the Nuclear Regulatory Commission, 2 of the top 5 most dangerous nuclear incidences since 1979 have happened at Davis-Besse.

53-2-OS

NUCLEAR ENERGY IS NOT CLEAN OR GREEN ENERGY!  
Every nuclear reactor generates about 20 tons of highly radioactive waste per year, and after 40 years of nuclear power, the U.S. still has not found an acceptable solution for the waste. The waste can cause cancer, birth defects, and even death. Nuclear power uses and pollutes significant amounts of water, while the mining, transportation, and enriching of uranium is carbon intensive which contributes to global warming.

53-3-RW

I do not want Davis-Besse to continue generating electricity and want the Nuclear Regulatory Commission to end the operating license for the plant. I care about the environment and support clean energy solutions such as energy efficiency and renewable power, and I know that Davis-Besse compromises my safety and the safety of my loved ones.

53-4-AL

Until nuclear power can be made safe for the environment by solving the waste problem, I do not want it to continue in operation.

53-5-OL

Dear Nuclear Regulatory Commission, please say NO to Davis-Besse! Make them accountable for the lapses in safety and help protect Ohioans from a potential disaster at Davis-Besse.

Sincerely,

Inez George  
1043 S Roosevelt Ave  
Bexley, OH 43209-2544  
(614) 338-0507

SUNSI Review Complete  
Template = ADM-013

ERIDS = ADM-03  
Add = J. Cooper (pec)

COMMENTER: NATALIE SCHAFRATH

RULES AND DIRECTIVES  
BRANCH

Gallagher, Carol

From: Sierra Club Membership Services [membership.services@sierraclub.org] on behalf of Natalie Schafrath [nschafrath@hotmail.com]  
Sent: Wednesday, December 08, 2010 11:35 AM  
To: Gallagher, Carol  
Subject: Davis-Besse Relicense Docket ID: NRC-2010-0298

2010 DEC -8 PM 1: 27

Dec 8, 2010

Carol Gallagher

To Gallagher,

9/20/2010  
75 FR 57299 (18)

RECEIVED

Ohioans are concerned about the environment, the rising costs of energy, and the dangers associated with nuclear power! However, that has not stopped First Energy from irresponsibly pursuing to get the Davis-Besse nuclear plant on Lake Erie relicensed to continue operation until 2037.

64-1-OL

NO NUCLEAR POWER PLANT IS SAFE AND DAVIS-BESSE IS ONE OF THE WORST!  
In 2002 the Davis-Besse plant nearly melted down almost causing a nuclear disaster. Neither First Energy nor the Nuclear Regulatory Commission discovered an enormous rust hole in the reactor head until it was almost too late! According to the Nuclear Regulatory Commission, 2 of the top 5 most dangerous nuclear incidences since 1979 have happened at Davis-Besse.

64-2-OS

NUCLEAR ENERGY IS NOT CLEAN OR GREEN ENERGY!  
Every nuclear reactor generates about 20 tons of highly radioactive waste per year, and after 40 years of nuclear power, the U.S. still has not found an acceptable solution for the waste. The waste can cause cancer, birth defects, and even death. Nuclear power uses and pollutes significant amounts of water, while the mining, transportation, and enriching of uranium is carbon intensive which contributes to global warming.

64-3-RW

It's high time we step up our efforts to help protect the future generations by doing what we can to ensure a safe environment for species diversity. We can not live in this world without being connected to the web of life that exists in every ecosystem. The nuclear waste generated from this plan would not only effect ourselves, and our children, but every species that struggles to survive as well.

64-4-AL

As someone who is SUPPOSE to represent the demands of their constituents I hope it is clear to you that Ohioans DON'T AGREE with this form of energy!

Dear Nuclear Regulatory Commission, please say NO to Davis-Besse! Make them accountable for the lapses in safety and help protect Ohioans from a potential disaster at Davis-Besse.

64-5-OL

Sincerely,

Natalie Schafrath  
125 W Blake Ave Apt B  
Columbus, OH 43202-2826

SUNSI Review Complete  
Template = ADM-013

F-RIDS = ADM-23  
all = P. Cropper (see)

COMMENTER: DAVID GREENE

RULES AND DIRECTIVES  
BRANCH  
LICENSE

Gallagher, Carol

From: Sierra Club Membership Services [membership.services@sierraclub.org] on behalf of David Greene [dgreene624@yahoo.com]  
Sent: Thursday, December 09, 2010 5:30 PM  
To: Gallagher, Carol  
Subject: Davis-Besse Relicense Docket ID: NRC-2010-0298

2010 DEC 13 AM 9:41

Dec 9, 2010

Carol Gallagher

To Gallagher,

9/20/2010  
15 FR 59299  
19

RECEIVED

Ohioans are concerned about the environment, the rising costs of energy, and the dangers associated with nuclear power! However, that has not stopped First Energy from irresponsibly pursuing to get the Davis-Besse nuclear plant on Lake Erie relicensed to continue operation until 2037.

56-1-OL

NO NUCLEAR POWER PLANT IS SAFE AND DAVIS-BESSE IS ONE OF THE WORST!  
In 2002 the Davis-Besse plant nearly melted down almost causing a nuclear disaster. Neither First Energy nor the Nuclear Regulatory Commission discovered an enormous rust hole in the reactor head until it was almost too late! According to the Nuclear Regulatory Commission, 2 of the top 5 most dangerous nuclear incidences since 1979 have happened at Davis-Besse.

56-2-OS

NUCLEAR ENERGY IS NOT CLEAN OR GREEN ENERGY!  
Every nuclear reactor generates about 20 tons of highly radioactive waste per year, and after 40 years of nuclear power, the U.S. still has not found an acceptable solution for the waste. The waste can cause cancer, birth defects, and even death. Nuclear power uses and pollutes significant amounts of water, while the mining, transportation, and enriching of uranium is carbon intensive which contributes to global warming.

56-3-RW

The Davis-Besse power plant must stop generating electricity and the Nuclear Regulatory Commission must end the operating license for the plant. In 2002 the Davis-Besse plant nearly melted down almost causing a nuclear disaster. Neither First Energy nor the Nuclear Regulatory Commission discovered an enormous rust hole in the reactor head until it was almost too late! According to the Nuclear Regulatory Commission, 2 of the top 5 most dangerous nuclear incidences since 1979 have happened at Davis-Besse. Nuclear power has too many problems from waste to extreme expense to oversight. This is not an environmentally sound solution.

56-4-AL

I support clean energy solutions such as energy efficiency and renewable power. The Davis-Besse plant compromises my safety and the safety of my loved ones. Nuclear power uses and pollutes significant amounts of water, while the mining, transportation, and enriching of uranium is carbon intensive which contributes to global warming.

Dear Nuclear Regulatory Commission, please say NO to Davis-Besse! Make them accountable for the lapses in safety and help protect Ohioans from a potential disaster at Davis-Besse.

56-5-OL

Sincerely,

David Greene  
806 Francis Ave  
Columbus, OH 43209-5412

SUNSI Review Complete  
Template = ADM-213

LEADS = ADM-213  
Call = P. Cooper (PCC)

COMMENTER: TEKLA LEWIN

RULES AND DIRECTIVES  
BRANCH

Gallagher, Carol

From: Sierra Club Membership Services [membership.services@sierraclub.org] on behalf of Tekla Lewin [tl@wideopenwest.com]  
Sent: Thursday, December 09, 2010 5:59 PM  
To: Gallagher, Carol  
Subject: Davis-Besse Relicense Docket ID: NRC-2010-0298

2010 DEC 13 AM 9:41

Dec 9, 2010

Carol Gallagher

To Gallagher,

9/20/2010 20  
75 FR 57299

RECEIVED

Ohioans are concerned about the environment, the rising costs of energy, and the dangers associated with nuclear power! However, that has not stopped First Energy from irresponsibly pursuing to get the Davis-Besse nuclear plant on Lake Erie relicensed to continue operation until 2037.

77-1-OL

NO NUCLEAR POWER PLANT IS SAFE AND DAVIS-BESSE IS ONE OF THE WORST!

In 2002 the Davis-Besse plant nearly melted down almost causing a nuclear disaster. Neither First Energy nor the Nuclear Regulatory Commission discovered an enormous rust hole in the reactor head until it was almost too late! According to the Nuclear Regulatory Commission, 2 of the top 5 most dangerous nuclear incidences since 1979 have happened at Davis-Besse.

77-2-OS

NUCLEAR ENERGY IS NOT CLEAN OR GREEN ENERGY!

Every nuclear reactor generates about 20 tons of highly radioactive waste per year, and after 40 years of nuclear power, the U.S. still has not found an acceptable solution for the waste. The waste can cause cancer, birth defects, and even death. Nuclear power uses and pollutes significant amounts of water, while the mining, transportation, and enriching of uranium is carbon intensive which contributes to global warming.

77-3-RW

Davis-Besse should not continue generating electricity; I urge the Nuclear Regulatory Commission to end the operating license for the plant. I care about the environment and support clean energy solutions such as energy efficiency and renewable power, and I know that Davis-Besse compromises my safety and the safety of my loved ones.

77-4-AL

Davis-Besse is far too dangerous.

Dear Nuclear Regulatory Commission, please say NO to Davis-Besse! Make them accountable for the lapses in safety and help protect Ohioans from a potential disaster at Davis-Besse.

77-5-OL

Sincerely,

Tekla Lewin  
5100 Kingshill Dr  
Columbus, OH 43229-5564

SUNSI Review Complete  
Template = ADM-013

ERDS = ADM-03  
All = J Cooper (pec)

### A.3 Comments Received on Draft Supplemental Environmental Impact Statement

On February 26, 2014, the NRC issued the Generic Environmental Impact Statement for License Renewal of Nuclear Power Plants, Supplement 52, Regarding Davis-Besse Nuclear Power Station, Draft Report for Comment (SEIS). The NRC staff distributed the draft SEIS to Federal, tribal, state, local governmental agencies, the applicant, and interested members of the public listed in Chapter 11, Mailing List. As part of the process to collect comments on the draft SEIS, the staff:

- Placed a copy of the draft SEIS into the NRC's Public Document Room, in Rockville, MD.
- Placed a copy of the draft SEIS on the license renewal Web site, <http://www.nrc.gov/reactors/operating/licensing/renewal/applications/davis-besse.html>.
- Provided a copy of the draft SEIS to the Toledo-Lucas County Public Library in Toledo, Ohio, and to the Ida Rupp Public Library in Port Clinton, Ohio.
- Published a notice of availability of the draft SEIS in the *Federal Register* on March 7, 2014 (79 FR 13079).
- Held two public meetings on March 25, 2014, at the Camp Perry Conference Center in Port Clinton, Ohio, to describe the results of the environmental review and provide the public with an opportunity to provide oral comments.

The staff has reviewed the transcripts from the public meetings and the written comments submitted via Regulations.gov. All of the comments are available on line at the NRC Public Document Room (using ADAMS) or at the NRC's Public Document Room at the NRC's Headquarters in Rockville, Maryland, using the appropriate ADAMS accession number shown in Table A-4.

Each commenter was given a unique identifier, so that comments could be traced back to the author. Table A-4 lists the individuals who provided comments on the draft SEIS and their identifiers. The individuals are listed in the order in which they spoke at the public meetings and in the order received for written comments.

**Table A–4. Commenters on the Draft Supplemental Environmental Impact Statement**

*Each commenter is identified along with their affiliation and how their comments were submitted.*

<b>Commenter</b>	<b>Affiliation</b>	<b>ID</b>	<b>Comment Source</b>	<b>ADAMS Accession Number</b>
John Q. Public <sup>(a)</sup>	Resident	1	Afternoon Transcript	ML14097A254
Victoria Clemons	Resident	2a	Afternoon Transcript	ML14097A254
		2b	Copy of e-mail submitted at Public Meeting	ML14098A027
		2c	Letter	ML14112A075
Guy Parmigian	Superintendent – Benton-Carroll-Salem School District	3a	Afternoon Transcript	ML14097A254
		3b	Evening Transcript	ML14097A253
Brad Goetz	International Brotherhood of Electrical Workers (IBEW), Local 1413	4	Afternoon Transcript	ML14097A254
Jodi Regal	President, Board of Ottawa County Commissioners	5	Afternoon Transcript	ML14097A254
Larry Tscherne	IBEW, Local 245	6	Afternoon Transcript	ML14097A254
Ron Donnal	GEM, Inc.	7	Afternoon Transcript	ML14097A254
Bill Buckles	Plumbers and Steamfitters and Service Mechanics, NW Ohio	8	Afternoon Transcript	ML14097A254
Brian Dicken	Vice President of Public Affairs, Toledo Regional Chamber of Commerce	9	Afternoon Transcript	ML14097A254
Chuck McCune	IBEW, Local 8	10a	Afternoon Transcript	ML14097A254
		10b	Evening Transcript	ML14097A253
Connie Kline	No Affiliation Given	11	Afternoon Transcript	ML14097A254



Commenter	Affiliation	ID	Comment Source	ADAMS Accession Number
Mike Jay	Toledo Regional Growth Partnership and Jobs Ohio Northwest	12	Evening Transcript	ML14097A253
Jamie Beyer Grant	Director, Ottawa County Improvement Corp.	13	Evening Transcript	ML14097A253
			Copy of the statement read at meeting <sup>(b)</sup>	ML14098A024
Terry Lodge	Beyond Nuclear, Don't Waste Michigan, the Citizens Alliance of Southwestern Ohio	14a	Evening Transcript	ML14097A253
		14b	Copy of the statement read at meeting <sup>(b)</sup>	ML14098A026
Dan Rutt	No Affiliation Given	15	Evening Transcript	ML14097A253
			Copy of the statement read at meeting <sup>(b)</sup>	ML14098A025
Michael Leonardi	No Affiliation Given	16a	Evening Transcript	ML14097A253
		16b	E-mail	ML14122A026
Joseph DeMare	No Affiliation Given	17a	Evening Transcript	ML14097A253
		17b	Letter	ML14122A019
Michael Keegan	Don't Waste Michigan	18a	Evening Transcript	ML14097A253
		18b	E-mail	ML14122A032
Pat Marida	Ohio Sierra Club, Nuclear Free Committee	19a	Evening Transcript	ML14097A253
		19b	Sierra Club Information Pages <sup>(c)</sup>	ML14098A028
		19c	Letter	ML14122A021
Alicia Rivers	No Affiliation Given	20	Evening Transcript	ML14097A253
Valerie Crow	No Affiliation Given	21	Evening Transcript	ML14097A253
Kevin Gar	No Affiliation Given	22	Evening Transcript	ML14097A253
Melissa Powell	Resident	23	Letter	ML14091A247

Appendix A

Commenter	Affiliation	ID	Comment Source	ADAMS Accession Number
Paul Szymanowski	Resident	24	Letter	ML14098A023
Kenneth A. Westlake	U.S. EPA Region 5	25	Letter	ML14113A425
FENOC (Ray Lieb)	FirstEnergy Nuclear Operating Company	26	Letter	ML14113A214
Anthony Szilagy	No Affiliation Given	27	E-mail	ML14122A020
Jim Sherman	No Affiliation Given	28	E-mail	ML14122A022
Bill Katakis	No Affiliation Given	29	E-mail	ML14122A023
Kathy Barnes	No Affiliation Given	30	E-mail	ML14122A024
Connie Hammond	No Affiliation Given	31	E-mail	ML14122A025
Kevin Kamps	Beyond Nuclear	32a	E-mail	ML14122A027
		32b	E-mail	ML14122A028
		32c	E-mail	ML14122A029
		32d	E-mail	ML14122A030
		32e	E-mail	ML14122A031

<sup>(a)</sup> This gentleman did not want to provide his name for the transcripts, and when asked, he stated his name was John Q. Public.

<sup>(b)</sup> This copy was provided after the evening public meeting and is identical to statement in the transcript.

<sup>(c)</sup> Informational material related to Sierra Club's Nuclear Free Campaign that was provided at the evening public meeting. The staff did not provide responses to this informational material because it is generic to the nuclear industry.

Comments received on the draft SEIS were placed into one of the technical issue categories, which are based on the issues that are contained in this SEIS. These technical issue categories and their abbreviation codes are presented in Table A-5.

**Table A-5. Technical Issue Categories**

*Comments were divided into one of the categories below, each of which has a unique abbreviation code.*

<b>Technical Issue</b>	<b>Code</b>
Alternative Energy Sources	AL
Air & Meteorology	AM
Aquatic Resources	AQ
Cumulative Impacts	CI
Cultural Resources	CR
Human Health	HH
Hydrology	HY <sup>(a)</sup>
License Renewal & Its Process	LR
Land Use	LU <sup>(a)</sup>
Noise	NO <sup>(a)</sup>
Opposition to License Renewal	OL
Outside of Scope	OS <sup>(b)</sup>
Postulated Accidents & SAMA	PA
Radioactive & Non-radioactive Waste	RW
Socioeconomics	SE <sup>(a)</sup>
Support of License Renewal	SL
Terrestrial Resources	TR

<sup>(a)</sup> No comments specific to the categories of hydrology, land use, noise, and socioeconomics were submitted during the comment period for reviewing the draft SEIS.

<sup>(b)</sup> Outside of scope are those comments that pertain to issues that are not evaluated during the environmental review of license renewal and include, but are not limited to, issues such as need for power; emergency planning; safety; security; terrorism; and spent nuclear fuel storage and disposal.

### **A.3.1 Alternative Energy Sources (AL)**

**Comment 11-1:** Mine is also a question, so I don't know if you will be able to answer it now. Was the recently approved wind farm in Herndon and Logan Counties, I don't see how it could have been factored in to the Environmental Impact Statement, because it was just approved by the Ohio Power Siting Commission last week, I believe. It is a 300 megawatt wind farm. Are you familiar with this at all, or is this something you are unfamiliar with?

**Response:** *This question is referring to the Scioto Ridge Wind Farm and transmission lines in Hardin and Logan Counties in Ohio. The Ohio Power Siting Board (OPSB) granted a Certificate*

*of Environmental Compatibility and Public Need for this project on March 17, 2014. This project was considered in the combination alternative in Chapter 8 of this SEIS. When the SEIS was published as a draft, the Scioto Ridge Wind Farm project was included in the total of Megawatts (MW) for projects that were awaiting approval by the OPSB. Section 8.2 has been revised to reflect the change in MW for projects that have been approved by OPSB and that are pending before the OPSB (OPSB 2014).*

**Comment 17a-2:** Another error in judgement [sic], a number of the comments on the original Environmental Impact Statement, talked about the cost, the high cost of nuclear power compared to the cost of solar power, and wind power which have both continued, solar and wind, to become more and more inexpensive. They have been getting cheaper and cheaper over the past four years, at an accelerating rate, while the cost of nuclear has been increasing. When asked to consider this, in the report the author say that cost is not considered in the DEIS because that is not part of what they are supposed to do.

**Comment 17a-7:** And finally, one of the things that we are contending, I'm representing the Ohio Green Party, and we are part of the contention process, is that alternative energy can replace Davis-Besse, we do not need the Davis-Besse generation. And there was talk, earlier, about 700 jobs here. Well, there are 3,000 jobs at risk in Perrisburg, at the First Solar Plant. We are at a point where we have to choose. Will we choose clean energy sources, like solar and wind, with thousands, tens of thousands of jobs, or will we continue to use nuclear power with hundreds and dozens of jobs?

**Comment 17b-14:** There are many errors of fact in this document, but the most important is the NRC staff's assertion that the power generated by Davis-Besse cannot be replaced by clean sources of electrical generation such as wind and solar. This is one of the Contentions raised by the Intervenor (The Green Party of Ohio, Beyond Nuclear, the Citizens Environment Alliance of Southwestern Ontario, and Don't Waste Michigan) in opposition to the initial application of FENOC for a license renewal. The Intervenor presented testimony and research demonstrating that wind and solar power, with or without energy storage technologies could reliably replace the power generated by Davis-Besse. The Atomic Safety Licensing Board (ASLB) reviewed the evidence supplied by the Intervenor and agreed to hear their contentions. The Nuclear Regulatory Commissioners then took the unprecedented step of overruling the ASLB and throwing out the Intervenor's contention. The Commissioners based this action on the "pragmatic" belief that neither wind nor solar nor any storage technology will be sufficiently advanced to replace DB in 2017, when its license expires, almost exactly three years from now.

**Comment 17b-15:** The Commissioners and the NRC Staff are wrong, and their error is being clearly and decisively demonstrated in Denmark. In 2013, wind power alone provided 33.2% of that country's electricity demand. With an installed capacity of almost 5,000 MW, Denmark has successfully integrated wind power, despite its intermittency, by having wind farms that cover a wide area, and the ability to export power to neighboring countries when it is producing excess. In fact, during a wind storm in December, 2013, the nation of Denmark met more than 100% of its needs from wind power alone, and exported the excess to neighboring countries. Denmark has had to upgrade its grid, in order to shift loads and demands quickly and efficiently. Our country is capable of making the same improvements. There is no technical reason FENOC could not do the same as Denmark.

**Comment 18a-1:** What was particularly lacking, and bothersome, is how alternative energy was pooh pooed, and can't have it, can't -- won't be baseload. And yet we are seeing it, it is happening now in real time.

**Comment 18a-2:** The alternative of First Energy seeking out alternative energy that they don't generate, that they could bring in through the grid, was not brought into consideration. This is a self-serving economic game here. And there's vested interest. I understand there are a lot of good jobs, paying jobs. But there will be more jobs in a renewable and alternative kind of economy, because those jobs are labor intensive.

**Comment 18b-1:** We did participate back in the scoping process. And as I review the SDEIS, they sliced and diced away my comments, but didn't seem to adequately address them, in my mind. What was particularly lacking, and bothersome, is how alternative energy was poo-hooed, and can't have it, can't -- won't be baseload. And yet we are seeing it, it is happening now in real time.

In mid March a company came forward and said they were going to be building 300 megawatts of wind energy in Ohio and it would be up within 12 to 18 months. It is doable.

Also in mid March, 2014 the PJM Interconnect grid, the largest grid in the U.S. said they could easily accommodate 30 percent wind and solar brought onto the grid.

**Comment 18b-2:** It was well known to Pennsylvania Jersey Maryland Interconnect covering 13 states and nations [sic] largest Interconnect has known and published since this 2010 report that Wind and Solar are available in abundance and that there is no disruption or destabilizing of "baseload grid." Replacement power was available in 2010 and is available now and certainly in 2017. The NRC Commission Order of March 27, 2012 must be reversed because they are simply wrong. Within FENOC's own system there are 14,000 MW. With [sic] FENOC is selling to wholesale markets electricity which is not needed on the grid. FENOC could easily retire Davis-Besse and meet that loss of power generation from within their own system. This amounts to gaming of the system to rationalize the need for the Davis-Besse license renewal. Please review FENOC 10 K to learn how they game the system. For the NRC Commission to reverse Contention 1,2,3 calling for 'reasonable' look at Alternatives amounts to the NRC Commission aiding and abetting the rigid status quo.

**Comment 18b-3:** The alternative of First Energy seeking out alternative energy that they don't generate, that they could bring in through the grid, was not brought into consideration. This is a self-serving economic game here at the detriment of FENOC ratepayers. We understand that there's [people with a] vested interest who are obstructing introduction of renewable and alternatives of wind and solar. We understand that there are a lot of good paying jobs. But there will be more jobs in a renewable and alternative economy, because those jobs are labor intensive. Whereas jobs in the nuclear industry are capital intensive, you get very few jobs for the money you spend. This has not adequately been considered.

**Comment 19a-2:** So in reviewing the supplement, the NRC must revisit contentions that the electricity can be readily replaced. And we have heard others talk about this. But we are asking that the NRC review Emory Levens, and Mahajani's articles and books, on how both carbon and nuclear can be replaced with renewables by 2050.

**Comment 19c-12:** It is increasing clear that a combination of wind, solar and efficiency could replace Davis-Besse by 2017. In addition to these, other alternative energy sources such as geothermal heating and cooling are increasing in popularity. The public is also undertaking an increasing number of conservation measures. The NRC has failed to keep up with the rapidly increasing ability of safer renewables technology and efficiency to supplant the need for the Davis-Besse reactor.

**Comment 21-3:** We act like there is some kind of a lack of ways to move forward, but we have renewable energy, we can generate enough power.

**Comment 23-2:** In the Supplemental Generic Environmental Impact Statement it said that alternative forms of energy were considered but not evaluated further. I don't understand this. Other forms of alternative energy are great alternatives to a form of energy that has a potential to cause grave harm to local residents.

**Comment 27-1:** Adequate alternatives do exist to replace the capacity of Davis Bessie [sic]. The combination of renewable solar and wind with the decreased demand in electricity resulting from savings from energy efficiency are more than sufficient to replace the capacity of Davis Bessie [sic]. A good example of what is possible can be learned from recent developments in wind energy.

**Comment 29-1:** They refuse to build, own, or operate wind farms, which are by far the cheapest new energy source that can be built, but they love nuclear, which is the most expensive and dangerous form of energy generation that can be built.

**Comment 32a-4:** Mark Cooper, an energy economist at Vermont Law School, warned on April 10, 2014 that nuclear utilities must plan for replacement power - as from efficiency upgrades and development of renewable sources of electricity - in advance of the inevitability that atomic reactors will one day close, lest our electric grids lurch from crisis to crisis. In fact, in July 2013, Cooper identified Davis-Besse as one of a dozen reactors most at risk of near-term shut down, due to a variety of factors, including economic factors (cost, old age, stand alone status, and only a 25-year future even if it gets an extension), operational factors (lack of reliability, long-term outages), as well as multiple safety factors. (see Exhibit ES-1: Retirement Risk Factors of the Nuclear Fleet, page iv, posted online at <http://216.30.191.148/071713%20VLS%20Cooper%20at%20risk%20reactor%20report%20FINAL1.pdf>).

**Response:** *These comments relate to the use of renewable energy in place of nuclear power. Consistent with 10 CFR 51.91(a)(1) and 51.91(b), in Chapter 8 of the SEIS, the NRC evaluates potential replacement power alternatives to Davis-Besse license renewal, including a discreet alternative that considers energy production generated from a combination of wind energy, solar energy, compressed air energy storage, and natural gas. In the NRC staff's best professional opinion, an alternative capable of producing as much baseload power as Davis-Besse and which relied more significantly or exclusively on wind or solar energy was not deemed to be a reasonable option at this time.*

*The NRC ultimately does not make the decision regarding which alternative (including the proposed action) to implement as part of its NEPA review, since that decision falls to utility and other energy-planning decision-makers. Comparing the environmental effects of the analyzed alternatives in Chapter 8 assists the NRC in deciding whether the adverse environmental impacts of license renewal are so great that preserving the option of license renewal for energy-planning decision-makers would be unreasonable (10 CFR 51.95(c)(4)). If the NRC decides to issue a renewed license, all of the alternatives, including the proposed action, will be available to energy-planning decision-makers. If the NRC decides not to renew the license (the no action alternative), then energy-planning decision-makers will need to replace Davis-Besse with another energy source, which may or may not be one of the alternatives considered in Chapter 8.*

*These comments provide no new information. Therefore, no changes were made to the SEIS as a result of these comments.*

### A.3.2 Air and Meteorology (AM)

**Comment 20-2:** Is there a mechanism that will absolutely guarantee us that Lake Erie will not have that same experience from some of the climate change that we are likely to experience here? Second, it seems to me that based on the uncertainty that we are facing, with the changes that are going to come about, as our climate changes, we can't be sure of anything. And that if there is something that we could depend on, it would be that things would get better if we would reduce risks.

**Response:** *Changes in climate have the potential to affect air and water resources, ecological resources, and human health, and are taken into consideration when evaluating cumulative impacts over the license renewal term. Because of the implications for global climate change, staff reviewed the impact greenhouse gas emissions have on the environment as it relates to energy production. Section 6.2 of the SEIS describes greenhouse gas emissions from continued plant operation and compares the emissions to coal, natural gas, and renewable energy sources.*

*No new information is presented in this comment. Therefore, no changes were made to the SEIS as a result of this comment.*

**Comment 25-4:** The Draft SEIS does not identify any air quality impacts as a result of the proposed refurbishment projects. While EPA recognizes that Ottawa County is an attainment area for all criteria pollutants, we expect construction equipment used during refurbishment activities to emit diesel emissions. The National Institute for Occupational Safety and Health (NIOSH) has determined that diesel exhaust is a potential occupational carcinogen, based on a combination of chemical, genotoxicity, and carcinogenicity data. In addition, acute exposures to diesel exhaust have been linked to health problems such as eye and nose irritation, headaches, nausea, asthma, and other respiratory system issues.

Recommendations: Although every construction site is unique, common actions can reduce exposure to diesel exhaust. EPA recommends that the applicant and NRC commit to the following actions during construction in the Final SEIS and license:

- Using low-sulfur diesel fuel (15 parts per million sulfur maximum) in construction vehicles and equipment.
- Retrofitting engines with an exhaust filtration device to capture diesel particulate matter before it enters the construction site.
- Positioning the exhaust pipe so that diesel fumes are directed away from the operator and nearby workers, thereby reducing the fume concentration to which personnel are exposed.
- Using catalytic converters to reduce carbon monoxide, aldehydes, and hydrocarbons in diesel fumes. These devices must be used with low sulfur fuels.
- Ventilating wherever diesel equipment operates indoors. Roof vents, open doors and windows, roof fans, or other mechanical systems help move fresh air through work areas. As buildings under construction are gradually enclosed, remember that fumes from diesel equipment operating indoors can build up to dangerous levels without adequate ventilation.

## Appendix A

- Attaching a hose to the tailpipe of diesel vehicles running indoors and exhaust the fumes outside, where they cannot re-enter the workplace. Inspect hoses regularly for defects and damage.
- Using enclosed, climate-controlled cabs pressurized and equipped with high efficiency particulate air (HEPA) filters to reduce the operators' exposure to diesel fumes. Pressurization ensures that air moves from inside to outside. HEPA filters ensure that any incoming air is filtered first.
- Regularly maintaining diesel engines, which is essential to keep exhaust emissions low. Follow the manufacturer's recommended maintenance schedule and procedures. Smoke color can signal the need for maintenance. For example, blue/black smoke indicates that an engine requires servicing or tuning.
- Reducing exposure through work practices and training, such as turning off engines when vehicles are stopped for more than a few minutes, training diesel-equipment operators to perform routine inspection, and maintaining filtration devices.
- Purchasing new vehicles that are equipped with the most advanced emission control systems available.
- Using electric starting aids such as block heaters with older vehicles to warm the engine reduces diesel emissions.
- Using respirators, which are only an interim measure to control exposure to diesel emissions. In most cases, an N95 respirator is adequate. Workers must be trained and fit-tested before they wear respirators. Depending on work being conducted, and if oil is present, concentrations of particulates present will determine the efficiency and type of mask and respirator. Personnel familiar with the selection care and use of respirators must perform the fit testing. Respirators must bear a NIOSH approval number. Never use paper masks or surgical masks without NIOSH approval numbers.

**Response:** *The commenter states that the Draft SEIS did not identify air quality impacts due to the proposed refurbishment activities associated with license renewal. The published Draft SEIS discussed potential air quality impacts from refurbishment activities in Sections 3.2.10 and 4.2 of the SEIS. Section 3.2.10 of the SEIS identifies that main contributors to air quality impacts associated with completed and ongoing refurbishment activities would be fugitive dust generation from facility construction activities, refurbishment work to open the shield building and containment vessel to replace the steam generators and related equipment, and exhaust emissions from motorized equipment and vehicles of temporary workers. Furthermore, as concluded in Section 3.2.10, estimated vehicle exhaust emissions from the additional needed workforce would not exceed de minimis levels. Since the screening analysis presented in Section 3.2.10 did not exceed the de minimis levels, a conformity determination is not required and it is unlikely that emissions from refurbishment activities would have affected a nonattainment or maintenance area or cause or contribute to any new violation of National Ambient Air Quality Standards.*

*The commenter is also concerned about the exposure of diesel exhaust during refurbishment activities involving construction equipment and identifies actions the NRC and applicant should commit to, to mitigate impacts from diesel exhaust exposure. Based on its limited statutory authority under the Atomic Energy Act, NRC cannot impose mitigation measures or standards on its nuclear power plant licensees that are not related to public health and safety from*



*radiological hazards or common defense and security. These actions and recommendations identified are outside the NRC's statutory authority. Nevertheless, licensees are required to comply with all applicable Federal, State, and local permit requirements relevant to their activities. Chapter 3 of the SEIS describes the activities that the licensee identified in the ER as refurbishment activities but have subsequently been completed in the years since the ER was submitted in 2010. The last of the activities identified as refurbishment, steam generator replacement, was completed during the spring 2014 refueling outage.*

*No new information is presented in this comment. Therefore, no changes were made to the SEIS as a result of this comment.*

**Comment 26-56:** The DSEIS states that the various studies it reviewed show that “the relatively lower order of magnitude of GHG emissions from nuclear power, when compared to fossil fueled alternatives (especially natural gas), *could potentially disappear if available uranium ore grades drop sufficiently . . .*” (Emphasis added.) This statement is speculative, apparently based on worst-case assumptions, and a review of the data presented in Table 6.2-2 reveals it to be unsupported. See, e.g., POST (2006) (referenced and described in Table 6.2-2). FENOC recommends deleting this sentence.

**Response:** *The NRC staff relied on current available information in discussing its independent analysis of Greenhouse Gas Emissions in Section 6.2 of the SEIS. Tables 6.2-1, 6.2-2, and 6.2-3 present a sampling and wide range of studies of lifecycle GHG emissions estimates of various electricity generation technologies. The statement the commenter identifies is supported by Mortimer (1990), Storm van Leeuwen and Smith (2008), and POST (2006) (all cited in Tables 6.2-1 and 6.2-2). These studies present data on the variation of carbon dioxide emissions released from nuclear power and illustrate that for low grade uranium ores (less [than] 0.01% uranium oxide), nuclear power lifecycle carbon dioxide emission could potentially exceed those of fossil-fuel fire power plants. Storm van Leeuwen and Smith (2008) particularly present the comparison between nuclear power and a gas-fired power plant emissions with decreasing ore grade.*

*The statement regarding future relative magnitudes of GHG emissions has not been revised as this independent analysis has presented current available data and the references, presented in Tables 6.2-1 and 6.2-2 of the SEIS (i.e., Mortimer (1990), Storm van Leeuwen and Smith (2008)), that support the statement the commenter believes is subjective.. However, the NRC staff recognizes that additional clarification should be provided and additional clarification has been inserted under the note on Table 6.2-1 and Table 6.2-2 in Chapter 6 of the SEIS.*

**Comment 26-57:** The DSEIS states that “[f]ew studies predict that nuclear fuel cycle emissions will exceed those of fossil fuels within a timeframe that includes the Davis-Besse period of extended operation.” But none of the studies cited in Table 6.2-2 appear to support this thesis—at least based on the data presented. Therefore, FENOC suggests revising this sentence to state: “Nearly all studies predict that nuclear fuel cycle emissions will remain an order of magnitude or more below those of all types of fossil fuels during the Davis-Besse period of extended operation.”

**Response:** *The NRC staff agrees that the statement needs to be revised. However, there are studies that support that nuclear power GHG emissions can possibly exceed those of fossil fuels if the ore grade decreases after the year 2050 (See Storm van Leeuwen and Smith 2008). Since the renewed operating licenses would allow an additional 20 years of operation for*

*Davis-Besse the renewed license would expire in 2037. Therefore, the bulleted statement in Section 6.2.2, Conclusions, of the SEIS has been revised to read:*

*A few studies (e.g. Mortimer 1990, Storm van Leeuwen and Smith 2008) predict that nuclear lifecycle GHG emissions will exceed those of fossil fuels as a result of declining ore grade; however, it is not expected for nuclear lifecycle GHG emissions to exceed those of fossil fuels within the timeframe that includes the period of extended operation of Davis-Besse.*

**Comment 26-58:** The DSEIS concludes that “it is likely that GHG emissions from renewable energy sources would be lower than those associated with Davis-Besse at some point during the period of extended operation.” This conclusion appears to be unsupported by the data presented in Table 6.2-3. FENOC suggests revising this sentence to state that “most of the relevant studies show that it is likely that GHG emissions associated with Davis-Besse will remain comparable to or below those from renewable energy sources throughout the period of extended operation.”

**Response:** *The NRC staff agrees that the statement needs to be revised since the period of extended operation for Davis-Besse would be from 2017 to 2037 and studies indicate that increases in GHG emissions from nuclear power may occur after the year 2050. Therefore, the statement in Section 6.2.2, Conclusion, has been revised to read:*

*Currently, the lifecycle GHG emissions associated with nuclear power and renewable energy sources are of comparable magnitude. It is likely that GHG emissions from renewable energy sources and those associated with Davis-Besse will remain comparable during the period of extended operation.*

**Comment 26-60:** The conclusion that the air quality impacts of new natural gas combined cycle generation would be SMALL to MODERATE appears inappropriate, in that it blurs the significant difference between emissions from Davis-Besse and natural gas sources. See Table 6.2-2 (page 6-6). FENOC suggests that if the impacts from Davis-Besse are SMALL, then the impacts from natural gas facilities should logically be at least MODERATE, consistent with the Davis-Besse Environmental Report.

**Response:** *The NRC staff disagrees that the SMALL to MODERATE determination reached in the SEIS for air quality impacts of an NGCC is inappropriate. The conclusion reached in the SEIS is not solely determined by the absolute value of emissions (intensity), but also considers context. As discussed in Section 8.1.1 of the SEIS, emissions, county designation, and applicable regulations and requirements were considered, and a SMALL to MODERATE conclusion is appropriate. No change to the SEIS was made because of this comment.*

### **A.3.3 Aquatic Resources (AQ)**

**Comment 17a-6:** I made a comment about the effect of the hot water discharge, from the plant, and how that affects invasive species. Because I believe warming the water encourages invasive species, such as the grass carp.

**Response:** *In the 2013 GEIS, the staff reviewed the potential impact of a thermal plume of discharge water to the receiving surface water body. Staff determined that thermal stratification due to nuclear power plant operations has not been encountered, and therefore the impact was*

considered to be SMALL. The Ohio Environmental Protection Agency (OEPA) issued FENOC a National Pollution Discharge Elimination System (NPDES) permit that requires a continuous temperature monitoring of the non-radioactive cooling water discharged at the main station outfall. OEPA ensures that FENOC complies with the provisions of the Federal Water Pollution Control Act, as amended, and with the Ohio Water Pollution Control Act. No change to the SEIS was made because of this comment.

**Comment 20-1:** One thing that surprised me, about what was said tonight, is that the impact that is expected for surface water, and groundwater, from a license renewal by Davis-Besse, would be very small. And I just wonder how, in this world, after our experience with Fukushima, and with what we know of climate change, we could possibly be saying something like that now.

**Response:** Staff reviewed impacts to the surface and groundwater from plant operations to determine the impact to the environment from the operation of Davis-Besse. Based upon the information available, the staff has determined that the impact to surface and ground water from Davis-Besse operating for an additional 20 years would be SMALL. The NRC has staff (Japan Lessons Learned Division) that is evaluating and developing actions that are necessary to enhance the safety of the nuclear reactors in the United States as a result of the accident at Fukushima. This group is evaluating many issues related to the safe operation of nuclear power plants, such as seismic and flooding hazards, emergency preparedness, hardened vents and filtration, and spent fuel pool instrumentation. As staff develops guidance from the lessons learned from the Fukushima accident, the guidance will be provided to nuclear plant operators to avoid an accident like Fukushima from happening in the United States. Information on work that is being done at the NRC in relation to the Fukushima accident can be found at the NRC public Web site: <http://www.nrc.gov/reactors/operating/ops-experience/japan-dashboard.html>. No change to the SEIS was made because of this comment.

**Comment 25-5:** The Draft SEIS references two “areas of concern” near Buffalo and the Ashtabula River on page 2-34, lines 12-16 and the lakewide management plan (LaMP) for Lake Erie. The Draft SEIS does not, however, state that Davis-Besse is within the EPA-designated Maumee River Area of Concern (AOC), which was extended in 1992 to include the Toussaint River. The document references the Remedial Action Plan (RAP), but it does not clarify that it is specific to the Maumee River AOC.

**Recommendations:** The Final SEIS should update this section to reflect that areas of concern are EPA-designated Areas of Concern, with specific locations, degradations, and improvement goals. In this context, where “areas of concern” are described, the correct term AOC should be used. The “Buffalo area of concern” should be updated to refer to the Buffalo River AOC. Further, the document should reflect that Davis-Besse is within the Maumee River AOC and that the RAP has been developed to improve water quality of the Maumee River and Lake Erie.

**Response:** The NRC recognizes that Davis-Besse lies within the EPA-designated Maumee River Area of Concern. The NRC has incorporated the EPA’s recommended modifications into Section 2.2.6 of the SEIS.

**Comment 25-6:** The Davis-Besse site is largely wetland, per the description on page 2-1, but the Draft SEIS does not include a map of the types of wetlands found onsite. EPA is particularly interested in wetlands that are not actively managed under the Ottawa National Wildlife Refuge, but rather those that could be impacted or adjacent to refurbishment and other activities related

to the operation of Davis-Besse. The Draft SEIS is unclear whether a wetland delineation was completed and whether wetlands are adjacent to areas proposed for construction.

**Recommendation(s):** EPA recommends including a wetland map and a proposed refurbishment facilities map in the Final SEIS. We acknowledge that the new facilities are proposed for previously-disturbed land, but without a map of both the aquatic resources and the proposed facilities, it is difficult to review potential direct and indirect impacts. EPA reminds NRC and the applicant to avoid even temporary, direct impacts to wetlands, such as staging construction equipment in wetlands. We recommend the Final SEIS include how the applicant and NRC will ensure direct and indirect impacts to wetlands are avoided. Temporary impacts to jurisdictional wetlands would trigger the need for a Clean Water Act Section 404 permit from the U.S. Army Corps of Engineers.

**Response:** *As described in Section 2.2.7.2, the Davis-Besse site comprises 954 acres. Navarre Marsh, which is leased to the U.S. Fish and Wildlife Service (FWS) for management as part of the Ottawa National Wildlife Refuge, covers 733 acres, and the remaining 221 acres contain facility buildings, structures, and parking lots; woodlands; low grasslands; and marginal agricultural land. Figure 2.1-3 depicts the on-site wetlands (Navarre Marsh). The proposed license renewal would include some construction activities associated with refurbishment (i.e., replacement of the steam generators). As indicated in Section 3.1, all construction associated with the steam generator replacement was completed during a 70-day refueling outage in the spring of 2014, and less than 10 acres of land was affected, all of which was developed industrial land. Navarre Marsh was unaffected by the construction. The NRC understands that if FENOC were to perform activities that could impact jurisdictional wetlands, it would need to seek a Clean Water Act Section 404 permit from the U.S. Army Corps of Engineers. However, because refurbishment activities did not directly or indirectly affect any wetlands, a permit was not necessary.*

*No revisions to the SEIS were made as a result of this comment.*

### **A.3.4 Cumulative Impacts (CI)**

**Comment 25-9:** Based on the discussion provided in section 4.15.5.1, Human Health - Radiological, EPA commends the applicant and NRC for maintaining an operational radiation dose level that is within public dose standards and are as low as reasonably achievable (ALARA). However, because of the new facility at Fermi in Michigan scheduled to come online as early as 2021 and other nuclear reactors along Lake Erie, EPA recommends the public dose levels be closely monitored to ensure values do not increase past historical levels.

**Recommendation:** EPA recommends that, with the addition of the new facility at Fermi in Michigan and other operating nuclear reactors adjacent to Lake Erie, public radiation doses are monitored closely to ensure no exceedances are recorded. Any exceedances should be reported to EPA.

**Response:** *Section 4.15.5.1 of the Davis-Besse FSEIS discusses the cumulative impacts of the operation of Davis-Besse and any other currently operating or proposed new nuclear facilities within a 50-mile radius. The currently operating facilities and proposed new nuclear facilities at the Fermi plant site would contribute to the cumulative radiological impacts in the vicinity of the Davis-Besse site. However, the cumulative radiological impacts from all uranium fuel cycle facilities in proximity to each other are limited to the radiation protection standards in 10 CFR Part 20 and 40 CFR Part 190. The NRC staff's review of radioactive releases from Davis-Besse shows that the annual radiation dose to the public has been less than 1.0 mrem*

*(0.01 mSv). This dose is well within the NRC's and EPA's radiation protection standards. In addition, as discussed in Section 4.8.1, Davis-Besse conducts a REMP around its site. The program measures radiation and radioactive materials in the environment from Davis-Besse and all other sources (i.e., other nuclear power plants such as Fermi, as well as other licensed users of radioactive material). Therefore, the REMP would monitor any cumulative impacts. As discussed in Section 4.8.1, the NRC staff reviewed the historical radiological environmental monitoring results for Davis-Besse and found no significant environmental impact associated with the operation of the plant. No revision to the SEIS was made as a result of this comment.*

### **A.3.5 Cultural Resources (CR)**

**Comment 19a-14:** So -- the last thing I want to talk about was that the -- if I read this right, it says that, the supplement says that it has relied on consultation with the tribes. And so with that consultation with the tribes, if I read this right, said consisted of writing letters to eight tribes, seven of which letters went unanswered. So we would like the NRC to have actual dialogue with all of these eight tribes. And dialogue should take place at, or close to, the tribal location, where the Native American cultural traditions can be respected, and where they don't have to drive long distances, or whatever.

**Comment 19c-7:** NRC maintains in its summary that it has relied on consultation with Tribes. This consisted of writing letters to eight tribes, 7 of which letters went unanswered. We submit that the NRC must have actual dialogue with these eight tribes, which dialogue should take place at or close to the tribal meeting location. Native American cultural traditions must be respected.

**Response:** *These two comments are related to how staff interacts with Native American tribes in the area around Davis-Besse. At the beginning of the scoping period, staff sent letters to leaders of the Federally recognized Native American tribes, which have historical ties to the area around Davis-Besse, requesting the tribes provide comments on the environmental review associated with the license renewal application. One tribe responded to this request. They indicated no objection to the proposed action of license renewal and asked to be contacted in the event skeletal remains were found in the vicinity of Davis-Besse. The other tribes did not provide comments, which is their prerogative. Additionally, the draft SEIS was sent to the same tribes inviting them to provide comments on the draft. Again, they exercised their prerogative to participate or not. To ensure the letters are sent to the correct individuals, the NRC staff reviews the latest version of the Bureau of Indian Affairs (BIA) Tribal Leaders Directory. This semiannual publication contains the most current information available at the time of publishing and takes into account tribal elections and other changes in tribal leadership that occurred since the last edition. In the case of the Davis Besse SEIS, the NRC staff consulted BIA's directory when preparing the letters discussed above. The latest version of the directory can be found at <http://www.bia.gov/cs/groups/webteam/documents/document/idc1-028053.pdf>.*

*No revision to the SEIS was made as a result of these comments.*

### **A.3.6 Human Health (HH)**

#### Radioactive Releases

**Comment 19a-8:** We are also looking, I'd like to mention the possibility of the contamination, radioactive contamination of the fresh water of Lake Erie, and maybe Lake Ontario, and maybe

the Great Lakes. And any of these reactors, any of the 37 reactors in the watershed of the Great Lakes could cause serious damage to our lakes. It never should have been allowed to happen.

**Comment 19a-9:** So all, a lot of unimagined scenarios have happened already, and continue to take place. And, unfortunately, Davis-Besse is located where it has the potential to contaminate the waters of Lake Erie for an eternity, actually.

**Comment 19a-10:** The NRC should address, look at routine radioactive releases that was mentioned before. There are tritium leaks, and so forth.

**Comment 19c-3:** The NRC has failed to adequately address the consequences of Davis-Besse's routine radioactive releases. The NRC has concluded that if the radionuclides are diluted, the problem will disappear. However, studies have shown that there is no safe dose of ionizing radiation, and that low doses of radioactivity can be far more deadly than originally thought. The NRC appears to be taking the industry position that if a particular cancer, stroke, heart attack, or birth defect cannot be proven to have been caused by radioactivity, then the conclusion must be that radioactivity did not cause these health problems. The NRC has used selective studies to back their position that there is little or no increase health risks around nuclear reactors, ignoring other studies that contradict this assumption.

**Response:** *Section 4.9.2 of the SEIS discusses the environmental impacts of the operation of the plant in the renewal term. NRC regulations require that radioactive liquid releases from nuclear power plants must meet radiation dose limits specified in 10 CFR Part 20, and the as low as is reasonably achievable (ALARA) dose criteria in Appendix I to 10 CFR Part 50. Regulatory limits are placed on the radiation dose that members of the public can receive from radioactive material released by a nuclear power plant. As part of the Radioactive Effluent Control Program, and as required by 10 CFR 50.36(a), Davis-Besse is required to submit an annual report to the NRC listing the types and quantities of radioactive effluents released into the environment. Davis-Besse is also required to have a Radiological Environmental Monitoring Program (REMP) to assess the radiological impact, if any, to its employees, the public, and the environment from plant operations. The REMP measures the aquatic, terrestrial, and atmospheric environment for radioactivity, as well as the ambient radiation. The REMP supplements the Radioactive Effluent Monitoring Program by verifying that any measurable concentrations of radioactive materials and levels of radiation in the environment are not higher than those calculated using the radioactive effluent release measurements and transport models. NRC's review of the REMP reports submitted by Davis-Besse has shown that there has been no measurable impact to the environment from operations at Davis-Besse. The NRC staff's review of the Davis-Besse Radioactive Effluent Control Program has shown that the radiation doses to members of the public from radioactive effluents were within the Federal radiation protection standards in NRC's 10 CFR Part 20, Appendix I to 10 CFR Part 50, and EPA's 40 CFR Part 190. Continued compliance with NRC and EPA's regulatory requirements is expected during the license renewal term; therefore, the impacts from radioactive effluents determination of SMALL in the Davis-Besse SEIS will not change. No new information was provided in these comments. Therefore, no revisions to the SEIS were made.*

### Algae

**Comment 17a-3:** Some errors of omission. Some comments were made about the algae blooms that we are experiencing here in Lake Erie. The NRC has said that there have been no reports of algae blooms near Davis-Besse. Well, I have to tell you, it is here. I have personally

seen it. I may not publish my reports in any journals, but I have been to the Ottawa Wildlife Refuge, and the local refuges, and I have seen piles of algae on the shoreline.

**Comment 17b-12:** Also, one of the contentions made by commenters on the original Environmental Impact Statement was that the heating of Lake Erie by Davis Besse's effluent would encourage the growth of cyanobacteria such as *Microcystis aeruginosa* and *Lyngbya wollei*. The NRC's response was, "Current operation of Davis-Besse has not been linked to the presence or growth of the cyanobacteria in Lake Erie." However, simply because no researcher has made the link, does not mean that the link does not exist. Several facts are known. Algae [sic] grows more quickly in warmer water. I have personally observed large mats of algae [sic] that have washed up onshore downstream from Davis-Besse. Probably, DB's discharges are encouraging more algal [sic] growth.

**Response:** *In Sections 4.15.2, Cumulative Impacts on Water Resources, 4.15.3, Cumulative Impacts on Aquatic Resources, and 4.15.5, Cumulative Human Health Impacts, blue-green algae or cyanobacteria has been discussed. As noted on the Ohio Environmental Protection Agency (OEPA) Web site (<http://epa.ohio.gov/habalgae.aspx>), factors that can contribute to harmful algal blooms include sunlight; low-water or low-flow conditions; calm water; warmer temperatures; and excess phosphorus or nitrogen that can be used as nutrients. In 2010, the U.S. Environmental Protection Agency (EPA) initiated the Great Lakes Restoration Initiative (GLRI) to protect and restore the Great Lakes. Further information on this initiative can be found at: <http://greatlakesrestoration.us/index.html>. On September 24, 2014, the GLRI Action Plan II was issued. This report lays out the steps that the 11 Federal agencies involved in the GLRI will take between 2015 and 2019 to protect the water quality of the Great Lakes. The GLRI Action Plan II can be found at: <http://greatlakesrestoration.us/actionplan/pdfs/glri-action-plan-2.pdf>. On the State level, in 2012, Ohio Governor John Kasich charged the Directors of the Ohio Department of Agriculture, the Ohio Department of Natural Resources, and OEPA to work together to develop recommendations for improving the quality of Ohio's waterways. Further information on this can be found at: <http://www.agri.ohio.gov/topnews/waterquality/>.*

*No new information was provided by these comments. Therefore, the SEIS was not revised as a result of these comments.*

### Cancer Reports

**Comment 16a-1:** You mentioned, in the draft there, that there are no studies that have been published in well recognized scientific journals, which I don't understand what that, the definition of that is. But there are some studies that I would recommend that you look at, on the causative effects of the operation of nuclear power plants and public health.

**Comment 16a-3:** There is also a study written by Dr. Gordon Edwards, from Canada, on the effects of tritium, which I think is -- I don't have the title of it with me, but I recommend that one as well, Dr. Gordon Edwards and tritium.

**Comment 16b-1:** I especially refer you to the comments of Joseph Demare [sic] regarding medical studies on the harmful effects of radiation, especially from aging nuclear reactors and the studies of Joe Mangano. I did want to point you to the studies on Uranium and Tritium by Canadian Doctor, Gordon Edwards: His organization's Web site is a wealth of information on the harmful health effects of radiation on human beings and provides in-depth detail on how, exactly, this radiation enters the human body and effects [sic] human health.  
<http://www.ccnr.org>, [http://www.ccnr.org/tritium\\_1.html](http://www.ccnr.org/tritium_1.html).

**Comment 17a-4:** One of the largest, probably the biggest and most serious errors of omission, I'm quoting now: No studies to date, that are accepted by the nothings leading scientific authorities that indicate a causative relationship between radiation dose from nuclear power facilities, and cancer in the general public exists. In other words, you are saying there aren't any studies linking living near a nuclear power plant to increased rates of cancer. And you list a number of studies that seem to indicate there isn't. Well, the omission is the many, many studies which do show a link between living near a nuclear power plant and increased cancer rates.

**Comment 17a-5:** But somehow France managed to do it, even though it is an incredibly nuclear dependent country, they published a study, it is called "The Childhood [sic] Leukemia Around French Nuclear Plants," and it was published in the International Journal of Cancer, in 2012. This study found, also, that leukemia rates for children doubled around nuclear power plants.

**Comment 17b-9:** In the initial public comment on the license renewal application, many people pointed out that nuclear power plants release radioactive isotopes which are known to cause cancer. There is a cancer cluster downwind of the power plant. This supports the conclusion is that radiation from Davis-Besse is causing the cancers. However, the NRC staff response to this assertion on page A-24 was that, "In summary, there are no studies to date that are accepted by the nation's leading scientific authorities that indicate a causative relationship between radiation dose from nuclear power facilities and cancer in the general public." To support this, they cite six studies done between 1979 and 2001. However, they have omitted many studies published in respected scientific journals which have been published since then which DO show a link between living near a nuclear power plant and doubling of cancer rates. This is not too surprising, since cancers caused by radiation can take up to 20 years to appear. Therefore, studies done when nuclear plants are only 10 or 15 years old would mask the long term effects of exposure to low level radiation.

**Comment 17b-10:** Finally, the works of Dr. Joseph Mangano, J.M. Gould and their many collaborators can not simply be dismissed out of hand. One of Dr. Mangno's [sic] most recent studies, "Infant Death and Childhood Cancer Reductions after Nuclear Plant Closings in the United States," with J.M. Gould, J.J. Mangano, W. McDonnell, J.D. Sherman and J. Brown, Archives of Environmental Health, 57, 23 - 31, 2002. Comes as close as ethically possible to establishing a causative link between nuclear plants and infant mortality. He found that, when nuclear plants were forced to have prolonged shutdowns, infant mortality rates dropped. When the shutdowns ended and the plants again began releasing radiation into the environment, the mortality rates again went up. Children and women are more vulnerable to radiation than men. A fact which the NRC does not seem to take into account in this report. This is explainable because dividing cells are the most sensitive to damage from radiation, and infants have extremely rapidly dividing cells. Older men, in comparison have cells which divide much less frequently. Dr. Mangano has many other studies which are included in these comments as Appendix A.

**Comment 23-3:** Nuclear reactors have caused cancer among so many. I think that some of these cases of cancer need to be evaluated further to see whether environmental factors such as Davis-Besse has to blame. People in the community shouldn't have to live in fear.

**Response:** *The NRC's mission is to protect the public health and safety and the environment from the effects of radiation from nuclear reactors, materials, and waste facilities. A discussion of these responsibilities beginning with the Atomic Energy Act of 1954 can be found on the NRC Web site at <http://www.nrc.gov/about-nrc/history.html>. The NRC's regulatory limits for radiological protection are set to protect workers and the public from the harmful health effects*



*(i.e., cancer and other biological impacts) of radiation. The limits are based on the recommendations of standards-setting organizations. Radiation standards reflect extensive scientific study by both national and international organizations. The NRC actively participates in, and monitors, the work of these organizations to keep current on the latest trends in radiation protection. If the NRC determines that there is a need to revise its radiation protection regulations, it will initiate a rulemaking. Members of the public who believe that the NRC should revise or update its regulations may request that the NRC do so by submitting a petition for rulemaking.*

*The NRC has based its dose limits and dose calculations on a descriptive model of the human body referred to as “standard man.” However, the NRC has always recognized that dose limits and calculations based on “standard man” must be informed and adjusted in some cases for factors such as age and gender. For example, the NRC has different occupational dose limits for pregnant women workers once they have declared (i.e., made known) they are pregnant, because the rapidly developing human fetus is more radiosensitive than an adult woman. NRC dose limits are also much lower for members of the public, including children and elderly people, than for adults who receive radiation exposure as part of their occupation. Finally, NRC dose calculation methods have always included age-specific dose factors for each radionuclide in order to consider the varied sensitivity to radiation exposure by infant, child, and teen bodies, which are also generally smaller than adult bodies. In addition, the calculation methods have always recognized that the diets (amounts of different kinds of food) of infants, children, and teens are different from those of adults. The NRC is currently updating 10 CFR Part 20, Standards for Radiation Protection, and information about this rulemaking can be found at: <http://www.nrc.gov/about-nrc/regulatory/rulemaking.html>.*

*One of the Davis-Besse public scoping comments stated that there is no safe dose of ionizing radiation. The BEIR VII report (National Research Council 2006) conclusions are specific to estimating cancer risk and do not state that there is no safe level or threshold of radiation exposure. However, the report did note that the “BEIR VII Committee said that the higher the dose, the greater the risk; the lower the dose, the lower the likelihood of harm to human health.” Further, the report notes that “[t]he Committee maintains that other health effects, such as heart disease and stroke, occur at high radiation doses but that additional data must be gathered before an assessment of any possible dose response can be made of connections between low doses of radiation and non-cancer health effects.” Although the LNT model is still considered valid, the BEIR VII Committee concluded that the current scientific evidence is consistent with the hypothesis that there is a linear dose-response relationship between exposure to ionizing radiation and the development of radiation-induced solid cancers in humans. Further, the Committee concluded “that it is unlikely that a threshold exists for the induction of cancers but notes that the occurrence of radiation-induced cancers at low doses will be small.”*

*Although radiation may cause cancers at high doses, currently there are no reputable scientifically conclusive data that unequivocally establish the occurrence of cancer following exposure to low doses (i.e., below about 10 rem (0.1 Sv)). However, radiation protection experts conservatively assume that any amount of radiation may pose some risk of causing cancer or a severe hereditary effect and that the risk is higher for higher radiation exposures. Therefore, a linear, no-threshold dose response relationship is used to describe the relationship between radiation dose and adverse impacts such as incidents of cancer. Simply stated, in this model any increase in dose, no matter how small, results in an incremental increase in health risk. This theory is accepted by the NRC as a conservative model for estimating health risks from radiation exposure, recognizing that the model probably over-estimates those risks. Based on this theory, the NRC conservatively establishes limits for radioactive effluents and radiation exposures for workers and members of the public. Although the public dose limit in 10 CFR*

## Appendix A

*Part 20 is 100 mrem (1 mSv) for all facilities licensed by the NRC, the NRC has imposed additional constraints on nuclear power reactors. Each nuclear power reactor has enforceable license conditions that limit the total annual whole body dose to a member of the public outside the facility to 25 mrem (0.25 mSv). The amount of radioactive material released from nuclear power facilities is well-measured, well-monitored, and known to be very small. The doses of radiation that are received by members of the public as a result of exposure to nuclear power facilities are very low (i.e., less than a few millirem) such that resulting cancers attributed to the radiation have not been observed and would not be expected. As stated in the GEIS, the NRC believes the public and occupational impacts during the license renewal term would be SMALL.*

*Although a number of studies of cancer incidence in the vicinity of nuclear power facilities have been conducted, no studies to date accepted by the scientific community show a correlation between radiation dose from nuclear power facilities and cancer incidence in the general public. The following is a list of some of the most recent radiation health studies that the NRC recognizes:*

*In 1990, at the request of Congress, the National Cancer Institute conducted a study of cancer mortality rates around 52 nuclear power plants and 10 other nuclear facilities. The study covered the period from 1950 to 1984 and evaluated the change in mortality rates before and during facility operations. The study concluded there was no evidence that nuclear facilities may be linked causally with excess deaths from leukemia or from other cancers in populations living nearby.*

*In June 2000, investigators from the University of Pittsburgh found no link between radiation released during the 1979 accident at Three Mile Island power plant and cancer deaths among nearby residents. Their study followed 32,000 people who lived within 5 miles of the plant at the time of the accident.*

*The American Cancer Society in 2000 concluded that, although reports about cancer clusters in some communities have raised public concern, studies show that clusters do not occur more often near nuclear plants than they do by chance elsewhere in the population. Likewise, there is no evidence that links strontium-90 with increases in breast cancer, prostate cancer, or childhood cancer rates. Radiation emissions from nuclear power plants are closely controlled and involve negligible levels of exposure for nearby communities.*

*In 2000, the Illinois Public Health Department compared childhood cancer statistics for counties with nuclear power plants to similar counties without nuclear plants and found no statistically significant difference.*

*The Connecticut Academy of Sciences and Engineering, in January 2001, issued a report on a study around the Haddam Neck nuclear power plant in Connecticut and concluded radiation emissions were so low as to be negligible and found no meaningful associations with the cancers studied.*

*In 2001, the Florida Bureau of Environmental Epidemiology reviewed claims that there are striking increases in cancer rates in southeastern Florida counties caused by increased radiation exposures from nuclear power plants. However, using the same data to reconstruct the calculations, on which the claims were based, Florida officials were not able to identify unusually high rates of cancers in these counties compared with the rest of the State of Florida and the Nation.*

*On April 7, 2010, the NRC announced that it asked the National Academy of Sciences (NAS) to perform a state-of-the-art study on cancer risk for populations surrounding nuclear power facilities. The NAS has a broad range of medical and scientific experts who can provide the best available analysis of the complex issues involved in discussing cancer risk and commercial*

nuclear power plants. More information on its methods for performing studies is available at <http://www.nationalacademies.org/studycommitteprocess.pdf>.

The NAS study will update the 1990 U.S. National Institutes of Health National Cancer Institute (NCI) report, "Cancer in Populations Living Near Nuclear Facilities" (NCI 1990). The study's objectives are to (1) evaluate whether cancer risk is different for populations living near nuclear power facilities; (2) include cancer occurrence; (3) develop an approach to assess cancer risk in geographic areas that are smaller than the county level; and (4) evaluate the study results in the context of offsite doses from normal reactor operations. Phase I of the NAS study report was published on March 29, 2012, and is available on the NAS Web site (<http://www.nap.edu>).

The NRC staff's discussion on the impacts to human health from the operation of Davis-Besse during the proposed license renewal term is discussed in Davis-Besse FSEIS Section 4.9.

No new information was presented in these comments. Therefore, no changes were made to the SEIS as a result of these comments.

**Comment 16a-2:** One is a recent report that came out just after this one was published on the 26th of February, was when you guys published this. This came out March 3rd, 2014, and its title is, A Report of Health Status of the California Residents in San Luis Obispo, and Santa Barbara Counties, Living Near the Diablo Canyon Nuclear Reactors Located in Avila Beach, California.

**Response:** This comment refers to the report Joseph Mangano wrote entitled "Report on Health Status of Residents in San Luis Obispo and Santa Barbara Counties Living near the Diablo Canyon Nuclear Reactors Located in Avila Beach, California" which was released on March 3, 2014. This report was written for the World Business Academy, located in Santa Barbara, California, and can be found at: <http://worldbusiness.org/nuclear-power-health-impact-study/>. The San Luis Obispo County Public Health Department reviewed the report and issued their own report on April 11, 2014, stating that the County Public Health Department disputed the findings in the Mangano report. The press release informing the public that the County Public Health Department report was available can be found at: <http://www.slocounty.ca.gov/Assets/PH/Media+Release+-+DCNPP+Health+Study.pdf>. The County's report can be found at: <http://www.slocounty.ca.gov/Assets/PH/Health+Concerns+from+DCNPP.pdf>. No new information was provided by this comment. Therefore, no changes to the SEIS were made.

#### Electromagnetic Fields – Chronic Effects

**Comment 25-8:** Per section 4.9.3, Electromagnetic Fields - Chronic Effects, because chronic exposure to electromagnetic fields continues to be studied and are not known at this time, NRC does not categorize [sic] chronic effects from electromagnetic fields to be either Category 1 or 2 (generic or site-specific), but rather "UNCERTAIN." EPA believes it would be prudent to consider the chronic effects of exposure to electromagnetic fields to be a Category 2 issue (site-specific), until a generic determination can be made.

Recommendation: EPA recommends NRC consider exposure to electromagnetic fields to be a Category 2 issue (site-specific) until a scientific consensus can be made and impacts can be analyzed as a Category 1 (generic).

**Response:** Section 4.9.1.1.4 of the License Renewal Generic Environmental Impact Statement (GEIS); NUREG-1437, discusses the health effects of electromagnetic fields (EMFs) used to

*determine its categorization of UNCERTAIN. A review of the biological and physical studies of 60-Hz EMFs did not find any consistent evidence that would link harmful effects with field exposures. EMFs are unlike other agents that have a toxic effect (e.g., toxic chemicals and ionizing radiation) in that dramatic acute effects cannot be forced, and longer-term effects, if real, are subtle. Because of inconclusive scientific evidence, the chronic health effects of EMF are considered UNCERTAIN, and currently, no generic impact level can be assigned. The NRC will continue to monitor the research initiatives, both those within the national EMF program and others internationally, to evaluate the potential carcinogenicity of EMFs as well as other progress in the EMF study disciplines. If the NRC finds that the appropriate Federal health agencies have reached a consensus on the potential human health effects from exposure to EMF, the NRC will revise the GEIS to include the new information, change the categorization if needed, and determine what to require of all future license renewal applicants.*

*No changes were made to the SEIS as a result of this comment.*

### Tritium

**Comment 17a-1:** In the area of errors of judgement [sic], discussing the tritium leaks that happened, and have happened, and may still be happening at Davis-Besse, the -- there is a description of the measurements of tritium, and it shows a graph of how they were high, and then they went low, and they went up again, and then they went down. And then the NRC, in this report, says that, well we have a plausible explanation for this leakage. Plausible explanation is not a high enough standard to protect any of us from tritium pollution.... And having a plausible explanation for why the plant is leaking is not satisfactory. We need to know why it is leaking in order to say, with any confidence, that it won't continue to leak over the next 20 years, if we re-license the plant.

**Comment 17b-8:** Another area of a serious error of judgment has to do with the leakage of tritium into the groundwater around Davis-Besse in the 2007-2010 time period. In Section 2, it states, "ERM (2008) provided a plausible explanation regarding tritium release and migration." However, the "explanation" is simply a list of possible tritium sources, "potential inadvertent releases from the power block, including the spent fuel pool, would migrate vertically down through the unsaturated zone to the water table. Potential releases from structures below ground could release tritium directly to the upper or lower dolomite unit." Potential tritium sources in the power block are the reactor containment, auxiliary building, circulating water pump house, turbine building, and borated water storage tank (ERM 2007), (ERM 2008). In addition, several spent fuel pool leaks have been documented (Davis-Besse Undated). These sources would all produce leaks of varying amounts, degrees of radioactivity, and seriousness in terms of compromising the safety of the plant. Before allowing the plant to be relicensed, the NRC must require FENOC to demonstrate a causal link between an accidental release of radiation and tritium entering the ground water. As long as the source of tritium and the cause of the leaks are unknown, there is a very real danger that another, more serious release of radiation will occur. As was demonstrated with the NRC's response to the cracks in the containment dome, simply accepting a "plausible explanation" from FENOC is not a high enough standard of oversight to protect the public health and safety.

**Comment 23-4:** There has been reported leaks of tritium.

**Comment 32d-3:** On July 31, 2006, FirstEnergy publicly admitted four "occurrences of inadvertent releases of radioactive liquids that had the potential to reach groundwater," adding Davis-Besse to the growing list of 102 reactors in the U.S. that have leaked radioactivity into the

environment since the early 1960s (and as the reactor ages, such leaks will become more likely). These four “inadvertent releases of radioactive liquids” were, specifically:

[1] Following a primary to secondary leak, contaminated secondary resin was transferred to the South Settling Basin, where it remains. The Davis-Besse South Settling Basin was designed to accept spent resin from backwashed secondary polishing demineralizers. Spent resins from the secondary polishers are no longer directed to this basin.

[2] Water from the Backwash Receiver Tank leaked into the ground from a break in a 3-inch line located between the Backwash Receiver Tank and the South Settling Basin. The line break was excavated and repaired, and 7 cubic yards of contaminated soil was sent to a disposal facility.

[3] Primary grade water was spilled onto the ground near the Borated Water Storage Tank while draining the Hydrogen Addition System. Approximately 20 cubic yards of contaminated soil was excavated from the area and shipped to a disposal facility.

[4] While pumping water from the North Settling Basin to the Collection Box, the discharge hose from the pump fell out of the Collection Box and spilled water containing **low-level** [sic, emphasis added] tritium (4 E+04 pCi/L) [that is 4 × 10,000 picoCuries per liter, twice the U.S. Environmental Protection Agency’s permissible concentration level for tritium contamination under the Safe Drinking Water Act] onto the ground.”

In October, 2008, Davis-Besse admitted an uncontrolled release of tritium - carcinogenic, mutagenic, and teratogenic -- discovered by a fluke when workers checked fire protection systems. Of course, Davis-Besse - as with every operating reactor in the U.S. -- has permission from NRC, EPA and other government agencies to release radioactivity into air, water, and soil on a “routine” basis, despite the fact that every radiation exposure, no matter how small, carries a health risk, and those risks are cumulative.

**Response:** *As described in Section 1.4 of this SEIS, in 2013, the NRC approved a revision to its environmental protection regulation, 10 CFR Part 51. With respect to groundwater quality, the final rule amends Table B-1 in Appendix B to Subpart A, of 10 CFR Part 51 by adding a new Category 2 issue, “Radionuclides released to groundwater,” with an impact level range of SMALL to MODERATE, to evaluate the potential impact of discharges of radionuclides from plant systems into groundwater. This new Category 2 issue has been added to evaluate the potential impact to groundwater quality from the discharge of radionuclides from plant systems, piping, and tanks.*

*As described in Section 2.2.5 of this SEIS, Davis-Besse has had leaks of tritium to onsite groundwater. In response to the Nuclear Energy Institute’s groundwater protection initiative, the licensee installed a number of new onsite groundwater sampling wells based on the site’s hydrogeology. These wells are sampled on a routine basis and the sample results are sent to the NRC as part of the Annual Environmental Report. The sources of leaks to groundwater have been identified and repaired. The highest tritium concentrations reported are well below the U.S. EPA drinking water standard of 20,000 pCi/l (40 CFR 141.66). Additionally, the tritium-contaminated groundwater has not moved off site. Therefore, as stated in Section 2.2.5, the impact of radionuclides released to groundwater is determined to be SMALL and is expected to remain SMALL during the license renewal term. No new information was presented in these comments. Therefore, no revisions were made to the SEIS as a result of the comments.*

### A.3.7 License Renewal and Its Process (LR)

#### Generic Environmental Impact Statement, NUREG-1437

**Comment 25-1:** The Draft SEIS identifies several resource areas with impact categories ranges as “SMALL to MODERATE,” or “MODERATE to LARGE,” including offsite impacts to terrestrial resources from refurbishment and impacts to historic archaeological resources from operation. There is little indication how the impacts to those resources could potentially increase from SMALL to MODERATE or from MODERATE to LARGE. For example, certain categories of impacts have clear and objective metrics that determine whether the site-specific impact is SMALL, MODERATE, or LARGE, such as Groundwater Use and Quality, page B-4.

Recommendation: EPA recommends the Final SEIS clarify how impacts to resources that are defined in a range could move from lesser significance to higher significance. For example, the metric for becoming a MODERATE impact to offsite terrestrial resources from refurbishment could be direct take of a certain number of acres or type of habitat. Further, NRC and the applicant should identify mitigation measures, including coordination with the Ohio Department of Natural Resources (ODNR) and the U.S. Fish and Wildlife Service (USFWS), to ensure that impacts are avoided or minimized and remain in the SMALL category. Mitigation measures should be specific; the Draft SEIS currently states “use of best management practices,” but this is too general. The Final SEIS should identify which specific best management practices will be used, where appropriate. For impacts to resources that are described in a range of significance, an adaptive management approach to mitigation should be outlined in the Final SEIS and committed to in the license.

**Response:** *Impacts to resources affected by license renewal are defined in the License Renewal (LR) Generic Environmental Impact Statement (GEIS), NUREG-1437. The LR GEIS also explains how impacts could range from lesser significance to higher significance for each resource. As explained in Section 1.4 of the SEIS, impact levels were established for each environmental impact NEPA issue or resource based on the Council on Environmental Quality (CEQ) terminology for “significantly” (see 40 CFR 1508.27). The range or extent of the impact would depend on how much of the resource would be affected by license renewal and refurbishment activities. Generic environmental impact analyses in the LR GEIS combined with site-specific environmental impact analyses in the Davis-Besse SEIS constitute the NRC’s NEPA analysis for license renewal.*

*The NRC evaluates the impacts of license renewal using information provided by the licensee in its environmental report and information gathered from various agencies, experts, and the public. On the basis of this evaluation, the NRC may identify mitigation measures to reduce certain impacts. However, the NRC can only require a licensee to mitigate impacts of those actions that are within the NRC’s statutory authority. Therefore, the NRC cannot impose mitigation measures that are not related to this statutory authority, (i.e., to the public health and safety from radiological hazards or common defense and security). Other mitigation requirements may be imposed by other Federal and state agencies that have jurisdiction over affected resources. These mitigation requirements are often prerequisites for obtaining permits from these agencies. The NRC will not grant a renewed license unless the licensee has obtained all necessary permits for operations. No change was made to the SEIS in response to this comment.*

**Comment 25-7:** Section 4.6.1, Exposure of Aquatic Organisms to Radionuclides, and Section 4.7.2, Exposure of Terrestrial Organisms to Radionuclides, provide information about the new Category 1 issues added in 2013 to the relicensing review process. Because this is a

new issue, EPA finds the discussion lacking. There is no specific reference to guidance nor specific metrics that govern how the significance category was assigned.

**Response:** *Exposure of Aquatic Organisms to Radionuclides and Exposure of Terrestrial Organisms to Radionuclides are two new categories that were identified in the 2013 LR GEIS. Chapter 4 of the LR GEIS describes the analyses the staff used to evaluate the impact and determine the significance of these two new categories. As noted in the LR GEIS, the dose rates for aquatic and terrestrial biota were calculated with the RESRAD-BIOTA dose evaluation model using site-specific radionuclide concentrations in water, sediments, and soils reported in the Radiological Environmental Monitoring Program (REMP) reports for 15 NRC-licensed power plants (see Table 4.6-5 in the 2013 LR GEIS for the plant list). These 15 plants represent plants with a range of radionuclide concentrations in environmental media. The total estimated dose rates for aquatic biota for these plants were all less than 0.2 rad/d (0.002 Gy/d), considerably less than U.S. Department of Energy (DOE) guideline value of 1 rad/d (0.01 Gy/d). Thus, it is anticipated that normal operations of these facilities would not result in negative effects on aquatic biota. Effects on populations of aquatic biota from such doses would be SMALL. This is considered a Category 1 issue.*

*Results of the RESRAD-BIOTA dose modeling show the dose estimates for three different terrestrial ecological receptors: riparian animal (an animal that is assumed to spend 50 percent of its time in water and 50 percent of its time on land), terrestrial animal, and terrestrial plant. The maximum estimated dose rate calculated for any of the 15 nuclear power plants was 0.0354 rad/d (3.54E-4 Gy/d) which is below the DOE guideline value of 0.1 rad/d (0.001 Gy/d) for a riparian animal receptor. On the basis of these calculations and a review of the available literature, the NRC concluded that the impact of routine radionuclide releases from past and current operations and refurbishment activities on terrestrial biota would be SMALL for all nuclear plants and would not be expected to appreciably change during the renewal period. This is considered a Category 1 issue. The SEIS was not revised as a result of this comment.*

**Comment 26-1:** Although the DSEIS discusses the revised GEIS and the related final rule, FENOC believes that the discussion should be further clarified to confirm that, as applicable to Davis-Besse, the NRC has considered each of the Category 1 issues in the revised rule and determined that there is no new and significant information and the Category 1 determinations remain valid for Davis-Besse and/or provided a justification for any differences between what is in the DSEIS versus what is in the revised GEIS/final rule.

**Comment 26-7:** This background sentence on the 2013 rulemaking states that the new Category 1 issues set forth in the revised GEIS and Part 51 rules “include geology and soils, exposure of terrestrial organisms to radionuclides, exposure of aquatic organisms to radionuclides, human health impact from chemicals, and physical occupational hazards.” A similar statement appears in Appendix B. This list does not appear to be comprehensive. The final rule (78 Fed. Reg. at 37,283) states: “New Category 1 issues were added: geology and soils; effects of dredging on surface water quality; groundwater use and quality; exposure of terrestrial organisms to radionuclides; exposure of aquatic organisms to radionuclides; effects of dredging on aquatic organisms; impacts of transmission line right-of-way management on aquatic resources; employment and income; tax revenues; human health impacts from chemicals; and physical occupational hazards.” and “Several issues were changed from Category 2 to Category 1: Offsite land use, air quality, public services (several issues), and population and housing.” FENOC requests that the DSEIS be revised to add all of the new Category 1 issues to this background sentence or to specifically clarify that this sentence is not intended to be comprehensive or to match the scope of new issues evaluated in the DSEIS.

Relatedly, and as proposed below regarding the substantive evaluations in Chapters 3 and 4, FENOC wants to ensure that all new Category 1 issues are fully and clearly addressed, or a justification be included for those not otherwise addressed in the DSEIS.

**Comment 26-8:** This background sentence on the 2013 rulemaking states that “Radionuclides released to groundwater, effects on terrestrial resources (non-cooling system impacts), minority and low-income populations (i.e., environmental justice), and cumulative impacts were added as new Category 2 issues.” This list appears to be inconsistent with the final rule (78 Fed. Reg. at 37,283), which states: “New Category 2 issues were added: Radionuclides released to groundwater, water use conflicts with terrestrial resources, water use conflicts with aquatic resources, and cumulative impacts.” and “One uncharacterized issue was reclassified as Category 2: Environmental justice/minority and low-income populations.” FENOC requests that the DSEIS be revised to include all of the new Category 2 issues to this background sentence or to specifically clarify that this sentence is not intended to be comprehensive.

**Comment 26-9:** This paragraph discusses the effectiveness of the final rule with regard to the new or revised Category 1 and 2 issues, and explains that the NRC must consider them. FENOC recommends that the NRC add a brief discussion providing additional details, explaining how the NRC considered the Category 1 and 2 issues.

**Comment 26-41:** Although these substantive chapters evaluating the environmental impacts of refurbishment and operation appear to address most of the new issues in the June 20, 2013 final rule that revised Table B-1, it is not clear whether each individual issue has been addressed. For example, it does not appear to be clearly stated whether the following Category 1 issues are applicable to Davis-Besse and, if so, how they are addressed: effects of dredging on surface water quality, groundwater quality degradation resulting from water withdrawals, effects of dredging on aquatic organisms, and impacts of transmission line ROW management on aquatic resources. Therefore, FENOC recommends that the NRC include a discussion in this chapter, or elsewhere in the SEIS, to provide an explanation of how the Category 1 issues in the new final rule have been addressed, or, in the alternative, to provide a justification for any differences between what is in the DSEIS versus what is in the revised GEIS/final rule.

**Comment 26-47:** FENOC requests that the DSEIS be revised to include an affirmative statement in this section clarifying that the NRC has reviewed the Category 1 issues in Table B-1, as revised in the June 20, 2013 final rule, and has determined that, to the extent such topics are applicable to Davis-Besse, there is no new and significant information, and therefore the Category 1 designations for these issues remain correct and the small impact designations in Table B-1 remain correct. Alternatively, the SEIS should provide a justification for any differences between what is in the DSEIS versus what is in the revised GEIS/final rule.

**Response:** *These six comments are related to the 2013 GEIS. As described in Section 1.4 of the SEIS, in the 2013 GEIS some Category 1 and 2 issues were consolidated, some Category 2 issues were changed to Category 1, and some new Category 1 and 2 issues were identified. The list of environmental issues in Section 1.4 was not meant to be a detailed list of all the 2013 GEIS issues. In Section 1.4 of the SEIS, the staff discussed its use of the 1996 and the revised 2013 Generic Environmental Impact Statement for License Renewal of Nuclear Plants, NUREG-1437 (GEIS). For Category 1 issues, the 1996 and 2013 GEISs documented the results of the NRC staff’s systemic approach to evaluate the environmental consequences of renewing the licenses of individual nuclear power plants and operating them for an additional 20 years. The staff analyzed in detail and resolved those environmental issues that could be resolved generically in the GEIS.*



*The staff's evaluation of the environmental issues applicable to Davis-Besse was based on both the 1996 and the 2013 GEISs. For Category 1 issues, no additional site-specific analysis was required in the SEIS unless new and significant information was identified that would change the generic evaluation in the GEIS. Section 4.14 of the SEIS contains the information on the process the staff used to identify any new and potentially significant information for Category 1 issues applicable to Davis-Besse and the process used for that determination. No new and significant information was discovered during the review period or from the public comments; therefore, the Category 1 issues were not discussed in the SEIS.*

*The Davis-Besse SEIS contains the staff's evaluation of all applicable Category 2 issues. Category 2 issues not applicable to Davis-Besse were not evaluated by the staff and were not cited in the SEIS.*

*No new information was presented in these comments. Therefore, no revisions were made to the SEIS as a result of these comments.*

### License Renewal Process

**Comment 17b-13:** In Section 4.1 LAND USE it was stated, "The review included a data gathering site visit to Davis-Besse. No new and significant information was identified during this review that would change the conclusions presented in the GEIS." Given the NRC staff's poor judgement [sic] in other matters the report from this visit should have included ANY new information found, so that the public could make a judgment as to what constituted "significant information." This study is supposed to be addressing the impacts of operation after renewal, but it seems in Section 4.2 they only address air quality during the revisions, not after. Section 4.5.2 discusses releases of radiation into local groundwater. It describes "unknown, uncontrolled, and unmonitored releases" of radioactive substances that have occurred in the past, but claims that such leaks are not expected to occur again. Therefore the impact is listed as "small" but in reality it could be much more significant. If the causes of radioactive releases are "unknown" and "uncontrolled," no accurate estimates of their future impacts can be made. In section 4.11 Environmental Justice the report states, "...During 2010, analyses performed on samples of environmental media showed no significant or measurable radiological impact above background levels from site operations (FENOC 2011)." The NRC omitted what it considers "significant." Section 4.4.1 claims that there will be no significant change in surface water use and water quality. However, if projections by the EPA and other agencies are correct, and Lake Erie will warm and shrink as a result of climate change, then there will almost certainly be altered impacts on issues such as thermal stratification of lakes and eutrophication.

**Response:** *This comment questions the lack of new and significant information discovered during the environmental review. The NRC uses the Council on Environmental Quality's (CEQ) definition of "Significantly" (40 CFR 1508.27) to determine if information is new and significant. The National Environmental Policy Act (NEPA) requires consideration of both context and intensity when evaluating information. Context means that the information must be analyzed in several contexts, such as society as a whole, the affected region, the affected interests, and the locality. Both short-term and long-term effects are also relevant to context. Intensity refers to the severity of the impact or extent of the impact. Direct, indirect, and cumulative effects are used to determine intensity. To determine intensity of an effect, the following should be considered:*

- 1. Impacts that may be both beneficial and adverse.*
- 2. Degree to which the proposed action affects public health and/or safety.*

3. *Unique characteristics of the geographic area, such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.*
4. *Degree to which the effects are likely to be highly controversial.*
5. *Degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.*
6. *Degree to which the action may establish a precedent for future actions with significant effects.*
7. *Whether the action is related to other actions with individually insignificant but cumulatively significant impacts.*
8. *Degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.*
9. *Degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.*
10. *Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.*

*The staff reviewed information for the SEIS and used this definition as the basis for determining whether the information was new and significant. No changes were made to the SEIS as a result of this comment.*

**Comment 19c-8:** The Sierra Club would like an explanation as to why the NRC would expect the Environmental Report submitted by FENOC to be anything other than a corporation acting in its own best interest? Why would a report by a vested financial interest be determined by the NRC to have credibility, while public concerns are rejected?

**Response:** *The regulations specific to the license renewal of nuclear power plants are found in 10 CFR Part 54, "Requirements for Renewal of Operating Licenses for Nuclear Power Plants." The information provided by an applicant as part of the license renewal application, including the environmental report (ER), is required to be complete and accurate in all material respects, as indicated in 10 CFR 54.13. Applicants are required to affirm, under penalty of perjury, that the information submitted is true and correct. The staff reviews the ER as part of an independent environmental review. The staff also considers comments made by the public during the scoping period and on the draft SEIS. Under the NRC's NEPA regulations in 10 CFR Part 51, the staff must determine the scope of the license renewal action and identify the significant issues to analyze in depth. The staff must also identify and eliminate from detailed study issues which are peripheral or are not significant or which have been covered by prior environmental review. The staff must provide a brief discussion as to why the issues are considered peripheral or will not have a significant effect on the quality of the human environment. No change has been made to the SEIS as a result of this comment.*

**Comment 19c-11:** The democratic process is undermined when members of the public have their ideas and critical information disallowed because they are not in a position to conform to the legalistic process crafted by the NRC. Not only has the general public been dismissed, but the evidence of skilled professionals has also been dismissed by the NRC. Additionally, the

rejection of professional arguments by the NRC occurred after the Atomic Safety and Licensing Board hearing the arguments agreed with the petitioners that wind and solar could well have the ability to replace the power from Davis-Besse by 2017. This is another reason that the NRC must revisit the contention that renewables have the ability to replace the power generation of the Davis-Besse reactor.

**Response:** *This comment is referring to the Atomic Safety and Licensing Board's (ASLB) decision to dismiss the intervenors' contention relating to FENOC's failure to consider in the ER, combinations of wind and/or solar photovoltaic energy sources as alternatives to relicensing Davis-Besse. On December 27, 2010, the intervenors submitted three contentions that alleged the applicant's ER did not adequately analyze wind power, solar power, or wind and solar power in combination as baseload power alternatives. On April 26, 2011, the ASLB admitted an amended contention, which combined these three contentions alleging that the ER had failed to adequately evaluate the full potential for renewable energy sources, specifically wind power in the form of interconnected wind farms and/or solar photovoltaic power, in combination with compressed air energy storage, to offset the loss of energy production from Davis-Besse (LBP-11-13). In September 2011, FENOC submitted revisions to the ER which expanded the discussion of renewable energy alternatives and submitted a request to the ASLB to dismiss the alternatives contention, which the ASLB denied. FENOC then appealed the ASLB's decision to the Commission. The Commission reviewed the submitted information and on March 27, 2012, the Commission issued its decision (CLI-12-08) that the ASLB had erred in admitting the alternatives contention and the contention was dismissed. Chapter 8 of the SEIS documents the staff's review of the reasonable alternatives. No changes to the SEIS were made as a result of this comment.*

**Comment 32d-1:** Article from Beyond Nuclear: Davis-Besse Atomic Reactor: 20 MORE Years of Radioactive Russian Roulette on the Great Lakes shore?! November 2010, corrected May 10, 2011.

**Response:** *This article was originally prepared in November 2010 by the organization Beyond Nuclear. This article presents a history of Davis-Besse operations and Beyond Nuclear's reasons for being opposed to the relicensing of Davis-Besse for an additional 20 years. This article described events such as the F2 tornado that hit Davis-Besse on June 24, 1998, the acid-induced corrosion of the reactor vessel head in 2002, and the northeast blackout of 2003. The issues discussed in this article were related to the current operations of the plant at the time of each event. No new information is provided in this article. No changes to the SEIS were made as a result of information in the article.*

**Comment 32e-1:** Beyond Nuclear Fact Sheet – What Humpty Dumpty doesn't want you to know: *Davis-Besse's Cracked Containment Snow Job*, August 8, 2012

**Response:** *This is an article that was prepared by Beyond Nuclear in August 2012. The article generally chronicles the history of the cracks in the concrete shield building. The article calls into question FENOC's root cause report on the cracking. The article also discusses NRC documents, such as e-mails, that Beyond Nuclear believes demonstrates how structural integrity of the shield building has been compromised. The e-mails reflect questions NRC staff was asking early on in the investigation of the cracks. The NRC staff continues to review and evaluate the shield building cracks. The results of staff's review will be documented in a supplemental safety report which will be completed in late 2015. No new information is*

*provided in this fact sheet. No changes to the SEIS were made as a result of information in the fact sheet.*

**Comment 32e-3:** The SER, issued on 7/31/12, includes not one, but four, open items: “management of shield building cracks during the period of extended operations; operating experience review prior to entering the period of extended operations; time limited aging analyses of reactor vessel neutron embrittlement; and pressure-temperature limits.” An embrittled reactor pressure vessel, given its metal’s loss of ductility, can fracture like a hot glass under cold water due to pressurized thermal shock (PTS) if the emergency core cooling system is activated. Despite this, NRC has repeatedly weakened its PTS safety standards, in order to allow old, dangerously degraded reactors like Davis-Besse to keep operating. Davis-Besse is the hottest operating atomic reactor in the U.S., one theory for why it has required three lids in a single decade (2002-2011). And such a sudden drop, from such high temperatures, due to ECCS activation in an emergency would exacerbate PTS risks.

**Response:** *The SER (safety evaluation report) that was issued on 7/31/12, had the four open items that are listed above. The open items in the SER are issues that the staff continues to review and needs further information from the licensee to adequately resolve the issues. The NRC staff issued a final SER (ML13248A267) on September 3, 2013, after the open items were resolved.*

*The SER with open items is staff’s interim report that is presented to the Advisory Committee on Reactor Safeguards (ACRS) Subcommittee for Plant License Renewal for review. The ACRS subcommittee will discuss the SER at a public meeting with representatives from the applicant’s staff, NRC staff, and other interested parties. The ACRS Subcommittee reviews the SER and provides comments to the staff on areas of the SER that need further explanation. After staff has resolved the open items in the SER and the ACRS Subcommittee comments, staff prepares a final SER which is provided to the ACRS full committee for review. The ACRS holds another public meeting with representatives from the applicant’s staff, NRC staff, and other interested parties to discuss the final SER. After the ACRS has completed its review and has determined a plant can operate safely for 20 additional years, the Chairman of the ACRS sends a letter to the Chairman of the NRC with ACRS’s conclusion and recommendation. A decision on whether or not to relicense a nuclear power plant will not be made until after the ACRS provides their conclusions and recommendations to the NRC Chairman. More information about the ACRS can be found at: <http://www.internal.nrc.gov/ACRS/>.*

*No new information was presented in this comment and therefore, no changes were made to the SEIS.*

#### License Renewal – Past Contentions

**Comment 32a-1:** “4 21 14 draft EIS comment vis a vis 1 10 12 cracking contention.” The following is provided as public comment on the NRC draft EIS re: Davis-Besse’s proposed 20 year license extension. Link to original Jan. 10, 2012, cracking contention filed with the NRC ASLB: <http://www.beyondnuclear.org/storage/FINAL%20Contention%205%20Cracking%20January%2010%202012.pdf>. [Also available in ADAMS - ML12010A172]

**Response:** *On January 10, 2012, the organization Beyond Nuclear, in conjunction with Citizens Environmental Alliance of Southwestern Ontario, Don’t Waste Michigan, and the Green Party of Ohio (Intervenors), submitted a motion for admission of Contention No. 5 on the*

*Davis-Besse concrete shield building cracking (ADAMS ML12010A172). Contention No. 5 asserted that the concrete shield building should be subject to an aging management review and that the concrete shield building cracks be analyzed within the Davis-Besse SEIS. The contention argued that the cracking of the concrete shield building also now required a site-specific review of severe accidents for NEPA compliance.*

*On February 6, 2012, the applicant, FENOC, filed a motion opposing Contention No. 5. On February 6, 2012, NRC staff also filed a motion (1) to admit, in part, the contention as it relates to the need for the concrete shield building to have an adequate aging management review, and (2) to deny, in part, claims that an evaluation of the cracks be included in the SEIS. NRC staff agreed that FENOC should have an aging management program (AMP) in place for the concrete shield building. On April 5, 2012, FENOC submitted notification to the ASLB that FENOC had provided to the NRC a Shield Building AMP (ML12097A216) to be added to the license renewal application.*

*On December 28, 2012, the ASLB, in Memorandum and Order (LBP-12-27), denied the motions to admit, amend and/or supplement proposed Contention No. 5 (ML12363A200). In LBP-12-27, the ASLB wrote that proposed Contention No. 5 was comprised of three central concerns:*

- 1. There is extensive cracking of unknown origin in the shield building structure.*
- 2. The cracking is an aging-related feature of the plant.*
- 3. This condition precludes safe operation of the plant.*

*ASLB wrote that with regard to these concerns, the Intervenor has not provided facts or expert opinions as to why FENOC's analyses and conclusions are incorrect. The ASLB also indicated that the Intervenor did not provide specifics as to why the new Shield Building AMP was wrong or inadequate. Finally, with respect to Intervenor's claim that the cracking precludes safe operation, no specific information was submitted that supported this claim. The ASLB also wrote that questioning the safe operation of the plant is actually claiming a current safety issue, and that current safety issues are beyond the scope of a license renewal hearing.*

*The NRC staff continues to review information about the cracking in the shield building and anticipates issuing a supplemental Safety Evaluation Report in May 2015 to document staff's review.*

*No new information has been provided. Therefore, no changes to the SEIS were made as a result of this comment.*

**Comment 32a-5:** Although we also filed a steam generator replacement contention at Davis-Besse in May, 2013, which included concerns about Shield Building breaches, that contention was summarily dismissed by the ASLB. Thus, the steam generator replacement "experiment" at Davis-Besse is now well underway, and only time will tell how long they will last, and how soon the Shield Building must again be breached, if FENOC chooses to replace large nuclear components located within the Shield Building.

**Response:** *This comment refers to the license amendment request submitted by FENOC to revise their technical specifications to operate the new steam generators. An Atomic Safety and Licensing Board (ASLB) was established in May 2013 as a result of a request for a hearing submitted by Beyond Nuclear, Citizens Environment Alliance of Southwestern Ontario, Don't Waste Michigan, and the Ohio Sierra Club. As documented in ASLB Order LBP-13-11 (ML13224A110), dated August 12, 2013, the contention and request for a hearing were denied because the license amendment was for proposed changes to the technical specifications for operating the new steam generators, not for the replacement of the steam generators. FENOC*

was following the requirements in 10 CFR 50.59 for the analysis to replace the steam generators. The NRC has previously stated that members of the public can only challenge actions taken under 10 CFR 50.59 by submitting a petition in accordance with 10 CFR 2.206.

NRC staff continues to review the concrete cracking in the shield building. The environmental impacts related to the replacement of the steam generators have been evaluated and are documented in Chapter 3 of the SEIS. No new information has been provided. Therefore, no changes to the SEIS were made as a result of this comment.

**Comment 32b-1:** “4 21 14 DEIS comments vis a vis 2012 D-B Cracking Contention Supplements.” The following is provided as public comment on the NRC draft EIS re: Davis-Besse’s proposed 20 year license extension I have previously submitted comments regarding our environmental coalition’s contention, dated Jan. 10, 2012, seeking a hearing, on Shield Building cracking at Davis-Besse, submitted to the NRC ASLB. The following comments stem from our coalition’s five supplements to that contention, submitted between Feb. and August of 2012.

**Response:** *This comment relates to four motions to amend proposed Contention No. 5 which was originally submitted on January 10, 2012, by the organization Beyond Nuclear, in conjunction with Citizens Environmental Alliance of Southwestern Ontario, Don’t Waste Michigan, and the Green Party of Ohio (Intervenors). The Intervenors submitted Contention No. 5 also on the Davis-Besse concrete shield building cracking (ADAMS ML12010A172). The four Motions to Amend Contention No. 5 are summarized below. The fifth motion to supplement proposed Contention No. 5 is discussed in the Response to Comment 32c-1.*

*Intervenors’ Motion to Amend ‘Motion for Admission of Contention No. 5’ was submitted on February 27, 2012 (ML12058A249). This motion was submitted because the Intervenors believed that an NRC inspection report issued on January 31, 2012 (ML12032A119), contained new information that was relevant to Contention No. 5. The motion to amend also includes information related to information released by former Congressman Kucinich.*

*Intervenors submitted the Motion to Amend and Supplement Proposed Contention No. 5 (Shield Building Cracking) on June 4, 2012 (ML12156A411). This motion was submitted for the “purpose of exposing discrepancies between FENOC’s February 27, 2012, ‘Root Cause Analysis Report’ and the RAI AMP.” The February 2012 Root Cause Analysis Report contained the licensee’s analysis to determine the direct cause of the laminar cracking in the Davis-Besse concrete shield building. Intervenors claimed that FENOC’s response to NRC staff’s Request for Additional Information (RAI) on the cracking in the Shield Building’s concrete (ML12097A520) demonstrated that the Root Cause Analysis Report was deficient.*

*Intervenors’ Third Motion to Amend and/or Supplement Proposed Contention No. 5 (Shield Building Cracking) was submitted on July 16, 2012 (ML12198A561). The stated purpose for this motion to amend was to demonstrate the discrepancies between FENOC’s Root Cause Analysis Report and the Shield Building AMP. The Intervenors stated that they believed there was “serious incongruity between the cracking problems as defined by FENOC, and the proposed remedy, exemplified by the AMP.”*

*Intervenors’ Fourth Motion to Amend and/or Supplement Proposed Contention No. 5 (Shield Building Cracking) was submitted on July 23, 2012 (ML12205A507). This motion to amend and/or supplement was in response to FENOC’s consultant, Performance Improvement International’s report, “Root Cause Assessment: Davis-Besse Shield Building Laminar Cracking, Vol. 1,” which was added to NRC’s ADAMS on May 24, 2012 (ML12138A037). Intervenors still maintain there is serious incongruity between the cracking problems and the*

shield building AMP. The Intervenor argued that the shield building AMP submitted by FENOC was inadequate.

Based upon the Intervenor's motions to admit and amend the contention and FENOC's and NRC staff's answers to the motions, on December 28, 2012, the ASLB, in the Memorandum and Order (LBP-12-27), denied the motions to admit, amend and/or supplement proposed Contention No. 5 (ML12363A200). In LBP-12-27, the ASLB wrote that the Intervenor do not articulate why the information contained in the proposed Contention No. 5, and its proposed amendments, is new or materially different from information on shield building cracking that was previously submitted. The ASLB also pointed out that the Intervenor do not provide information as to why the AMP is not adequate.

The NRC staff continues to review information about the cracking in the shield building and anticipates issuing a supplemental Safety Evaluation Report in May 2015 to document staff's review. No new information has been provided. Therefore, no changes to the SEIS were made as a result of this comment.

**Comment 32c-1:** "4 21 14 DEIS comment vis a vis 5th Cracking Contention Supplement dated 8 16 12"

**Response:** This comment refers to the collection of NRC documents received by the organization Beyond Nuclear as a result of the January 26, 2012, Freedom of Information Act (FOIA) request (FOIA/PA-2012-0121). On August 16, 2012, Beyond Nuclear, Citizens Environment Alliance of Southwestern Ontario, Don't Waste Michigan, and the Green Party of Ohio (Intervenor) submitted these documents in support of Intervenor's Fifth Motion to Amend and/or Supplement Proposed Contention No. 5 (Shield Building Cracking) (ML12229A584, ML12229A585, ML12229A586, ML12229A587, ML12229A588, ML12230A000, ML12230A001, ML12230A002, ML12230A003 and ML12230A004).

These documents consist of staff e-mails, conference call summaries, informational slides prepared for briefing management, and proposed questions to ask the applicant in requests for information. These documents represent a snapshot of the work (through January 2012) the NRC staff was doing with regard to the concrete shield building cracking.

As documented in LBP-12-27, dated December 28, 2012, the ASLB determined that this fifth supplement to proposed Contention No. 5 was inadmissible because the Intervenor did not demonstrate how the information in this supplement is new and materially different from previously available information and if the information in these documents is material to NRC's ultimate licensing decision. The NRC staff continues to review the information related to the cracking in the concrete Shield Building and anticipates issuing a supplemental SER in May 2015. No licensing decision will be made until all safety issues have been resolved.

These documents provide no new information. No changes to the SEIS were made as a result of these documents.

#### Editorial Comments

**Comment 25-10:** Section 2.1.2.2, *Radioactive Gaseous Waste*, page 2-9, line 3, references 40 CFR Part 40, which is Research and Demonstration Grants. Please clarify if this is the intended citation.

Recommendation: Clarify whether this is correct; if not, please reflect the correct citation in the Final SEIS.

**Response:** *The commenter is correct in that the wrong regulation was cited. The regulation that should be have cited is 40 CFR Part 190, Environmental Radiation Protection Standards for Nuclear Power Operations. Section 2.1.2.2 has been revised to cite the correct regulation.*

**Comment 25-11:** EPA recommends that resources agencies be provided with and the public have access to color versions of maps within the Draft SEIS, particularly for maps that rely on a color gradient. All maps in the paper copy and the CD of the Draft SEIS are provided in grey-scale, making it difficult to fully analyze certain impacts. For example, figures 2.1-2, 2.1-3, 2.2-1 should be provided in color, or at minimum the document should include specific location in NRC's Agencywide Documents Access and Management System (ADAMS). This means the citation should not just be given as an ADAMS access number, but should also include a specific page number.

Recommendation: NRC should provide access to color versions of maps that rely on color gradient. If nothing else, the ADAMS access number and specific page location should be provided indicating where the color versions can be found.

**Response:** *The version of the draft SEIS that is in ADAMS should have had color figures. For some unknown reason, when the PDF file of the draft SEIS was entered into ADAMS, the figures were not saved in color. When the final SEIS is published and entered into ADAMS, the staff will ensure that the figures will appear in ADAMS in color. No changes were made the SEIS as a result of this comment.*

**Comment 26-5:** The DSEIS concludes that its "preliminary recommendation is that the adverse environmental impacts of license renewal for Davis-Besse are not great enough to deny the option of license renewal for energy planning decisionmakers." Consistent with 10 CFR § 51.95(c)(4) and Section 9.4 of the DSEIS, this conclusion should be revised to read as follows: "the adverse environmental impacts of license renewal are not so great that preserving the option of license renewal for energy planning decision makers would be unreasonable."

**Comment 26-10:** Similar to Comment 5, above, the sentence should be revised to read as follows: "...Commission that the adverse environmental impacts of license renewal are not so great that preserving the option of license renewal for energy planning decision makers would be unreasonable."

**Response:** *These comments relate to the wording of the preliminary recommendation in the draft SEIS. The wording in the draft SEIS was not consistent with the wording in the regulations at 10 CFR 51.95(c)(4). The wording of the recommendation in the Executive Summary and in Chapter 1 of the SEIS has been revised so that it is consistent with the wording in the regulation and in Chapter 9.*

**Comment 26-21:** FENOC recommends changing or deleting the reference source cited (Brown 2010) since there is no corresponding reference citation in the references list in Section 2.4.

**Response:** *Staff agrees with this comment. The reference to (Brown 2010) has been corrected to (FENOC 2010d).*



**Comment 26-2:** FENOC notes that the description of the combinations alternative on this page does not match the similar description on page xix, Line 7.

**Response:** *Staff agrees with this comment. The list of alternatives in the Executive Summary has been revised to reflect the alternatives evaluated in Chapter 8 of the SEIS.*

**Comment 26-3:** FENOC suggests changing “Nuclear Power Plant” to “Nuclear Power Station.”

**Comment 26-4:** FENOC recommends changing “is” to “are,” since the topic is “environmental impacts.”

**Comment 26-6:** FENOC suggests that the word “million” following MMBtu should be in the right-hand column in front of “British thermal unit.”

**Comment 26-11:** FENOC suggests changing “Accession Nos.” to the singular “Accession No.”

**Response:** *Staff agrees with these editorial changes. The Executive Summary, Abbreviations & Acronyms, and Chapter 1 of the SEIS were revised to incorporate these changes.*

**Comment 26-12:** FENOC suggests removing the extra spaces (25 mi) (40 km) (2500 m) in lines 2 & 5. Also, the statement “[a]pproximately 700 ac (300 ha) are marshland...” is the only location in the DSEIS where 700 ac is used; elsewhere, the statement “approximately 733 ac” is used multiple times. Recommend using “approximately 733 ac” throughout the DSEIS.

**Comment 26-13:** FENOC recommends the use of 908 megawatts-electric (MWe) instead of 913 MWe in the DSEIS, to be consistent with the License Renewal Application and Environmental Report. The reference cited on page 2-6, Line 11 (i.e., FENOC 2010c), is the License Renewal Application, which lists electrical output as “908 MWe.” Also, 908 MWe is used later in the DSEIS for the comparison of Alternatives.

**Comment 26-14:** The sentence states that each primary coolant loop contains one reactor coolant pump, but Davis-Besse has two reactor coolant pumps per loop. FENOC recommends changing Line 17 from “...one reactor coolant pump,” to “... one or two (depending on the plant design) reactor coolant pumps.”

**Comment 26-15:** FENOC suggests revising the 3 cited references (FENOC 2011) on this page to be consistent with the references Section 2.4, which lists the references as FENOC 2011a, 2011b, or 2011c. Same comment for page 2-11, line 26 (FENOC 2010), which has no alpha character (a, b, c or d) following the year.

**Comment 26-16:** The Magee Marsh Wildlife Area entrance is approximately 6 miles west of the station. Lake Erie is east of the station. FENOC recommends revising Line 19 to read, “The Navarre Marsh partially surrounds the station to the north, east and southeast.”

**Comment 26-17:** Regarding the sentence, “Davis-Besse has many sources of criteria pollutants and HAPs to include the following:”, FENOC recommends changing the sentence to read: “The Davis-Besse sources of criteria pollutants and HAPS are as follows:” As currently written, the sentence suggests there are more sources than those listed.

**Comment 26-18:** FENOC requests that, at the beginning of the sentence at the end of the Line, NRC consider adding “However,” in front of “In 1992, Davis-Besse...” to make it clear that the previous discussion of fires and the chemicals released during transformer fires didn’t apply in this case.

## Appendix A

**Comment 26-19:** FENOC recommends changing “August 14, 2006” to “July 1, 2011” to align with the new permit date and the suggested update to Appendix C, below.

**Comment 26-20:** FENOC recommends deleting “asbestos”, because the updated permit does not require monitoring for asbestos.

**Comment 26-22:** FENOC recommends changing “2006” to “2011” to align with the new permit date, a previous comment and the suggested update to Appendix C, below.

**Comment 26-24:** The change has been submitted and approved, and zinc acetate is being used, so FENOC recommends revising the last sentence to be past tense.

**Comment 26-23:** The use of the terms “violate” with respect to NPDES requirements and “NOV” (Notice of Violation issued by a regulator e.g., OEPA) are confusing when used interchangeably in the first two sentences. The statements need to be clear that site personnel may indicate an action, lack of action, or parameter may have exceeded (“violated”) permit requirements, but there were no formal NOV’s issued for the cases described where FENOC exceeded permit requirements for a period of time. FENOC recommends changing “NOV” on line 17 to “violations.”

**Comment 26-25:** FENOC recommends changing the sentence to read, “...December 2010 at monitoring wells 30S....”

**Comment 26-26:** FENOC recommends changing “Ce-137” to “Cs-137” and “Ce-134” to “Cs-134.” Also, the cited reference (NRC 1991) is not included in the list of references in Section 2.4, page 2-87.

**Comment 26-27:** FENOC recommends changing “sodium hydroxide” to “sodium hypochlorite.”

**Comment 26-28:** FENOC suggests that the reference to “Table 2.3-8” in this line should instead be “Table 2.2-8.”

**Comment 26-29:** FENOC suggests that the reference to “Section 2.2.6” in this line should instead be “Section 2.2.7.2.”

**Comment 26-30:** FENOC suggests underlining and separating the heading “Transportation” in a manner similar to the formatting of the previous heading “Education”.

**Comment 26-31:** A space is needed between the first two words in the line.

**Comment 26-32:** The word “temporary” is missing the letter “t.”

**Comment 26-33:** There is an errant comma following the word “of.”

**Comment 26-34:** FENOC recommends rewording the following sentence as shown: “One documented fluted projectile point is located was discovered at the Peters site in Ottawa County, south of Davis-Besse along the Portage River was discovered (Prufer and Shane 1973).”

**Comment 26-35:** FENOC recommends changing “north” to “northwest,” because the Maumee River runs from the southwest to the northwest of Davis-Besse.

**Comment 26-36:** The Magee Marsh is approximately 6 miles west of Davis-Besse. FENOC recommends adding a period after “...agricultural purposes” and deleting the remainder of the sentence.

**Comment 26-37:** Many of the titles for the Code of Federal Regulations citations are incorrect or duplicated. Examples include 10 CFR Part 60, Part 70, 15 CFR Part 930 has multiple citations bundled together, 40 CFR Part 80, 40 CFR Part 239, etc. FENOC recommends

verifying the titles for these citations in this section and in the other references sections of the DSEIS.

**Comment 26-38:** FENOC suggests that the title of this document reference should read, “Loggerhead Shrike: First Ever Captured....”

**Comment 26-39:** FENOC recommends deleting the “(2010b)” at the end of the reference to be consistent with the other FENOC 2010 citations.

**Comment 26-40:** This FENOC 2011 citation appears to be out of chronological order and should be located between lines 11 and 12. On line 20, [FENCO] should read [FENOC].

**Response:** *Staff agrees with these editorial changes. Chapter 2 of the SEIS was revised to incorporate these changes.*

**Comment 26-43:** FENOC is an entity. FENOC recommends changing the sentence from “FENOC noted in their ER that...” to “FENOC noted in its ER that...” This issue appears in multiple locations (at least 8 instances) in the DSEIS (see Chapter 4 for more examples). Similarly, FENOC recommends changing the statement in Line 1 on the next page from “FENOC’s procedures require them to coordinate with the FWS...” to “FENOC’s procedures require coordination with the FWS....”

**Comment 26-44:** FENOC recommends changing “Environmental Procedure” to “Environmental Evaluations procedure” to match the title of the procedure.

**Response:** *Staff agrees with these editorial changes. Chapter 3 of the SEIS was revised to incorporate these changes.*

**Comment 26-45:** FENOC recommends deleting one of the uses of the word “vicinity” in the 2nd paragraph, 1st sentence.

**Comment 26-46:** The first sentence begins with an errant period.

**Comment 26-49:** The sentence at the end of the second paragraph in this section is not complete and has no period.

**Response:** *Staff agrees with these editorial changes. Chapter 4 of the SEIS was revised to incorporate these changes.*

**Comment 26-50:** In response to NRC requests for additional information (RAIs), the total number of SAMAs was changed from 167 to 168, and the number of SAMAs eliminated based on screening was changed from 152 to 153. (see ADAMS Accession No. ML11180A233 [FENOC Letter L-11-154 dated June 24, 2011], RAI 5.c). This comment also applies to Appendix F, Section F.1 (page F-1). However, since this Appendix is written chronologically, FENOC recommends adding the following bullet to page F-2 under the list of FENOC provided information via letter dated June 24, 2011: - identification of a new SAMA candidate (OT-9R), which changed the total number of SAMA candidates evaluated to 168 instead of the original 167.

**Comment 26-53:** FENOC recommends clarifying the following two initiating event descriptions: From: “Flooding in CCW pump room” To: “Flooding in CCW pump room from SW” [or, Service Water] and, From: “Flooding in turbine building” To: “Flooding in turbine building from Circ

## Appendix A

water.” Also, consider noting that the % contribution to CDF values are slightly different from those reported in FENOC Environmental Report Table E.3-1 due to rounding.

Comment also applies to Appendix F, Section F.2.1, Table F-1.

**Comment 26-54:** FENOC recommends that the Population Dose and % Contribution be updated to match those included in FENOC Letter L-12-244 dated July 16, 2012 (see Table E.3-21). Comment also applies to Appendix F, Section F.2.1, Table F-2.

**Response:** *Staff agrees with these editorial changes. Chapter 5 and Appendix F of the SEIS were revised to incorporate these changes.*

**Comment 26-51:** FENOC suggests adding the text in bold/underline: “In the third step, FENOC estimated the benefits and the costs associated with each of the 15 candidate SAMAs.”

**Comment 26-52:** The text states: “Column totals in Table 5.3-2 may differ due to round off.” The table reference appears to be incorrect. The correct reference is Table 5.3-1.

**Comment 26-55:** Suggest adding the text in bold/underline: “FENOC’s derivation of each of the associated costs is summarized in Appendix E of the ER.”

**Response:** *Staff agrees with these editorial changes. Chapter 5 of the SEIS was revised to incorporate these changes.*

**Comment 26-59:** FENOC recommends changing “...FENOC Service Company’s...” to “...FirstEnergy Service Company’s....”

**Comment 26-61:** FENOC suggests revising the acronym “GGNS” to read “Davis-Besse.”

**Response:** *Staff agrees with these editorial changes. Chapter 8 of the SEIS was revised to incorporate these changes.*

**Comment 26-62:** FENOC recommends changing the name “Nesser” to “Nusser” in 3 locations. Nusser is the correct spelling according to the signature on the email included as page A-173.

**Response:** *Staff agrees with this editorial change. Appendix A was revised to correct the spelling of the individual’s name.*

**Comment 26-42:** There are numerous references in Chapters 3 & 4 to replacement of the steam generators and that these activities “will be performed during an extended outage scheduled for the spring of 2014” (e.g., Pg 3-3, lines 17-20). At the time of this review, both steam generators have been replaced and the 2014 refueling outage is nearing completion. Consider changing the tense for steam generator replacement to past tense, although FENOC realizes that this change would impact many pages and sections of the DSEIS.

**Response:** *Staff agrees with this comment. Chapters 3 and 4 of the SEIS have been revised to reflect that all activities that had been identified as refurbishment activities in the ER have been completed in the years since the ER was submitted. The last of the activities identified as refurbishment, steam generator replacement, was completed during the spring 2014 refueling outage.*

**Comment 26-48:** At the bottom of page 4-32, the first project listed under “Energy Projects” is the ‘Independent Spent Fuel Storage Installation on Davis-Besse site; dry spent-fuel storage’. It is not clear why the Status discusses Spent Fuel Pool and transfer pit storage versus the dry fuel storage pad and current dry fuel storage capability. On page 4-33, the 3rd PROJECT/ACTION listed (Toledo Refinery Substation Project), the LOCATION description ends abruptly... “Oregon, Ohio, near the intersection of”.

**Response:** *Staff agrees with these comments. Table 4-13 has been revised to include the use of the NUHOMS 24P canisters to store spent nuclear fuel. The location of the Toledo Refinery Substation Project was revised to include the correct location.*

**Comment 26-63:** Storage of spent nuclear fuel & high-level radioactive waste:  
STATUS – The word Expired should read “Expires.”

**Comment 26-64:** Permit to operate an air containment source:  
STATUS - should read as follows:  
Operation of station auxiliary boiler  
Facility ID#: 0362000091  
Permit #: P0110436  
Issued: 02/28/2013  
Expires: 02/28/2023

**Comment 26-65:** NPDES Permit - Treatment of wastewater and effluent discharge to surface receiving waters (Toussaint River and Lake Erie):  
STATUS - the Ohio Permit No. should read  
21B00011\*JD  
Issued: 07/01/2011  
Expires: 04/30/2016

**Comment 26-66:** Hazardous material registration:  
STATUS - should read as follows:  
Transportation of hazardous materials  
Permit Number: 052112 020 004UW  
Issued: 05/22/2012  
Expires: 06/30/2015  
(Renewed Triennially)

**Comment 26-67:** License to deliver radioactive waste:  
STATUS - should read as follows:  
Shipment of radioactive material to a licensed disposal-processing facility within the State of Tennessee  
Tennessee Delivery License  
# T-OH003-L14  
Issued: Annually  
Expires: 12/31/2015

**Comment 26-68:** New Row:  
License to deliver radioactive waste:  
AGENCY - should read as follows:  
South Carolina Department of Health and Environmental Control  
AUTHORITY - should read as follows:  
South Carolina Radioactive Waste Transportation and Disposal Act  
No. 429 of 1980

Appendix A

STATUS - should read as follows:  
Shipment of radioactive material to a licensed disposal-processing facility  
within the State of South Carolina  
Permit #: 0054-34-14  
Issued: 12/5/2014  
Expires: 12/31/2015

**Comment 26-69:** Underground storage tank registration:  
STATUS - should read as follows:  
Facility # 62000072  
Expires: 06/30/2015

**Comment 26-70:** X-ray generating equipment registration:  
STATUS - should read as follows:  
Expires: 05/31/2016

**Comment 26-71:** Scientific Collection Permit:  
STATUS - should read as follows:  
Permit #: 15-112  
Issued: 03/16/2014  
Expires: 03/15/2015

**Response:** *These comments provide the updated information on the Federal, State and local permits, and other authorizations FENOC has related to the operation of the Davis-Besse plant. Appendix C of the SEIS has been revised to include this information.*

**Comment 26-72:** The following FENOC letter is missing from the list of correspondence: Letter L-12-244 from John C. Dominy, Davis-Besse Nuclear Power Station, Unit 1, Docket No. 50-346, License Number NPF-3, Correction of Errors in the Davis-Besse Nuclear Power Station. Unit No.1, License Renewal Application (TAC No. ME4613) Environmental Report Severe Accident Mitigation Alternatives Analysis, and License Renewal Application Amendment No. 29 (dated July 16, 2012) FENOC notes that this same correspondence is listed in Appendix F, Section F.8 (References), page F-36, Lines 34-38 (FENOC 2012a). However, the ML number listed in Appendix F is a duplicate of the ML number for FENOC letter dated June 24, 2011. Also, FENOC was not able to find the document in ADAMS using various search terms (may not be available to the public).

**Response:** *Staff agrees with this comment. The July 16, 2012, letter has been added to Appendix E. The ADAMS Accession Number of this letter has been corrected in Appendix F of the SEIS.*

**Comment 26-73:** FENOC suggests inserting the word “are” as follows: “The Level 1 core damage sequences are grouped into core damage bins according to similarities in their impact on containment response.”

**Comment 26-74:** FENOC suggests editing the quoted sentence as follows: “Data from 2006 through 2008 were considered, but the 2006 data were chosen because they were the most complete data set. Data from year 2008 were considered unusable as they contained too many missing long data sequences of unusable data.”

**Comment 26-75:** FENOC suggests adding to the following sentence the language in bold/underline: “In response to an NRC staff RAI, FENOC revised the Level 3 PRA to include

that portion of the Canadian population located within the 50-mi radius SAMA analysis region (FENOC 2011).”

**Comment 26-77:** FENOC suggests editing the quoted sentence as follows: “In response to the RAIs, FENOC addressed the suggested lower cost alternatives and determined that they were already implemented at Davis-Besse (b), not feasible (c), or not cost-beneficial (a, d, e, and f) (FENOC 2011).”

**Comment 26-78:** The word “applicant’s” should be “applicants’.”

**Response:** *Staff agrees with these editorial changes. Appendix F of the SEIS was revised to incorporate these changes.*

**Comment 26-76:** Same issue as Comment 49 [5.3.1]. Specifically, the total number of SAMAs was changed from 167 to 168, and the number of SAMAs eliminated based on screening was changed from 152 to 153.

However, since Appendix F is written chronologically, FENOC recommends adding the following sentence after line 6 on page F-18 and after line 19 on page F-35: In response to NRC RAIs, FENOC’s initial list of 167 SAMA candidates was increased to 168, of which 153 were eliminated based on screening.

**Response:** *Staff agrees that the number of SAMAs should be changed from 167 to 168, and the number that were screened out should be 153. Appendix F of the SEIS was revised to incorporate these changes. Staff does not agree that the suggested sentence needs to be added. This change was not made.*

### A.3.8 Opposed to License Renewal (OL)

**Comment 14b-4:** You must heed the lesson and shut Davis-Besse down, not allow it to limp through another score of years, creating even more uncontrollable lethality for our children’s children’s children.

**Comment 15-1:** We must listen to our future generations. If not us, who? If not now, when? As for me, in this generation, I will gladly live without Davis-Besse. I will gladly trade the sliver of energy produced, during my lifetime, to spare thousands of generations the poison of nuclear waste. Though make no mistake. Even if the problem of nuclear waste disposal was somehow miraculously solved, I would still gladly trade this energy source, simply to avoid the probability of a nuclear catastrophe, from the safety disaster that Davis-Besse has so proven. Shut it down.

**Comment 18a-8:** I’m vehemently opposed to this nuclear power plant.

**Comment 18b-7:** Cease and desist. Stop making it period. Do not relicense. You don’t know what to do with the High Level Nuclear Waste that you have already made.

**Comment 19a-1:** So in talking about the GEIS, and the preliminary recommendation says that there is not enough adverse environmental impacts to deny the license renewal, the Sierra Club does not agree with that. The NRC has wholly failed to acknowledge public concerns, as well as hard science, about the dangers of current and future radioactive contamination, and about nuclear power being a dated technology.

**Comment 20-3:** My children, I'm afraid, aren't going to be able to find a single foot of ground, in this earth, that is safe for them to be on, or air safe to breathe. And Davis-Besse's license extension isn't going to help that problem. It will exacerbate it.

**Comment 22-2:** Davis-Besse is an old plant. As it ages more accidents will happen. I'm against this renewal, and I don't think it is right. Thank you for your time.

**Comment 23-1:** I support closing down Davis-Besse for good. I am a Toledo resident and a mother of two children. I am fearful that other accidents in the future will threaten me as well as my children's lives. There have been too many close calls in the past.

**Comment 24-1:** Living only 15 miles from Davis-Besse, I am opposed to the license renewal for 20 years. This plant is an accident waiting to happen. It has a long history of near accidents and disrepair. To renew a license here would be irresponsible of the NRC.

**Comment 27-2:** Davis Bessie [sic] is not needed to produce reliable power and the license needs to be denied. The above information applies only to wind power but other technologies exist that do address storage problems with solar energy. When the potential of wind power is added to both solar power and energy efficiency there is no need for energy from Davis Bessie [sic].

**Comment 28-1:** Please deny the renewal of this monstrosity.

**Comment 29-4:** Moral hazard and corporate greed are the problem at F.E./DB and its shell companies. NRC can and should limit the damage to us and to the people who live over the next 250,000 years or so by denying the license to renew the Davis Besse nuclear power plant.

**Comment 30-4:** Even if 'repaired' Davis Besse is not a good investment. As a taxpayer I am horrified the government uses my tax dollars to subsidize the nuclear industry.

**Comment 30-5:** Sometimes the best thing to do is to quit trying to fix a broken thing. When a car rusts out underneath, you don't keep driving it down the road even though the engine is still running. You shouldn't allow a dangerous nuclear ... aging ... power plant to keep operating. The risk is too great.

**Comment 31-1:** I would like to request that the License renewal application for the Davis-Besse nuclear power plant be denied. I am very concerned about the history of chronic problems that have not be fully explained or addressed like the cracking in the concrete shield. My concern is that these cracks weaken the plant's viability in severe weather and increase vulnerability [sic] to earthquakes.

**Comment 32a-2:** Such risky behavior by FENOC and NRC, working in collusion and complicity, cannot be endured for an additional 20 years.

**Response:** *These comments are generally opposed to the renewal of the Davis-Besse operating license. No new information was provided in these comments, and the SEIS has not been revised as a result of these comments.*

### **A.3.9 Outside of Scope (OS)**

**Comment 18a-10:** It is based on economic drivers, and now we are looking at a plant that has just invested close to 6, 700 million dollars, on steam generators, which have not been scrutinized, which could not have been scrutinized, which Incadel [sic] 690 issue could have not been known, because it wasn't realized in two years ago. The NRC did that on the oversight. The utility relied on an in-house studies, of 50/59 processing, same, same, just checking it out,



same piece of equipment going in. The steam generators that came out weighed 590 tons. The ones that are going in 465 tons. That is not same for same. So the NRC oversight, there has been a meltdown, there is no credibility with the Nuclear Regulatory Commission.

**Response:** *This comment is outside of the scope of the Davis-Besse license renewal environmental review because it is questioning the use of the 50.59 process for steam generator replacement. The evaluation for the replacement of the two steam generators was done under the regulations in 10 CFR 50.59, Changes, tests, and experiments. This regulation established the conditions under which licensees may make changes to the facility or procedures and conduct tests or experiments without prior NRC approval. The 50.59 evaluation looks at the effect the proposed change, test, or experiment may have on the safety analyses that are contained in the plant's updated Final Safety Analysis Report (UFSAR). Prior to taking an action, a licensee must determine if the action meets the criteria listed in 10 CFR 50.59(c)(1). If the action meets the criteria, then the licensee is required to submit an application to amend the operating license. If the action does not require an amendment to the license, then the licensee can proceed with the action. However, the licensee is required to maintain the records of changes and must include a written evaluation that provides the reasons for the determination a license amendment was not needed. For changes to the facility, the licensee is required to maintain the records for the life of the plant. These records are also the subject of inspections by NRC inspectors. NRC Inspection Report 05000346/20130101 (ML14204A317) documents the NRC staff's inspection of the Davis-Besse steam generator replacement project. The impact to the environment from activities associated with steam generator replacement are discussed in Chapter 3 of the SEIS. No new information was presented in this question, and no changes to the SEIS were made.*

**Comment 19a-11:** The NRC must address the increasing brittleness of the metal, and the cement, when it is in contact with the radioactivity, as the years progress.

**Response:** *This comment related to the embrittlement of metal and concrete is outside of the scope of the Davis-Besse license renewal environmental review because it is an issue that is reviewed as part of the Davis-Besse license renewal safety review. As described in Chapter 3 of NUREG-1850, "Frequently Asked Questions on License Renewal of Nuclear Power Reactors" (ML061110022), embrittlement is an aging process in which material becomes more brittle and likely to fracture. In nuclear reactors, continual irradiation of material by neutrons is one of the causes of embrittlement of metal and concrete. Another cause is due to the wide temperature fluctuations that occur in the structures and components associated with producing and carrying steam. Embrittlement is reviewed as part of the safety review for license renewal. Applicants must have programs that can detect and mitigate the effects of aging. The programs must be able to examine the systems, components, and structures and verify that they still function as they were originally designed. The program must also demonstrate that the systems, components, and structures have not been compromised or degraded. The programs related to embrittlement will be discussed in the safety evaluation report prepared to document the safety review for license renewal.*

*Additionally, long-term research in the areas of metal and concrete embrittlement is being performed by organizations such as the NRC, the National Institute of Standards and Technology, and the Electric Power Research Institute. NUREG-1925, "Research Activities: FY 2012-FY 2014" (ML13242A030) describes the long-term research projects being conducted by the NRC. No new information has been presented in this comment, and no changes to the SEIS were made.*

**Comment 19c-2:** The NRC has failed to acknowledge that the engineered lifespan of nuclear reactors is 40 years. Extending reactor operations beyond engineered lifespans poses a considerably greater the risk of a nuclear catastrophe. The NRC has failed to address the risks of accident from increasing brittleness of metal and cement when in contact with radioactivity as years progress.

**Response:** *This comment is outside of the scope of the Davis-Besse license renewal environmental review because it questions the lifespan of nuclear reactors. As described in Chapter 1 of NUREG-1850, Frequently Asked Questions on License Renewal of Nuclear Power Reactors (ML061110022), the Atomic Energy Act of 1954 originally specified that commercial power reactors could be granted a license for a period not exceeding 40 years and may be renewed upon the expiration of such period. The 40-year term for an operating commercial nuclear reactor was based on economic and antitrust considerations instead of the technical limitations of the plant. No new information was provided in this question, and no changes to the SEIS were made.*

**Comment 19c-6:** Another critical factor that was not adequately addressed is evacuation of the surrounding area in case of a radioactive emergency. Across the nation and around the world, real emergencies reveal the inadequacy of disaster preparation. Loss of electric power and generator failures have consistently contributed to nuclear emergencies worldwide.

**Response:** *This comment is outside of the scope of the Davis-Besse license renewal environmental review because it questions the emergency preparedness of the plant. As described in Chapter 4 of NUREG-1850, Frequently Asked Questions on License Renewal of Nuclear Power Reactors (ML061110022), when the regulations relating to license renewal (10 CFR Part 54) were being developed, it was determined that all nuclear power facility licensees are required to have a specific level of protection regardless of plant design, construction or license date. The regulations that pertain to all operating nuclear power facilities are in 10 CFR 50.47 and Appendix E to 10 CFR Part 50. Staff reviews the emergency preparedness plans and observes the required exercises throughout the lifetime of the plant. Because of the ongoing review of the emergency preparedness plans, the Commission determined that a special review of emergency planning issues for license renewal was not needed. No new information was provided by this comment, and no revisions to the SEIS were made.*

**Comment 22-1:** 801805 Revision 27 gave the plant manager permission to override QA. I reported it to the NRC. The NRC says we need this many, this much time to investigate. When I called the NRC back they had lost the file. Senators Metzenbaum and Glenn became involved, and the NRC decided to open the case again. There were three violations and a fine of 275,000 dollars. I didn't know utility companies could tell people not to go to the NRC.

**Response:** *This comment is outside of the scope of the Davis-Besse license renewal environmental review because it relates to an allegation investigation. Anyone should feel free to communicate any safety concern to the U.S. Nuclear Regulatory Commission (NRC). It is the NRC's policy to encourage workers at NRC-regulated facilities to take safety concerns to their own management first, since the facility operator has the primary responsibility for, and is most able to ensure, safe nuclear operations. However, workers and other members of the public can bring safety concerns directly to the NRC at any time. It is the agency's responsibility to respond to those concerns in a timely manner and to protect the identity of the individual to the greatest degree possible. For more information on how to bring concerns directly to the NRC,*

*please refer to Brochure 0240, Reporting Safety Concerns to the NRC (NUREG/BR-0240, ML12146A003). No new information was provided in this comment, and no changes to the SEIS were made.*

**Comment 25-3:** Based on the discussion above pertaining to the development of new permanent and temporary facilities on the Davis-Besse site, EPA understands that some parking lots will be used for new permanent or temporary facilities. The Draft SEIS does not state whether the parking lots will be permanently lost due to construction and, if so, where new parking will be located. If the parking lots are currently in use and slated for conversion to permanent or temporary facilities, new parking facilities would need to be constructed to compensate for lost parking.

Recommendation: The Final SEIS should identify which parking lots are slated for permanent conversion to permanent or temporary facilities and whether parking spaces will need to be compensated for in another area of the Davis-Besse site. Any resultant impacts should be disclosed and mitigated. If new parking facilities are required because of the new permanent and temporary refurbishment facilities, EPA recommends permeable pavement be used, reducing runoff and helping to improve the health of Lake Erie.

**Response:** *This commenter made a recommendation that FENOC consider where new parking lots will be located if current parking lots are lost due to construction, and also the type of pavement should be considered for use. Chapter 3 of the SEIS contains the discussion of the refurbishment activities that were originally identified in the application for license renewal that was submitted in 2010. All construction of permanent and temporary facilities related to refurbishment was performed within the developed industrial area of the site on previously-disturbed land. Additionally, all activities identified as refurbishment have been completed. The last of the refurbishment activities was completed during the spring 2014 refueling outage. However, this comment is outside of the scope of the Davis-Besse license renewal environmental review because it is recommending actions that are outside of NRC's statutory authority. The NRC does not have the authority to suggest the types of paving material to use or where to locate parking lots on plant sites. No new information was provided in this comment, and no changes were made to the SEIS because of this comment.*

**Comment 30-3:** Just like Consumers Power promised to repair Palisades, what happened after it was relicensed? CP sold it to Entergy who still has not done the repairs CP thought necessary, and were contingent upon relicensing. The NRC has not made Entergy do the repairs, but has left it up to Entergy to decide whether the repairs are necessary or not. Meanwhile, Palisades has had leaks, come close to meltdowns, and sump pump failure etc. ... Davis Besse also may run the risk of being resold ... possibly to a foreign nation if they can unload it that way ... and not do repairs.

**Response:** *This comment is outside of the scope of the Davis-Besse license renewal environmental review because it relates to the ownership of nuclear plants. Regardless of ownership, the Palisades nuclear facility is still subject to routine safety inspections, has resident inspectors on site to review operations, and still must comply with all the regulations and laws. The Atomic Energy Act of 1954, as amended, limits foreign ownership of commercial nuclear plants. The regulation in 10 CFR 50.38, Ineligibility of certain applicants, states that a company that is owned or controlled by an alien, a foreign corporation, or a foreign government is ineligible to obtain a license for a commercial nuclear plant licensed under 10 CFR Part 50. No new information is provided in this comment, and no revisions to the SEIS were made.*

### Shield Building Cracks

**Comment 17b-3:** The containment dome was designed to protect the nuclear core from external attacks such as tornadoes. However, since the EIS was submitted, it has come to light that the containment dome (or “shield building”) around the reactor core is full of large cracks. Also the structure has been operating with large voids in the concrete shell. The initial explanation of the cracks was that they occurred during construction as a result of the blizzard of 1978. NRC and FENOC concluded that these cracks were, therefore, stable and posed no threat to the structure. However, in 2013 it was discovered that these cracks are, in fact, growing. This means that the original explanation for their formation is wrong. It also means that the structure is, by definition, unstable. Whether that instability could lead to structural failure requires study before an accurate answer can be given. The original answer, based on estimates and judgements [sic] was clearly wrong.

**Comment 18a-11:** And we were told that the cracks were not propagating, and everything was being looked at. A simple ultrasound would have found that. But for over two years the NRC allowed them to operate that and only found it when they came in to cut a fourth hole into that shield building, which does not meet the design criteria, does not meet seismic qualification, which will crumble around that primary containment and, potentially, tip into the reactor.

**Comment 19a-12:** Also the cracking of the shield building, and the determination that the cracks were the result of the blizzard of '78 was proved to be inaccurate, because the cracks are now widening, which cracks do over time.

**Comment 19a-13:** And the fourth cutting of through the shield building that will weaken that. And as one engineer put it, the shield building will hold up just fine until something stresses it. So, and then we have heard about the 25 foot gap. So we are trying to imagine how this could happen, when multiple inspectors, supposedly on the job all the time, and then also who knows how to pour concrete there?

**Comment 19c-4:** The NRC has failed to take into account the continued cracking of the shield building. The NRC and FENOC’s original determination that the cracks were the result of the blizzard of 1978, that they were not age related and that they were not widening defied scientific credibility. That conclusion has since been proven erroneous with the lengthening and expanding of the cracks. This new cracking was found in a dozen core bore locations, leaving us to ponder what cracking actually exists throughout the entire concrete mass. The reactor was allowed to restart without the issue of the cracking being resolved. The latest, fourth cut-through of the shield building to install the new steam generators has only increased the probability of cracks enlarging over time. As one engineer put it, “The shield building will hold up just fine until something stresses it.”

**Comment 19c-5:** Then NRC must address a new contention of the 25-foot gap in the resealed cement of the shield building, revealed with the concrete forms or plates were recently removed from the previous 2011 pour. The public is incredulous as to how this gap could happen, first with multiple inspectors assigned to watch every action and second with any reasonable concrete pouring skills being used. We recently found in an ADAMS search that gaps were found in Davis-Besse’s previous concrete patch of 2002 when the plates were removed from the concrete pour. The Sierra Club would like an explanation as to why, considering this 2002 scenario, the plates holding the 2011 concrete pour were allowed to remain in place until recently.

**Comment 29-2:** The containment building is full of cracks, which is the only thing we know will happen with concrete, it will definitely crack, especially when it's very old concrete as in the containment building.

**Comment 30-2:** Davis Besse has had a history of huge running cracks. Even though the cracks are "patched" the real problem has not been solved. What is causing the cracking? Because cracking could lead to containment compromise, including a full blown melt down, I believe Davis Besse and its cracks should be shut down and decommissioned, not relicensed.

**Response:** *These comments are referring to the cracks discovered in the Davis-Besse concrete Shield Building. The cracks in the Shield Building are outside of the scope of the environmental review because the cracks are being evaluated under the current licensed operations. The Shield Building is subject to an aging management review under the regulations in 10 CFR Part 54, and the staff must make a determination that FENOC can adequately manage the effects of aging on the Shield Building before issuing a renewed license. Staff is evaluating the issue and will document their findings in a safety evaluation report. No new information was presented in these comments, and the SEIS was not revised.*

#### Loss of Offsite Power

**Comment 17b-7:** Loss of offsite power is also estimated at twice every hundred thousand years. In April of 2013, snipers systematically destroyed a power substation near San Jose, California. It took almost a month to restore the station's function. The power grid, and its vulnerable points such as substations are a potential target for a variety of potential aggressors. Terrorists, criminals, or agents of hostile governments could all attack vital parts of the grid system, causing prolonged loss of outside power. A study published in the May, 2014 issue of Ecological Economics, entitled "Human and nature dynamics (HANDY): Modeling inequality and use of resources in the collapse or sustainability of societies" suggests that we are most likely entering a period of societal instability. This instability could create multiple scenarios that would lead to long term disruption of offsite power, from severe weather events, to wars, to civil unrest. There have also been many local examples of prolonged power outages. The estimate of twice every hundred thousand years is clearly wrong. All the estimates of "initiating events" in Section 5 that could lead to a core meltdown are similarly, demonstrably wrong.

**Response:** *Loss of offsite power is outside of the scope of the Davis-Besse environmental review for license renewal. Loss of offsite power resulting in station blackout is an issue that is important to current operation. If plants lose offsite power, they are required to have reliable emergency diesel generators available to provide onsite power to structures, systems, and components that are important to safety. No new information was presented in this comment, and no revisions to the SEIS were made.*

#### High Burnup Fuel

**Comment 18a-3:** And I see, from a document that Davis- Besse was authorized, according to amendment number 213, to move to a fuel cycle which lasted 730 days. What happens is the fuel gets super burnt up, becomes super hot, radioactively, and super hot thermally, decay. And it embrittles the actual cladding around the fuel rods. So when you pull it out of the spent fuel pool and go to put it in dry cask storage, you have a multitude of problems. It is not known how this will respond in a Yucca Mountain, or some other proposal. So the whole entire industry, for two decades, has been operating blind, and going about generating high burnup fuel.

**Comment 18a-4:** I would like to know exactly when did Davis-Besse begin their high burnup fuel cycles, and if indeed they will be projected to go for 20 additional years of high burnup fuel cycles, when it is not known what to do with this waste that wasn't considered in the beginning.

**Comment 18a-5:** I'm going to leave with you a document, generated by a Dr. Marvin Resnikoff, within the last month or so, speaking about the high burnup nuclear fuel and how problematic it is, and it was never taken into consideration.

**Comment 18b-4:** New information has been coming out on the high burnup fuel that is being utilized at reactors around the U.S. that initially began in the early '90s. And I see, from a document that Davis-Besse was authorized, according to amendment number 213, to move to a fuel cycle which lasted 730 days. What happens is the fuel gets super burnt up, becomes super hot, radioactively, and super hot thermally, decay. And it embrittles the actual cladding around the fuel rods. So when you pull it out of the spent fuel pool and go to put it in dry cask storage, you have a multitude of problems. It is not known how this will respond in a Yucca Mountain, or some other proposal. So the whole entire industry, for two decades, has been operating blind, and going about generating high burnup fuel. We would like to know exactly when did Davis-Besse begin their high burnup fuel cycles, and if indeed they will be projected to go for 20 additional years of high burnup fuel cycles, when it is not known what to do with this waste that wasn't considered in the beginning. This was not addressed in the DSEIS.

**Comment 19a-5:** [...] there was talk about the high burnup waste, and the Sierra Club would like the NRC to look at the high burnup waste.

**Comment 19c-10:** The issue of high burnup fuel waste must also be addressed. Even our best engineers are unsure how to properly handle out-of-water storage of this far hotter waste.

**Response:** *These comments are related to the use and storage of high burnup fuel, which is outside of the scope of the Davis-Besse license renewal. Burnup is the energy produced by the nuclear fuel as a measure of the time the fuel assembly stays in the reactor core, usually expressed in gigawatt days per metric ton of uranium (GWD/MTU). High burnup fuel is generally defined as fuel with a burnup greater than 45 GWD/MTU. Using fuel with a high burnup allows the power plant to have longer operating cycles (usually 18 to 24 months) between refueling outages. Davis-Besse has been using high burnup fuel since the mid-1990s. Fuel burnup is addressed as part of system design safety reviews. Staff evaluated the nuclear, thermal, mechanical, and materials design of the fuel system. Fuel burnup is one of the fuel design operating limits established to ensure fuel reliability and acceptable performance during normal operations, anticipated operational occurrences, and postulated accidents. The NRC, through the Office of Nuclear Regulatory Research, is actively participating in research activities related to high burnup fuel. NRC sponsors a number of experimental programs at Oak Ridge National Laboratory and Studsvik Nuclear AB hot cell Laboratory in Sweden to provide data. NRC contracts with the Pacific Northwest National Laboratory for support for NRC's fuel rod computer codes. The NRC is actively engaged with international high burnup fuel research programs in Norway, France, Japan, and Sweden. More information about this can be found in NUREG-1925, Rev. 2, at:*

*<http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1925/r2/>. More information concerning international activities regarding high burnup fuel can be found at: <http://www.iaea.org/gsearch/high%2Bburnup%2Bfuel>.*

*These comments do not provide new information, and no changes were made to the SEIS.*

## Flooding

**Comment 18a-6:** I also had problems with how the issue of flooding has been addressed. And I don't believe it properly has. Lake Erie is known for its seiches [sic] that is where the wind, straight line wind blow the lake out, and it sloshes back and forth, back and forth.

**Comment 18a-7:** So the whole of flooding has been inadequately addressed, and has been swept under the rug.

**Comment 18b-5:** We have also had problems with how the issue of flooding has been addressed. And I don't believe it properly has. Lake Erie is known for its seiches [sic] that is where the wind, straight line wind blow the lake out, and it sloshes back and forth, back and forth. In fact the recent storm, in 2012, on the East Coast, created a lot of havoc on the Great Lakes, and there were seiches [sic], over on Lake Michigan, of 30 feet high. There have been sashes [sic], historically, which have been 30 feet, 40 feet high. There have been recent seiches [sic], over near Cleveland area, that actually came up and pulled people into the water. It does happen. We would like to reflect back in 1972, when the Davis-Besse was underwater for nearly a month. But what I'm guaranteed, there is an elevation of 591, and the lake knows when to stop, and it does not come over that elevation. So the whole of flooding has been inadequately addressed, and has been swept under the rug.

**Response:** *These comments refer to onsite flooding which is outside of the scope of the Davis-Besse license renewal. Onsite flooding is an issue related to current operation. In response to the Fukushima accident in 2011, the NRC requested nuclear power plant licensees to review their design basis with regard to flooding, seismic, tsunami and other external hazards. Work on this is ongoing, and further information can be found at: <http://www.nrc.gov/reactors/operating/ops-experience/japan-dashboard.html>.*

### **A.3.10 Postulated Accidents & SAMA (PA)**

**Comment 2c-1:** The results of the evaluation of 167 "severe accident mitigation alternatives" or SAMA candidates for Davis Besse indicated no enhancements to be potentially cost beneficial for implementation at Davis-Besse and none will be implemented at Davis Besse. Of the 167 safety measures considered, 107 were eliminated based only on a quantitative cost-benefit analysis. That is, 107 recognized possible safety enhancements for continuing operations another 20 years will not be done, or required, because ... "they are not cost effective." These safety features range from hardened containment vent filters to fire and flood safety measures. All 107 safety enhancement actions were considered too "expensive" by both FENOC and the NRC. My comments today will try to focus on the quantitative data used to make these decisions, but the knowledge or qualitative data that is known leads to a discussion of ethical decisions that need to be made by regulators. Should safety features be required even if they are expensive? Seat belts were made mandatory to save lives and unleaded fuel was made mandatory for clean air even though they would add to the final cost to consumers. Which, if not all of Davis Besse's SAMA considerations should be implemented regardless of cost?

**Response:** *The Severe Accident Mitigation Alternatives (SAMA) analysis is an evaluation of alternatives that have the potential to reduce the risk of a severe accident. Design-basis accidents (DBA) are accidents that the plant can withstand during normal and abnormal transients, without undue hazard to the health and safety of the public. A severe accident is more severe than a DBA because it could result in substantial damage to the reactor core, whether or not there are serious offsite consequences. The SAMA analysis considers if there*

*are plant changes (i.e., hardware, procedures, and training) that have the potential to reduce the risk of a severe accident.*

*A SAMA evaluation is usually a four-step approach:*

- 1. Quantify the level of risk associated with potential reactor accidents, using the plant-specific probabilistic risk assessment (PRA) and other risk models.*
- 2. Examine the major risk contributors and identify possible ways (the identified SAMAs) of reducing the risk.*
- 3. Estimate the benefits and costs associated with each SAMA.*
- 4. Determine if the benefit of the SAMA is greater than the cost.*

*During the evaluation, identified SAMAs may be eliminated from further consideration because the SAMA has already been implemented, is not applicable to the plant, has an estimated implementation cost that exceeds the dollar value for eliminating all severe accident risk at the plant, is related to a non-risk significant system and has a very low benefit, or is similar in nature and could be combined with another SAMA candidate.*

*Chapter 5 and Appendix F of the SEIS describes FENOC's analysis for identifying SAMAs. After a thorough review of FENOC's SAMA evaluation, the staff found that FENOC used sound methods to evaluate and screen the SAMAs. No new information is provided in this comment, and no revisions to the SEIS were made.*

**Comment 2c-2:** In order for cost-benefit calculations to be performed all costs and benefits must be expressed in a common measure, dollars, including things not bought and sold on markets, and to which dollar prices are therefore not attached. The most dramatic example of such things is human life itself. Many of the other benefits achieved or preserved by environmental policy – such as peace and quiet, fresh-smelling air, clean water, spectacular vistas and the environment we share with other biological species – are not traded on markets either. The Nuclear Regulatory Commission (NRC) uses a dollar figure for the value of human life that is 1/2 to 1/3 the value used by other federal agencies - \$3 million dollars is used by the NRC to calculate these cost-benefit analyses.

**Comment 2c-3:** In sharp contrast the Nuclear Regulatory Commission (NRC) uses a dollar figure for the value of human life that is roughly one third of the value used by other federal agencies- \$3 million dollars. The \$3 million dollar price tag can be found in the NRC regulation, NUREG-1530 section 6.6, written 2 decades ago in 1995. The regulation then proffers a discussion (since not every one dies and that they may only get cancer) a conversion factor is set at \$2100 per person-rem exposure to radionuclides which is then further discounted to \$2000 per person-rem in section 8.

**Comment 2c-4:** It would be in the best interest of the environment and for human life itself that the Davis Besse DGEIS as well as all other nuclear power plant EISs be put on hold for revisions to the NRC VSL figures and SAMA cost analysis procedures which are expected to be revised by the end of 2014.

**Response:** *These comments are related to the dollar amount used to assess the value of a human life. "Reassessment of NRC's Dollar per Person-Rem Conversion Factor Policy," NUREG-1530, (ADAMS Accession No. ML063470485) provides guidance for monetizing the health detriment resulting from radiation exposure that is used by the NRC in evaluating whether the benefits of a proposed regulatory action exceed the costs. The NRC uses the dollar per person-rem conversion in cost-benefit analyses to determine the monetary valuation*



*of the consequences associated with radiological exposure and establishes the factor by multiplying a Value of Statistical Life (VSL) and a cancer coefficient. The concept of VSL is used widely throughout the Federal government to monetize the health benefits of a safety regulation. Used in this manner, VSL (and therefore the associated dollar per person-rem conversion factor) corresponds to society's willingness to pay for small reductions in a particular mortality risk. In other words, VSL is not a measurement or valuation of a human life and does not suggest that any individual's life can be expressed in monetary terms. The sole purpose of VSL (and therefore the associated dollar per person-rem conversion factor) is to help describe better the likely benefits of a regulatory action.*

*Enclosure 8 of SECY-12-0110, "Consideration of Economic Consequences with the U.S. Nuclear Regulatory Commission's Regulatory Framework," (ADAMS Accession No. ML12173A478) describes the NRC's approach to research and publish a revised conversion factor policy in the form of a NUREG. These actions and plans were updated in SECY-14-0002, "Plan for Updating the U.S. Nuclear Regulatory Commission's Cost-Benefit Guidance," (ADAMS Accession No. ML13274A495). Per Commission direction provided in SRM-SECY-12-0110, the staff continues its work on determining an updated dollar per person-rem conversion factor as well as a methodology for systematically updating it in the future. Through interagency meetings, the staff is considering the VSL knowledge developed by other Federal agencies. The staff plans to engage external stakeholders and seek approval from the Commission prior to finalizing NUREG-1530. No new information was provided by these comments, and therefore, the SEIS was not revised.*

**Comment 17b-1:** For example, the agency estimates in Appendix F (Section F.2.1) that the frequency of a core damaging accident is once every hundred thousand years. This fanciful estimate comes despite the fact that there have been numerous core damaging accidents within the last fifty years, including Enrico Fermi 1, Three Mile Island, Chernobyl, and the three nuclear meltdowns at Fukushima. A more accurate estimate, based on actual real world experience, is that nuclear plant meltdowns occur approximately once every 10 years.

**Comment 17b-4:** Numerous other tornadoes have touched down in the area surrounding Davis-Besse since its construction. Tornado frequency is influenced by topography. Low, flat areas like the area where DB is located are more prone to tornadoes. Also, the frequency of severe weather events such as tornadoes is predicted to increase as a result of climate change. An estimate based on reality and real world experience suggests that the odds that Davis-Besse could be hit by an F4 or higher tornado during the period it would operate if its license [sic] were renewed are much higher than 1 in 100,000. Oklahoma City, Harvest, Alabama, and Cordell, Kansas have all experienced multiple tornado strikes in the same location.

**Response:** *The core damage frequency (CDF) used in the Davis-Besse severe accident mitigation analysis (SAMA) is based on the examination of site-specific identified accident scenarios, statistical evidence, and models at the component level. The determination of CDF takes into account the current state of knowledge as informed by science, engineering, and operating experience including lessons learned from past incidents. As evidenced by the distribution of CDF values among the U.S. nuclear fleet, individual plant designs can vary by a significant degree. Basing CDF on global statistical estimates ignores the variations in plant design, variations in operating procedures and variations in regulatory requirements. In addition, basing CDF on global statistical estimates ignores the lessons learned from past accidents including both design and procedure changes.*

*The NRC staff disagrees that the applicant's SAMA analysis is inadequate because the CDF is not estimated generically from direct experience. The SAMA analysis for license renewal is a*

*Category 2 issue, which means that it should be evaluated on a site-specific basis. The applicant calculates the CDF using a plant-specific probabilistic risk assessment (PRA) model, using plant-specific fault trees, event trees, and reliability information, and which has been subject to independent peer review. This approach is consistent with the current guidance for preparing a SAMA analysis provided in Revision A of Nuclear Energy Institute (NEI) 05-01, "Severe Accident Mitigation Alternatives (SAMA) Analysis," which has been endorsed by the NRC staff for use in SAMA analysis. This document provides the applicant guidance to use the plant-specific PRA model. Based on this site-specific information, the applicant estimates the severe accident risk and evaluates the economic impacts of a severe accident. No new information was provided in these comments, and no changes were made to the SEIS.*

**Comment 17b-2:** Not surprisingly, the factors that led to NRC's incorrect estimate are also wildly wrong. Tornadoes, floods and other external events are estimated to occur, cumulatively, once every 100,000 years. On page F11, the NRC States, "Based on this result, the applicant concluded that these other external hazards would be negligible contributors to overall core damage and did not consider any plant-specific SAMAs for these events." However, Davis-Besse has already been hit by a tornado. On June 24, 1998 the plant was struck by an F2 tornado. Contrary to the estimates of the NRC, this does not mean that we are good for another 100,000 years. Instead, it demonstrates that Davis-Besse is in a location that is uniquely prone to tornadoes. In fact Lake High School, less than 25 miles from Davis-Besse, was destroyed by an F4 tornado on June 5, 2010. The applicant (FENOC), is clearly wrong and it is the responsibility of the NRC to reject incorrect assertions on relicensing applications. Tornadoes are a site specific risk for the Davis-Besse nuclear plant. The questions that need to be answered in regard to this are not "When will DB be hit by another tornado?" but "What happens if Davis-Besse is hit by an F4 tornado, as Lake High School was?"

**Comment 17b-5:** Similarly, flooding is estimated to occur only once every 100,000 years. But the Davis-Besse site was flooded by a seiche in November of 1972, before the plant was operational. DB is uniquely vulnerable to seiche events because of its location on Lake Erie. While the plant does have some protective measures in place, the size and extent of those measures have been limited by the costs involved, just as the tsunami barriers were at the Fukushima nuclear plants. The NRC's four step process to judge whether or not a risk such as flooding needs to be mitigated starts with an estimation of the risk involved. This estimate has been demonstrated to be incorrect. Therefore all the other steps in the process have also produced incorrect results.

**Comment 19c-1:** The Sierra Club does not agree with the NRC assessment. The NRC has wholly failed to acknowledge public concern, as well as hard science, about the dangers of current and future radioactive contamination of Lake Erie, including the risks of catastrophic accident. The NRC has given unsubstantiated and inaccurate estimations of the risk of nuclear accident, flood, tornado and loss of external power. The NRC estimates in Appendix F that the frequency of a core damaging accident is once every 100,000 years, in spite of the fact that for Fermi 1, Three Mile Island, Chernobyl, and Fukushima the actual frequency has been proven to be far higher.

**Response:** *The design basis for Davis-Besse includes criteria for protection against natural phenomena as documented in the Final Safety Analysis Report (FSAR). In accordance with NRC requirements, the design basis must include appropriate consideration of the most severe of the natural phenomena that have been historically reported for the nuclear power plant site and surrounding area.*

*The Davis-Besse SAMA analysis incorporated an estimate of CDF from High winds, tornadoes, external Floods, and Other external events (HFO) of  $1.0 \times 10^{-5}$ . This value does not imply that tornadoes, floods, and other external events are estimated to occur, cumulatively, once every 100,000 years. Rather the HFO CDF is an estimate of the probability of the occurrence of an HFO as an initiating event that, in combination with a succession of component and/or system failures, eventually leads to core damage. Regarding consideration of tornadoes specifically, the Davis-Besse PRA model includes tornado initiating events for each of the six tornado intensity classes F0 through F5, each of which contributes high wind effects to the estimated CDF based on analysis of the plant design features.*

*No new information was provided in these comments, and no changes were made to the SEIS.*

**Comment 17b-6:** One of those steps, the cost/benefit analysis, prioritizes profitability for FENOC over the public health and safety. If FENOC determines that it costs too much to mitigate or eliminate a risk, they will not do it. However, with the chances of those risks being estimated as miniscule, almost no mitigation can be justified through a cost/benefit analysis. Turbine room flooding, for example, is estimated at once every 10 million years. No mitigation measures could be justified for something that happens so rarely. However, the Fort Calhoun nuclear plant experienced turbine room flooding in July of 2011. Clearly, it happens more frequently than once every 10 million years.

**Response:** *The licensing basis for Davis-Besse is based on the reasonable assurance of adequate protection as documented in the Final Safety Analysis Report (FSAR). The FSAR design-basis accident analyses do not include cost benefit analyses. Rather these analyses are deterministic in nature and must meet defined regulatory acceptance criteria in order to demonstrate reasonable assurance of adequate protection.*

*A SAMA analysis is a systematic search for potentially cost beneficial enhancements to further reduce nuclear power plant risk. The first step of a SAMA evaluation is to identify and characterize the leading contributors to CDF and offsite risk based on a plant-specific risk study. Table F-1 from Appendix F of NUREG-1437, Supplement 52, titled, "Davis-Besse Core Damage Frequency for Internal Events," indicates that flooding in the turbine building is estimated to contribute approximately 1% to the estimated CDF from internal events. The CDF for flooding in the turbine building is estimated to be  $8.8 \times 10^{-8}$  per year. This value is not an estimate of the frequency of the turbine building flooding but rather an estimate of the probability of the occurrence of turbine building flooding as an initiating event that, in combination with a succession of component and/or system failures, eventually leads to core damage.*

*No new information was provided in these comments, and no changes were made to the SEIS.*

**Comment 32a-3:** FENOC's SAMA analyses assume a safe, sound Shield Building capable of performing its designed containment function. However, the severe cracking known since October 2011, combined with wall gaps in resealed access openings in 2002 and 2011, seriously undermine any such optimistic assumptions. As Intervenor's SAMA contentions have challenged since the beginning of this license extension application proceeding, FENOC's SAMA analyses need fundamental re-evaluation. NRC's draft EIS does not adequately address these needed SAMA re-evaluations, if it addresses them at all.

**Comment 32b-2:** Intervenor's urge that their cracked concrete containment and Severe Accident Mitigation Alternatives (SAMA) contentions are inextricably interlinked because

FENOC assumes a functioning shield building in its SAMA analyses. Given the severe cracking and other degradation of the shield building, that assumption no longer holds water.

**Response:** *These comments contend that the SAMA analysis is no longer valid because of the cracks that have been discovered in the concrete shield building. The SAMA analysis is a probability-weighted assessment of the benefits and costs of mitigation alternatives. In particular, the analysis evaluates the degree to which specific additional mitigation measures (e.g., new plant procedures or new hardware) may reduce the risk—by reducing the probability or the consequences—of the accident scenarios evaluated. A specific mitigation alternative might reduce risk by, for example, reducing the estimated frequency of core damage or estimated frequency of containment failure in a particular accident sequence. If the cost of implementing a particular SAMA is greater than its associated benefit, the SAMA would not be considered cost-beneficial. SAMAs, in short, are rooted in a cost-benefit assessment.*

*As a result of the cracks discovered in the shield building, the licensee has had to demonstrate that the shield building maintains sufficient structural capacity to perform its design functions if subjected to a postulated design-basis earthquake, tornado wind, or tornado-generated missiles. The NRC staff continues to review and evaluate the licensee's actions regarding the cracks as current operations and as part of the safety review for license renewal.*

*No new information was provided in these comments, and no changes were made to the SEIS.*

**Comment 32d-4:** The litany of serious close calls listed above could have led to loss-of-coolant in the Davis-Besse atomic reactor's core, meltdown, and a catastrophic radioactivity release on the Great Lakes shoreline, between Toledo and Cleveland. How bad might that have been in terms of casualties and property damage? The 1982 NRC and -Sandia National Lab report, "Calculation of Reactor Accident Consequences," or CRAC-2, found that a major radioactivity release from Davis-Besse could cause 1,400 "peak early fatalities," 73,000 "peak early injuries," and 10,000 "peak cancer deaths." An \$84 billion figure for property damage was given. However, population growth in the past 28 years must be accounted for, which would likely make such casualty numbers even worse today. And when adjusted for inflation to present day dollar values, property damages could now top \$185 billion. And it has recently been revealed that NRC, EPA, and the Federal Emergency Management Agency (FEMA) disagree about which agency would lead the longer term clean up after a major radioactivity release, and where the funding would come from, calling into question disaster planning and severe accident mitigation analysis upon which Davis-Besse's 20 year license extension approval by NRC would be based.

**Response:** *This comment questions who will lead and who will fund the cleanup at a nuclear power plant in the event of an accident with significant amounts of radioactive material released offsite. With regards to the finding, funding to clean up after a major release of radioactivity would be as established by the Price-Anderson Act which became law on September 2, 1957. The Price-Anderson Act covers liability claims of members of the public for personal injury and property damage caused by a nuclear accident at a commercial nuclear power plant. The liability limit for a nuclear accident has increased over time to an insurance pool of more than \$12 billion. Owners of nuclear power plants pay an annual premium of \$375 million in private insurance for offsite liability coverage for each reactor site. If the cost of cleanup of the accident exceeds the \$375 million, then each utility would be assessed a prorated share of the excess amount, up to \$121 million per reactor. After this money is depleted, then Congress will determine whether additional disaster relief is required. NRC regulations (10 CFR 50.54(w)) require licensees to maintain a minimum of \$1.06 billion in onsite property insurance at each*

reactor site. This requirement was added after the accident at Three Mile Island to ensure that licensees would be able to cover cleanup costs resulting from a nuclear accident.

With regards to who leads the federal response, President Obama signed Presidential Policy Directive (PPD)-8: National Preparedness in March 2011 to enhance the Nation's ability to prepare for and respond to the threats that pose the greatest danger to the United States. PPD-8 required the development of a National Planning System that integrates planning across all levels of government and with the private and non-profit sector to provide an agile and flexible approach to prevent, protect, mitigate, respond, and recover from threats that pose the greatest risk to the Nation, including severe accidents at nuclear power facilities. National Planning Frameworks that describe the key roles and responsibilities for delivering the capability to prevent, protect, mitigate, respond, and recover from serious threats are part of the National Planning System.

The National Recovery Framework (NRF) is the guide to how the Nation responds to all types of disasters and emergencies. The NRF uses the concepts identified in the National Incident Management System (NIMS) to align key roles and responsibilities. NIMS is a guide for how departments and agencies at all levels of government, nongovernmental organizations, and the private sector work together to manage incidents. In July 2015, the State of South Carolina is sponsoring the Southern Exposure 2015 Exercise which is designed to test and analyze the ability of State, Federal, and local governments, to respond to and recover from an emergency at a nuclear power plant. The Southern Exposure 2015 Exercise will coincide with the H.B. Robinson Nuclear Power Plant's biennial emergency preparedness exercise. The State of South Carolina, with a number of local governments and Federal agencies, such as NRC, U.S. Department of Energy, Federal Emergency Management Agency, and U.S. Department of Agriculture, will work together during a radiological release incident and afterwards during recovery activities.

The Nuclear/Radiological Incident Annex (NRIA) to the NRF describes the policies, situations, concepts of operations, and responsibilities of the Federal departments and agencies governing the immediate response and short-term recovery activities for incidents involving release of radioactive materials to address the consequences of the event. The purpose of this annex is to:

- Define the roles and responsibilities of Federal agencies in responding to the unique characteristics of different categories of nuclear/radiological incidents.
- Discuss the specific authorities, capabilities, and assets the Federal Government has for responding to nuclear/radiological incidents that are not otherwise described in the NRF.
- Discuss the integration of the concept of operations with other elements of the NRF, including the unique organization, notification, and activation processes and specialized incident-related actions.
- Provide guidelines for notification, coordination, and leadership of Federal activities.

Because there are several categories of potential incidents and impacted entities, this annex identifies different Federal agencies as "coordinating agencies" and "cooperating agencies" and associated strategic concepts of operations based on the authorities, responsibilities, and

## Appendix A

*capabilities of those departments or agencies. In addition, this annex describes how other Federal departments and agencies support the Department of Homeland Security (DHS) when DHS leads a large-scale multiagency Federal response.*

*This comment provided no new information and, therefore, no changes were made to the SEIS.*

**Comment 32e-2:** FENOC recently admitted five major errors in its Severe Accident Mitigation Alternatives (SAMA) analyses, submitted with its Environmental Report in its license extension application. These include: “An inaccurate land area conversion factor for acres to hectares was used”; “Dollar values for Ohio farmland and non-farmland used as inputs to the ‘MELCOR Accident Consequence Code System’ (MACCS2) software used in support of the SAMA Analysis were not appropriate”; “The escalation of decontamination costs used in the SAMA Analysis was not performed per the guidance of Nuclear Energy Institute (NEI) 05-01 ‘Severe Accident Mitigation Alternatives (SAMA) Analysis Guidance Document,’ November 2005, using the consumer price index”; “Use of core inventory isotopic ‘activity’ instead of isotopic ‘mass’ in the Modular Accident Analysis Program (MAAP) software code runs did not reflect updated industry guidance”; “The wind direction from the Davis-Besse Meteorological Tower was not converted from the ‘blowing from’ direction to the ‘blowing toward’ direction for use in the SAMA Analysis calculations. The data from the Davis-Besse Meteorological Tower is received in the ‘blowing from’ direction. However, the MACCS2 software requires wind direction data inputs to be provided in the ‘blowing toward’ direction. The data conversion was not performed properly.” Each of these mistakes could well mean that predictions of casualties and property damage resulting from a catastrophic radioactivity release at Davis-Besse have been dangerously under-estimated by FENOC itself, a point the environmental coalition has already alleged for two years.

**Response:** *On August 27, 2010, FENOC submitted a license renewal application, which included a SAMA analysis as part of the Environmental Report. The NRC staff had reviewed the SAMA analysis submitted with the license renewal application and, by letter dated April 20, 2011 (ML110910566), sent a request for additional information (RAI) on the original SAMA analysis. FENOC provided responses to the RAI on June 24, 2011 (ML11180A233).*

*In January 2012, FENOC notified the NRC staff that four errors had been identified in the SAMA analysis that was submitted as part of the August 2010 license renewal application. FENOC redid the SAMA analysis, correcting those four errors. During the review of the corrected draft, an additional error was discovered. The five errors were corrected, and a corrected SAMA analysis was submitted to the NRC on July 16, 2012 (ML12200A024). FENOC also reviewed the responses to the April 2011 RAI and discovered that a number of the RAI responses needed to be revised based on the corrected SAMA analysis. The corrected RAI responses were submitted as part of the July 16, 2012, submittal. The NRC staff reviewed FENOC’s corrected SAMA analysis and concluded that the methods used and the implementation of the methods was sound. The staff’s evaluation of the updated SAMA evaluation is documented in Chapter 5 and Appendix F of the SEIS.*

*This comment provided no new information and, therefore, no changes were made to the SEIS.*

### **A.3.11 Radioactive & Non-Radioactive Waste (RW)**

**Comment 14a-2:** The problem is, is that table S-3, that is -- appears in the NRC regulations, contain a discussion of the nuclear fuel waste disposition cycle. And it assumes that there will be, essentially, perfect containment.

**Comment 14a-4:** The problem is that Table S-3 presumes that a repository built in salt formations is going to be stable and that, that presumption, that assumption may be about to be undermined for all time.

**Comment 14a-3:** But the point that the intervenors, in Davis-Besse, are here to make tonight, is that there is serious, recent, new information that calls into question table S-3, the very assumption on which plants like Davis-Besse are allowed, originally, to be licensed and allowed to be, to have their licenses renewed.

That the assumption being we can take care of the waste problem, it will be contained, there won't be forever problems posed to our children's children's, children's children.

**Comment 14b-3:** I understand that there is an ongoing rulemaking proceeding over waste confidence, but the point the Intervenor in the Davis-Besse license renewal case are here to make to you, tonight, is that there is serious recent new information that calls into question the Table S-3 assumptions that allowed Davis-Besse to be licensed in the first place, much less granted an extension. The NEPA document for the LRA cannot be considered thorough and fully disclosing without scientific reconsideration of the assumption that the dangerous garbage from nuclear fissioning will not pose horrific hazards to less-informed and more vulnerable populations in the poorer which are likely to be found in the, overpopulated world of the future.

**Response:** *These comments refer to Table S-3 in 10 CFR Part 51, "Table of Uranium Fuel Cycle Environmental Data." Environmental impacts associated with the uranium fuel cycle as they apply to license renewal are discussed in Section 4.12.1 of the 2013 GEIS (ML13106A241). The discussion in the GEIS encompasses the applicability and adequacy of Table S-3 in 10 CFR Part 51.51. The conclusion is that the assumptions and methodology used in preparing Table S-3 were conservative enough that the impacts described by the use of Table S-3 would still be bounding for the purposes of discussing the impacts associated with the uranium fuel cycle as applied to license renewal. No new information was provided in this comment, and no changes to the SEIS were made.*

**Comment 14b-2:** Intervenor in the NRC's pending "waste confidence" decisionmaking process have warned, authoritatively, of the dangers of storing high-level radioactive waste in salt formations.

**Comment 18a-9:** To generate one more ounce of nuclear waste is immoral, because we do not know what to do with what we have. All we have gotten was a Waste Confidence, a con game, we will figure out what to do with it later.

**Comment 18b-6:** To generate one more ounce of nuclear waste is immoral, because we do not know what to do with what we have. All we have gotten was a Waste Confidence, a con game, we will figure out what to do with it later. Now, many people look at Yucca Mountain, what a failure Yucca Mountain was. Yucca Mountain is a tremendous success because for 27 years it kept the lie alive, that you knew what to do with it, you don't. You are just kicking it down the road, it is immoral what you are doing. It is now known you don't know what to do with it. And I would argue that the Nuremberg principles do apply here, today, in the actions that decisionmakers make going forward. Because it is not based on science.

**Comment 19a-3:** The NRC must also address the most serious issue of nuclear reactors outside of an accident, or meltdown, which is of course, the radioactive waste.

**Comment 19a-4:** So the NRC must address the environmental impact of Davis-Besse's waste, for the next few hundred generations. And the whole business of when the Waste Confidence

was overturned, by the Court, that meant it should be overturned, they should drop it, they should start looking at the waste.

**Comment 19a-6:** The Sierra Club, we have signed on to the principles for safeguarding nuclear waste at reactors. So what that, what those organizations that have signed on to that have, what it has said, it must be stored as close, as safely possible, to the site of generation.

**Comment 19a-7:** It can't be left on Prairie Island, in the middle of the Mississippi River. You know, those places, it must be moved off of there. But it can't, at the same time, it can't be moved out to Nevada, because that increases the risk of accidents along the way. And the waste must not be put where it cannot be retrieved, and resealed. So what we are talking about is a rolling custody of the waste for generations to come.

**Comment 19c-9:** The NRC has failed to address the most serious issue of nuclear reactors, outside of an accident or meltdown, which is the generation of hundreds of tons of highly radioactive waste. Waste that will be around far longer than FirstEnergy or the United States government, or anything resembling the civilization that we have today. Kicking the radioactive can down the road - saddling future generations with the problems and the expense of isolating our generation's nuclear waste, is irresponsible at best and criminal at worst. The NRC should include in their assessment the environmental impact of Davis-Besse's waste for the next few hundred generations.

**Comment 21-1:** I have had the same objection, the entire time, since before they built it, what are you going to do with the waste?

**Comment 21-2:** I live in Michigan now, but my water comes from Toledo, which comes from Lake Erie. I'm concerned that we have storage that is going to stay at this plant forever.

**Comment 29-3:** NRC should consider the cost of storing, guarding, and monitoring the nuclear waste generated by another 20 years of Russian Roulette type operation of and at Davis Besse,

**Comment 30-1:** Davis Besse creates nuclear waste. There is no solution to the safe storage of nuclear waste. It remains toxic for longer than anyone can guarantee its safe storage. There is no way to dispose of it that would not endanger the environment sooner or later. When businesses pollute, they should be shut down.

**Comment 31-2:** I am particularly concerned about the pollution produced by nuclear waste produced by the plant and potential impact of continued accumulating pollution on the health of my family, especially my grandchildren.

**Comment 32d-2:** Davis-Besse's indoor pool for storing high-level radioactive wastes was "packed to the gills" by the mid-1990s, at which point it proposed loading horizontal outdoor "bunkers" (unfortified) of concrete and steel – "dry" storage casks – to serve as "overflow parking." NRC identified serious problems with 3 of the "NUHOMS" dry storage casks, manufactured by Vectra Technologies (later taken over by Transnuclear, Inc., a subsidiary of the French government owned nuclear giant Cogema, now called Areva) fully loaded with irradiated nuclear fuel at Davis-Besse. The casks were discovered to have been built below technical specifications: the aggregate used to fabricate the casks' outer concrete walls - essential for radiation shielding -- was poor quality, and the steel alloy walls of the inner metallic canisters actually containing the irradiated nuclear fuel were ground too thin along the weld lines, in violation of technical specifications. The Toledo Coalition for Safe Energy challenged the safety and quality assurance of this proposal in 1994, but was overruled by NRC, which allowed loading of casks to begin in 1995. These faulty casks remain fully loaded with high-level radioactive waste onsite at Davis-Besse to this day, 15 years later.



The vast majority of Davis-Besse's irradiated nuclear fuel is still stored in its pool - vulnerable to cooling water drain downs or boil offs due to accident (such as heavy load drops), natural disaster (such as tornadoes), or intentional terrorist attacks. Without cooling water, wastes in the pool could catch fire within hours, resulting in 25,000 latent cancer deaths, due to large amounts of such hazardous radioactive isotopes as Cesium-137 escaping in the smoke and blowing downwind, depositing lethal fallout as far away as 500 miles. However, as time goes on, more and more dry casks are being loaded with older irradiated nuclear fuel at Davis-Besse, in order to free up room in the storage pool for the hellishly hot and radioactive rods just removed from the operating reactor core during re-fueling outages.

Dry casks themselves are vulnerable to accidents, are not designed to withstand terrorist attacks, and will eventually degrade with exposure to the elements and need to be unloaded and replaced with new containers. NRC recently updated its "Nuclear Waste Confidence Findings and Rule," asserting that "the nation's spent nuclear fuel can be safely stored for at least 60 years beyond the licensed life of any reactor and that sufficient repository capacity will be available when necessary." NRC's "confidence" in the opening of a repository is suspect: President Obama has cancelled the proposed Yucca Mountain, Nevada repository, the only "deep geologic" dumpsite to be studied for high-level radioactive waste disposal in the U.S. for the past 23 years. NRC is thus perpetrating a "con game", on the American people, and blocking any consideration of irradiated nuclear fuel generation risks in new reactor combined construction and operating license application proceedings, as well as in old reactor license extension proceedings, such as the one now underway at Davis-Besse.

Thus, NRC has already "blessed" high-level radioactive wastes remaining at Davis-Besse for a century, until 2077. If NRC rubberstamps a 20 year license extension, the irradiated nuclear fuel could remain onsite until 2097. However, the NRC Commissioners have also "directed the NRC staff to conduct additional analysis for [even] longer-term storage," ordering staff to submit a "plan to the Commission for the long-term rulemaking by the end of the calendar year [2010]." Thus, NRC could soon approve irradiated nuclear fuel remaining at Davis-Besse - on the shoreline of the Great Lakes, 20% of the world's surface fresh water, and drinking supply for 40 million people -- for *centuries* into the future, despite the safety, security, health, and environmental risks.

High-level radioactive wastes are one of the most hazardous substances ever generated by humankind. While electricity is but a fleeting byproduct, irradiated nuclear fuel will remain deadly and need to be isolated from the living environment "forevermore." Without radiation shielding, it can deliver a lethal dose of gamma radiation in seconds or minutes, even decades after removal from the reactor. Alpha particle emitters, however, such as Plutonium-239 -- a microscopic speck of which, if inhaled, could initiate lung cancer -- will remain hazardous for hundreds of thousands of years. Other radioactive isotopes will remain deadly far longer - Iodine-129, for example, has a 157 million year hazardous persistence.

**Response:** *These comments are all related to the long-term storage of nuclear waste and the Continued Storage Rule. The License Renewal Generic Environmental Impact Statement (GEIS); NUREG-1437 addresses the onsite storage of SNF during the 20-year license renewal period. The GEIS concluded that the impact of onsite storage of SNF during the 20-year license renewal term would be SMALL and that the issue was generic to all nuclear power plants. The Davis-Besse SEIS discussion in Chapter 6 tiers off the GEIS's discussion and conclusion. The NRC identified no new and significant information related to the storage of SNF during the 20-year license renewal period during its independent review of FENOC's ER, the scoping process, or the site audit. Therefore, the NRC staff concluded that there would be no impact during the license renewal term beyond those discussed in the GEIS.*

*For the period beyond the licensed life for reactor operations, on August 26, 2014, the Commission approved a revised rule at 10 CFR 51.23 and associated Generic Environmental Impact Statement for Continued Storage of Spent Nuclear Fuel (NUREG-2157, ADAMS Accession No. ML14188B749). Subsequently, on September 19, 2014, the NRC published the revised rule (79 FR 56238) in the Federal Register along with NUREG-2157 (79 FR 56263). The revised rule adopts the generic impact determinations made in NUREG-2157 and codifies the NRC's generic determinations regarding the environmental impacts of continued storage of spent nuclear fuel beyond a reactor's operating license (i.e., those impacts that could occur as a result of the storage of spent nuclear fuel at at-reactor or away-from-reactor sites after a reactor's licensed life for operation and until a permanent repository becomes available).*

*Under 10 CFR 51.23, the impact determinations in NUREG-2157 regarding continued storage are deemed incorporated into the NRC's environmental impact statements for reactor and independent spent fuel storage installation (ISFSI) licenses. NUREG-2157 supports the revised rule and includes, among other things, the staff's analyses related to the particular deficiencies identified by the D.C. Circuit in the vacated Waste Confidence decision and rule. The NRC staff's consideration of the issues identified by the D.C. Circuit was aided considerably by the public's extensive participation in the process, including comments received during scoping, on the draft NUREG-2157 and revised rule, and participation in nationwide public meetings, among other things. The information in NUREG-2157 was developed using an open and public process and the findings in NUREG-2157 are codified by rule in 10 CFR 51.23.*

*In CLI-14-08 (ADAMS Accession No. ML 14252A721), the Commission held that the revised 10 CFR 51.23 and associated NUREG-2157 cure the deficiencies identified by the court in New York and stated that the rule satisfies the NRC's NEPA obligations with respect to continued storage for initial, renewed, and amended licenses. Because the impact determinations in NUREG-2157 regarding continued storage are deemed incorporated into this Davis-Besse FSEIS, Chapter 6 of this FSEIS now contains an analysis for the generic issues of "Onsite storage of spent nuclear fuel" and "Offsite radiological impacts of spent nuclear fuel and high-level waste disposal" that satisfies NEPA. As the Commission noted in CLI-14-08, the NRC staff must account for these environmental impacts before finalizing its licensing decision in this proceeding. The NRC staff accounted for the impacts determined in NUREG-2157 and incorporated the impacts into Chapter 6 of this FSEIS.*

*The revised Continued Storage rule does not require any changes to the management (i.e., handling, storage, and disposition) of SNF at a reactor site. As previously stated, the revised 10 CFR 51.23 documents the environmental impacts of continued storage of SNF. Therefore, there are no potential changes in direct, indirect, and cumulative impacts that result from the revised rule.*

*The comments provide no new and significant information for this environmental review (as specified in 10 CFR 51.95(c)(3)) and are not evaluated. However, as stated above, the NRC staff revised Chapter 6 of this FSEIS to incorporate the revised 10 CFR 51.23 rule and NUREG-2157 to address the environmental impacts associated with the continued storage of spent nuclear fuel.*

**Comment 14a-1:** It is our opinion that circumstances, in recent weeks, which have happened in a comparative obscure media environment, have seriously undermined the assumptions that have given rise to the GEIS conclusion, the Waste Confidence conclusion, that nuclear power plants, like Davis-Besse, can continue in operation, generating incredibly lethal waste products from fissioning, and that there would be adequate measures to contain the dangers from that waste for the forever period of time that it will be necessary to do so. On February 4th, 2014,

the assumptions of very low probability crumbled at the Energy Department's Waste Isolation Pilot Plant, which is, the short name is WIPP, W-I-P-P, near Carlsbad, New Mexico.

**Comment 14b-1:** It is our opinion that circumstances in recent weeks in New Mexico have seriously undermined the assumptions that have given rise to the generic conclusion that nuclear power plants like Davis-Besse can be allowed to continue in operation, generate incredibly lethal waste products from fissioning, and that there will be adequate measures in place to keep those deadly genies bottled up for the necessary tens or hundreds of thousands of years.

**Response:** *These two comments are out of scope of the Davis-Besse license renewal but are related to radioactive waste storage. On Friday, February 14, 2014, there was an accident at the Department of Energy (DOE) Waste Isolation Pilot Plant (WIPP) in Carlsbad, New Mexico, which resulted in the release of americium and plutonium from one or more of the transuranic (TRU) waste containers inside the facility. The release was detected by a continuous air monitor that is positioned underground. Some of the material released was directed through high-efficiency particulate air (HEPA) filters. However, a measureable amount of the radioactive material bypassed the HEPA filters and was released directly to the environment from an exhaust duct. Twenty-one individuals initially tested positive for low levels of americium and plutonium. On February 27, 2014, DOE appointed an Accident Investigation Board to investigate the radiological release. In April 2014, DOE released, "Accident Investigation Report, Phase 1: Radiological Release Event at the Waste Isolation Pilot Plant on February 14, 2014." This Phase 1 report focused on mechanisms of the radioactive material releases and corrective actions needed so that this type of release would not happen again. Phase 2 will focus on determining the direct cause of the accident. Information on the accident at WIPP can be found at: [http://www.wipp.energy.gov/wipprecovery/accident\\_desc.html](http://www.wipp.energy.gov/wipprecovery/accident_desc.html). These comments provided no new information. Therefore, the SEIS was not revised as a result of these comments.*

### A.3.12 Support of License Renewal (SL)

**Comment 3a-1:** Continued, long-term operation, of the plant will allow the Davis-Besse Nuclear Power Station, to maintain its commitment to education in Ottawa County, and beyond, both through annual tax contributions and the public outreach activities conducted by its dedicated professionals. This is an invaluable contribution to our communities that will benefit students for generations to come.

**Comment 3b-1:** I know I speak for educators across northwest Ohio when I say that Davis-Besse serves an important role supporting the educational backbone of our communities. In fact the plant provides more than 5.8 million dollars, locally, in annual property taxes which provide a direct and substantial benefit to our school district.

**Comment 4-1:** And it would also be devastating, I believe, to Ottawa County. IBEW 1413 believes that the approval of the additional 20 year license for Davis-Besse is not an option, but a must. The Draft Environmental Impact Statement supports this position and indicates that the impact, from extending the life of the plant is minimal, at most.

**Comment 5-1:** Our nuclear energy facilities provide substantial economic benefits to the state, and the local community, including high paying jobs, and tax revenue, that help to fund local services, and help to keep property taxes much lower than they otherwise would be.

**Comment 6-1:** And I think it is imperative that you go along with this process. Local 245 supports the approval of the license renewal, and we ask for your approval, also.

**Comment 7-1:** Davis-Besse has provided a clean and safe place for our associates to work, and provide for their families, while providing reliable power for our communities. And I strongly support the extension of the operating license.

**Comment 8-1:** I'm here today to support the license renewal application that will allow Davis-Besse to operate through 2037.

**Comment 9-1:** In fact, we believe it is necessary to preserve the economic stability of our area with the renewal. Livelihoods and jobs depend on affordable energy. Davis-Besse provides that as a resource, and we encourage the NRC to work with First Energy to renew the license.

**Comment 10a-1:** Because of First Energy's high standards, and commitment to excellence, in the nuclear industry, we feel that an extension of the existing license is a positive step forward and should be granted to First Energy.

**Comment 10b-1:** Because of First Energy's highest standards, and a commitment to excellence in the nuclear industry, we feel that an extension of this licensing is a positive step forward, and it should be granted to First Energy. Thank you.

**Comment 12-1:** Today I would like to focus my comments on the jobs aspect. Without license renewal northwest Ohio would suffer economically, with the loss of more than 700 stable, well-paying jobs.

**Comment 13-1:** In closing, nuclear power must continue to produce safe, reliable, electricity as a part of our country's diverse energy portfolio. I strongly support the issuance of an additional 20 year operating license for Davis-Besse which will afford our region continued production of reliable power. This is vital to maintaining a business friendly environment, not just in Ottawa County, but in supporting the prosperity of northwest Ohio.

**Response:** *These comments are in support of Davis-Besse's license renewal and will not be addressed further. The comments provide no new information, and the SEIS has not been revised as a result of these comments.*

### **A.3.13 Terrestrial Resources (TR)**

**Comment 1-1:** The biggest impact, I would believe, would be the avian resources, because they are going to have the quickest emission, and quickest exposure to the facility, here, if there is a leakage or a release of radiation, because they are going to be airborne. And we are on the Black Swamp, which is one of the biggest flyways in North America. I mean, North America, South America, the butterflies come through here, the birds come through here, many, many other organisms come here.

**Comment 2a-2:** Davis-Besse rests on the crossroads of two major migration pathways, both east and west, from the Atlantic to the Pacific, and from the North Pole to the South Pole. Some of these new identified species are migratory.

**Response:** *As part of the license renewal review, the staff considered impacts to both State- and Federally-listed species. In 2010, the NRC staff initiated consultation with U.S. Fish and Wildlife Service (FWS) and National Marine Fisheries Service (NMFS) regarding the presence of threatened and endangered species in the vicinity of Davis-Besse. By letter dated December 21, 2010, NMFS informed staff that there were no species listed under the jurisdiction of NMFS to occur in the vicinity of Davis-Besse.*

*In Section 2.2.8.4 of the SEIS, the NRC staff identified the eastern pondmussel as occurring in Ottawa County, and therefore, conclusions regarding impacts to aquatic resources in SEIS*

*Section 4.6 and protected species and habitats in SEIS Section 4.8 are inclusive of this species. The rayed bean, which is a Federally endangered species, does not occur in Ottawa County according to U.S. Fish and Wildlife (FWS) records. During Endangered Species Act section 7 consultation between the NRC and FWS, the FWS did not identify the rayed bean as being potentially affected by the proposed license renewal. For these reasons, the NRC did not consider this species in the SEIS. The comment provides no new and significant information, and the NRC staff did not revise the SEIS as a result of this comment.*

**Comment 17b-11:** In addition to impacts on humans, essential information on the impact on the flora and fauna of the study area has been omitted. There is extensive description and quantification of the birds in the area, for example, and a very brief mention is made of ways that birds could be impacted by Davis-Besse's cooling towers is listed, but a detailed discussion of the severity of that impact is omitted. A 2009 study done by Benjamin K. Sovacool entitled, "Contextualizing avian mortality: A preliminary appraisal of bird and bat fatalities from wind power, fossil-fuel, and nuclear electricity" presented to the Energy Governance Program, Centre on Asia and Globalisation, Lee Kuan Yew School of Public Policy, National University of Singapore, Singapore 259772, Singapore and found online at: <http://www.nukefree.org/news/avianmortalityfromwindpower,fossil-fuel,andnuclearelectricity> suggests that Davis Besse could be killing 3,000 to 5,000 birds every year. Thus, avian impacts should be reclassified as LARGE.

**Response:** *Section 4.3.5.2 of the 1996 Generic Environmental Impact Statement for License Renewal of Nuclear Plants (GEIS; NUREG-1437) addressed the potential for birds to collide with cooling towers. After reviewing plant-specific analyses, including a study conducted at Davis-Besse from 1972-1979, the NRC concluded that avian mortality resulting from collisions of birds with cooling towers is a generic (Category 1) issue and would be of SMALL significance for all plants during the license renewal term because it is unlikely that losses of birds from collisions would threaten the stability of local populations or result in a noticeable impairment of the function of a species within local ecosystems. In the 2013 GEIS, the NRC reconsidered whether the finding of SMALL remained valid. The NRC combined the issue of bird collisions with cooling towers and bird collisions with transmission lines into one issue (bird collisions with plant structures and transmission lines) and considered findings in past license renewal reviews as well as new studies or information on the potential effects of bird collisions. The NRC concluded that this issue should remain a Category 1 issue with a conclusion of SMALL. During the NRC's review of the Davis-Besse license renewal application, the staff did not identify any new and significant information that would call into question this finding, and thus, the conclusion of SMALL remains appropriate for this issue.*

*The 2009 Sovacool article referenced by the commenter mentions the 1972-1979 study conducted at Davis-Besse. The article provides no new or significant information about bird mortality at Davis-Besse that was not already considered in the 1996 GEIS, the 2013 GEIS, or the Davis-Besse SEIS. The NRC staff did not revise the SEIS as a result of this comment.*

### Endangered Species

**Comment 2a-1:** I want to ask, first, about the slide on the threatened and endangered species. What date did the Ohio DNR provide that information to you? Do you know the date that that information was provided? You have listed four species. Today there are actually six endangered species in Ottawa County and there is, actually, evidence of two more. With

this new information I believe a Generic Environmental Impact Statement would not be adequate.

**Comment 2b-1:** In addition to surveying the property for birds, insects, turtles, and snakes, the group also sampled Lake Erie for aquatic critters including fish and mussels. Assisted by University of Toledo graduate student Todd Crail, the Young Birders Club was able to document the state endangered Eastern Pond Mussel and the Rayed Bean Mussel, a species that is currently being considered for the United States Endangered Species List.

**Response:** *As part of the license renewal review, the staff considered impacts to both State- and Federally-listed species. In 2010, the NRC staff initiated consultation with U.S. Fish and Wildlife Service (FWS) and National Marine Fisheries Service (NMFS) regarding the presence of threatened and endangered species in the vicinity of Davis-Besse. By letter dated December 21, 2010, NMFS informed staff that there were no species listed under the jurisdiction of NMFS to occur in the vicinity of Davis-Besse.*

*In Section 2.2.8.4 of the SEIS, the NRC staff identified the eastern pondmussel as occurring in Ottawa County, and therefore, conclusions regarding impacts to aquatic resources in SEIS Section 4.6 and protected species and habitats in SEIS Section 4.8 are inclusive of this species. The rayed bean, which is a Federally endangered species, does not occur in Ottawa County according to U.S. Fish and Wildlife (FWS) records. During Endangered Species Act section 7 consultation between the NRC and FWS, the FWS did not identify the rayed bean as being potentially affected by the proposed license renewal. For these reasons, the NRC did not consider this species in the SEIS. The comment provides no new and significant information, and the NRC staff did not revise the SEIS as a result of this comment.*

**Comment 25-2:** Section 3.2.1, Terrestrial Resources - Refurbishment Impacts, details several refurbishment activities, including two permanent storage facilities, one permanent multi-story office building, and several temporary facilities. The temporary facilities may include a permanent base concrete pad. The Draft SEIS states that all land disturbed for construction and refurbishment-related activities will be previously disturbed land, such as mowed areas, parking lots, or other paved surfaces. These activities will lead to an increase in impervious surfaces. As discussed in section 4.15.3, Cumulative Impacts on Aquatic Resources, urbanization and shoreline development are major stressors on the health of Lake Erie. Avoiding impacts to wetlands and reducing the amount of impervious surfaces along the lake help reduce this stress.

**Recommendations:** EPA has several recommendations regarding the construction of the permanent and temporary facilities on the Davis-Besse site. EPA encourages the applicant to site and organize construction projects to minimize impacts to surrounding habitats. It is unclear if the permanent base concrete pad for temporary facilities is even necessary, since it is only under consideration at this time. Any unnecessary permanent, impervious areas are discouraged. EPA recommends staggering construction schedules of the new facilities so that no additional habitat is directly disturbed. This could mean having one temporary laydown area that services the construction of new permanent facilities one at a time, reducing the amount of disturbed habitat. Any new buildings and surrounding areas should be designed to Leadership in Energy and Environmental Design (LEED) standards. If LEED standards are pursued, this information should be included in the Final SEIS. Any potential use of Energy Star appliances, EPA's WaterSense program, EPA's GreenScapes program, or other similar programs should be identified in the Final SEIS. These are important elements of reducing the overall environmental impact of the proposed project.

**Response:** *The refurbishment activities discussed in Chapter 3 of the SEIS have been completed. Additionally, these recommendations are outside of the statutory authority granted the NRC by the Atomic Energy Act of 1954, as amended. Nevertheless, the NRC has included EPA's recommendations for ways to further mitigate environmental impacts during refurbishment in Section 3.2.1 of the SEIS.*

#### **A.4 Comment Letter and Meeting Transcripts for the Draft Supplemental Environmental Impact Statement**

The following pages contain the comments, identified by commenter designation and comment number, from letters and the transcripts from the public meetings on the draft supplemental EIS.

1 the fish, you are talking -- I don't know, aquatic  
2 resources.

3 The biggest impact, I would believe, would  
4 the aviary resources, because they are going to have  
5 the quickest emission, and quickest exposure to the  
6 facility, here, if there is a leakage or a release of  
7 radiation, because they are going to be airborne.

8 And we are on the Black Swamp, which is  
9 one of the biggest flyways in North America. I mean,  
10 North America, South America, the butterflies come  
11 through here, the birds come through here, many, many  
12 other organisms come here.

1-1-TR

13 And I think you are missing the boat,  
14 literally, on this slide right here, not considering  
15 that.

16 MS. KEEGAN: Well, it is not on the slide,  
17 but our staff looked at the impacts on aquatic and  
18 terrestrial species in the whole evaluation.

19 This is just a brief summary. In the  
20 document it lists everything that was looked at, and  
21 everything that was reviewed. And they looked at the  
22 swamp, I forget the name of it.

23 But they looked at that, they evaluated  
24 the impact to it. So our staff looked at as much as  
25 they could, they did an environment, or an independent



1 MS. CLEMENS: Victoria Clemens, and I'm a  
2 resident in Port Clinton.

3 I want to ask, first, about the slide on  
4 the threatened and endangered species. What date did  
5 the Ohio DNR provide that information to you? Do you  
6 know the date that that information was provided?

7 You have listed four species. Today there  
8 are actually six endangered species in Ottawa County  
9 and there is, actually, evidence of two more. With  
10 this new information I believe a Generic Environmental  
11 Impact Statement would not be adequate. 2a-1-TR

12 I think NRC, EPA, Fish and Wildlife  
13 Service, need to do a new survey, an actual full scale  
14 survey and a new full scale impact statement.

15 The shoreline and marshes, I would add to  
16 the statement that John Q Public made. The shoreline  
17 and marshes of the western basin of Lake Erie are of  
18 global importance.

19 Davis-Besse rests on the crossroads of two  
20 major migration pathways, both east and west, from the  
21 Atlantic to the Pacific, and from the North Pole to  
22 the South Pole.

23 Some of these new identified species are  
24 migratory. So, thank you. 2a-2-TR

25 FACILITATOR RIVERA: Thank you. It sounds

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1 These groups are invited to tour the plant on a  
2 regular basis.

3 And Davis-Besse representatives often  
4 visit schools, and other organizations, to provide  
5 presentations on nuclear power.

6 Recently the plant has hosted groups from  
7 Ohio State University, Bowling Green State University,  
8 and the University of Toledo.

9 Davis-Besse employees have organized  
10 several fundraisers, earning more than 5,000 dollars,  
11 to benefit local schools through events such as a golf  
12 outing and a chili cook-off.

13 Continued, long-term operation, of the  
14 plant will allow the Davis-Besse Nuclear Power  
15 Station, to maintain its commitment to education in  
16 Ottawa County, and beyond, both through annual tax  
17 contributions and the public outreach activities  
18 conducted by its dedicated professionals.

19 This is an invaluable contribution to our  
20 communities that will benefit students for generations  
21 to come. 3a-1-SL

22 Thank you for the opportunity to share my  
23 perspective on the benefits of license renewal for the  
24 Davis-Besse Nuclear Power Station.

25 FACILITATOR RIVERA: Thank you. For the

1 union jobs.

2 And it would also be devastating, I  
3 believe, to Ottawa County. IBEW 1413 believes that  
4 the approval of the additional 20 year license for  
5 Davis-Besse is not an option, but a must. 4-1-SL

6 The Draft Environmental Impact Statement  
7 supports this position and indicates that the impact,  
8 from extending the life of the plant is minimal, at  
9 most. Thank you.

10 FACILITATOR RIVERA: Thank you. Jodi  
11 followed by Larry Tscherne, and then Ron Donnal.  
12 Again, I'm very sorry if I mispronounce your name.

13 MS. REGAL: Good afternoon, I'm Jodi Regal,  
14 president of the Board of Ottawa County Commissioners.

15 I appreciate the opportunity to comment on  
16 the environmental impact of continued operations for  
17 the Davis-Besse Nuclear Power Station, through an  
18 extended license period.

19 The NRC has concluded, in its Draft  
20 Environmental Impact Statement, the adverse  
21 environmental impacts of license renewal for Davis-  
22 Besse are not great enough to deny the option of  
23 license renewal for energy planning decisionmakers.

24 From my viewpoint, as a county  
25 commissioner, adverse impacts don't arise from the

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1 continued operation of the plant, but would result  
2 from the shutdown of the plant at the end of its  
3 current licensing period.

4 Our nuclear energy facilities provide  
5 substantial economic benefits to the state, and the  
6 local community, including high paying jobs, and tax  
7 revenue, that help to fund local services, and help to  
8 keep property taxes much lower than they otherwise  
9 would be. 5-1-SL

10 Locally the Davis-Besse Nuclear Power  
11 Station is one of Ottawa County's largest employers,  
12 with more than 700 full-time employees. The plant  
13 contributes more than 13 million dollars, annually, in  
14 local and state taxes.

15 In addition, because of supplier demand,  
16 created by the plant, and consumer demand created by  
17 its employees, an additional 1,100 jobs are supported.

18 Most of these are small businesses that  
19 rely on this support to remain successful. We also  
20 appreciate the personal contributions the employees of  
21 Davis-Besse bring to our community.

22 Many are involved in civic organizations  
23 and educational endeavors, as well as providing many  
24 hours of community service. They are a good neighbor  
25 and friend to all of us.

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1           From the reactor operators, right on down  
2 to maintenance services, the warehousing, all the  
3 maintenance activities, we are very, very familiar  
4 with the safety culture.

5           The labor-management meetings that we  
6 hold, on a regular monthly basis, in addition to the  
7 work that we have done together, both here locally,  
8 and in Washington, through our labor-management  
9 committees, and through the IBEW's Code of Excellence.

10          Again, the safety culture, the dedication,  
11 and the craftsmanship, I could tell you, is second to  
12 none. First Energy has been very open and honest.  
13 Davis-Besse has been very open and honest on all  
14 issues with us.

15          I'm here to tell you that we test them,  
16 and we question them, on everything that goes, and  
17 there isn't anything that goes unturned.

18          And I think it is imperative that you go  
19 along with this process. Local 245 supports the  
20 approval of the license renewal, and we ask for your  
21 approval, also. Thank you. 6-1-SL

22          FACILITATOR RIVERA: Thank you. Next we  
23 will have Ron Donnal, followed by Bill Buckles, and  
24 then Brian Dicken.

25          MR. DONNAL: Good afternoon. My name is

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1 Ron Donnal, I'm with Gem, Incorporated. Gem is a  
2 local specialty contractor that provides construction  
3 and maintenance services.

4 Gem has a 30-plus year history at the  
5 Davis-Besse Nuclear Power Station. We currently have  
6 150 associates working on site.

7 Davis-Besse has provided a clean and safe  
8 place for our associates to work, and provide for  
9 their families, while providing reliable power for our  
10 communities. 7-1-SL

11 And I strongly support the extension of  
12 the operating license. Thank you.

13 FACILITATOR RIVERA: Thank you. Bill  
14 Buckles, followed by Brian Dicken. And that is the  
15 end of the pre-registered speakers. I have one more  
16 card over there. But if anyone else is inspired to  
17 speak we do have yellow cards out in the lobby, or we  
18 can bring you one if you let us know.

19 MR. BUCKLES: Thank you, I'm Bill Buckles,  
20 I'm a business agent with the Plumbers and  
21 Steamfitters and Service Mechanics in Northwest Ohio.

22 And bear with me, because I punched this  
23 out on my memo pad a little bit ago. Thank you,  
24 members of the NRC for providing me the opportunity to  
25 speak today.

1           AgaIn, my name is Bill Buckles, and I have  
2           been a lifelong resident of Northwest Ohio, living  
3           most of the time in the view of Davis-Besse Nuclear  
4           Power Plant.

5           I'm here today to support the license  
6           renewal application that will allow Davis-Besse to  
7           operate through 2037. 8-1-SL

8           I would have moved my family out of this  
9           area, years ago, if I did not have total confidence in  
10          the safety of this facility.

11          My confidence is bolstered, in part,  
12          because I have had the privilege of occasionally  
13          working at the plant as a member of the Northwest Ohio  
14          Piping industry.

15          As regular maintenance is done by well  
16          trained, highly skilled men and women, who take great  
17          pride in their work, and know the importance of  
18          maintaining a safe environment for us all.

19          I also support the license renewal because  
20          I strongly believe that nuclear power has to be part  
21          of the energy production mix in America, for both  
22          economic and environmental reasons.

23          Finally, as one of the largest employers,  
24          in Ottawa County, Davis-Besse is critical to the  
25          future economic development of this area. The more

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1 create 1,100 jobs, and another 45 and a half million  
2 in payroll, in the state, each year.

3 The report estimates that the total  
4 economic impact, of the Davis-Besse Power Station, is  
5 more than 440 million dollars.

6 Members of the Toledo Regional Chamber of  
7 Commerce directly, or indirectly, benefit from the  
8 operations of Davis-Besse.

9 Our members, nearly 85 percent, are small  
10 businesses, of 50 or fewer employees. These  
11 businesses, in particular, count on business like  
12 Davis-Besse to survive.

13 As your report concluded, we agree that  
14 granting an additional 20 year license, to the  
15 facility, can be done without adverse impacts to the  
16 environment of Northwest Ohio.

17 In fact, we believe it is necessary to  
18 preserve the economic stability of our area with the  
19 renewal. 9-1-SL

20 Livelihoods and jobs depend on affordable  
21 energy. Davis-Besse provides that as a resource, and  
22 we encourage the NRC to work with First Energy to  
23 renew the license. Thank you.

24 FACILITATOR RIVERA: Thank you. Our final  
25 registered speaker is Chuck McCune. If anybody needs

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1 public's awareness.

2 Because of First Energy's high standards,  
3 and commitment to excellence, in the nuclear industry,  
4 we feel that an extension of the existing license is  
5 a positive step forward and should be granted to First  
6 Energy. 10a-1-SL

7 Thank you.

8 FACILITATOR RIVERA: Thank you. I didn't  
9 see any hands go up, and I haven't seen any more  
10 yellow cards be submitted. Sorry. You can put a  
11 question on the record. However, you may not get a  
12 response from the NRC at this time. But they will be  
13 around after the meeting. Okay, go ahead. This is  
14 Victoria Clemens.

15 MS. CLEMENS: This is to talk about the  
16 economic benefits of having a nuclear power plant,  
17 reminded me of the question I forgot to ask, and I  
18 have always wanted to ask, and I have never found it  
19 on the NRC website.

20 You do socioeconomic studies, you do  
21 oodles of studies on economics. I would like one  
22 question answered. What value is used in your  
23 calculations for a human life? Can one of you answer  
24 that?

25 MR. LUBINSKI: This is John Lubinski, the

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1                   And we take those actions as they occur.  
2                   We don't wait for license renewal to address those  
3                   safety issues.

4                   FACILITATOR RIVERA: Thank you. Any other  
5                   yellow cards out there, for speakers?

6                   This is Connie Kline.

7                   MS. KLINE: Mine is also a question, so I  
8                   don't know if you will be able to answer it now.

9                   Was the recently approved wind farm in  
10                  Herndon and Logan Counties, I don't see how it could  
11                  have been factored in to the Environmental Impact  
12                  Statement, because it was just approved by the Ohio  
13                  Power Siting Commission last week, I believe.

14                  It is a 300 megawatt wind farm. Are you  
15                  familiar with this at all, or is this something you  
16                  are unfamiliar with? 11-1-AL

17                  MR. WITTACK: This is Brian Wittack, from  
18                  NRC headquarters.

19                  With regards to that particular wind farm  
20                  application, I would have to say at this point we are  
21                  not familiar with that. We will have to take that  
22                  back and take a look at the specifics of that.

23                  But given the recency of it, it was  
24                  probably not part of the assessment.

25                  MS. KLINE: Because it is, actually, it is

1 interest to our organization.

2 Today I would like to focus my comments on  
3 the jobs aspect. Without license renewal northwest  
4 Ohio would suffer economically, with the loss of more  
5 than 700 stable, well-paying jobs. 12-1-SL

6 That number includes only the direct full-  
7 time jobs at Davis-Besse. Also lost would be hundreds  
8 of jobs involving maintenance work completed during  
9 outages, a large number of which are provided through  
10 the union halls of northwest Ohio.

11 The trickle down effect would mean that  
12 businesses, all across the region, would suffer as  
13 well. Studies have indicated that employees, of  
14 Davis-Besse, spend tens of millions of dollars with  
15 area businesses each year, expenditures that would  
16 certainly be drastically cut in the event of a plant  
17 closure.

18 In addition many suppliers and vendor  
19 companies, in the area, which support the plant with  
20 goods and services would feel a significant loss as  
21 well.

22 These potential losses are not just  
23 hypothetical. Hard data, on the economic impact, from  
24 nuclear plant closures, can be found across the  
25 country.

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1 FACILITATOR RIVERA: Thank you. Our next  
2 speaker is Guy Parmigian, followed by Jamie Grant and  
3 Terry Lodge.

4 MR. PARMIGIAN: Good evening. My name is  
5 Guy Parmigian, and I'm a superintendent of the Benton-  
6 Carroll-Salem local school district.

7 I'm proud to say that the Davis-Besse  
8 Nuclear Power Station is located within our  
9 geographical border.

10 I know I speak for educators across  
11 northwest Ohio when I say that Davis-Besse serves an  
12 important role supporting the educational backbone of  
13 our communities.

14 In fact the plant provides more than 5.8  
15 million dollars, locally, in annual property taxes  
16 which provide a direct and substantial benefit to our  
17 school district. 3b-1-SL

18 Benton-Carroll-Salem schools is in a  
19 unique position in that, approximately, 20 percent of  
20 our revenues are a result of Davis-Besse's operation  
21 within the boundaries of our school district.

22 Given the unique relationship between our  
23 district and the Davis-Besse Nuclear Power Station I  
24 would be remiss if I did not discuss how Davis-Besse  
25 has been a good neighbor, community minded, and

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1 get enough for their own needs and were shut down  
2 temporarily.

3 This is just one recent and local example  
4 of the importance of maintaining a diverse supply of  
5 fuel for electricity production and the negative  
6 impacts, on consumers, when limited and unreliable  
7 electric supply is our only option.

8 In closing, nuclear power must continue to  
9 produce safe, reliable, electricity as a part of our  
10 country's diverse energy portfolio.

11 I strongly support the issuance of an  
12 additional 20 year operating license for Davis-Besse  
13 which will afford our region continued production of  
14 reliable power. 13-1-SL

15 This is vital to maintaining a business  
16 friendly environment, not just in Ottawa County, but  
17 in supporting the prosperity of northwest Ohio.

18 Thank you.

19 FACILITATOR RIVERA: Thank you. Next we  
20 will have Terry Lodge, followed by Dan Rutt, and  
21 Michael Leonardi.

22 MR. LODGE: Good evening, I'm Terry Lodge.  
23 I brought written comments, a written version of the  
24 comments I'm going to deliver. Shall I give them to  
25 the panel up here? Okay, I will, in a few minutes.

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1 I must say that I've been opposed to  
2 nuclear power for 40 years, nearly, and I'm still  
3 hearing the same propagandistic arguments that I heard  
4 40 years ago, as to why it is such a great beneficial  
5 thing.

6 I'm kind of amazed when the economic doom  
7 and gloom prognosticators appear at these kinds of  
8 presentations and talk about how if the plant closes  
9 down all is lost, when there is no discussion about  
10 the economics and the sustainability, and the  
11 reliability of good union jobs in factories, good  
12 union jobs in the construction and maintenance of  
13 solar rays, photovoltaic arrays, and wind generators,  
14 and installers of industrial and commercial  
15 conservation technology.

16 That isn't what I came to testify about,  
17 or to comment about tonight.

18 I represent Beyond Nuclear, I'm an  
19 attorney, represent Beyond Nuclear, Don't Waste  
20 Michigan, The Green Party of Ohio, and the Citizen's  
21 Environmental Alliance of Southwestern Ontario in the  
22 ongoing license renewal proceeding for Davis-Besse.

23 It is our opinion that circumstances, in  
24 recent weeks, which have happened in a comparative  
25 obscure media environment, have seriously undermined

14-1-RW

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1 the assumptions that have given rise to the GEIS  
2 conclusion, the Waste Confidence conclusion, that  
3 nuclear power plants, like Davis-Besse, can continue  
4 in operation, generating incredibly lethal waste  
5 products from fissioning, and that there would be  
6 adequate measures to contain the dangers from that  
7 waste for the forever period of time that it will be  
8 necessary to do so.

14-1-RW (cont.)

9 On February 4th, 2014, the assumptions of  
10 very low probability crumbled at the Energy  
11 Department's Waste Isolation Pilot Plant, which is,  
12 the short name is Wipp, W-I-P-P, near Carlsbad, New  
13 Mexico.

14 A fire in a large underground salt truck  
15 raged for hours. Ten days later an even more unlikely  
16 accident happened, wastes containing plutonium blew  
17 through WIPP's ventilation system, traveling 2,150  
18 feet to the surface, contaminating at least 17 workers  
19 and spreading small amounts of radioactive material  
20 into the environment.

21 More than a month after the fire the WIPP  
22 project remains closed. It is for the -- it is for  
23 the permanent dumping, the disposition of Department  
24 of Energy and military radioactive waste.

25 What happened underground is unclear at

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1 this point. It is not known whether the leak and the  
2 truck fire are connected. It is not known whether  
3 there was a waste drum explosion, or the collapse of  
4 the roof of one of the facility's storage chambers.

5 As DOE contractors are sending robots to  
6 explore the caverns at WIPP, the future of the world's  
7 only operating high hazard radioactive waste  
8 repository is quite uncertain.

9 The problem is, is that table S-3, that is  
10 -- appears in the NRC regulations, contains a  
11 discussion of the nuclear fuel waste disposition  
12 cycle. 14a-2-RW

13 And it assumes that there will be,  
14 essentially, perfect containment. The problem is that  
15 the DOE has, preliminarily, identified that somebody  
16 shut off the automatic sprinkler system in the caverns  
17 at WIPP.

18 And now there may be irretrievably,  
19 irremediably, radioactive tunnels that will make it  
20 forever, or at least for a very long and expensive  
21 time, very difficult to continue to use the facility.

22 I will be leaving my comments. But I  
23 understand, of course, that there is the ongoing Waste  
24 Con rulemaking proceeding.

25 But the point that the intervenors, in

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1 Davis-Besse, are here to make tonight, is that there  
2 is serious, recent, new information that calls into  
3 question table S-3, the very assumption on which  
4 plants like Davis-Besse are allowed, originally, to be  
5 licensed and allowed to be, to have their licenses  
6 renewed. 14a-3-RW

7 That the assumption being we can take care  
8 of the waste problem, it will be contained, there  
9 won't be forever problems posed to our children's  
10 children's, children's children.

11 That assumption has been grossly  
12 undermined. This facility has only been opened, and  
13 receiving waste, for about 15 years.

14 If it can't make it through the first  
15 generation, I am very skeptical that there will be a  
16 problem-free, continuing period, through the  
17 approximate 2030 time, when the WIPP facility is  
18 supposed to be full and closed.

19 The problem is that Table S-3 presumes  
20 that a repository built in salt formations is going to  
21 be stable and that, that presumption, that assumption  
22 may be about to be undermined for all time. 14a-4-RW

23 Thank you.

24 FACILITATOR RIVERA: Thank you. Next we  
25 will have Dan Rutt, Michael Leonardi, and then Joseph

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1 different. Perhaps the gentle whispers of our great,  
2 great, great, great, great grandchildren saying, good  
3 job, to the employees of the former nuclear industry.

4 And by good job they don't mean thanks for  
5 taking a decent paying job but, rather, holding out  
6 and demanding jobs, jobs friendly to both working  
7 families and our environment.

8 If we are truly heard today, then we might  
9 just hear the gentle whispers of our great, great,  
10 great, great, great, great grandchildren, thanking the  
11 nameless thousands across this great land, who worked  
12 for neither wages, nor shareholder profits but,  
13 rather, worked freely for a world where it doesn't pay  
14 to destroy our environment.

15 We must listen to our future generations.  
16 If not us, who? If not now, when? As for me, in this  
17 generation, I will gladly live without Davis-Besse.  
18 I will gladly trade the sliver of energy produced,  
19 during my lifetime, to spare thousands of generations  
20 the poison of nuclear waste.

15-1-OL

21 Though make no mistake. Even if the  
22 problem of nuclear waste disposal was somehow  
23 miraculously solved, I would still gladly trade this  
24 energy source, simply to avoid the probability of a  
25 nuclear catastrophe, from the safety disaster that

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1 Davis-Besse has so proven. Shut it down.

2 Please listen to the prophets who seek the  
3 good of all, not the prophets which only enrich the  
4 few at the expense of the 99 percent. Thank you.

5 FACILITATOR RIVERA: Thank you. Our next  
6 speaker is Michael Leonardi, followed by Joseph  
7 DeMare, and then Michael Keegan.

8 MR. LEONARDI: I think Dan summed it up  
9 all pretty well right there. And I just want to bring  
10 attention to a couple of things, to the NRC.

11 You mentioned, in the draft there, that  
12 there are no studies, that have been published in well  
13 recognized scientific journals, which I don't  
14 understand what that, the definition of that is.

15 But there are some studies that I would  
16 recommend that you look at, on the causative effects  
17 of the operation of nuclear power plants and public  
18 health. 16-1-HH

19 One is a recent report that came out just  
20 after this one was published on the 26th of February,  
21 was when you guys published this. This came out March  
22 3rd, 2014, and its title is, A Report of Health Status 16-2-HH  
23 of the California Residents in San Luis Obispo, and  
24 Santa Barbara Counties, Living Near the Diablo Canyon  
25 Nuclear Reactors Located in Avila Beach, California.

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1 That is the title.

2 And that does show a high probability of  
3 the causative effect on increased health risks in  
4 those counties. In fact it shows they do this baby  
5 tooth study, that I'm sure you have heard about, that  
6 shows that strontium 90 levels, in baby teeth, in  
7 those two counties, are 30.8 percent greater than the  
8 average for the rest of California.

9 The study is done by Dr. Joe Mangano, who  
10 is from the organization called Radiation and Public  
11 Health.

12 There is also a study written by Dr.  
13 Gordon Edwards, from Canada, on the effects of  
14 tritium, which I think is -- I don't have the title of  
15 it with me, but I recommend that one as well, Dr.  
16 Gordon Edwards and tritium. 16a-3-HH

17 If you just google it I'm sure it will  
18 come up. It is over a couple of decades old, I think.

19 Really that is all I wanted to address to  
20 the NRC. But I would like to say some more after  
21 hearing some of the comments tonight.

22 I think the previous comments before Terry  
23 and Dan, were, exemplify the fact that we live in what  
24 many of us call a corporateteocracy. And I really,  
25 I'm an educator, and it was really gut wrenching to

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1 ordinary people with no technical background. So it  
2 is taking us a little while.

3 But we are finding things, we are finding  
4 some things that are seriously wrong with this  
5 document.

17a-1-HH

6 In the area of errors of judgement,  
7 discussing the tritium leaks that happened, and have  
8 happened, and may still be happening at Davis-Besse,  
9 the -- there is a description of the measurements of  
10 tritium, and it shows a graph of how they were high,  
11 and then they went low, and they went up again, and  
12 then they went down.

13 And then the NRC, in this report, says  
14 that, well we have a plausible explanation for this  
15 leakage. Plausible explanation is not a high enough  
16 standard to protect any of us from tritium pollution.

17 Tritium has a half-life of about 12 years.  
18 And so the tritium that leaked from the plant and is  
19 now in the Lake Erie system, and in our fish, and in  
20 our drinking water, that will be around for 100 years,  
21 causing problems for us and our descendants.

22 And having a plausible explanation for why  
23 the plant is leaking is not satisfactory. We need to  
24 know why it is leaking in order to say, with any  
25 confidence, that it won't continue to leak over the

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1 next 20 years, if we re-license the plant.

2 Another error in judgement, a number of  
3 the comments on the original Environmental Impact  
4 Statement, talked about the cost, the high cost of  
5 nuclear power compared to the cost of solar power, and  
6 wind power which have both continued, solar and wind,  
7 to become more and more inexpensive. 17-2-AL

8 They have been getting cheaper and cheaper  
9 over the past four years, at an accelerating rate,  
10 while the cost of nuclear has been increasing.

11 When asked to consider this, in the report  
12 the author say that cost is not considered in the DEIS  
13 because that is not part of what they are supposed to  
14 do.

15 But I think that the cost of electricity  
16 has a direct impact on all of our socioeconomic well  
17 being. And socioeconomic well being is something that  
18 the NRC is required to protect.

19 Wind and solar are becoming the cheapest  
20 form of electrical generation. That is one reason they  
21 are the fastest growing form of electrical generation  
22 in the world.

23 Some errors of omission. Some comments  
24 were made about the algae blooms that we are  
25 experiencing here in Lake Erie. The NRC has said that 17a-3-HH

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1 there have been no reports of algae blooms near Davis-  
2 Besse.

3 Well, I have to tell you, it is here. I  
4 have personally seen it. I may not publish my reports  
5 in any journals, but I have been to the Ottawa  
6 Wildlife Refuge, and the local refuges, and I have  
7 seen piles of algae on the shoreline.

8 So it needs to be considered. And not  
9 considering it as an error of omission.

10 One of the largest, probably the biggest  
11 and most serious errors of omission, I'm quoting now:  
12 No studies to date, that are accepted by the nothings 17a-4-HH  
13 leading scientific authorities that indicate a  
14 causative relationship between radiation dose from  
15 nuclear power facilities, and cancer in the general  
16 public exists.

17 In other words, you are saying there  
18 aren't any studies linking living near a nuclear power  
19 plant to increased rates of cancer. And you list a  
20 number of studies that seem to indicate there isn't.

21 Well, the omission is the many, many  
22 studies which do show a link between living near a  
23 nuclear power plant and increased cancer rates.

24 I'm only going to name a few here, but  
25 there are many. One of them, one of the most famous is

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1 the KIKK study from Germany. In German it is called  
2 Kindesalter in Der Umgebung Westdeutscher  
3 Kerntechnischer Anlagen.

4 It sounds funny when I try to pronounce  
5 it, but it is a serious study. It shows that leukemia  
6 rates doubled within a five kilometer range of a  
7 nuclear power plant.

8 In 2012 the French government, I was going  
9 to say, it is not easy to find studies that show that  
10 your technology causes cancer, when your living  
11 depends on that technology.

17a-5-HH

12 But somehow France managed to do it, even  
13 though it is an incredibly nuclear dependent country,  
14 they published a study, it is called "The Childhood  
15 Leukemia Around French Nuclear Plants", and it was  
16 published in the International Journal of Cancer, in  
17 2012.

18 This study found, also, that leukemia  
19 rates for children doubled around nuclear power  
20 plants.

21 And here in the United States we have a  
22 tireless researcher, by the name of Dr. Joe Mangano,  
23 that a previous speaker alluded to. He has published  
24 32 peer reviewed articles in various publications  
25 around the country, and around the world, that show

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1 destroy cells, when they explode?

2 How can we put that into the environment  
3 and not cause cancer? I don't have a mechanism.  
4 Maybe the NRC does have a mechanism. Maybe there are  
5 radioactive fairies that catch them, and keep them  
6 away from us.

7 But, believe it or not, even though I am  
8 an environmentalist, I do not believe in fairies.

9 Finally, there are errors of fact. I'm  
10 going to start with a trivial one, just because it  
11 affected me personally. In the original document I'm

12 identified as speaker number 14, and at one point I  
13 am, I made a comment about the effect of the hot water  
14 discharge, from the plant, and how that affects  
15 invasive species. 17a-6-AQ

16 Because I believe warming the water  
17 encourages invasive species, such as the grass carp.

18 I was kind of surprised to see that you listed me as  
19 having said indicia species which is a word I didn't  
20 even know existed, until I saw it. It means  
21 indicators. It is the plural of the word indicators.

22 So thank you for expanding my vocabulary  
23 but that is not what I said. I'm talking about  
24 invasive species.

25 And, finally, one of the things that we

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1 are contending, I'm representing the Ohio Green Party,  
2 and we are part of the contention process, is that  
3 alternative energy can replace Davis-Besse, we do not  
4 need the Davis-Besse generation.

5 And there was talk, earlier, about 700  
6 jobs here. Well, there are 3,000 jobs at risk in  
7 Perrisburg, at the First Solar Plant. 17a-7-AL

8 We are at a point where we have to choose.  
9 Will we choose clean energy sources, like solar and  
10 wind, with thousands, tens of thousands of jobs, or  
11 will we continue to use nuclear power with hundreds  
12 and dozens of jobs?

13 Wind and solar are replacing nuclear power  
14 in countries like Germany and in other countries  
15 around the world. It is simply a fact of history. It  
16 can be done.

17 It takes additional technology, you have  
18 to be more aware of your grid, you have to have better  
19 meteorology so you can predict wind speeds. But it is  
20 happening all over the place.

21 And the point at which our contention was  
22 denied, by the -- it was accepted by the ASLB, but  
23 denied by the Commissioners, was a study that Davis-  
24 Besse, that FENOC actually cited.

25 This study, FENOC said, shows that wind

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1                   What was particularly lacking, and  
2 bothersome, is how alternative energy was pooh pooed,  
3 and can't have it, can't -- won't be baseload. And  
4 yet we are seeing it, it is happening now in real  
5 time. 18a-1-AL

6                   Just this past week a company came forward  
7 and said they were going to be building 300 megawatts  
8 of wind energy in Ohio and it would be up within 12 to  
9 18 months. It is doable.

10                   Just this week the interconnected grid,  
11 the largest grid in the U.S. said they could easily  
12 accommodate 30 percent wind and solar brought onto the  
13 grid.

14                   The alternative of First Energy seeking  
15 out alternative energy that they don't generate, that  
16 they could bring in through the grid, was not brought  
17 into consideration. 18a-2-AL

18                   This is a self-serving economic game here.  
19 And there's vested interest. I understand there are  
20 a lot of good jobs, paying jobs. But there will be  
21 more jobs in a renewable and alternative kind of  
22 economy, because those jobs are labor intensive.

23                   Whereas jobs in the nuclear industry are  
24 capital intensive, you get very few jobs for the money  
25 you spent.

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1                   Much of what I had planned to present  
2 tonight was on the new information coming out on the  
3 high burnup fuel that is being utilized at reactors  
4 around the U.S. that initially began in the early  
5 '90s.

6                   And I see, from a document that Davis-  
7 Besse was authorized, according to amendment number  
8 213, to move to a fuel cycle which lasted 730 days.  
9 What happens is the fuel gets super burnt up, becomes  
10 super hot, radioactively, and super hot thermally,  
11 decay. 18a-3-OS

12                   And it embrittles the actual cladding  
13 around the fuel rods. So when you pull it out of the  
14 spent fuel pool and go to put it in dry cask storage,  
15 you have a multitude of problems.

16                   It is not known how this will respond in  
17 a Yucca Mountain, or some other proposal. So the  
18 whole entire industry, for two decades, has been  
19 operating blind, and going about generating high  
20 burnup fuel.

21                   I would like to know exactly when did 18a-4-OS  
22 Davis-Besse begin their high burnup fuel cycles, and  
23 if indeed they will be projected to go for 20  
24 additional years of high burnup fuel cycles, when it  
25 is not known what to do with this waste that wasn't

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1 considered in the beginning.

2 I'm going to leave with you a document,  
3 generated by a Dr. Marvin Resnikoff, within the last  
4 month or so, speaking about the high burnup nuclear  
5 fuel and how problematic it is, and it was never taken  
6 into consideration. 18a-5-OS

7 I also had problems with how the issue of  
8 flooding has been addressed. And I don't believe it  
9 properly has. Lake Erie is known for its seiches  
10 that is where the wind, straight line wind blow the  
11 lake out, and it sloshes back and forth, back and  
12 forth. 18a-6-OS

13 In fact the recent storm, in 2012, on the  
14 East Coast, created a lot of havoc on the Great Lakes,  
15 and there were seiches, over on Lake Michigan, of 30  
16 feet high.

17 There have been sashes, historically,  
18 which have been 30 feet, 40 feet high. There have  
19 been recent seiches, over near Cleveland area, that  
20 actually came up and pulled people into the water.

21 It does happen. I would like to reflect  
22 back in 1972, when the Davis-Besse was underwater for  
23 nearly a month. But what I'm guaranteed, there is an  
24 elevation of 591, and the lake knows when to stop, and  
25 it does not come over that elevation.

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So the whole of flooding has been inadequately addressed, and has been swept under the rug. 18a-7-OS

So I, I'm disappointed in that my comments got sliced and diced. I'm vehemently opposed to this nuclear power plant. Certainly there has been some economic activity, it has been a boon to the region. 18a-8-OL

But the potential loss, the potential risk of losing an area the size of Pennsylvania, the hundreds of billions of dollars of property damage, hundreds of thousands of lives impacted, it is just a cost that we don't need to go into, we don't need to go down that road.

To generate one more ounce of nuclear waste is immoral, because we do not know what to do with what we have. All we have gotten was a Waste Confidence, a con game, we will figure out what to do with it later. 18a-9-OL

Now, many people look at Yucca Mountain, what a failure Yucca Mountain was. Yucca Mountain is a tremendous success because for 27 years it kept the lie alive, that you knew what to do with it, you don't.

You are just kicking it down the road, it is immoral what you are doing. It is now known you

1 don't know what to do with it.

2 And I would argue that the Nuremberg  
3 principles do apply here, today, in the actions that  
4 decisionmakers make going forward. Because it is not  
5 based on science.

6 It is based on economic drivers, and now  
7 we are looking at a plant that has just invested close  
8 to 6, 700 million dollars, on steam generators, which  
9 have not been scrutinized, which could not have been  
10 scrutinized, which Incadel 690 issue could have not  
11 been known, because it wasn't realized in two years  
12 ago. 18a-10-OS

13 The NRC did that on the oversight. The  
14 utility relied on an in-house studies, of 50/59  
15 processing, same, same, just checking it out, same  
16 piece of equipment going in.

17 The steam generators that came out weighed  
18 590 tons. The ones that are going in weigh 465 tons.  
19 That is not same for same.

20 So the NRC oversight, there has been a  
21 meltdown, there is no credibility with the Nuclear  
22 Regulatory Commission. And we see the inadequacy of  
23 the quality assurance of the Nuclear Regulatory  
24 Commission, when we realized, on Valentine's Day, we  
25 learn about a 25 foot gap in the concrete that is 12,

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1 6, 6 inches to 12 inches wide, 25 feet long. This is  
2 when the plant was crawling with inspectors.

3 And we were told that the cracks were not  
4 propagating, and everything was being looked at. A  
5 simple ultrasound would have found that. 18a-11-OS

6 But for over two years the NRC allowed  
7 them to operate that and only found it when they came  
8 in to cut a fourth hole into that shield building,  
9 which does not meet the design criteria, does not meet  
10 seismic qualification, which will crumble around that  
11 primary containment and, potentially, tip into the  
12 reactor.

13 So the NRC has no credibility in this  
14 process, whatsoever. Their ethics are their wallet,  
15 next to their science, and I'm sorry but this is a  
16 very sad process. And I will be vehemently oppose  
17 this plant, and I will follow it into the future.

18 FACILITATOR RIVERA: Thank you. Next we  
19 will have Pat Marida, followed by Alicia Rivers. And  
20 if there are any other cards, in the audience, that  
21 need to be picked up, or if you need a card, if you  
22 could just raise your hand?

23 MS. MARIDA: Hi, I'm Pat Marida, and I'm  
24 the Chair of the Ohio Sierra Club's Nuclear Free  
25 Committee.

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1           And I would like to address two -- we have  
2           seen the big company piped in, and they bring in 600,  
3           how many, 1,000 workers come in, and they move into  
4           your town, and then nobody thinks about what is going  
5           to happen when there is even more people out of  
6           employment, if something happens, and the plant shuts  
7           down.

8           This is the problem with these big  
9           centralized energy sources. That is why we are in  
10          favor of more decentralized.

11           So in talking about the GEIS, and the  
12          preliminary recommendation says that there is not  
13          enough adverse environmental impacts to deny the  
14          license renewal, the Sierra Club does not agree with  
15          that.

16           The NRC has wholly failed to acknowledge  
17          public concerns, as well as hard science, about the  
18          dangers of current and future radioactive  
19          contamination, and about nuclear power being a dated  
20          technology. 19a-1-OL

21           So in reviewing the supplement, the NRC  
22          must revisit contentions that the electricity can be  
23          readily replaced. And we have heard others talk about  
24          this. 19a-2-OS

25           But we are asking that the NRC review

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1 Emory Levens, and Mahajani's articles and books, on  
2 how both carbon and nuclear can be replaced with  
3 renewables by 2050.

19a-2-OS (con't)

4 So efficiency, and a slowdown of the  
5 economy have resulted in a drop in electric demand.  
6 And this confirms that trends of the past cannot be  
7 reliably extrapolated into the future while our  
8 continued demand for electricity.

9 So the concept of baseload is also a relic  
10 of the past. And centralized power sources, which  
11 with unwieldy and unreliable grids, they are a relic  
12 of the 20th century.

13 The nation is rapidly moving toward a more  
14 decentralized, and I must say, democratized and  
15 sustainable energy sourcing.

16 New jobs, energy jobs will be created by  
17 the people, where they already live, they won't be  
18 moving here, and have to be moving here and there.

19 There will be clean safe jobs, where no  
20 one needs to wear radiation detection badges. And we  
21 talked about the new wind farm that is coming down the  
22 pike.

19a-3-RW

23 The NRC must also address the most serious  
24 issue of nuclear reactors outside of an accident, or  
25 meltdown, which is of course, the radioactive waste.

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1           And longer, it will be here longer than  
2 First Energy, it will be here longer than the United  
3 States government. And it will be here longer than  
4 anything resembling the civilization that we now have  
5 today.

6           So kicking the radioactive can down the  
7 road, saddling future generations with the problems,  
8 and the expense of isolating these, our generation's  
9 nuclear waste is irresponsible at best, and criminal  
10 at worst.

11           So the NRC must address the environmental  
12 impact of Davis-Besse's waste, for the next few  
13 hundred generations. 19a-4-RW

14           And the whole business of when the Waste  
15 Confidence was overturned, by the Court, that meant it  
16 should be overturned, they should drop it, they should  
17 start looking at the waste.

18           But no, they wrote a new, they are writing  
19 a new one. So that as soon as they can pass this new  
20 one, then they can go ahead and license everything  
21 that is waiting. And it is just not the way it should  
22 go, it should happen.

23           The NRC should drop the waste confidence  
24 and start looking at the waste.

25           The Sierra -- well, we talked about --

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1 there was talk about the high burnup waste, and the  
2 Sierra Club would like the NRC to look at the high  
3 burnup waste. 19a-5-OS

4 And when the engineers aren't even sure  
5 how to handle this hotter than ever, hotter than  
6 imagined waste.

7 The Sierra Club, we have signed on to the  
8 principles for safeguarding nuclear waste at reactors.  
9 So what that, what those organizations that have  
10 signed on to that have, what it has said, it must be  
11 stored as close, as safely possible, to the site of  
12 generation. 19a-6-RW

13 It can't be left on Prairie Island, in the  
14 middle of the Mississippi River. You know, those  
15 places, it must be moved off of there.

16 But it can't, at the same time, it can't  
17 be moved out to Nevada, because that increases the  
18 risk of accidents along the way. 19a-7-RW

19 And the waste must not be put where it  
20 cannot be retrieved, and resealed. So what we are  
21 talking about is a rolling custody of the waste for  
22 generations to come.

23 We are also looking, I'd like to mention  
24 the possibility of the contamination, radioactive  
25 contamination of the fresh water of Lake Erie, and

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1 maybe Lake Ontario, and maybe the Great Lakes.

2 And any of these reactors, any of the 37  
3 reactors in the watershed of the Great Lakes could  
4 cause serious damage to our lakes. It never should  
5 have been allowed to happen. 19a-8-HH

6 So -- and what happened at Fukushima, you  
7 know, there was one chance in 100 billion that three  
8 reactors would melt down at the same time, and it  
9 happened.

10 So all, a lot of unimagined scenarios have  
11 happened already, and continue to take place. And,  
12 unfortunately, Davis-Besse is located where it has the  
13 potential to contaminate the waters of Lake Erie for  
14 an eternity, actually. 19a-9-HH

15 So we would ask the NRC to take special  
16 notice of the dangers of exposing our nation to the  
17 risk of losing Great Lakes' water.

18 The NRC should address, look at routine  
19 radioactive releases, that was mentioned before.  
20 There are tritium leaks, and so forth. 19a-10-HH

21 The NRC must address the increasing  
22 brittleness of the metal, and the cement, when it is  
23 in contact with the radioactivity, as the years  
24 progress. 19a-11-OS

25 Also the cracking of the shield building,

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1 and the determination that the cracks were the result  
2 of the blizzard of '78 was proved to be inaccurate,  
3 because the cracks are now widening, which cracks do  
4 over time. 19a-12-OS

5 Which most people would have figured that,  
6 would have thought that that would be the conclusion,  
7 and that was what happened.

8 And the fourth cutting of through the  
9 shield building that will weaken that. And as one  
10 engineer put it, the shield building will hold up just  
11 fine until something stresses it.

12 So, and then we have heard about the 25  
13 foot gap. So we are trying to imagine how this could  
14 happen, when multiple inspectors, supposedly on the  
15 job all the time, and then also who knows how to pour  
16 concrete there? 19a-13-OS

17 I mean, that is pretty -- that should have  
18 been a pretty routine and regular thing. So how, how  
19 does a mistake like that happen at a nuclear power  
20 plant is incredible, I'm incredulous about that, too.

21 So personally I'm a volunteer, I'm not  
22 paid to be here, like FENOC or the NRC. I spend my  
23 own gas money to drive up from Columbus. I spend my  
24 retirement days and evenings, also, attempting to keep  
25 the world a safer place for my grandchildren.

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1           So -- the last thing I want to talk about  
2           was that the -- if I read this right, it says that,  
3           the supplement says that it has relied on consultation  
4           with the tribes.

19a-14-CR

5           And so with that consultation with the  
6           tribes, if I read this right, said consisted of  
7           writing letters to eight tribes, seven of which  
8           letters went unanswered.

9           So we would like the NRC to have actual  
10          dialogue with all of these eight tribes. And dialogue  
11          should take place at, or close to, the tribal  
12          location, where the Native American cultural  
13          traditions can be respected, and where they don't have  
14          to drive long distances, or whatever.

15          So thank you.

16          FACILITATOR RIVERA: Thank you. Next we  
17          are going to hear from Alicia Rivers, followed by  
18          Valerie Crow and Kevin Garn.

19          MS. RIVERS: My name is Alicia Rivers and  
20          I'm from Columbus, Ohio. And fortunately everybody  
21          else has said most of what I was going to say so this  
22          will be very brief.

20-1-AQ

23          One thing that surprised me, about what  
24          was said tonight, is that the impact that is expected  
25          for surface water, and groundwater, from a license

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renewal by Davis-Besse, would be very small.  
And I just wonder how, in this world, after our experience with Fukushima, and with what we know of climate change, we could possibly be saying something like that now.

20-1-AQ (cont')

We know that even in our cities, our infrastructure for handling floods is not good enough. So what happens when Davis-Besse experiences some of those rising water levels?

And is it going to be anything like it is at Fukushima, which has now poured hundreds of thousands of gallons of radioactive water into the ocean?

Is there a mechanism that will absolutely guarantee us that Lake Erie will not have that same experience from some of the climate change that we are likely to experience here?

20-2-AM

Second, it seems to me that based on the uncertainty that we are facing, with the changes that are going to come about, as our climate changes, we can't be sure of anything.

And that if there is something that we could depend on, it would be that things would get better if we would reduce risks.

So the best thing that we could do, for



1           Those folks who were working out there,  
2 those workers for that facility, didn't expect to be  
3 breathing in radioactive particles that would damage  
4 their health.

5           And that same air is likely to be blown a  
6 little north to Albuquerque. And so much of the  
7 radioactivity out west has been blown all over the  
8 place, and has contaminated so many lives, and so much  
9 land.

10           I just wonder how we can live with  
11 ourselves, how can we consider ourselves to be ethical  
12 and humane creatures, when we continue making nuclear  
13 waste, and distributing it all over the planet?

14           My children, I'm afraid, aren't going to  
15 be able to find a single foot of ground, in this  
16 earth, that is safe for them to be on, or air safe to  
17 breathe. 20-3-OL

18           And Davis-Besse's license extension isn't  
19 going to help that problem. It will exacerbate it.  
20 Thank you.

21           FACILITATOR RIVERA: Thank you. I would  
22 now like to offer the podium to Valerie Crow, followed  
23 by Kevin Garn.

24           MS. CROW: My name is Valerie Crow. I  
25 watched Davis-Besse being built, and I have had the

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1 seems like it is all about the money. Well, if we  
2 destroy anything no amount of money is going to bring  
3 that back. Thank you.

4 FACILITATOR RIVERA: Thank you. Our next  
5 speaker is Kevin Garn. And if there is anyone else in  
6 the audience that needs a card, or has a card, please  
7 raise it.

8 MR. GARN: Good evening, my name is Kevin  
9 Gar.

10 I served two tours in the Marines, running  
11 computerized payroll systems, and went to work for  
12 Davis-Besse. Five years I spent with the Marines was  
13 nothing compared to what I have seen at Davis-Besse.

14 801805 Revision 27 gave the plant manager  
15 permission to override QA. I reported it to the NRC.  
16 The NRC says we need this many, this much time to  
17 investigate.

18 When I called the NRC back they had lost  
19 the file. Senators Metzemaum and Glenn became  
20 involved, and the NRC decided to open the case again.  
21 There were three violations and a fine of 275,000  
22 dollars.

23 I thought this was the United States of  
24 America. I didn't know utility companies could tell  
25 people not to go to the NRC. I thought this was the

22-1-OS

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21-1-RW

1 same objection, the entire time, since before they  
2 built it, what are you going to do with the waste?

3 If you can't answer that question it was  
4 why were we building these plants, this one  
5 especially? And so close to the source of water that  
6 we all use.

7 I live in Michigan now, but my water comes  
8 from Toledo, which comes from lake Erie. I'm  
9 concerned that we have storage that is going to stay  
10 at this plant forever.

21-2-RW

11 How is that going to -- how are we going  
12 to protect the lake? Davis-Besse has a pretty lousy  
13 safety record, actually. We act like there is some  
14 kind of a lack of ways to move forward, but we have  
15 renewable energy, we can generate enough power.

21-3-AL

16 We are doing it now, Davis-Besse is not  
17 running, and we still have lights. In my Native  
18 American background we say that we are here to make  
19 decisions, and we should be thinking about the next  
20 seven generations coming after us, in all our  
21 decisions.

22 And if we cannot, in clear conscience, say  
23 that there is going to be a better outcome, or good  
24 outcome, then we shouldn't be doing these things.

25 A lot of what I hear being said here, this

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1 land of the home of the free and the brave.

2 Davis-Besse is an old plant. As it ages  
3 more accidents will happen. I'm against this renewal,  
4 and I don't think it is right. Thank you for your  
5 time. 22-2-OL

6 FACILITATOR RIVERA: Thank you. Our next  
7 speaker is Chuck McCune.

8 MR. McCUNE: Good evening, my name is  
9 Chuck McCune, I'm an electrician for Local 8, with the  
10 International Brotherhood of Electrical Workers, those  
11 bad guys.

12 I have been working this electrical  
13 industry for over 34 years. My brothers and sisters  
14 built this facility over 35 years ago, with a lot of  
15 pride, and a lot of hard work.

16 This plant has been the livelihood for  
17 many of my brothers and sisters, for that time. We  
18 are tradesmen, and tradeswomen, who install the backup  
19 systems, the backup to the backup systems, the safety  
20 systems, the radiation detection systems, the  
21 emergency shutdown systems, and many more.

22 These systems have all been installed, and  
23 upgraded, many times for the safety of this plant, its  
24 personnel, the community and the environment.

25 The work we have done, at this facility,

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1 is of the highest quality because of two things.  
2 First the management has the highest standards for  
3 human performance of any work on the site.

4 And, second, we all live in this area. If  
5 we felt that there was a problem with this facility,  
6 we would be the first to bring this to the public's  
7 awareness.

8 Because of First Energy's highest  
9 standards, and a commitment to excellence in the  
10 nuclear industry, we feel that an extension of this  
11 licensing is a positive step forward, and it should be  
12 granted to First Energy. Thank you. 10b-1-SL

13 FACILITATOR RIVERA: Thank you. Are there  
14 any other cards in the audience that need to be  
15 collected?

16 (No response.)

17 FACILITATOR RIVERA: Having none I would  
18 like to offer the opportunity, to John Lubinski, to  
19 offer a few remarks.

20 MR. LUBINSKI: Good evening, everyone. As  
21 Alison introduced me, earlier, I'm the Director of the  
22 Division of License Renewal at NRC Headquarters.

23 And I wanted to start by thanking everyone  
24 for being here tonight. I appreciate it, I know how  
25 valuable everyone's time is. You being here tonight

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For Immediate Release:

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**Local Youth Group Finds State Endangered Species at Port Clinton's Lakefront Preserve**

→ The Ohio Young Birders Club (OYBC) hosted a BioBlitz at Port Clinton's Lakefront Preserve on July 23, 2011, and the results might surprise you. Well over 200 species of living things were documented on the property which lies on the shores of Lake Erie between City Beach and Water Works Park. This area, a coastal wetland habitat, provides a home to many unique plants and animals.

Over 30 people, including student members from Michigan and Illinois, participated in the daylong BioBlitz event. A BioBlitz is an effort to identify all of the living things on a property. Participants collected species information that serves as a valuable tool for helping to maintain the habitat, and provides baseline data that will assist in evaluating the success of ongoing restoration efforts.

In addition to surveying the property for birds, insects, turtles, and snakes, the group also sampled Lake Erie for aquatic critters including fish and mussels. ~~Assisted by University of Toledo graduate student Todd Crail, the Young Birders Club was able to document the state endangered Eastern Pond Mussel and the Rayed Bean Mussel, a species that is currently being considered for the United States Endangered Species List.~~

2-1-TR

RAY BEAN  
ADDED TO  
FEDERAL  
LIST  
2/14/2012

Other species highlights from the day included Bald Eagle, Painted Turtle, and a Bronze Copper butterfly. The Young Birders Club will continue to monitor the species that are using the property. BSBO's Education Director Kenn Keffer says they have a bit more surveying to do. "Our experts on insects and aquatic plants couldn't make it that day, so we're bringing them back to complete our inventory. Once we fill in those gaps in our survey, the total number of species inventoried will really jump! It was a great day and we were blown away by all the cool critters we found!"

The group expects to add many additional bird species during their Big Sit for Conservation fundraiser to be held on the property on October 9th, when they'll be raising money for the OYBC and restoration efforts at the Lakefront Preserve.

The Ohio Young Birders BioBlitz was a collaborative effort between the Black Swamp Bird Observatory and the City of Port Clinton. The BioBlitz was also supported in part to thanks to grants from the Harry Stensen Memorial Trust and the Ottawa County Community Foundation.

The Ohio Young Birders Club is a statewide program of the Black Swamp Bird Observatory, and is now in its fifth year of connecting young people ages 12 - 18 with outdoor experiences.

For more information about the BioBlitz, Black Swamp Bird Observatory, and the Ohio Young Birders Club email: staff@bsbo.org or call: 419-898-4070.

Provided by Victoria Clemons at March 25, 2014  
Public meeting regarding Davis-Besse draft SEIS

Cindy Bladey  
Chief, Rules, Announcements, and Directives Branch  
Office of Administration  
Mail Stop: 3WFN-06-44M  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

RE: NUREG-1437, Supplement 52, Generic Environmental Impact Statement  
Regarding Davis Besse Nuclear Power Station, Docket ID NRC-2010-0298

Comment on the license renewal of Davis Besse and the DGEIS.

My comments relate to both the Severe Accident Mitigation Alternatives or SAMAs used in the DGEIS and to postponing all Environmental Impact Statements for nuclear power plants until the Commission has revised their guidance on NUREG-1530.

The results of the evaluation of 167 "severe accident mitigation alternatives" or SAMA candidates for Davis Besse indicated no enhancements to be potentially cost-beneficial for implementation at Davis-Besse and none will be implemented at Davis Besse. Of the 167 safety measures considered, 107 were eliminated based only on a quantitative cost-benefit analysis. That is, 107 recognized possible safety enhancements for continuing operations another 20 years will not be done, or required, because ... "they are not cost effective".

2c-1-PA

These safety features range from hardened containment vent filters to fire and flood safety measures. All 107 safety enhancement actions were considered too "expensive" by both FENOC and the NRC. My comments today will try to focus on the quantitative data used to make these decisions, but the knowledge or qualitative data that is known leads to a discussion of ethical decisions that need to be made by regulators. Should safety features be required even if they are expensive? Seat belts were made mandatory to save lives and unleaded fuel was made mandatory for clean air even though they would add to the final cost to consumers. Which, if not all of Davis Besse's SAMA considerations should be implemented regardless of cost?

In order for cost-benefit calculations to be performed all costs and benefits must be expressed in a common measure, dollars, including things not bought and sold on markets, and to which dollar prices are therefore not attached. The most dramatic example of such things is human life itself. Many of the other benefits achieved or preserved by environmental policy — such as peace and quiet, fresh-smelling air, clean water, spectacular vistas and the environment we share with other biological species — are not traded on markets either. The Nuclear Regulatory Commission (NRC) uses a dollar figure for the value of human life that is 1/2 to 1/3 the value used by other federal agencies - \$3 million dollars is used by the NRC to calculate these cost-benefit analyses.

2c-2-PA

The Food and Drug Administration declared that one human life in cost-benefit analyses was worth \$7.9 million in 2010, up from \$5 million in 2008, in proposing warning labels on cigarette packages featuring images of cancer victims.

The Transportation Department uses a Value Statistical Life (VSL) figure of \$9.1 million in current dollars and with wage forecasts from the Congressional Budget Office, there will be an expected 1.07 percent annual growth rate in median real wages over the next 30 years (2013-2043). These estimates imply that VSL in future years should be estimated to grow by 1.07 percent per year. [1]

The Environmental Protection Agency set the value of one human life at \$9.1 million in 2010 when proposing tighter restrictions on air pollution. The agency used numbers as low as \$6.8 million during the George W. Bush administration. These VSL numbers may keep climbing. In 2010, the E.P.A. said it might set the value of life number for preventing cancer deaths 50 percent higher than other deaths, because cancer kills slowly.

In sharp contrast the Nuclear Regulatory Commission (NRC) uses a dollar figure for the value of human life that is roughly one third of the value used by other federal agencies - \$3 million dollars. The \$3 million dollar price tag can be found in the NRC regulation, NUREG-1530 section 6.6, written 2 decades ago in 1995. The regulation then proffers a discussion (since not every one dies and that they may only get cancer) a conversion factor is set at \$2100 per person-rem exposure to radionuclides which is then further discounted to \$2000 per person-rem in section 8.

So we see - the EPA finds cancer and cancer causing deaths to be more debilitating over time and they would like to raise the \$9.1 million another 50%, while the NRC discounts the value of human life and discounts cancers. The NRC has not adjusted the VSL in 19 years for inflation or for new empirical studies. The nuclear industry is not being held to the same standards of safety for human life or the environment.

2c-3-OS



The nuclear industry is an unsafe industry, which needs to pay the cost to keep the human race and the environment safe. You may argue then that the cost of the energy it produces will go up and that is a valid statement – but as the true cost of nuclear energy comes apparent the cost of “safe” energy and alternative energy becomes more competitive and more desirable.

The decisions that must be made by government involve painful choices. These decisions affect not only the distribution of goods and benefits, but also of physical and mental suffering. It’s easy to understand why people would want to avoid making such choices and would rather rely on “the numbers” than with knowledge and responsibility for the consequences of their choices. While this may be understandable it is not an acceptable moral position. To govern is to choose, and government officials—whether elected or appointed—betray their obligations to the welfare of the people who hired them if they adopt a policy of ignorance and non-responsibility for consequences.

It would be in the best interest of the environment and for human life itself that the **Davis Besse DGEIS as well as all other nuclear power plant EISs be put on hold for revisions to the NRC VSL figures and SAMA cost analysis procedures** which are expected to be revised by the end of 2014.<sup>[4]</sup>

2c-4-OL

Respectfully,  
Victoria Clemons, R.Ph.  
Port Clinton, Ohio

CC: Mark A. Satorius, Executive Director for Operations

[1] Memorandum – Guidance on Treatment of the Economic Value of a Statistical Life in U.S. Department of Transportation Analyses. <http://www.dot.gov/sites/dot.dev/files/docs/VSL%20Guidance.doc>

[2] U.S. Environmental Protection Agency (2010). *Valuing Mortality Risk Reductions for Environmental Policy: A White Paper (Review Draft)*. Prepared by the National Center for Environmental Economics for consultation with the Science Advisory Board – Environmental Economics Advisory Committee.

[3] A current survey of theoretical and empirical research on VSL may be found in: Cropper, M., J.K. Hammitt, and L.A. Robinson (2011). “Valuing Mortality Risk Reductions: Progress and Challenges.” *Annual Review of Resource Economics*. 3: 313-336. <http://www.annualreviews.org/doi/abs/10.1146/annurev.resource.012809.103949>

[4] Update to Dollar per Person-Rem Conversion Factor Guidance: Per SRM-SECY-12-0110, the staff continues its work to update NUREG-1530, “Reassessment of NRC’s Dollar per Person-Rem Conversion Factor Policy.” NUREG-1530 provides guidance for monetizing the health detriment resulting from radiation exposure. Through interagency meetings, the staff is considering the knowledge developed by other federal agencies in this area. The staff will engage external stakeholders and seek approval from the Commission prior to finalizing this NUREG, which is expected in late 2014. <http://www.nrc.gov/reading-rm/doc-collections/commission/secys/2014/2014-0002scy.pdf>

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March 25, 2014

**PUBLIC COMMENTS OF BEYOND NUCLEAR, DON'T WASTE MICHIGAN, GREEN  
PARTY OF OHIO AND CITIZENS ENVIRONMENT ALLIANCE OF  
SOUTHWESTERN ONTARIO TO U.S. NUCLEAR REGULATORY COMMISSION  
ON DRAFT SEIS FOR DAVIS-BESSE NUCLEAR POWER STATION  
OPERATING LICENSE EXTENSION**

I represent Beyond Nuclear, Don't Waste Michigan and the Citizens Environment Alliance of Southwestern Ontario in the pending license renewal proceeding for Davis-Besse.

It is our opinion that circumstances in recent weeks in New Mexico have seriously undermined the assumptions that have given rise to the generic conclusion that nuclear power plants like Davis-Besse can be allowed to continue in operation, generate incredibly lethal waste products from fissioning, and that there will be adequate measures in place to keep those deadly genies bottled up for the necessary tens or hundreds of thousands of years.

14b-1-RW

On February 4, 2014, assumptions of very low probability crumbled at the Energy Department's Waste Isolation Pilot Plant (WIPP) near Carlsbad, New Mexico, when a fire in a large salt truck raged for hours, deep underground. Ten days later, an even more unlikely accident happened: Wastes containing plutonium blew through the WIPP ventilation system, traveling 2,150 feet to the surface, contaminating at least 17 workers, and spreading small amounts of radioactive material into the environment

More than a month after the fire, WIPP remains closed, and what happened underground remains unclear. It is not known whether the leak and the truck fire are connected; a waste-drum explosion or the collapse of a roof of one of the facility's storage chambers could be to blame for the radiation event. As DOE contractors send robots to explore WIPP's caverns, the future of the world's only operating high-hazard radioactive waste repository is uncertain.

The fire is believed to have started when diesel fuel or hydraulic fluid leaked inside a truck's engine compartment. The fire consumed the driver's compartment and the truck's large front tires, which produced copious amounts of thick black smoke, prompting 86 workers to be evacuated. Six workers were treated at the Carlsbad hospital for smoke inhalation, and another seven were treated at the site. Workers have not been allowed back in the mine since.

The Energy Department investigation report of March 14 concluded the fire could have been prevented had the contractor and Energy Department site managers bothered, after being repeatedly warned, to remove a buildup of flammable material in the mine, to regularly maintain

trucks and equipment, and to correct emergency response deficiencies. Moreover, the automatic fire suppression system had been turned off before the fire. There was also a radiation leak which may or may not be connected to the truck fire. Among possible causes of the leak, a waste drum explosion is now under consideration. Waste drums containing transuranics generate hydrogen, methane, and other volatile gases which, if unvented, can build up and, if ignited, explode.

Concerns have also been raised about the possibility of a storage room ceiling or wall collapse. Eventually, when WIPP closes, sometime after 2030, the salt formation is expected to slowly collapse and seal off the drums of waste. But this was not expected to happen until long after the repository is filled and closed. If a collapse has already occurred, just 15 years after the facility opened, it will raise additional questions about WIPP's ability to ensure engineered barriers and institutional controls will work for a 10,000 year period.

Intervenors in the NRC's pending "waste confidence" decisionmaking process have warned, authoritatively, of the dangers of storing high-level radioactive waste in salt formations. Physicist Arjun Makhijani filed a formal declaration with the NRC on December 20, 2013 [<http://www.cleanenergy.org/wp-content/uploads/MakhijaniDeclaration.pdf>], in which he stated:

14b-2RW

(p. 6/70)

"Disposal impacts are relevant because they are part of the waste confidence finding that a mined geologic repository is feasible. By definition of such feasibility, such a repository must meet reasonable health and safety standards. Moreover, we note that Table S-3 at 10 CFR 51.51 is invalid for estimating high-level waste disposal impacts. Among other things, its underlying assumption of disposal in a bedded salt repository for spent fuel disposal was repudiated by the NRC itself in 2008. {citation: U.S. Nuclear Regulatory Commission. 10 CFR Part 51: [Docket ID-2008-0482]: Waste Confidence Decision Update," Federal Register, v. 73, no. 197 (October 9, 2008): pp. 59555. On the Web at <http://www.gpo.gov/fdsys/pkg/FR-2008-10-09/pdf/E8-23381.pdf>. "FR DOC # E8-23381" "Proposed Rules"}

(p. 9/70)

3.5. Proposed Table B-1 is inconsistent with another regulation that also makes a finding on the same subject: Table S-3 in 10 CFR 51.51.<sup>1</sup> Table S-3 summarizes the NRC's conclusion that the impacts of spent fuel disposal will be zero, based on the assumption that spent fuel will be disposed of in a bedded salt repository. Proposed Table

<sup>1</sup>[Footnote 26 of Makhijani's statement reproduced here:] The Draft GEIS acknowledges that "[t]he environmental impacts of portions of the uranium fuel cycle that occur before new fuel is delivered to the plant and after spent fuel is sent to a disposal site have been evaluated and are codified" in 10 CFR 51.51 and Table S-3. [U.S. Nuclear Regulatory Commission. Waste Confidence Generic Environmental Impact Statement: Draft Report for Comment. (NUREG-2157) Washington, DC: Waste Confidence Directorate, Office of Nuclear Material Safety and Safeguards, NRC, September 2013. On the Web at <http://pbadupws.nrc.gov/docs/ML1322/ML13224A106.pdf>. Page1-22)]

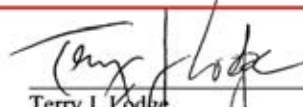
B-1 contradicts Table S-3 by concluding that long-term doses could be as high as 100 millirem per year. But the NRC does not attempt to reconcile proposed Table B-1 and Table S-3; nor does it address the fact that in the 2008 Draft Waste Confidence Update, it repudiated bedded salt as a geologic medium for a repository.<sup>2</sup> Nothing in the NRC's response to public comments on this point negated this repudiation of the unsuitability of bedded salt for spent fuel disposal.<sup>3</sup>

Dr. Makhijani's conclusion is that "[t]he NRC's understanding today is that radiation doses to the public could be well above the zero exposure assumed in Table S-3." (Statement p. 41/70).

I understand that there is an ongoing rulemaking proceeding over waste confidence, but the point the Intervenor in the Davis-Besse license renewal case are here to make to you, tonight, is that there is serious recent new information that calls into question the Table S-3 assumptions that allowed Davis-Besse to be licensed in the first place, much less granted an extension. The NEPA document for the LRA cannot be considered thorough and fully-disclosing without scientific reconsideration of the assumption that the dangerous garbage from nuclear fissioning will not pose horrific hazards to less-informed and more vulnerable populations in the poorer which are likely to be found in the, overpopulated world of the future. The NRC itself has repudiated the science of WIPP, yet relies on that now-discredited science for one of the fundamental driving rationales for commercial nuclear power. The time of reckoning commenced February 4. You must heed the lesson and shut Davis-Besse down, not allow it to limp through another score of years, creating even more uncontainable lethality for our children's children.

14b-3-OS

14b-4-OL

  
Terry J. Lodge  
Counsel for Intervenor

<sup>2</sup>[Footnote 27 from Makhijani statement reproduced here] U.S. Nuclear Regulatory Commission. 10 CFR Part 51: [Docket ID-2008-0482]: Waste Confidence Decision Update," Federal Register, v. 73, no. 197 (October 9, 2008): pp. 59555. On the Web at <http://www.gpo.gov/fdsys/pkg/FR-2008-10-09/pdf/E8-23381.pdf>. "FR DOC # E8-23381" "Proposed Rules").

<sup>3</sup> [Footnote 28 from Makhijani reproduced here] U.S. Nuclear Regulatory Commission. "10 CFR Part 51: [NRC-2008-0482]: Waste Confidence Decision Update," Federal Register, v. 75, no. 246 (December 23, 2010): pp. 81043 and 81044. On the Web at <http://www.gpo.gov/fdsys/pkg/FR-2010-12-23/pdf/2010-31637.pdf>. "FR DOC # 2010-31637" "Update and final revision of Waste Confidence Decision."]

RULES AND DIRECTIVES  
BRANCH  
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Submission Type: Web

# PUBLIC SUBMISSION

2014 APR 25 AM 10: 59

**Docket:** NRC-2010-0298  
Receipt and Availability of Application for License Renewal

RECEIVED

**Comment On:** NRC-2010-0298-0033  
License Renewal Application for Davis-Besse Nuclear Power Station, Unit 1; Draft Supplemental Generic Environmental Impact Statement

**Document:** NRC-2010-0298-DRAFT-0041  
Comment on FR Doc # 2014-05021

## Submitter Information

3/7/2014  
79 FR 13079  
18

**Name:** Michael Leonardi  
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2486 Robinwood C  
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## General Comment

It goes without saying that in the dismal oligarchy that we find ourselves living in:  
<http://www.bbc.com/news/blogs-echochambers-27074746> -- the studies were cited in newspapers across the globe -- exercises like these are a completely futile waste of time and energy. I have seen several of the other comments that have been submitted and they have already covered much of what I see as important. I especially refer you to the comments of Joseph Demare regarding medical studies on the harmful effects of radiation, especially from aging nuclear reactors and the studies of Joe Mangano. I did want to point you to the studies on Uranium and Tritium by Canadian Doctor, Gordon Edwards: His organization's website is a wealth of information on the harmful health effects of radiation on human beings and provides in-depth detail on how, exactly, this radiation enters the human body and effects human health. <http://www.ccnr.org> . [http://www.ccnr.org/tritium\\_1.html](http://www.ccnr.org/tritium_1.html) . Do what you will with them and even if you do your jobs well, which would mean NEVER recommending another license renewal of any existing nuclear power plant and the revocation of all previously granted, rest assured that the political hacks appointed to the commission will dismiss your work as irrelevant and you may go on pushing paper on the taxpayer's dime.

16b-1-HH

SUNSI Review Complete  
Template = ADM - 013  
E-RIDS= ADM-03  
Add= E. Keegan (enk)

3/7/2014  
79 FR 13019

11

### Comments on the Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 52

Regarding Davis-Besse Nuclear Power Station

Report number NUREG-1437, Supplement 52, Docket ID NRC-2010-0298

ATTN: Cindy Bladey, Chief, Rules, Announcements, and Directives Branch (RADB), Division of Administrative Services, Office of Administration, Mail Stop:3WFN-06-A44MP, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001.

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2014 MAR 22 PM 2:10

RULES AND DIRECTIVES  
BRANCH  
L-5000

The following comments are in response to the Draft Generic Environmental Impact Statement (DGEIS), Report number NUREG-1437, Supplement 52, in regards to the Davis-Besse relicensing application, Docket ID NRC-2010-0298.

In reviewing the DGEIS, it is important to keep in mind the central purpose of the NRC, that is "to protect health and safety and minimize danger to life or property." This report fails to do so because it is filled with errors: errors in judgement; errors of omission; and errors of fact. These errors consistently prioritize protecting the profits and investments of FENOC over the health and safety of the public. In fact, events which have occurred and information which has come to light since the original Environmental Impact Statement was submitted, have made it increasingly clear that the only way for the NRC to fulfill its primary mission is to transition from an agency which promotes nuclear power to one which oversees an orderly transition away from nuclear power and towards the safe decommissioning of all nuclear power plants. These new and significant events include: the nuclear disaster in Fukushima, Japan; numerous studies published since the original EIS which show a link between living near a nuclear power plant and increased cancer rates; and increasing demonstrations that non-polluting energy sources such as wind and solar power can reliably replace nuclear power.

#### Section One: Errors of Judgement

The clearest demonstration of the NRC's bias towards promoting nuclear power and against protecting the health and safety of the public shows up in this report whenever the agency is required to make a judgement or an estimate. In these cases, the NRC makes judgements and predictions that fly in the face of reality and common sense in order to justify the license renewal.

For example, the agency estimates in Appendix F (Section F.2.1) that the frequency of a core damaging accident is once every hundred thousand years. This fanciful estimate comes despite the fact that there have been numerous core damaging accidents within the last fifty years, including Enrico Fermi 1, Three Mile Island, Chernobyl, and the three nuclear meltdowns at Fukushima. A more accurate estimate, based on actual real world experience, is that nuclear plant meltdowns occur approximately once every 10 years.

17b-1-PA

SUNSI Review Complete  
Template = ADM - 013  
E-RIDS = ADM-03  
Add = E. Keegan (enr)

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on behalf of the Ohio Green Party

17b-2-PA

Not surprisingly, the factors that led to NRC's incorrect estimate are also wildly wrong. Tornadoes, floods and other external events are estimated to occur, cumulatively, once every 100,000 years. On page F11, the NRC States, "Based on this result, the applicant concluded that these other external hazards would be negligible contributors to overall core damage and did not consider any plant-specific SAMAs for these events." However, Davis-Besse has already been hit by a tornado. On June 24, 1998 the plant was struck by an F2 tornado. Contrary to the estimates of the NRC, this does not mean that we are good for another 100,000 years. Instead, it demonstrates that Davis-Besse is in a location that is uniquely prone to tornadoes. In fact Lake High School, less than 25 miles from Davis-Besse, was destroyed by an F4 tornado on June 5, 2010. The applicant (FENOC), is clearly wrong and it is the responsibility of the NRC to reject incorrect assertions on relicensing applications. Tornadoes are a site specific risk for the Davis-Besse nuclear plant. The questions that need to be answered in regard to this are not "When will DB be hit by another tornado?" but "What happens if Davis-Besse is hit by an F4 tornado, as Lake High School was?"

17b-3-OS

The containment dome was designed to protect the nuclear core from external attacks such as tornadoes. However, since the EIS was submitted, it has come to light that the containment dome (or "shield building") around the reactor core is full of large cracks. Also the structure has been operating with large voids in the concrete shell. The initial explanation of the cracks was that they occurred during construction as a result of the blizzard of 1978. NRC and FENOC concluded that these cracks were, therefore, stable and posed no threat to the structure. However, in 2013 it was discovered that these cracks are, in fact, growing. This means that the original explanation for their formation is wrong. It also means that the structure is, by definition, unstable. Whether that instability could lead to structural failure requires study before an accurate answer can be given. The original answer, based on estimates and judgements was clearly wrong.

17b-4-PA

Numerous other tornadoes have touched down in the area surrounding Davis-Besse since its construction. Tornado frequency is influenced by topography. Low, flat areas like the area where DB is located are more prone to tornadoes. Also, the frequency of severe weather events such as tornadoes is predicted to increase as a result of climate change. An estimate based on reality and real world experience suggests that the odds that Davis-Besse could be hit by an F4 or higher tornado during the period it would operate if its license were renewed are much higher than 1 in 100,000. Oklahoma City, Harvest, Alabama, and Cordell, Kansas have all experienced multiple tornado strikes in the same location.

17b-5-PA

Similarly, flooding is estimated to occur only once every 100,000 years. But the Davis-Besse site was flooded by a seiche in November of 1972, before the plant was operational. DB is uniquely vulnerable to seiche events because of its location on Lake Erie. While the plant does have some protective measures in place, the size and extent of those measures have been limited by the costs involved, just as the tsunami barriers were at the Fukushima nuclear plants. The NRC's four step process to judge whether or not a risk such as flooding needs to be mitigated starts with an estimation of the risk involved. This estimate has been demonstrated to be incorrect. Therefore all the other steps in the process have also produced incorrect results.

17b-6-PA

One of those steps, the cost/benefit analysis, prioritizes profitability for FENOC over the public health and safety. If FENOC determines that it costs too much to mitigate or eliminate a risk, they will not do it. However, with the chances of those risks being estimated as miniscule, almost no mitigation can be justified through a cost/benefit analysis. Turbine room flooding, for example, is estimated at once every 10 million years. No mitigation measures could be justified for something that happens so rarely. However, the Fort Calhoun nuclear plant experienced turbine room flooding in July of 2011. Clearly, it happens more frequently than once every 10 million years.

Loss of offsite power is also estimated at twice every hundred thousand years. In April of 2013, snipers systematically destroyed a power substation near San Jose, California. It took almost a month to restore the station's function. The power grid, and its vulnerable points such as substations are a potential target for a variety of potential aggressors. Terrorists, criminals, or agents of hostile governments could all attack vital parts of the grid system, causing prolonged loss of outside power. A study published in the May, 2014 issue of Ecological Economics, entitled "Human and nature dynamics (HANDY): Modeling inequality and use of resources in the collapse or sustainability of societies" suggests that we are most likely entering a period of societal instability. This instability could create multiple scenarios that would lead to long term disruption of off site power, from severe weather events, to wars, to civil unrest. There have also been many local examples of prolonged power outages. The estimate of twice every hundred thousand years is clearly wrong. All the estimates of "initiating events" in Section 5 that could lead to a core meltdown are similarly, demonstrably wrong.

17b-7-OS

Another area of a serious error of judgement has to do with the leakage of tritium into the groundwater around Davis-Besse in the 2007-2010 time period. In Section 2, it states, "1 ERM (2008) provided a plausible explanation regarding tritium release and migration." However, the "explanation" is simply a list of possible tritium sources, "potential inadvertent releases from the power block, including the spent fuel pool, would 3 migrate vertically down through the unsaturated zone to the water table. Potential releases from 4 structures below ground could release tritium directly to the upper or lower dolomite unit." 5 Potential tritium sources in the power block are the reactor containment, auxiliary building, 6 circulating water pump house, turbine building, and borated water storage tank (ERM 2007), 7 (ERM 2008). In addition, several spent fuel pool leaks have been documented 8 (Davis-Besse Undated). " These sources would all produce leaks of varying amounts, degrees of radioactivity, and seriousness in terms of compromising the safety of the plant. Before allowing the plant to be relicensed, the NRC must require FENOC to demonstrate a causal link between an accidental release of radiation and tritium entering the ground water. As long as the source of tritium and the cause of the leaks are unknown, there is a very real danger that another, more serious release of radiation will occur. As was demonstrated with the NRC's response to the cracks in the containment dome, simply accepting a "plausible explanation" from FENOC is not a high enough standard of oversight to protect the public health and safety.

17b-8-HH

## Section Two: Errors of Omission



The recommendation that the adverse environmental impacts of license renewal for Davis-Besse are not great enough to deny the license renewal is dependent on the omission of essential information from the NRC staff's consideration.

In the initial public comment on the license renewal application, many people pointed out that nuclear power plants release radioactive isotopes which are known to cause cancer. There is a cancer cluster downwind of the power plant. This supports the conclusion is that radiation from Davis-Besse is causing the cancers. However, the NRC staff response to this assertion on page A-24 was that, "In summary, there are no studies to date that are accepted by the nation's leading scientific authorities that indicate a causative relationship between radiation dose from nuclear power facilities and cancer in the general public." To support this, they cite six studies done between 1979 and 2001. However, they have omitted many studies published in respected scientific journals which have been published since then which DO show a link between living near a nuclear power plant and doubling of cancer rates. This is not too surprising, since cancers caused by radiation can take up to 20 years to appear. Therefore, studies done when nuclear plants are only 10 or 15 years old would mask the long term effects of exposure to low level radiation.

17b-9-HH

Two of the most widely accepted studies that the NRC omitted were done in Europe and have contributed to the decision of the French government to cut back on the use of nuclear power, and the decision by the German government to eliminate nuclear power from its energy mix completely. Leading scientific authorities in those countries are able to make the seemingly common sense connection between the release of radioactive isotopes into the environment and the subsequent development of cancer. The 2008 German study, "Kinderkrebs in der Umgebung Von Kern Kraftwerken" describes a 60% increase in solid cancers and a 120% increase in leukemia amongst people living near nuclear power plants. The French study, "Childhood Leukemia Around French Nuclear Power Plants" documents a doubling of leukemia rates. This means that for each child with leukemia near a French nuclear plant, there is a 50/50 chance that their cancer was caused by emissions from that plant.

There have been many other studies, as well. A study entitled, "Childhood Cancer Near Nuclear Installations," by Ian Fairle published in the Journal of Environmental Science and Health on 3/1/10, Volume 21, Issue 2, also shows an increase in cancer. There was a study done for the European Parliament that estimated more than 1,000,000 people have died prematurely from the radiation released by the Chernobyl disaster.

It is important to note that finding a fully "causative" link between nuclear plant emissions and increased cancer rates is not only almost impossible, such a study would be immoral and unethical. To demonstrate true causation, one would have to follow a radioactive particle as it left Davis-Besse, entered the environment, was consumed or absorbed by an individual, emitted ionizing radiation inside that person's tissues, and monitored the subsequent cellular damage and cancer development. If a researcher had the ability to do this, they would also be morally compelled to step in and prevent the victim from developing cancer in the first place. Instead, studies must rely on inductive reasoning, that is demonstrating that the number of cancers increase in the vicinity of nuclear plants in enough instances to make the conclusion that

the nuclear plants are causing the increase a reasonable one. This conclusion can be bolstered by demonstrating an increase in rare cancers which are known to be caused by specific radioactive isotopes that are released by nuclear plants, such as thyroid cancers and radioactive iodine. However, many radioactive isotopes, such as tritium, have unpredictable impacts which can affect many different organs.

Finally, the works of Dr. Joseph Mangano, J.M. Gould and their many collaborators can not simply be dismissed out of hand. One of Dr. Mangano's most recent studies, "Infant Death and Childhood Cancer Reductions after Nuclear Plant Closings in the United States," with J.M. Gould, J.J. Mangano, W. McDonnell, J. D. Sherman and J. Brown , Archives of Environmental Health, 57, 23 - 31, 2002. Comes as close as ethically possible to establishing a causative link between nuclear plants and infant mortality. He found that, when nuclear plants were forced to have prolonged shut downs, infant mortality rates dropped. When the shut downs ended and the plants again began releasing radiation into the environment, the mortality rates again went up. Children and women are more vulnerable to radiation than men. A fact which the NRC does not seem to take into account in this report. This is explainable because dividing cells are the most sensitive to damage from radiation, and infants have extremely rapidly dividing cells. Older men, in comparison have cells which divide much less frequently. Dr. Mangano has many other studies which are included in these comments as Appendix A.

17b-10-HH

In addition to impacts on humans, essential information on the impact on the flora and fauna of the study area has been omitted. There is extensive description and quantification of the birds in the area, for example, and a very brief mention is made of ways that birds could be impacted by Davis-Besse's cooling towers is listed, but a detailed discussion of the severity of that impact is omitted. A 2009 study done by Benjamin K. Sovacool entitled, "Contextualizing avian mortality: A preliminary appraisal of bird and bat fatalities from wind power, fossil-fuel, and nuclear electricity" presented to the Energy Governance Program, Centre on Asia and Globalisation, Lee Kuan Yew School of Public Policy, National University of Singapore, Singapore 259772, Singapore and found online at : <http://www.nukefree.org/news/avianmortalityfromwindpower,fossil-fuel,andnuclearelectricity> suggests that Davis Besse could be killing 3,000 to 5,000 birds every year. Thus, avian impacts should be reclassified as LARGE.

17b-11-TR

Also, one of the contentions made by commenters on the original Environmental Impact Statement was that the heating of Lake Erie by Davis Besse's effluent would encourage the growth of cyanobacteria such as *Microcystis aeruginosa* and *Lyngbya wollei*. The NRC's response was, "Current operation of Davis-Besse has not been linked to the presence or growth of the cyanobacteria in Lake Erie." However, simply because no researcher has made the link, does not mean that the link does not exist. Several facts are known. Algae grows more quickly in warmer water. I have personally observed large mats of algae that have washed up onshore downstream from Davis-Besse. Probably, DB's discharges are encouraging more algal growth.

17b-12-HH

In Section 4.1 LAND USE it was stated, " The review included a data gathering site visit to Davis-Besse. No new and significant information was identified during this review that would change the conclusions presented in the GEIS. " Given the NRC staff's poor judgement in other

matters, the report from this visit should have included ANY new information found, so that the public could make a judgement as to what constituted "significant information." This study is supposed to be addressing the impacts of operation after renewal, but it seems in Section 4.2 they only address air quality during the revisions, not after. Section 4.5.2 discusses releases of radiation into local groundwater. It describes "unknown, uncontrolled, and unmonitored releases" of radioactive substances that have occurred in the past, but claims that such leaks are not expected to occur again. Therefore the impact is listed as "small" but in reality it could be much more significant. If the causes of radioactive releases are "unknown" and "uncontrolled," no accurate estimates of their future impacts can be made. In section 4.11 Environmental Justice the report states, "...During 2010, analyses performed on samples of environmental media showed no significant or measurable radiological impact above background levels from site operations (FENOC 2011)." The NRC omitted what it considers "significant." Section 4.4.1 claims that there will be no significant change in surface water use and water quality. However, if projections by the EPA and other agencies are correct, and Lake Erie will warm and shrink as a result of climate change, then there will almost certainly be altered impacts on issues such as thermal stratification of lakes and eutrophication.

17b-13-LR

### Section Three: Errors of Fact

There are many errors of fact in this document, but the most important is the NRC staff's assertion that the power generated by Davis-Besse cannot be replaced by clean sources of electrical generation such as wind and solar. This is one of the Contentions raised by the Intervenor (The Green Party of Ohio, Beyond Nuclear, the Citizens Environment Alliance of Southwestern Ontario, and Don't Waste Michigan) in opposition to the initial application of FENOC for a license renewal. The Intervenor presented testimony and research demonstrating that wind and solar power, with or without energy storage technologies could reliably replace the power generated by Davis-Besse. The Atomic Safety Licensing Board (ASLB) reviewed the evidence supplied by the Intervenor and agreed to hear their contentions. The Nuclear Regulatory Commissioners then took the unprecedented step of overruling the ASLB and throwing out the Intervenor's contention. The Commissioners based this action on the "pragmatic" belief that neither wind nor solar nor any storage technology will be sufficiently advanced to replace DB in 2017, when its license expires, almost exactly three years from now.

17b-14-AL

The Commissioners and the NRC Staff are wrong, and their error is being clearly and decisively demonstrated in Denmark. In 2013, wind power alone provided 33.2% of that country's electricity demand. With an installed capacity of almost 5,000 MW, Denmark has successfully integrated wind power, despite its intermittency, by having wind farms that cover a wide area, and the ability to export power to neighboring countries when it is producing excess. In fact, during a wind storm in December, 2013, the nation of Denmark met more than 100% of its needs from wind power alone, and exported the excess to neighboring countries. Denmark has had to upgrade its grid, in order to shift loads and demands quickly and efficiently. Our country is capable of making the same improvements. There is no technical reason FENOC could not do the same as Denmark.

17b-15-AL

**Comments submitted April 21, 2014 by Michael Keegan for Don't Waste Michigan Intervenors**

I am submitting these comments on behalf of Don't Waste Michigan. We are, indeed, legal intervenors in the licensing proceedings on the Davis-Besse. Please enter these comments into the SDEIS docket for Davis-Besse.

We did participate back in the scoping process. And as I review the SDEIS, they sliced and diced away my comments, but didn't seem to adequately address them, in my mind. What was particularly lacking, and bothersome, is how alternative energy was poooh poeed, and can't have it, can't --'won't be baseload. And yet we are seeing it, it is happening now in real time.

18b-1-AL

In mid March a company came forward and said they were going to be building 300 megawatts of wind energy in Ohio and it would be up within 12 to 18 months. It is doable.

Also in mid March, 2014 the PJM Interconnect grid, the largest grid in the U.S. said they could easily accommodate 30 percent wind and solar brought onto the grid.

**America's Largest Grid Operator: Massive Renewables Push Won't Be a Problem**

**NRDC's John Moore looks at why PJM is bullish on the feasibility of renewables integration.**

John Moore  
March 17, 2014

PJM Interconnection, the nation's largest power transmission grid organization, announced recently that wind and solar power could generate about 30 percent of PJM's total electricity for its territory covering the Mid-Atlantic region and part of the Midwest by 2026 without "any significant issues."

That's engineer-speak for "no big deal." Even better, we would see more clean power at less cost and with far less pollution than our current mix of coal and natural gas power plants.

PJM's new renewables integration report, prepared by General Electric, is required reading for anyone who questions the ability of the electric grid to handle large amounts of wind, solar and other renewable energy. GE estimates that about 113,000 megawatts of installed wind and solar power resources (including distributed/generation), could produce about 30 percent of the region's total energy. That's enough energy to power 23.5 million homes annually.

Here's the breakdown of the resource mix in one of the scenarios studied in the report:

Third, PJM's study was done in a relative vacuum; it didn't consider how several grid regions, working together, could manage significantly more clean power. PJM and the other grid operators across the country need to work in a more cooperative manner to conduct the studies and other work necessary to show states across the country that power-sharing saves even more money than for each region to plan for its own resources. FERC has encouraged this cooperation by issuing interregional coordination requirements in its landmark Order 1000 (more about that [here](#)), but the regions can do more -- and they don't need to wait for further instructions from Washington.

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*John Moore is a senior attorney with the Natural Resources Defense Council. This piece was originally published on NRDC's Switchboard blog and was reprinted with permission.*

PJM Interconnect 2010 ISO/RTO Metrics Report Published in 2010  
<http://www.ferc.gov/industries/electric/indus-act/rto/metrics/pjm-rto-metrics.pdf>

It was well known to Pennsylvania Jersey Maryland Interconnect covering 13 states and nations largest Interconnect has known and published since this 2010 report that Wind and Solar are available in abundance and that there is no disruption or destabilizing of "baseload grid". Replacement power was available in 2010 and is available now and certainly in 2017. The NRC Commission Order of March 27, 2012 must be reversed because they are simply wrong.

18b-2-OS

Within FENOC's own system there are 14,000 MW. With FENOC is selling to wholesale markets electricity which is not needed on the grid. FENOC could easily retire Davis-Besse and meet that loss of power generation from within their own system. This amounts to gaming of the system to rationalize the need for the Davis-Besse license renewal. Please review FENOC 10 K to learn how they game the system. For the NRC Commission to reverse Contention 1,2,3 calling for 'reasonable' look at Alternatives amounts to the NRC Commission aiding and abetting the rigid status quo.

<http://www.4-traders.com/FIRSTENERGY-CORP-12586/news/FirstEnergy-Corp--FIRSTENERGY-CORP-10-K-MANAGEMENTS-DISCUSSION-AND-ANALYSIS-OF-REGISTRANT-AND-18017110/>

The alternative of First Energy seeking out alternative energy that they don't generate, that they could bring in through the grid, was not brought into consideration. This is a self-serving economic game here at the detriment of FENOC ratepayers. We understand that there's vested interest who are obstructing introduction of renewable and alternatives of wind and solar. We understand that there are a lot of good paying jobs. But there will be more jobs in a renewable and alternative economy, because those jobs are labor intensive. Whereas jobs in the nuclear industry are capital

18b-3-AL

intensive, you get very few jobs for the money you spend. This has not adequately been considered.

Amory Lovins recently conducted a study for Dartmouth documenting the poor economics of building new nuclear and showing that many of existing nuclear plants are not economically viable as they stand today. Please review the Amory Lovin's report.

[http://web.mail.comcast.net/service/home/~/LovinsDartmouthSlides-and-notes-15April2014.pdf?auth=co&loc=en\\_US&id=1023194&part=2](http://web.mail.comcast.net/service/home/~/LovinsDartmouthSlides-and-notes-15April2014.pdf?auth=co&loc=en_US&id=1023194&part=2)

At page 5 Lovin's writes:

Reactors are promoted as costly to build but cheap to run. Yet as Daniel Allegretti ably described, many existing, long-paid-for U.S. reactors are now starting to be shut down because just their *operating* cost can no longer compete with wholesale power prices, typically depressed by gas-fired plants or windpower.

This graph from my *Bulletin of the Atomic Scientists* article a year ago summarizes nuclear-industry data on the operating costs of all U.S. PWRs. Both within and between the four quartiles, each with 25 reactors, the operating costs vary widely, especially for major repairs or renovations—called "net capital additions" because they're capitalized rather than expensed. These expenditures may fix failing old components, or may invest to increase the unit's output or lifetime, or both, but the industry hasn't publicly stated the mix of these causes. Suspicions are growing, though, that like an old car, some reactors are no longer worth fixing, or fixing them is too risky a bet that nothing else expensive will break for a long time. Last year, U.S. utilities bit that bullet and terminated 14 operating or planned units. Many more are reportedly at risk of closure this year.

And the *Bulletin of Atomic Scientists* Articles from 2013 indicating many existing nuclear plants are not economical in 2013 with trends getting worse. Please review full article at:

[http://www.rmi.org/Knowledge-Center/Library/2013-09\\_BulletinAtomicScientists](http://www.rmi.org/Knowledge-Center/Library/2013-09_BulletinAtomicScientists)

AUTHOR: Lovins, Amory

DOCUMENT ID: 2013-09

YEAR: 2013

DOCUMENT TYPE: Journal or Magazine Article

PUBLISHER: Bulletin of Atomic Scientists, SAGE Publications Ltd.

In the United States, which trades three-fifths of its electricity in competitive markets, the prohibitive capital cost of new nuclear power plants ensures that only a handful will be built. Nonetheless, with 40-year licenses being extended to 60 years, the 104 existing reactors' relatively low generating costs are widely expected to justify decades of continued operation. But the generating costs of aging reactors have been rising, while

competitors, including modern renewables, show rapidly falling total costs—and those opposed cost curves have begun to intersect. An expanding fraction of well-running nuclear plants is now challenged to compete with moderating wholesale power prices, while plants needing major repairs or located in regions rich in wind power increasingly face difficult choices of whether to run or close. Thus, even without events that might accelerate nuclear phase-out, as the Fukushima disaster did in Germany, shifting competitive conditions have begun to drive a gradual US nuclear phase-out. Its economics are illuminated by a detailed energy scenario that needs no nuclear energy, coal, or oil and one-third less natural gas to run a 158 percent bigger US economy in 2050—but cuts carbon emissions by 82 to 86 percent and costs \$5 trillion less. That scenario's 80-percent-renewable, 50-percent-distributed, equally reliable, and more resilient electricity system would cost essentially the same as a business-as-usual version that sustains nuclear and coal power, but it would better manage all the system's risks. Similarly comprehensive modeling could also analyze faster nuclear phase-out if desired.

#### Use of High Burn-Up Fuel and Environmental Consequences

18b-4-OS

New information has been coming out on the high burnup fuel that is being utilized at reactors around the U.S. that initially began in the early '90s. And I see, from a document that Davis-Besse was authorized, according to amendment number 213, to move to a fuel cycle which lasted 730 days. What happens is the fuel gets super burnt up, becomes super hot, radioactively, and super hot thermally, decay. And it embrittles the actual cladding around the fuel rods. So when you pull it out of the spent fuel pool and go to put it in dry cask storage, you have a multitude of problems. It is not known how this will respond in a Yucca Mountain, or some other proposal. So the whole entire industry, for two decades, has been operating blind, and going about generating high burnup fuel. We would like to know exactly when did Davis-Besse begin their high burnup fuel cycles, and if indeed they will be projected to go for 20 additional years of high burnup fuel cycles, when it is not known what to do with this waste that wasn't considered in the beginning. This was not addressed in the DSEIS

Pasted immediately below are several documents one of them is generated by a Dr. Marvin Resnikoff, within the last few month or so, speaking about the high burnup nuclear fuel and how problematic it is, and it was never taken into consideration.

1 GAO-12-797 SPENT NUCLEAR FUEL Accumulating Quantities at Commercial Reactors Present Storage & Other Challenges, August 2012  
<http://www.gao.gov/assets/600/593745.pdf> Low-enriched uranium = up to 5% of U 235

2 DOE FCRD-NFST-2013-000132, Rev. 1; Fuel Cycle Research & Development- Nuclear Fuel Storage and Transportation-2013-000132, Rev. 1, 6/15/13 <http://www.hsd.org/?abstract&did=739345>

3 CoC No. 1029 Technical Specifications for Advanced NUHOMS® System Operating Controls and Limits, Appendix A Tables 2-9 to 2-16  
<http://pbadupws.nrc.gov/docs/ML0515/ML051520131.pdf>

4 RWMA Marvin Resnikoff, PhD: The Hazards of Generation III Reactor Fuel Wastes  
May 2010 <http://bit.ly/19dVRsY>

5 Edison request for NUHOMS® 32PTH2  
<http://pbadupws.nrc.gov/docs/ML1204/ML12046A013.pdf>

6 SFPO Interim Staff Guidance 11, Rev 3 Cladding Considerations for the  
Transportation and Storage of Spent Fuel 11/17/2003

<http://www.nrc.gov/reading-rm/doc-collections/isg/isg-11R3.pdf>

7 NWTRB Douglas B. Rigby, PhD: The NRC approved the initial 20 year dry cask  
storage based on assumptions. However, no information was  
found on inspections conducted on high burnup fuels to confirm the predictions that  
were made. U.S. Nuclear Waste Technical Review Board

December 2010 report [http://www.nwtrb.gov/reports/eds\\_rpt.pdf](http://www.nwtrb.gov/reports/eds_rpt.pdf)

8 NRC Robert E. Einziger, PhD: insufficient data to support licensing dry casks for >20  
years, March 13, 2013. <http://1.usa.gov/15E8gX5>

We have also had problems with how the issue of flooding has been addressed. And I don't believe it properly has. Lake Erie is known for its seiches that is where the wind, straight line wind blow the lake out, and it sloshes back and forth, back and forth. In fact the recent storm, in 2012, on the East Coast, created a lot of havoc on the Great Lakes, and there were seiches, over on Lake Michigan, of 30 feet high.

18b-5-OS

There have been sashes, historically, which have been 30 feet, 40 feet high. There have been recent seiches, over near Cleveland area, that actually came up and pulled people into the water. It does happen. We would like to reflect back in 1972, when the Davis-Besse was underwater for nearly a month. But what I'm guaranteed, there is an elevation of 591, and the lake knows when to stop, and it does not come over that elevation. So the whole of flooding has been inadequately addressed, and has been swept under the rug. So We, I'm disappointed in that my comments got sliced and diced. I'm vehemently opposed to this nuclear power plant. Certainly there has been some economic activity, it has been a boon to the region. But the potential loss, the potential risk of losing an area the size of Pennsylvania, the hundreds of billions of dollars of property damage, hundreds of thousands of lives impacted, it is just a cost that we don't need to go into, we don't

need to go down that road. To generate one more ounce of nuclear waste is immoral, because we do not know what to do with what we have. All we have gotten was a Waste Confidence, a con game, we will figure out what to do with it later.

18b-6-RW

Now, many people look at Yucca Mountain, what a failure Yucca Mountain was. Yucca Mountain is a tremendous success because for 27 years it kept the lie alive, that you knew what to do with it, you don't. You are just kicking it down the road, it is immoral what you are doing. It is now known you don't know what to do with it. And I would argue that the Nuremberg principles do apply here, today, in the actions that decisionmakers make going forward. Because it is not based on science.

To continue to generate high level nuclear waste among the most toxic and lethal poisons known to mankind are crimes against humanity and crimes against the future.

I am compelled to enter into the record and public comment the Principles of International Law Recognized in the Charter of the Nuremberg Tribunal and in the Judgment of the Tribunal.



Cease and desist. Stop making it period. Do not relicense. You don't know what to do with the High Level Nuclear Waste that you have already made.

18b-7-OL

It is based on economic drivers, and now we are looking at a plant that has just invested 600 to 700 million dollars, on steam generators, which have not been scrutinized, which could not have been scrutinized, which Incadel 690 issue could have not been known, because it wasn't realized in two years ago. The NRC did that on the oversight. The utility relied on an in-house studies, of 50.59 processing, same, same, just checking it out, same piece of equipment going in. The steam generators that came out weighed 590 tons. The ones that are going in weigh 465 tons. That is not same for same. So the NRC oversight, there has been a meltdown, there is no credibility with the Nuclear

Regulatory Commission. And we see the inadequacy of the quality assurance of the Nuclear Regulatory Commission, when we realized, on Valentine's Day, we learn about a 25 foot gap in the concrete that is 6 inches to 12 inches wide, 25 feet long. This is when the plant was crawling with inspectors. And we were told that the cracks were not propagating, and everything was being looked at. A simple ultrasound would have found that.

But for over two years the NRC allowed them to operate that and only found it when they came in to cut a fourth hole into that shield building, which does not meet the design criteria, does not meet seismic qualification, which will crumble around that primary containment and, potentially, tip into the reactor. So the NRC has no credibility in this process, whatsoever. NRC's science is in their wallet, next to their ethics, and we are sorry this is a very sad process. And we will be vehemently oppose this plant, and we will follow it into the future.



**SIERRA CLUB**  
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April 20, 2014

United States Nuclear Regulatory Commission  
RE: License Renewal Application for Davis-Besse Nuclear Power Station Unit 1  
Docket No. 50-346; NRC 2010-0298

**Addressing the U.S. Nuclear Regulatory Commission (NRC) License Renewal Application for Davis-Besse Nuclear Power Station, Unit 1; Draft Supplemental Generic Environmental Impact Statement**  
and the NRC's preliminary recommendation that adverse environmental impacts of license renewal for Davis-Besse are not great enough to deny license renewal.

The Sierra Club does not agree with the NRC assessment. The NRC has wholly failed to acknowledge public concern, as well as hard science, about the dangers of current and future radioactive contamination of Lake Erie, including the risks of catastrophic accident. The NRC has given unsubstantiated and inaccurate estimations of the risk of nuclear accident, flood, tornado and loss of external power. The NRC estimates in Appendix F that the frequency of a core damaging accident is once every 100,000 years, in spite of the fact that for Fermi 1, Three Mile Island, Chernobyl, and Fukushima the actual frequency has been proven to be far higher.

19c-1-PA

The NRC has failed to acknowledge that the engineered lifespan of nuclear reactors is 40 years. Extending reactor operations beyond engineered lifespans poses a considerably greater the risk of a nuclear catastrophe. The NRC has failed to address the risks of accident from increasing brittleness of metal and cement when in contact with radioactivity as years progress.

19c-2-OS

The NRC has not ruled out the risk of an accident causing severe radioactive contamination of the fresh water in Lake Erie and Lake Ontario, and perhaps also the rest of the Great Lakes. The Sierra Club is of the opinion that there is no justification for taking such a risk, no matter how small, particularly when the odds given by the NRC are at odds with reality. The odds of an accident at Fukushima where 3 reactors melted down and fuel pools were compromised would have been calculated as one in hundreds of billions, yet it has already happened. Totally unimagined scenarios have and will continue to take place at Fukushima and elsewhere. The NRC has failed to address the actual consequences of Davis-Besse's potential to contaminate the waters of the Great Lakes. A catastrophic accident has the potential not only to cause immediate and future deaths of persons, wildlife and ecosystems, but to cause collapse of government and civilization. The Sierra Club does not believe that the electricity from this facility, which continues to be easily replaced during reactor downtime, could ever justify risking human life and civilization.

The NRC has failed to adequately address the consequences of Davis-Besse's routine radioactive releases. The NRC has concluded that if the radionuclides are diluted, the problem will disappear. However, studies have shown that there is no safe dose of ionizing radiation, and that low doses of radioactivity can be far more deadly than originally thought. The NRC appears to be taking the industry position that if a particular cancer, stroke, heart attack, or birth defect cannot be proven to have been caused by radioactivity, then the conclusion must be that radioactivity did not cause these health problems. The NRC has used selective studies to back their position that there is little or no increase health risks around nuclear reactors, ignoring other studies that contradict this assumption.

19c-3-HH

The NRC has failed to take into account the continued cracking of the shield building. The NRC and FENOC's original determination that the cracks were the result of the blizzard of 1978, that they were not age related and that they were not widening defied scientific credibility. That conclusion has since been proven erroneous with

19c-4-OS

<p>the lengthening and expanding of the cracks. This new cracking was found in a dozen core bore locations, leaving us to ponder what cracking actually exists throughout the entire concrete mass. The reactor was allowed to restart without the issue of the cracking being resolved. The latest, fourth cut-through of the shield building to install the new steam generators has only increased the probability of cracks enlarging over time. As one engineer put it, "The shield building will hold up just fine until something stresses it."</p>	19c-4-OS (con't.)
<p>Then NRC must address a new contention of the 25-foot gap in the resealed cement of the shield building, revealed with the concrete forms or plates were recently removed from the previous 2011 pour. The public is incredulous as to how this gap could happen, first with multiple inspectors assigned to watch every action and second with any reasonable concrete pouring skills being used. We recently found in an ADAMS search that gaps were found in Davis-Besse's previous concrete patch of 2002 when the plates were removed from the concrete pour. The Sierra Club would like an explanation as to why, considering this 2002 scenario, the plates holding the 2011 concrete pour were allowed to remain in place until recently.</p>	19c-5-OS
<p>Another critical factor that was not adequately addressed is evacuation of the surrounding area in case of a radioactive emergency. Across the nation and around the world, real emergencies reveal the inadequacy of disaster preparation. Loss of electric power and generator failures have consistently contributed to nuclear emergencies worldwide.</p>	19c-6-OS
<p>NRC maintains in its summary that it has relied on consultation with Tribes. This consisted of writing letters to eight tribes, 7 of which letters went unanswered. We submit that the NRC must have actual dialogue with these eight tribes, which dialogue should take place at or close to the tribal meeting location. Native American cultural traditions must be respected.</p>	19c-7-CR
<p>The Sierra Club would like an explanation as to why the NRC would expect the Environmental Report submitted by FENOC to be anything other than a corporation acting in its own best interest? Why would a report by a vested financial interest be determined by the NRC to have credibility, while public concerns are rejected?</p>	19c-8-LR
<p>The NRC has failed to address the most serious issue of nuclear reactors, outside of an accident or meltdown, which is the generation of hundreds of tons of highly radioactive waste. Waste that will be around far longer than FirstEnergy or the United States government, or anything resembling the civilization that we have today. Kicking the radioactive can down the road – saddling future generations with the problems and the expense of isolating our generation's nuclear waste, is irresponsible at best and criminal at worst. The NRC should include in their assessment the environmental impact of Davis-Besse's waste for the next few hundred generations.</p>	19c-9-RW
<p>The issue of high burnup fuel waste must also be addressed. Even our best engineers are unsure how to properly handle out-of-water storage of this far hotter waste.</p>	19c-10-OS
<p>The Sierra Club has signed on to the Principles for Safeguarding Nuclear Waste at Reactors. In a nutshell, waste must be stored as close as safely possible to the site of generation. Waste must not be placed where it cannot be retrieved and resealed. A rolling custody of the waste will be necessary as generations progress.</p>	
<p>The democratic process is undermined when members of the public have their ideas and critical information disallowed because they are not in a position to conform to the legalistic process crafted by the NRC. Not only has the general public been dismissed, but the evidence of skilled professionals has also been dismissed by the NRC. Additionally, the rejection of professional arguments by the NRC occurred after the Atomic Safety and Licensing Board hearing the arguments agreed with the petitioners that wind and solar could well have the ability to replace the power from Davis-Besse by 2017. This is another reason that the NRC must revisit the contention that renewables have the ability to replace the power generation of the Davis-Besse reactor.</p>	19c-11-LR
<p>The NRC has failed to acknowledge that the Davis-Besse reactor has been offline or at less than full power for a considerable amount of time since it first came online with no deleterious effects on the grid or on the supply of electricity to consumers. This takes into question the NRC's requirement that alternative sources cannot be considered unless they are online to replace every electron of Davis-Besse's full power by its 2017 license expiration date.</p>	

It is increasingly clear that a combination of wind, solar and efficiency could replace Davis-Besse by 2017. In addition to these, other alternative energy sources such as geothermal heating and cooling are increasing in popularity. The public is also undertaking an increasing number of conservation measures. The NRC has failed to keep up with the rapidly increasing ability of safer renewables technology and efficiency to supplant the need for the Davis-Besse reactor. For example, in 2014 a major new 300 KW wind farm was announced for Hardin and Logan Counties. The NRC must revisit intervenor contentions that the electricity generated by Davis-Besse can be replaced by the increasing amounts of renewables that are being adopted. Amory Lovins' and Arjun Makhijani have written articles and books on how ***both carbon and nuclear can be replaced nationwide with renewables by 2050***. Efficiency and a slowdown of the economy have resulted in a drop in electric demand. This confirms that trends of the past cannot be reliably extrapolated into the future. The concept of "base load" is also a relic of the past. Using the outdated standard of base load as a requirement for new technology and systems of the modern era fails innovation, retrenches outdated systems and gives a handicap to renewables. Centralized power sources, with unwieldy and unreliable grids, are a relic of the 20th Century. The nation is rapidly moving to more democratized, decentralized, and sustainable energy sourcing. New energy jobs are being created where people already are. These are clean, safe jobs where no one needs to wear radiation detection badges. It is imperative that the NRC revisit these considerations in any environmental impact statement.

19c-12-AL

Thank you.

Submitted for the Ohio Sierra Club Nuclear Free Committee by  
Patricia A. Marida, chair

**PUBLIC SUBMISSION**

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Receipt and Availability of Application for License Renewal

**Comment On:** NRC-2010-0298-0033  
License Renewal Application for Davis-Besse Nuclear Power Station, Unit 1; Draft Supplemental Generic Environmental Impact Statement

**Document:** NRC-2010-0298-DRAFT-0030  
Comment on FR Doc # 2014-05021

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**General Comment**

I support closing down Davis-Besse for good. I am a Toledo resident and a mother of two children. I am fearful that other accidents in the future will threaten me as well as my children's lives. There have been too many calls in the past. The next accident could be a core meltdown. How many times can they go, "that was close" before something utterly tragic happens within our community. Nuclear reactors have caused cancer among so many, and its avoidable by choosing an alternative form of energy. In the Supplemental Generic Environmental Impact Statement it said that alternative forms of energy were considered but not evaluated further. I don't understand this. Other forms of alternative energy are great alternatives to a form of energy that has a potential to cause grave harm to local residents. I think that some of these cases of cancer need to be evaluated further to see whether environmental factors such as Davis-Besse has to blame. People in the community shouldn't have to live in fear. I like many of us don't have an option to move because of this threat that is staring me in the face. This is my home and I have lived here for thirty years. There are so many others within the community who are against nuclear power. I feel like our voices aren't being taken in consideration. The profit of running this power plant seems to be the number one motive in continuing the operation of Davis-Besse. The well being of the community needs to be the number one priority. There has been reported leaks of tritium This was found on accident. What if this was not found. How many issues go unnoticed? It is said that Davis-Besse has had 10 times more accidents than any other nuclear power plant in America. If this power plant has had so many problems why is it still operational?

**SUNSI Review Complete**

Template = ADM - 013

E-RIDS= ADM-03

Add= E. Keegan (enk)

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# PUBLIC SUBMISSION

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**Docket:** NRC-2010-0298  
Receipt and Availability of Application for License Renewal

**Comment On:** NRC-2010-0298-0033  
License Renewal Application for Davis-Besse Nuclear Power Station, Unit 1; Draft Supplemental Generic Environmental Impact Statement

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## General Comment



Living only 15 miles from Davis-Besse, I am opposed to the license renewal for 20 years. This plant is an accident waiting to happen. It has a long history of near accidents and disrepair. To renew a license here would be irresponsible of the NRC.

24-1-OL

SUNSI Review Complete  
Template = ADM - 013  
E-RIDS= ADM-03  
Add= E. Keegan (enk)

**U.S. EPA's Detailed Comments on Davis-Besse  
Draft SEIS, NUREG-1437, CEQ #20140050  
April 2014**

**Impact Categories**

25-1-LR

The Draft SEIS identifies several resource areas with impact categories ranges as "SMALL to MODERATE," or "MODERATE to LARGE<sup>1</sup>," including offsite impacts to terrestrial resources from refurbishment and impacts to historic archaeological resources from operation. There is little indication how the impacts to those resources could potentially increase from SMALL to MODERATE or from MODERATE to LARGE. For example, certain categories of impacts have clear and objective metrics that determine whether the site-specific impact is SMALL, MODERATE, or LARGE, such as *Groundwater Use and Quality*, page B-4.

**Recommendation:** EPA recommends the Final SEIS clarify how impacts to resources that are defined in a range could move from lesser significance to higher significance. For example, the metric for becoming a MODERATE impact to offsite terrestrial resources from refurbishment could be direct take of a certain number of acres or type of habitat. Further, NRC and the applicant should identify mitigation measures, including coordination with the Ohio Department of Natural Resources (ODNR) and the U.S. Fish and Wildlife Service (USFWS), to ensure that impacts are avoided or minimized and remain in the SMALL category. Mitigation measures should be specific; the Draft SEIS currently states "use of best management practices," but this is too general. The Final SEIS should identify which specific best management practices will be used, where appropriate. For impacts to resources that are described in a range of significance, an adaptive management approach to mitigation should be outlined in the Final SEIS and committed to in the license.

**Terrestrial Resources – Refurbishment and Operation**

25-2-TR

Section 3.2.1, *Terrestrial Resources – Refurbishment Impacts*, details several refurbishment activities, including two permanent storage facilities, one permanent multi-story office building, and several temporary facilities. The temporary facilities may include a permanent base concrete pad. The Draft SEIS states that all land disturbed for construction and refurbishment-related activities will be previously disturbed land, such as mowed areas, parking lots, or other paved surfaces. These activities will lead to an increase in impervious surfaces. As discussed in section 4.15.3, *Cumulative Impacts on Aquatic Resources*, urbanization and shoreline development are

<sup>1</sup> NRC has developed three levels of significance for potential impact: SMALL, MODERATE, and LARGE. See page 1-4 of the Draft SEIS for further explanation.

major stressors on the health of Lake Erie. Avoiding impacts to wetlands and reducing the amount of impervious surfaces along the lake help reduce this stress.

25-2-TR (cont)

**Recommendations:** EPA has several recommendations regarding the construction of the permanent and temporary facilities on the Davis-Besse site.

- EPA encourages the applicant to site and organize construction projects to minimize impacts to surrounding habitats. It is unclear if the permanent base concrete pad for temporary facilities is even necessary, since it is only under consideration at this time. Any unnecessary permanent, impervious areas are discouraged.
- EPA recommends staggering construction schedules of the new facilities so that no additional habitat is directly disturbed. This could mean having one temporary laydown area that services the construction of new permanent facilities one at a time, reducing the amount of disturbed habitat.
- Any new buildings and surrounding areas should be designed to Leadership in Energy and Environmental Design (LEED) standards. If LEED standards are pursued, this information should be included in the Final SEIS. Any potential use of Energy Star appliances, EPA's WaterSense program, EPA's GreenScapes program, or other similar programs should be identified in the Final SEIS. These are important elements of reducing the overall environmental impact of the proposed project.

Based on the discussion above pertaining to the development of new permanent and temporary facilities on the Davis-Besse site, EPA understands that some parking lots will be used for new permanent or temporary facilities. The Draft SEIS does not state whether the parking lots will be permanently lost due to construction and, if so, where new parking will be located. If the parking lots are currently in use and slated for conversion to permanent or temporary facilities, new parking facilities would need to be constructed to compensate for lost parking.

25-3-OS

**Recommendation:** The Final SEIS should identify which parking lots are slated for permanent conversion to permanent or temporary facilities and whether parking spaces will need to be compensated for in another area of the Davis-Besse site. Any resultant impacts should be disclosed and mitigated. If new parking facilities are required because of the new permanent and temporary refurbishment facilities, EPA recommends permeable pavement be used, reducing runoff and helping to improve the health of Lake Erie.

**Air Quality – Refurbishment**

25-4-AM

The Draft SEIS does not identify any air quality impacts as a result of the proposed refurbishment projects. While EPA recognizes that Ottawa County is an attainment area for all criteria pollutants, we expect construction equipment used during refurbishment activities to emit



diesel emissions. The National Institute for Occupational Safety and Health (NIOSH) has determined that diesel exhaust is a potential occupational carcinogen, based on a combination of chemical, genotoxicity, and carcinogenicity data. In addition, acute exposures to diesel exhaust have been linked to health problems such as eye and nose irritation, headaches, nausea, asthma, and other respiratory system issues.

**Recommendations:** Although every construction site is unique, common actions can reduce exposure to diesel exhaust. EPA recommends that the applicant and NRC commit to the following actions during construction in the Final SEIS and license:

25-4-AM(cont)

- Using low-sulfur diesel fuel (15 parts per million sulfur maximum) in construction vehicles and equipment.
- Retrofitting engines with an exhaust filtration device to capture diesel particulate matter before it enters the construction site.
- Positioning the exhaust pipe so that diesel fumes are directed away from the operator and nearby workers, thereby reducing the fume concentration to which personnel are exposed.
- Using catalytic converters to reduce carbon monoxide, aldehydes, and hydrocarbons in diesel fumes. These devices must be used with low sulfur fuels.
- Ventilating wherever diesel equipment operates indoors. Roof vents, open doors and windows, roof fans, or other mechanical systems help move fresh air through work areas. As buildings under construction are gradually enclosed, remember that fumes from diesel equipment operating indoors can build up to dangerous levels without adequate ventilation.
- Attaching a hose to the tailpipe of diesel vehicles running indoors and exhaust the fumes outside, where they cannot re-enter the workplace. Inspect hoses regularly for defects and damage.
- Using enclosed, climate-controlled cabs pressurized and equipped with high efficiency particulate air (HEPA) filters to reduce the operators' exposure to diesel fumes. Pressurization ensures that air moves from inside to outside. HEPA filters ensure that any incoming air is filtered first.
- Regularly maintaining diesel engines, which is essential to keep exhaust emissions low. Follow the manufacturer's recommended maintenance schedule and procedures. Smoke color can signal the need for maintenance. For example, blue/black smoke indicates that an engine requires servicing or tuning.
- Reducing exposure through work practices and training, such as turning off engines when vehicles are stopped for more than a few minutes, training diesel-equipment operators to perform routine inspection, and maintaining filtration devices.
- Purchasing new vehicles that are equipped with the most advanced emission control systems available.

- Using electric starting aids such as block heaters with older vehicles to warm the engine reduces diesel emissions.
- Using respirators, which are only an interim measure to control exposure to diesel emissions. In most cases, an N95 respirator is adequate. Workers must be trained and fit-tested before they wear respirators. Depending on work being conducted, and if oil is present, concentrations of particulates present will determine the efficiency and type of mask and respirator. Personnel familiar with the selection, care, and use of respirators must perform the fit testing. Respirators must bear a NIOSH approval number. Never use paper masks or surgical masks without NIOSH approval numbers.

**Aquatic Resources – Refurbishment and Operation**

25-5-AQ

The Draft SEIS references two “areas of concern” near Buffalo and the Ashtabula River on page 2-34, lines 12-16 and the lakewide management plan (LaMP) for Lake Erie. The Draft SEIS does not, however, state that Davis-Besse is within the EPA-designated Maumee River Area of Concern (AOC), which was extended in 1992 to include the Toussaint River. The document references the Remedial Action Plan (RAP), but it does not clarify that it is specific to the Maumee River AOC.

**Recommendations:** The Final SEIS should update this section to reflect that areas of concern are EPA-designated Areas of Concern, with specific locations, degradations, and improvement goals. In this context, where “areas of concern” are described, the correct term AOC should be used. The “Buffalo area of concern” should be updated to refer to the Buffalo River AOC. Further, the document should reflect that Davis-Besse is within the Maumee River AOC and that the RAP has been developed to improve water quality of the Maumee River and Lake Erie.

The Davis-Besse site is largely wetland, per the description on page 2-1, but the Draft SEIS does not include a map of the types of wetlands found onsite. EPA is particularly interested in wetlands that are not actively managed under the Ottawa National Wildlife Refuge, but rather those that could be impacted or adjacent to refurbishment and other activities related to the operation of Davis-Besse. The Draft SEIS is unclear whether a wetland delineation was completed and whether wetlands are adjacent to areas proposed for construction.

25-6-AQ

**Recommendation(s):** EPA recommends including a wetland map and a proposed refurbishment facilities map in the Final SEIS. We acknowledge that the new facilities are proposed for previously-disturbed land, but without a map of both the aquatic resources and the proposed facilities, it is difficult to review potential direct and indirect impacts. EPA reminds NRC and the applicant to avoid even temporary, direct impacts to wetlands, such as staging construction equipment in wetlands. We recommend the Final SEIS include how the applicant and NRC will ensure direct and indirect impacts to

wetlands are avoided. Temporary impacts to jurisdictional wetlands would trigger the need for a Clean Water Act Section 404 permit from the U.S. Army Corps of Engineers.

#### **Radiation Impacts to Aquatic and Terrestrial Resources**

25-7-LR

Section 4.6.1, *Exposure of Aquatic Organisms to Radionuclides*, and section 4.7.2, *Exposure of Terrestrial Organisms to Radionuclides*, provide information about the new Category 1 issues<sup>2</sup> added in 2013 to the relicensing review process. Because this is a new issue, EPA finds the discussion lacking. There is no specific reference to guidance nor specific metrics that govern how the significance category was assigned.

**Recommendation:** EPA recommends the discussion be enhanced, given its recent inclusion in the review process, despite it being a Category 1 issue. Any available guidance should be identified. The objective metrics that define the significance category should be included.

#### **Human Health**

25-8-HH

Per section 4.9.3, *Electromagnetic Fields – Chronic Effects*, because chronic exposure to electromagnetic fields continues to be studied and are not known at this time, NRC does not categorize chronic effects from electromagnetic fields to be either Category 1 or 2 (generic or site-specific), but rather “UNCERTAIN.” EPA believes it would be prudent to consider the chronic effects of exposure to electromagnetic fields to be a Category 2 issue (site-specific), until a generic determination can be made.

**Recommendation:** EPA recommends NRC consider exposure to electromagnetic fields to be a Category 2 issue (site-specific) until a scientific consensus can be made and impacts can be analyzed as a Category 1 (generic).

#### **Cumulative Impacts**

25-9-CI

Based on the discussion provided in section 4.15.5.1, *Human Health - Radiological*, EPA commends the applicant and NRC for maintaining an operational radiation dose level that is within public dose standards and are as low as reasonably achievable (ALARA). However, because of the new facility at Fermi in Michigan scheduled to come online as early as 2021 and other nuclear reactors along Lake Erie, EPA recommends the public dose levels be closely monitored to ensure values do not increase past historical levels.

<sup>2</sup> NRC separates generic issues, related to all facility, from site-specific issues. Category 1 issues (generic) have been analyzed in the Generic EIS and require no further discussion in a site-specific document, unless new and significant information is presented. Category 2 issues (site-specific) require analysis on a facility-by-facility basis.

25-9-CI (cont.)

**Recommendation:** EPA recommends that, with the addition of the new facility at Fermi in Michigan and other operating nuclear reactors adjacent to Lake Erie, public radiation doses are monitored closely to ensure no exceedances are recorded. Any exceedances should be reported to EPA.

**Editorial**

25-10-LR

Section 2.1.2.2, *Radioactive Gaseous Waste*, page 2-9, line 3, references 40 CFR Part 40, which is Research and Demonstration Grants. Please clarify if this is the intended citation.

**Recommendation:** Clarify whether this is correct; if not, please reflect the correct citation in the Final SEIS.

EPA recommends that resources agencies be provided with and the public have access to color versions of maps within the Draft SEIS, particularly for maps that rely on a color gradient. All maps in the paper copy and the CD of the Draft SEIS are provided in grey-scale, making it difficult to fully analyze certain impacts. For example, figures 2.1-2, 2.1-3, and 2.2-1 should be provided in color, or at minimum the document should include specific location in NRC's Agencywide Documents Access and Management System (ADAMS). This means the citation should not just be given as an ADAMS access number, but should also include a specific page number.

25-11-LR

**Recommendation:** NRC should provide access to color versions of maps that rely on color gradient. If nothing else, the ADAMS access number and specific page location should be provided indicating where the color versions can be found.

**FirstEnergy Nuclear Operating Company (FENOC) Comments  
Related to Draft Plant-Specific Supplement 52 to the  
Generic Environmental Impact Statement for License Renewal of Nuclear Plants  
Regarding Davis-Besse Nuclear Power Station, Unit 1 (DSEIS)**

L-14-146  
Page 1 of 14

Item No.	DSEIS Section	DSEIS Page / Line(s)	Comment	
1.	General Comment	--	Although the DSEIS discusses the revised GEIS and the related final rule, FENOC believes that the discussion should be further clarified to confirm that, as applicable to Davis-Besse, the NRC has considered each of the Category 1 issues in the revised rule and determined that there is no new and significant information and the Category 1 determinations remain valid for Davis-Besse and/or provided a justification for any differences between what is in the DSEIS versus what is in the revised GEIS/final rule.	26-1-LR
2.	Abstract	iii / Lines 9-10	FENOC notes that the description of the combinations alternative on this page does not match the similar description on page xix, Line 7.	26-2-LR
3.	Executive Summary	xv / Line 5	FENOC suggests changing "Nuclear Power <u>Plant</u> " to "Nuclear Power <b>Station</b> ".	26-3-LR
4.	Executive Summary	xvi / Line 30	FENOC recommends changing "is" to " <b>are</b> ", since the topic is "environmental impacts".	26-4-LR
5.	Executive Summary  1.5	xix	The DSEIS concludes that its " <u>preliminary recommendation is that the adverse environmental impacts of license renewal for Davis-Besse are not great enough to deny the option of license renewal for energy-planning decisionmakers.</u> " Consistent with 10 CFR § 51.95(c)(4) and Section 9.4 of the DSEIS, this conclusion should be revised to read as follows: " <b><u>the adverse environmental impacts of license renewal are not so great that preserving the option of license renewal for energy planning decision makers would be unreasonable.</u></b> "	26-5-LR
6.	Abbreviations & Acronyms	xxii	FENOC suggests that the word "million" following MMBtu should be in the right-hand column in front of "British thermal unit".	26-6-LR

FENOC Comments Related to Draft DSEIS  
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Item No.	DSEIS Section	DSEIS Page / Line(s)	Comment
7.	1.4  Appendix B	1-4 / Lines 10-13  B-1 / last paragraph	<p>This background sentence on the 2013 rulemaking states that the new Category 1 issues set forth in the revised GEIS and Part 51 rules "include geology and soils, exposure of terrestrial organisms to radionuclides, exposure of aquatic organisms to radionuclides, human health impact from chemicals, and physical occupational hazards." A similar statement appears in Appendix B.</p> <p>This list does not appear to be comprehensive. The final rule (78 Fed. Reg. at 37,283) states: "New Category 1 issues were added: geology and soils; effects of dredging on surface water quality; groundwater use and quality; exposure of terrestrial organisms to radionuclides; exposure of aquatic organisms to radionuclides; effects of dredging on aquatic organisms; impacts of transmission line right-of-way management on aquatic resources; employment and income; tax revenues; human health impacts from chemicals; and physical occupational hazards." and "Several issues were changed from Category 2 to Category 1: Offsite land use, air quality, public services (several issues), and population and housing."</p> <p>FENOC requests that the DSEIS be revised to add all of the new Category 1 issues to this background sentence or to specifically clarify that this sentence is not intended to be comprehensive or to match the scope of new issues evaluated in the DSEIS.</p> <p>Relatedly, and as proposed below regarding the substantive evaluations in Chapters 3 and 4, FENOC wants to ensure that all new Category 1 issues are fully and clearly addressed, or a justification be included for those not otherwise addressed in the DSEIS.</p>

26-7-LR

FENOC Comments Related to Draft DSEIS  
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Item No.	DSEIS Section	DSEIS Page / Line(s)	Comment	
8.	1.4  Appendix B	1-4 / Lines 13-15  B-1 / last paragraph	<p>This background sentence on the 2013 rulemaking states that "Radionuclides released to groundwater, effects on terrestrial resources (non-cooling system impacts), minority and low-income populations (i.e., environmental justice), and cumulative impacts were added as new Category 2 issues."</p> <p>This list appears to be inconsistent with the final rule (78 Fed. Reg. at 37,283), which states: "New Category 2 issues were added: Radionuclides released to groundwater, water use conflicts with terrestrial resources, water use conflicts with aquatic resources, and cumulative impacts." and "One uncharacterized issue was reclassified as Category 2: Environmental justice/minority and low-income populations."</p> <p>FENOC requests that the DSEIS be revised to include all of the new Category 2 issues to this background sentence or to specifically clarify that this sentence is not intended to be comprehensive.</p>	26-8-LR
9.	1.4	1-4 / Lines 16-22	<p>This paragraph discusses the effectiveness of the final rule with regard to the new or revised Category 1 and 2 issues, and explains that the NRC must consider them. FENOC recommends that the NRC add a brief discussion providing additional details, explaining how the NRC considered the Category 1 and 2 issues.</p>	26-9-LR
10.	1.5	1-6 / Lines 6-7	<p>Similar to Comment 5, above, the sentence should be revised to read as follows: "... <b><u>Commission that the adverse environmental impacts of license renewal are not so great that preserving the option of license renewal for energy planning decision makers would be unreasonable.</u></b>"</p>	26-10-LR
11.	1.10	1-9 / Line 5	<p>FENOC suggests changing "Accession Nos." to the singular "Accession No."</p>	26-11-LR
12.	2.0	2-1 / Lines 2 & 5	<p>FENOC suggests removing the extra spaces (25 mi) (40 km) (2500 m) in lines 2 &amp; 5. Also, the statement "[a]pproximately 700 ac (300 ha) are marshland..." is the only location in the DSEIS where 700 ac is used; elsewhere, the statement "approximately 733 ac" is used multiple times. Recommend using "approximately 733 ac" throughout the DSEIS.</p>	26-12-LR

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Item No.	DSEIS Section	DSEIS Page / Line(s)	Comment	
13.	2.1  2.1.1	2-1 / Line 19,  2-6 / Line 9	FENOC recommends the use of <u>908</u> megawatts-electric (MWe) instead of <u>913</u> MWe in the DSEIS, to be consistent with the License Renewal Application and Environmental Report. The reference cited on page 2-6, Line 11 (i.e., FENOC 2010c), is the License Renewal Application, which lists electrical output as "908 MWe". Also, 908 MWe is used later in the DSEIS for the comparison of Alternatives.	26-13-LR
14.	2.1.1	2-6 / Line 17	The sentence states that each primary coolant loop contains one reactor coolant pump, but Davis-Besse has two reactor coolant pumps per loop. FENOC recommends changing Line 17 from "... <u>one reactor coolant pump</u> ," to "... <u>one or two (depending on the plant design) reactor coolant pumps</u> ."	26-14-LR
15.	2.1.2.3	2-10 / Lines 12, 17 & 27  2-11/ Line 26	FENOC suggests revising the 3 cited references (FENOC 2011) on this page to be consistent with the references Section 2.4, which lists the references as FENOC 2011a, 2011b, or 2011c.  Same comment for page 2-11, line 26 (FENOC 2010), which has no alpha character (a, b, c or d) following the year.	26-15-LR
16.	2.2.1	2-18 / Line 19	The Magee Marsh Wildlife Area entrance is approximately 6 miles west of the station. Lake Erie is east of the station. FENOC recommends revising Line 19 to read, "The Navarre Marsh partially surrounds the station to the north, east and southeast."	26-16-LR
17.	2.2.2.1	2-21 / Line 15	Regarding the sentence, " <u>Davis-Besse has many sources of criteria pollutants and HAPs to include the following:</u> ", FENOC recommends changing the sentence to read: " <u>The Davis-Besse sources of criteria pollutants and HAPS are as follows:</u> " As currently written, the sentence suggests there are more sources than those listed.	26-17-LR
18.	2.2.2.1	2-21 / Line 44	FENOC requests that, at the beginning of the sentence at the end of the Line, NRC consider adding " <u>However,</u> " in front of "In 1992, Davis-Besse..." to make it clear that the previous discussion of fires and the chemicals released during transformer fires didn't apply in this case.	26-18-LR
19.	2.2.4	2-27 / Line 12	FENOC recommends changing " <u>August 14, 2006</u> " to " <u>July 1, 2011</u> " to align with the new permit date and the suggested update to Appendix C, below.	26-19-LR



FENOC Comments Related to Draft DSEIS  
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Item No.	DSEIS Section	DSEIS Page / Line(s)	Comment	
20.	2.2.4	2-28 / Line 23	FENOC recommends deleting " <u>asbestos</u> ", because the updated permit does not require monitoring for asbestos.	26-20-LR
21.	2.2.4	2-28 / Line 25	FENOC recommends changing or deleting the reference source cited (Brown 2010) since there is no corresponding reference citation in the references list in Section 2.4.	26-21-LR
22.	2.2.4	2-29 / Line 7	FENOC recommends changing " <u>2006</u> " to " <u>2011</u> " to align with the new permit date, a previous comment and the suggested update to Appendix C, below.	26-22-LR
23.	2.2.4	2-29 / Lines 16-18	The use of the terms "violate" with respect to NPDES requirements and "NOV" (Notice of Violation issued by a regulator e.g., OEPA) are confusing when used interchangeably in the first two sentences. The statements need to be clear that site personnel may indicate an action, lack of action, or parameter may have exceeded ("violated") permit requirements, but there were no formal NOV's issued for the cases described where FENOC exceeded permit requirements for a period of time. FENOC recommends changing " <u>NOV</u> " on line 17 to " <u>violations</u> ".	26-23-LR
24.	2.2.4	2-29 / Lines 26-27	The change has been submitted and approved, and zinc acetate is being used, so FENOC recommends revising the last sentence to be past tense.	26-24-LR
25.	2.2.5	2-31 / Line 4	FENOC recommends changing the sentence to read, "...December 2010 at <u>monitoring</u> wells 30S...".	26-25-LR
26.	2.2.5	2-33 / Lines 13-14	FENOC recommends changing " <u>Ce-137</u> " to " <u>Cs-137</u> " and " <u>Ce-134</u> " to " <u>Cs-134</u> ". Also, the cited reference (NRC 1991) is not included in the list of references in Section 2.4, page 2-87.	26-26-LR
27.	2.2.5	2-33 / Line 30	FENOC recommends changing " <u>sodium hydroxide</u> " to " <u>sodium hypochlorite</u> ".	26-27-LR
28.	2.2.8.3	2-49 / Line 13	FENOC suggests that the reference to " <u>Table 2.3-8</u> " in this line should instead be " <u>Table 2.2-8</u> ."	26-28-LR
29.	2.2.8.4	2-52 / Line 6	FENOC suggests that the reference to " <u>Section 2.2.6</u> " in this line should instead be " <u>Section 2.2.7.2</u> ."	26-29-LR
30.	2.2.9.2	2-59 / Line 10	FENOC suggests underlining and separating the heading "Transportation" in a manner similar to the formatting of the previous heading "Education".	26-30-LR

FENOC Comments Related to Draft DSEIS  
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Item No.	DSEIS Section	DSEIS Page / Line(s)	Comment	
31.	2.2.9.5	2-60 / Line 42	A space is needed between the first two words in the line.	26-31-LR
32.	2.2.9.5	2-65 / Line 11	The word "temporary" is missing the letter "t".	26-32-LR
33.	2.2.9.6	2-67 / Line 12	There is an errant comma following the word "of".	26-33-LR
34.	2.2.10.1	2-69 / Lines 21-22	FENOC recommends rewording the following sentence as shown: "One documented fluted projectile point <del>is located</del> <b>was discovered</b> at the Peters site in Ottawa County, south of Davis-Besse along the Portage River <del>was discovered</del> (Prufer and Shane 1973)."	26-34-LR
35.	2.2.10.1	2-71 / Line 23	FENOC recommends changing " <u>north</u> " to " <u>northwest</u> ", because the Maumee River runs from the southwest to the northwest of Davis-Besse.	26-35-LR
36.	2.2.10.2	2-72 / Line 40	The Magee Marsh is approximately 6 miles west of Davis-Besse. FENOC recommends adding a period after "...agricultural purposes" and deleting the remainder of the sentence.	26-36-LR
37.	2.4	2-74 to 2-76 / various Lines	Many of the titles for the Code of Federal Regulations citations are incorrect or duplicated. Examples include 10 CFR Part 60, Part 70, 15 CFR Part 930 has multiple citations bundled together, 40 CFR Part 80, 40 CFR Part 239, etc. FENOC recommends verifying the titles for these citations in this section and in the other references sections of the DSEIS.	26-37-LR
38.	2.4	2-79 Line 24	FENOC suggests that the title of this document reference should read, "Loggerhead Shrike: <u>First Ever</u> Captured...".	26-38-LR
39.	2.4	2-82 Line 37	FENOC recommends deleting the "(2010b)" at the end of the reference to be consistent with the other FENOC 2010 citations.	26-39-LR
40.	2.4	2-83 / Lines 15-19 and Line 20	This FENOC 2011 citation appears to be out of chronological order and should be located between lines 11 and 12. On line 20, [FENCO] should read [FENOC].	26-40-LR

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Item No.	DSEIS Section	DSEIS Page / Line(s)	Comment	
41.	Chapters 3 & 4	All	<p>Although these substantive chapters evaluating the environmental impacts of refurbishment and operation appear to address most of the new issues in the June 20, 2013 final rule that revised Table B-1, it is not clear whether each individual issue has been addressed.</p> <p>For example, it does not appear to be clearly stated whether the following Category 1 issues are applicable to Davis-Besse and, if so, how they are addressed: effects of dredging on surface water quality, groundwater quality degradation resulting from water withdrawals, effects of dredging on aquatic organisms, and impacts of transmission line ROW management on aquatic resources.</p> <p>Therefore, FENOC recommends that the NRC include a discussion in this chapter, or elsewhere in the SEIS, to provide an explanation of how the Category 1 issues in the new final rule have been addressed, or, in the alternative, to provide a justification for any differences between what is in the DSEIS versus what is in the revised GEIS/final rule.</p>	26-41-LR
42.	3.1	3-3 / Lines 5 & 6	<p>There are numerous references in Chapters 3 &amp; 4 to replacement of the steam generators and that these activities "will be performed during an extended outage scheduled for the spring of 2014" (e.g., Pg 3-3, lines 17-20). At the time of this review, both steam generators have been replaced and the 2014 refueling outage is nearing completion. Consider changing the tense for steam generator replacement to past tense, although FENOC realizes that this change would impact many pages and sections of the DSEIS.</p>	26-42-LR
43.	3.2.1	3-4 / Line 33  3-5 / Line 1	<p>FENOC is an entity. FENOC recommends changing the sentence from "FENOC noted in <u>their</u> ER that..." to "FENOC noted in <u>its</u> ER that...". This issue appears in multiple locations (at least 8 instances) in the DSEIS (see Chapter 4 for more examples).</p> <p>Similarly, FENOC recommends changing the statement in Line 1 on the next page from "FENOC's procedures require <u>them</u> to coordinate with the FWS..." to "FENOC's procedures <u>require coordination</u> with the FWS..."</p>	26-43-LR
44.	3.2.8	3-9 / Line 7	<p>FENOC recommends changing "<u>Environmental Procedure</u>" to "<u>Environmental Evaluations procedure</u>" to match the title of the procedure.</p>	26-44-LR

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Item No.	DSEIS Section	DSEIS Page / Line(s)	Comment	
45.	4.7.3	4-8 / [No line numbers]	FENOC recommends deleting one of the uses of the word "vicinity" in the 2 <sup>nd</sup> paragraph, 1 <sup>st</sup> sentence.	26-45-LR
46.	4.9.1	4-13 / [No line numbers]	The first sentence begins with an errant period.	26-46-LR
47.	4.14	4-30 & 4-31	FENOC requests that the DSEIS be revised to include an affirmative statement in this section clarifying that the NRC has reviewed the Category 1 issues in Table B-1, as revised in the June 20, 2013 final rule, and has determined that, to the extent such topics are applicable to Davis-Besse, there is no new and significant information, and therefore the Category 1 designations for these issues remain correct and the small impact designations in Table B-1 remain correct. Alternatively, the SEIS should provide a justification for any differences between what is in the DSEIS versus what is in the revised GEIS/final rule.	26-47-LR
48.	Table 4.15-1	4-32 & 4-33	At the bottom of page 4-32, the first project listed under "Energy Projects" is the ' <i>Independent Spent Fuel Storage Installation on Davis-Besse site; dry spent-fuel storage</i> '. It is not clear why the Status discusses Spent Fuel Pool and transfer pit storage versus the dry fuel storage pad and current dry fuel storage capability.  On page 4-33, the 3 <sup>rd</sup> PROJECT/ACTION listed (Toledo Refinery Substation Project), the LOCATION description ends abruptly... "Oregon, Ohio, near the intersection of".	26-48-LR
49.	4.15.5.2	4-43 / Line 20	The sentence at the end of the second paragraph in this section is not complete and has no period.	26-49-LR

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Item No.	DSEIS Section	DSEIS Page / Line(s)	Comment	
50.	5.3.1  5.3.3  F.1	5-3 / Lines 23 & 33  5-6 / Lines 12, 21  F-1 / Line 18  F-2 / Lines 4-23	In response to NRC requests for additional information (RAIs), the total number of SAMAs was changed from 167 to 168, and the number of SAMAs eliminated based on screening was changed from 152 to 153. (see ADAMS Accession No. ML11180A233 [FENOC Letter L-11-154 dated June 24, 2011], RAI 5.c).  This comment also applies to Appendix F, Section F.1 (page F-1). However, since this Appendix is written chronologically, FENOC recommends adding the following bullet to page F-2 under the list of FENOC provided information via letter dated June 24, 2011:  <b><u>- Identification of a new SAMA candidate (OT-9R), which changed the total number of SAMA candidates evaluated to 168 instead of the original 167.</u></b>	26-50-LR
51.	5.3.1	5-3 / Lines 35-36	FENOC suggests adding the text in bold/underline: "In the third step, FENOC estimated the benefits and the costs associated with each of the <b><u>15 candidate</u></b> SAMAs."	26-51-LR
52.	5.3.2	5-4 / Line 29	The text states: "Column totals in Table 5.3-2 may differ due to round off." The table reference appears to be incorrect. The correct reference is Table <b><u>5.3-1</u></b> .	26-52-LR
53.	5.3.2  F.2.1	5-5 / Table 5.3-1  F-4 / Table F-1	FENOC recommends clarifying the following two initiating event descriptions:  From: "Flooding in CCW pump room"  To: "Flooding in CCW pump room <b><u>from SW</u></b> " [or, <b><u>Service Water</u></b> ]  and, From: "Flooding in turbine building"  To: "Flooding in turbine building <b><u>from Circ water</u></b> "  Also, consider noting that the % contribution to CDF values are slightly different from those reported in FENOC Environmental Report Table E.3-1 due to rounding.  Comment also applies to Appendix F, Section F.2.1, Table F-1.	26-53-LR

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Item No.	DSEIS Section	DSEIS Page / Line(s)	Comment	
54.	5.3.2  F.2.1	5-5 / Table 5.3-2  F-5 / Table F-2	FENOC recommends that the Population Dose and % Contribution be updated to match those included in FENOC Letter L-12-244 dated July 16, 2012 (see Table E.3-21).  Comment also applies to Appendix F, Section F.2.1, Table F-2.	26-54-LR
55.	5.3.5	5-7 / Lines 13-14	Suggest adding the text in bold/underline: "FENOC's derivation of each of the associated costs is summarized in Appendix E <b><u>of the ER.</u></b> "	26-55-LR
56.	6.2.1.2	6-5 / Lines 19-21	The DSEIS states that the various studies it reviewed show that "the relatively lower order of magnitude of GHG emissions from nuclear power, when compared to fossil-fueled alternatives (especially natural gas), <i>could potentially disappear if available uranium ore grades drop sufficiently . . .</i> " (Emphasis added.) This statement is speculative, apparently based on worst-case assumptions, and a review of the data presented in Table 6.2-2 reveals it to be unsupported. See, e.g., POST (2006) (referenced and described in Table 6.2-2). FENOC recommends deleting this sentence.	26-56-LR
57.	6.2.2	6-8 / Lines 39-40	The DSEIS states that " <u>few studies predict that nuclear fuel cycle emissions will exceed those of fossil fuels within a timeframe that includes the Davis-Besse period of extended operation.</u> " But none of the studies cited in Table 6.2-2 appear to support this thesis—at least based on the data presented. Therefore, FENOC suggests revising this sentence to state: " <b><u>Nearly all studies predict that nuclear fuel cycle emissions will remain an order of magnitude or more below those of all types of fossil fuels during the Davis-Besse period of extended operation.</u></b> "	26-57-LR
58.	6.2.2	6-9 / Lines 8-9	The DSEIS concludes that " <u>it is likely that GHG emissions from renewable energy sources would be lower than those associated with Davis-Besse at some point during the period of extended operation.</u> " This conclusion appears to be unsupported by the data presented in Table 6.2-3. FENOC suggests revising this sentence to state that " <b><u>most of the relevant studies show that it is likely that GHG emissions associated with Davis-Besse will remain comparable to or below those from renewable energy sources throughout the period of extended operation.</u></b> "	26-58-LR

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Item No.	DSEIS Section	DSEIS Page / Line(s)	Comment	
59.	8.0	8-3 / Line 30	FENOC recommends changing "... FENOC Service Company's..." to "... <b>FirstEnergy</b> Service Company's...."	26-59-LR
60.	8.1	8-6 / Table 8.1-1	The conclusion that the air quality impacts of new natural gas combined cycle generation would be SMALL to MODERATE appears inappropriate, in that it blurs the significant difference between emissions from Davis-Besse and natural gas sources. See Table 6.2-2 (page 6-6). FENOC suggests that if the impacts from Davis-Besse are SMALL, then the impacts from natural gas facilities should logically be at least MODERATE, consistent with the Davis-Besse Environmental Report.	26-60-LR
61.	8.1.5.1	8-12 / Line 17	FENOC suggests revising the acronym "GGNS" to read " <b>Davis-Besse</b> ".	26-61-LR
62.	11.0 Appendix A	11-4 A-4 & A-173	FENOC recommends changing the name "Nesser" to " <b>Nusser</b> " in 3 locations. Nusser is the correct spelling according to the signature on the email included as page A-173.	26-62-LR
63.	Appendix C	C-5 / Table C-2	Storage of spent nuclear fuel & high-level radioactive waste: STATUS – The word <u>Expired</u> should read " <b>Expires</b> ".	26-63-LR
64.	Appendix C	C-5 / Table C-2	Permit to operate an air containment source: STATUS – should read as follows: Operation of station auxiliary boiler <b>Facility ID#: 0362000091</b> <b>Permit #: P0110436</b> <b>Issued: 02/28/2013</b> <b>Expires: 02/28/2023</b>	26-64-LR
65.	Appendix C	C-5 & C-6 / Table C-2	NPDES Permit – Treatment of wastewater and effluent discharge to surface receiving waters (Toussaint River and Lake Erie): STATUS – the Ohio Permit No. should read <b>21B00011*JD</b> <b>Issued: 07/01/2011</b> <b>Expires: 04/30/2016</b>	26-65-LR

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Item No.	DSEIS Section	DSEIS Page / Line(s)	Comment
66.	Appendix C	C-6 / Table C-2	Hazardous material registration: STATUS – should read as follows: Transportation of hazardous materials Permit Number: <b><u>052112 020 004UW</u></b> Issued: <b><u>05/22/2012</u></b> Expires: <b><u>06/30/2015</u></b> (Renewed Triennially)
67.	Appendix C	C-6 / Table C-2	License to deliver radioactive waste: STATUS – should read as follows: Shipment of radioactive material to a licensed disposal-processing facility within the State of Tennessee Tennessee Delivery License # T-OH003-L <b><u>14</u></b> Issued: Annually Expires: <b><u>12/31/2014</u></b>
68.	Appendix C	C-6 / Table C-2	New Row: <b><u>License to deliver radioactive waste:</u></b> AGENCY – should read as follows: <b><u>South Carolina Department of Health and Environmental Control</u></b> AUTHORITY – should read as follows: <b><u>South Carolina Radioactive Waste Transportation and Disposal Act No. 429 of 1980</u></b>  STATUS – should read as follows: <b><u>Shipment of radioactive material to a licensed disposal-processing facility within the State of South Carolina</u></b> <b><u>Permit #: 0054-34-14</u></b> <b><u>Issued: 12/10/2013</u></b> <b><u>Expires: 12/31/2014</u></b>

26-66-LR

26-67-LR

26-68-LR



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Item No.	DSEIS Section	DSEIS Page / Line(s)	Comment	
69.	Appendix C	C-6 / Table C-2	Underground storage tank registration: STATUS – should read as follows: <u>Certificate Facility # 62000072</u> <u>Expires: 06/30/2014</u>	26-69-LR
70.	Appendix C	C-7 / Table C-2	X-ray generating equipment registration: STATUS – should read as follows: <u>Expires: 05/31/2014</u>	26-70-LR
71.	Appendix C	C-7 / Table C-2	Scientific Collection Permit: STATUS – should read as follows: <u>Permit #: 15-112</u> <u>Issued: 03/16/2014</u> <u>Expires: 03/15/2015</u>	26-71-LR
72.	Appendix E	E-8	The following FENOC letter is missing from the list of correspondence: <u>Letter L-12-244 from John C. Dominy, Davis-Besse Nuclear Power Station, Unit 1, Docket No. 50-346, License Number NPF-3, Correction of Errors in the Davis-Besse Nuclear Power Station, Unit No. 1, License Renewal Application (TAC No. ME4613) Environmental Report Severe Accident Mitigation Alternatives Analysis, and License Renewal Application Amendment No. 29 (dated July 16, 2012)</u>  FENOC notes that this same correspondence is listed in Appendix F, Section F.8 (References), page F-36, Lines 34-38 (FENOC 2012a). However, the ML number listed in Appendix F is a duplicate of the ML number for FENOC letter dated June 24, 2011. Also, FENOC was not able to find the document in ADAMS using various search terms (may not be available to the public).	26-72-LR
73.	F.2.2	F-12 / Line 7	FENOC suggests inserting the word "are" as follows: "The Level 1 core damage sequences <u>are</u> grouped into core damage bins according to similarities in their impact on containment response."	26-73-LR

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 Page 14 of 14

Item No.	DSEIS Section	DSEIS Page / Line(s)	Comment	
74.	F.2.2	F-14 / Lines 14-17	FENOC suggests editing the quoted sentence as follows: "Data from 2006 through 2008 <u>was were</u> considered, but the 2006 data <u>was were</u> chosen because <u>it was they were</u> the most complete data set. Data from year 2008 <u>was were</u> considered unusable as <u>it they</u> contained too many missing long <u>data</u> -sequences of unusable data."	26-74-LR
75.	F.2.2	F-14 / Lines 39-40	FENOC suggests adding to the following sentence the language in bold/underline: "In response to an NRC staff RAI, FENOC revised the Level 3 PRA to include <b>that portion of</b> the Canadian population <b>located within the 50-mi radius SAMA analysis region</b> (FENOC 2011)."	26-75-LR
76.	F.3.1  F.7	F-17 / Line 34  F-35 / Lines 18 & 19	Same issue as Comment 49 [5.3.1]. Specifically, the total number of SAMAs was changed from 167 to 168, and the number of SAMAs eliminated based on screening was changed from 152 to 153.  However, since Appendix F is written chronologically, FENOC recommends adding the following sentence after line 6 on page F-18 and after line 19 on page F-35:  <u>In response to NRC RAIs, FENOC's initial list of 167 SAMA candidates was increased to 168, of which 153 were eliminated based on screening.</u>	26-76-LR
77.	F.3.2	F-21 / Line 30	FENOC suggests editing the quoted sentence as follows: "In response to the RAIs, FENOC addressed the suggested lower cost alternatives and determined that they were <b>either</b> -already implemented at Davis-Besse (b), not feasible (c), or not cost-beneficial (a, d, e, and f) (FENOC 2011)."	26-77-LR
78.	F.5	F-27 / Line 27	The word " <u>applicant's</u> " should be " <u>applicants</u> ".	26-78-LR

RULES AND DIRECTIVES  
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# PUBLIC SUBMISSION

2014 APR 25 AM 10: 58

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Tracking No. 1jy-8bm1-cd6y  
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Submission Type: Web

**Docket:** NRC-2010-0298  
Receipt and Availability of Application for License Renewal

RECEIVED

**Comment On:** NRC-2010-0298-0033  
License Renewal Application for Davis-Besse Nuclear Power Station, Unit 1; Draft Supplemental Generic Environmental Impact Statement

**Document:** NRC-2010-0298-DRAFT-0035  
Comment on FR Doc # 2014-05021

3/7/2014  
79FR 13079

## Submitter Information

12

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**Email:** 3000aws@gmail.com

## General Comment

Adequate alternatives do exist to replace the capacity of Davis Bessie. The combination of renewable solar and wind with the decreased demand in electricity resulting from savings from energy efficiency are more than sufficient to replace the capacity of Davis Bessie. A good example of what is possible can be learned from recent developments in wind energy

27-1-AL

In 2012 the Lawrence Berkeley National Laboratory and the National Renewable Energy Laboratory released a report entitled "Recent Developments in the Levelized Cost of Energy from U. S. Wind Power Projects." This report says that wind technology in 2012 can produce wind at around 6 cents per KWH. The report also demonstrates that Ohio can produce wind at a 30-40 % capacity factor. Ohio could install 1-2 billion dollars of wind each year for the next 20 years and we would still have wind capacity in Ohio. So, alternatives are available and cost effective to compete with the wasteful nuclear monstrosity known as Davis Bessie. A step in this direction occurred in March of 2014 Ohio Power Siting Board approved a 300 MW wind project in Hardin and Logan Counties. This capacity is nearly 1/3 the capacity of Davis Bessie. The Nuclear Regulatory Commission needs to seriously consider the evidence of the tremendous potential of both wind and solar energy. The old economic arguments against wind and solar are no longer valid given the decline in costs for both of these renewables.

The arguments against wind and solar have relied on arguments that have been refuted repeatedly. These tired arguments rely on disproven facts that renewables cannot provide base load power. Jacobs and Archer completed a study in 2007 demonstrating that up to 19 interconnected wind farm sites can provide baseload power. On the first page of Abstract of their article they state "Because it is intermittent, though, wind is not

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Add = E. Keegan (enk)

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used to supply baseload electric power today ( 2006). Interconnecting wind farms through the transmission grid is a simple and effective way of reducing deliverable wind power swings caused by intermittency. As more farms are interconnected in an array, wind speed correlation among sites decreases and so does the probability that all sites experience the same wind regime at the same time. The array consequently behaves more and more similarly to a single farm with steady wind speed and thus steady deliverable wind power. . . . It was found that an average of 33% and a maximum of 47% of yearly averaged wind power from interconnected farms can be used as reliable, baseload electric power. Equally significant, interconnecting multiple wind farms to a common point and then connecting that point to a far-away city can allow the long-distance portion of transmission capacity to be reduced, for example, by 20% with only a 1.6% loss of energy." There are viable alternatives to nuclear power and the old arguments concerning renewables not being able to supply baseload power are no longer valid.

Davis Bessie is not needed to produce reliable power and the license needs to be denied. The above information applies only to wind power but other technologies exist that do address storage problems with solar energy. When the potential of wind power is added to both solar power and energy efficiency there is no need forenergy from Davis Bessie.

27-2-OL

Economically investment in renewables and energy efficiency would pay big dividends. First Energy needs to give up its resistance to change and begin to implement the options that will be safer , cleaner, and better for our future.

# PUBLIC SUBMISSION

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**Docket:** NRC-2010-0298  
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**Comment On:** NRC-2010-0298-0033  
License Renewal Application for Davis-Besse Nuclear Power Station, Unit 1; Draft Supplemental Generic Environmental Impact Statement

**Document:** NRC-2010-0298-DRAFT-0037  
Comment on FR Doc # 2014-05021

*3/7/2014*  
*79 FR 13079*

## Submitter Information

**Name:** Jim Sherman

*14*

## General Comment

Please deny the renewal of this monstrosity.

28-1-OL

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2014 APR 25 AM 10:58

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E-RIDS= ADM-03  
Add= *R. Keegan (enk)*

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# PUBLIC SUBMISSION

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Comment On: NRC-2010-0298-0033  
License Renewal Application for Davis-Besse Nuclear Power Station, Unit 1; Draft Supplemental Generic Environmental Impact Statement

Document: NRC-2010-0298-DRAFT-0038  
Comment on FR Doc # 2014-05021

3/7/2014  
79FR 13079

## Submitter Information

15

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## General Comment

In U.S. history there is no record of a worse run nuclear reactor, nor one with such a flawed design, nor one owned by a company that has declared political war on all sources of cheaper energy. They refuse to build, own, or operate wind farms, which are by far the cheapest new energy source that can be built., but they love nuclear, which is the most expensive and dangerous form of energy generation that can be built. The more money they spend to build a KW of electricity production , the more money they make on the construction and also on the operation of it. The criminal negligence exhibited at Davis Besse should be paramount in NRC's decision, because it's scaring the heck out of us. The Davis Besse nuclear facility is an antique, with numerous design flaws, with a history of blatant carelessness and intentional negligence., in the running of a Uranium powered nuclear reactor. The horrible folly that might likely befall a reactor run by people who lie about doing intensely critical maintenance and required inspections, would devastate the midwest and Lake Erie. People would not move back here in the event of a release of the magnitude that Davis Besse has proven itself capable of producing (time and time again) Antique nuclear reactors should not be allowed to run, especially when solar power is cheaper, has no fuel costs, and will never cause a permanent evacuation when the county receive the earthquake that we know will come some day, because it's overdue. The company(s) Fenoc, FE, etc. etc., are not qualified and by their own long and failed record , will never be morally qualified to run a nuclear reactor. The reactor containment building has been ripped apart time and again, with critically important structural damage in the concrete dome. The containment building is full of cracks, which is the only thing we know will happen with concrete, it will definitely crack, especially when it's very old concrete as in the containment building. The hole in the head of the reactor, was immediately followed by the replacement head developing scores of cracks in the coolant nozzles. NRC let the worst run reactors owner install a reactor head which had the same incredible faults as the one that produced Boric acid coolant leaks and burnt a hole through several inches of

29-1-AL

29-2-OS

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E-RFDS = ADM-03  
Add = E. Keegan (enk)

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steel, leaving only a pitted and bulging 3/8" stainless liner between us and a possible meltdown. All this to buy time for First Energy so they could delay the inevitable move toward wind power, and solar, and electrical efficiency programs. Look at the actual cost figures. If NRC renews the license for Davis Besse nuclear power plant it will cost Ohioans billions of dollars to store the nuclear waste for the next quarter million years. Wind power, solar power, and efficiency programs could negate the need for all of the power produced at Davis Besse, but First Energy fights efficiency ferociously, using legal bribe money, lobbying, using ALEC, the legal bribery machine, and even gave a million or more dollars to Bush 2 to delay "new source review" implementation on it's coal plants. F.E. is not a decent energy company, it's areas are mostly monopoly controlled by it, unless you want to buy power from it's shell corporation. If it's in the financial interest of F.E.'s customers to have Davis Besse stay open with the chance of permanently evacuating large parts of 29-3-RW you should renew it's license. ~~NRC can't renew Davis Besse's license on the basis of economics. E~~ knows that F.E. will continue to suck the economic life out of their customers if the reactor is re-licensed. NRC should consider the cost of storing, guarding, and monitoring the nuclear waste generated by another 20 years of Russian Roulette type operation of and at Davis Besse, NRC should turn down the licensing renewal request of First Energy/Davis Besse because it is and always has been unsafe to run, terribly expensive to run, and thanks to the Price Anderson Act, the liability ""insurance"" for the plant melting down is squarely on the backs of taxpayers. Davis Besse's liabilities are immense, multi faceted and will be ours to pay for generations. If it melts down, their liability is so low that it has created an even greater "moral hazard". Moral hazard is an insurance term that defines increased risk of loss because the insured suffers no consequences from a loss or even multiple losses. Moral hazard and corporate greed are the problem at F.E./DB and it's shell companies. NRC can and should limit the damage to us and to the people who live over the next 250,000 years or so by denying the license to renew the Davis Besse nuclear power plant. 29-4-OL

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# PUBLIC SUBMISSION

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Comment on FR Doc # 2014-05021

## Submitter Information

3/7/2014  
79FR 13079  
16

Name: Kathy Barnes  
Address:  
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Sherwood, MI, 49089  
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## General Comment

Re: Docket ID NRC-2010-0298 The relicensing of Davis Besse Nuclear Power Plant:

I am opposed to relicensing Davis Besse for a variety of reasons. I will try to be clear and concise:

30-1-RW

1. Davis Besse creates nuclear waste. There is no solution to the safe storage of nuclear waste. It remains toxic for longer than anyone can guarantee its safe storage. There is no way to dispose of it that would not endanger the environment sooner or later. When businesses pollute, they should be shut down.

30-2-OL

2. Davis Besse has had a history of huge running cracks. Even though the cracks are "patched" the real problem has not been solved. What is causing the cracking? Because cracking could lead to containment compromise, including a full blown melt down, I believe Davis Besse and its cracks should be shut down and decommissioned, not relicensed.

30-3-OS

3. Just like Consumers Power promised to repair Palisades, what happened after it was relicensed? CP sold it to Entergy who still has not done the repairs CP thought necessary, and were contingent upon relicensing. The NRC has not made Entergy do the repairs, but has left it up to Entergy to decide whether the repairs are necessary or not. Meanwhile, Palisades has had leaks, come close to melt downs, and sump pump failure etc.....Davis Besse also may run the risk of being resold...possibly to a foreign nation if they can unload it that way.....and not do repairs.

30-4-OS

4. Even if repaired Davis Besse is not a good investment. As a taxpayer I am horrified the government uses my tax dollars to subsidize the nuclear industry.

30-5-OL

5. Sometimes the best thing to do is to quit trying to fix a broken thing. When a car rusts out underneath, you don't keep driving it down the road even though the engine is still running. You shouldn't allow a dangerous nuclear power plant to keep operating. The risk is too great.

*SUNSE Review complete  
Template = ADM-013*

*FRIDG = ADM-03  
Cdd = E. Keegan (ENK)*



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# PUBLIC SUBMISSION

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Receipt and Availability of Application for License Renewal

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**Comment On:** NRC-2010-0298-0033  
License Renewal Application for Davis-Besse Nuclear Power Station, Unit 1; Draft Supplemental Generic Environmental Impact Statement

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Comment on FR Doc # 2014-05021

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3/7/2014  
79FR 13079  
17

## General Comment

I would like to request that the License renewal application for the Davis-Besse nuclear power plant be denied. I am very concerned about the history of chronic problems that have not be fully explained or addressed like the cracking in the concrete shield. My concern is that these cracks weaken the plant's viability in severe weather and increase vulnerabilty to earthquakes.

31-1-OL

I live in Columbus, Ohio and I am concerned about the possibility of Fukushima-like disaster in Ohio. This plant is too old to be safely operated.

I am particularly concerned about the pollution produced by nuclear waste produced by the plant and potential impact of continued accumulating pollution on the health of my family, especially my grandchildren.

31-2-RW

SUNSI Review Complete  
Template = ADM - 013  
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Comment on FR Doc # 2014-05021

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 2014 APR 25 AM 10:59  
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 10:59

## General Comment

See attached file(s)

## Attachments

4 21 14 draft EIS comment vis a vis 1 10 12 cracking contention

32a-1-LR

SUNSI Review Complete  
Template = ADM - 013  
E-RIDS= ADM -03  
Add= *E. Keegan (enk)*

The following is provided as public comment on the NRC draft EIS re: Davis-Besse's proposed 20 year license extension

32a-1-LR (cont.)

Link to original Jan. 10, 2012 cracking contention filed with the NRC ASLB:

<http://www.beyondnuclear.org/storage/FINAL%20Contention%205%20Cracking%20January%2010%202012.pdf>

It is noteworthy to point out that, after an initial period of support for our contention, NRC Staff opposed it after the publication of FENOC's Aging Management Plan in early April, 2012

At point #20, on p.21-22, we stated:

"Those patches are, of course, weak spots themselves, both the welded area on the inner steel containment, a mere 1.5 inches thick, as well as the "patched" area on the concrete shield building/secondary reactor containment structure, a mere 2.5 feet thick. As explained below, on January 4, 2012, David Lochbaum of UCS questioned whether the multiple holes cut in containment, and thus the multiple "patches" applied afterwards, overlapped, and how so. The "welds" on the inner steel container, and "repours" of concrete on the outer shield/secondary containment building, are themselves weak spots – perhaps repeatedly so in spots that have been involved in more than one cut-through and repair. This is a safety-significant issue that will grow all the more so with age-related degradation, and the prospect for yet one more cut-through and "repair" (patch) for the 2014 steam generator replacement project. In fact, FENOC has answered Lochbaum's question about the overlap of the breaches. In its January 5, 2012 Camp Perry power point presentation cited previously, on Slide #18 (page 9 of the hardcopy handout), FENOC documents that indeed all of the first three breaches – 1970, 2002, and 2011 – have already overlapped, specifically in the top left-hand quadrant."

As revealed via our FOIA request (dated Jan. 26, 2012), by documents NRC provided us in summer 2012, contractors Bechtel and Sargent and Lundy themselves at first suspected that the hydro-demolition process itself, used to breach the Shield Building, was responsible for the cracking. Although the cracking proved to be far more widespread than the access opening area impacted by the hydro-demolition activity, Bechtel and Sargent and Lundy's concern is a strong indication that hydro-demolition can in fact be a concern in terms of damage.

In fact, in Feb. 2014, it was revealed that the hydro-demolition just carried out as part of the steam generator transplant operation had damaged the rebar in the Shield Building access opening area. On April 15, 2014, NRC Staff included this concern about rebar damage issue in Requests for Additional Information (RAIs) regarding the 2017-2037 Aging Management Plan (AMP).

Davis-Besse has breached its Shield Building four times: the Initial Construction Opening in the 1970s; the 2002 reactor lid replacement access opening; the 2011 reactor

lid replacement access opening; and the 2014 steam generator replacement access opening. This is more than any other nuclear power plant. Each breach of the Shield Building risks more damage to the structure. Davis-Besse cannot guarantee not needing to breach the Shield Building yet again before 2037.

At point #22, on p.23-24, we stated:

“This approach appears more attuned to an arbitrary outage schedule, with a speedy return to economically-profitable “production” rather than taking a conservative, analytical approach to determination of root causes, extent, and safety-significance of cracking in the shield building. Such an approach imperils Intervenors, the people they represent, and countless residents downwind and downstream of the aged and aging Davis-Besse atomic reactor in the Great Lakes Basin.”

NRC’s OIG reported at the end of 2002, after the Hole in the Head fiasco revealed earlier that year, that NRC – in addition to FENOC – had prioritized the company’s bottom line above public safety. NRC has repeated that behavior since 2011 – allowing the company to rush reactor restart in Dec. 2011, before knowing the root cause, extent of condition, and corrective actions needed, regarding Shield Building cracking. In fact, given revelations of the worsening of previously known cracking, and the initiation of previously unknown cracking, in August/September 2013, NRC has postponed FENOC’s due date for a “revised revised” root cause report and corrective action (aging management) plan until mid-2014 – more than two years after the original Feb. 28, 2012 deadline. As David Lochbaum of UCS indicated in May of 2012, FENOC’s failure to provide complete, accurate information by Feb. 28, 2012 constituted a 10CFR50.9 violation, but NRC has never taken enforcement action.

At point #23, on p.24, we stated:

“Of additional concern is that the pour of new concrete to re-seal the shield building foreclosed significant investigatory options for examination and further analysis of the cause, extent, and significance of the cracks, such as direct visual examination, direct measurement, direct sampling, etc. In effect, evidence of the cracking has been buried under inches or feet of concrete, due to FENOC’s rush to re-start, and NRC’s letting them get away with it.”

In fact, in Feb. 2014 we learned that, by leaving in place metal forms in late 2011, FENOC had concealed a 25 foot long, 6 to 12 inch wide, air space or gap of yet to be revealed depth through the 30 inch thick Shield Building wall. The metal forms prevented visual examination of the gap. Thus, not only did the rushed resealing of the access opening involve an incomplete concrete pour – it also prevented visual examination and discovery of the very gap resulting from the rush-job conducted during the rush to restart the reactor in Dec. 2011. Thus, Davis-Besse operated at full power for over two years –

from early December 2011 to Feb. 1, 2014 – with a significant void space in its Shield Building wall, of yet-to-adequately-be-determined impact on containment safety margins.

Such risky behavior by FENOC and NRC, working in collusion and complicity, cannot be endured for an additional 20 years.

32a-2-OL

At point #25, on p.26, we stated:

“If the shield building loses its ability to perform its safety- and security-related functions, Davis-Besse should be immediately shut down, of course. But this very risk, the potential loss of shield building safety and security function over time, is exactly the kind of analysis that should be included in FENOC SAMA analyses regarding the Davis-Besse license extension. Such analyses have not been done. Similarly, the potential for Davis-Besse’s cracked shield building to cause its early retirement, before its current license expiration in 2017, or before its extended 2037 license expiration proposed by FENOC, should be addressed by FENOC’s reliability analyses, and its energy alternatives analyses. For, if Davis-Besse’s days are numbered, due to its cracked shield building, then Intervenor’s wind, solar, and compressed air energy storage contentions increase in merit. FENOC, and the Region of Interest as a whole, should be preparing now to replace Davis-Besse and the NRC should reflect such a reality through its own independent analysis in the Draft Environmental Impact Statement on the license extension proposal.”

FENOC’s SAMA analyses assume a safe, sound Shield Building capable of performing its designed containment function. However, the severe cracking known since October 2011, combined with wall gaps in resealed access openings in 2002 and 2011, seriously undermine any such optimistic assumptions. As Intervenor’s SAMA contentions have challenged since the beginning of this license extension application proceeding, FENOC’s SAMA analyses need fundamental re-evaluation.

32a-3-PA

NRC’s draft EIS does not adequately address these needed SAMA re-evaluations, if it addresses them at all.

Mark Cooper, an energy economist at Vermont Law School, warned on April 10, 2014 that nuclear utilities must plan for replacement power – as from efficiency upgrades and development of renewable sources of electricity – in advance of the inevitability that atomic reactors will one day close, lest our electric grids lurch from crisis to crisis. In fact, in July 2013, Cooper identified Davis-Besse as one of a dozen reactors most at risk of near-term shut down, due to a variety of factors, including economic factors (cost, old age, stand alone status, and only a 25-year future even if it gets an extension), operational factors (lack of reliability, long-term outages), as well as multiple safety factors. (see Exhibit ES-1: Retirement Risk Factors of the Nuclear Fleet, page iv, posted online at <http://216.30.191.148/071713%20VLS%20Cooper%20at%20risk%20reactor%20report%20FINAL1.pdf>).

32a-4-AL

At point #40, on p. 38-39, we stated:

“A problem with this examination protocol is that this visual inspection program is limited to external surfaces. The present cracking controversy involves internal cracking, not visible to the naked eye on the surface. That is another reason that Interveners are concerned that the early December pouring of the concrete to patch the shield building hole may have covered up evidence of cracking that could only be obtained through direct visual inspection, but is now under inches or feet of concrete.”

The rushed access opening reseal, in the lead up to the rushed reactor restart, in late 2011, not only concealed primary evidence of severe Shield Building wall cracking, it also introduced a substantial gap in the resealed access opening, concealed from visual examination by metal plates that had been left in place. FENOC’s ability to detect serious problems with the Shield Building without direct visual examination seems quite limited. The substantial Shield Building wall gap introduced in 2011, for example, remained undiscovered until Feb. 2014, when visual examination revealed it during the steam generator replacement cut of yet another access opening through the Shield Building. During the Dec. 2011 to Feb. 2014 time frame, not a single acoustic test that could have revealed the wall gap was performed.

Along the same lines, the white wash applied to the exterior of the Shield Building in August 2012 has concealed visual evidence of surface cracking ever since. Interveners called for comprehensive root cause, extent of condition, and corrective action examination, documentation, and analyses throughout late 2011 and all of 2012 (in fact, still call for it) – for all forms of cracking and other Shield Building problems, not just sub-surface laminar cracking. FENOC’s and NRC’s priority on production (company profit), rather than public safety, has glossed over serious Shield Building problems, of deep safety and environmental concern on the brink of approval of a 20-year license extension. In fact, we addressed this concern at the very end of point #45, on p.46-47, stating:

“Interveners question with alarm the safety significance of the potential for worsening concrete shield building cracking over the next five years of licensed operations. Contemplating such worsening cracking for the next quarter century, considering the 20 year license extension proposed, raises the level of alarm considerably. Interveners contend that Davis-Besse should be shut down on Earth Day (April 22), 2017 – its last licensed date for operations under the original 40 year license – at the very latest.

In fact, by Sept. 2013, FENOC admitted worsening of previously identified cracking, as well as initiation of newly discovered cracking – that is, age-related cracking. This is clear evidence that Interveners’ cracking should have been admitted for ASLB hearing in the first place – it still should be.

At point #48, on p.50, we stated:

"In request for additional information (RAI) B.1 4-1, issued on May 19, 2011, the staff asked the applicant to describe the programmatic activities that will be used to continually identify aging issues, evaluate them, and as necessary, enhance the aging management programs (AMPs) or develop new AMPs for license renewal. In its response dated June 24, 2011, the applicant stated that it currently has a procedurally controlled operating experience review process, as required by NUREG-0737, "Clarification of TMI Action Plan Requirements," Item I.C.5, "Procedures for Feedback of Operating Experience to Plant Staff." The applicant stated that this process provides for the systematic identification and transfer of lessons learned from site and industry experience into fleet and station processes to prevent events and enhance the safety and reliability of its operations."

The irony of this, of course, is that the Three Mile Island precursor incident at Davis-Besse, 18 months before the TMI meltdown, could have prevented the TMI meltdown, had that OE [Operating Experience] been shared with TMI by Davis-Besse, or even NRC. But that did not happen, and the rest is history. This TMI precursor incident was described, in summary, in a backgrounder about Davis-Besse's numerous close calls with disaster, previously put on the record in this proceeding, posted online at <http://www.beyondnuclear.org/storage/Davis%20Besse%2020%20More%20Years%20of%20Radioactive%20Russian%20Roulette%20Nov%202010%20corrected%20Dec%2028%202010.pdf> (see pages 1-2).

Given NRC Staff's April 15, 2014 RAIs, it is clear that NRC Staff is still not clear that FENOC has aging-related cracking of the Shield Building, and associated "adequate protection" concerns associated with Shield Building safety-related design functionality, comprehensively covered, under its 2017-2037 AMP.

At point #51, on p.55, we stated:

"NRC's DB RAI 3.1.2.2.16-3, on page 6, also directly touches upon Intervenors' present contention. This is due to the fact that degradation of the steam generators will require their premature replacement, requiring yet another breach of the Davis-Besse concrete shield building. FENOC already plans such an organ transplant in 2014. But if FENOC screws up this aging management program badly enough, it could very well have to replace steam generators yet again in the future, during the license extension, even after the 2014 steam generator replacement. Given the fact that Davis-Besse currently has its third lid, with no guarantees that a fourth lid will not be needed, necessitating yet another concrete shield building breach, it is not far fetched to raise the concern about yet more steam generator replacements post-2014. Each breach of the concrete shield building risks introducing more weakness into the structure, and undermining its vital safety function.

The late Jan., 2012 San Onofre (CA) steam generator tube rupture occurred a few weeks after this Jan. 10, 2012 contention was filed. The defective San Onofre replacement steam generators led to the permanent shutdown of San Onofre Units 2 and 3 in June 2013.

Although we also filed a steam generator replacement contention at Davis-Besse in May, 2013, which included concerns about Shield Building breaches, that contention was summarily dismissed by the ASLB. Thus, the steam generator replacement "experiment" at Davis-Besse is now well underway, and only time will tell how long they will last, and how soon the Shield Building must again be breached, if FENOC chooses to replace large nuclear components located within the Shield Building.

32a-5-LR



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**Document:** NRC-2010-0298-DRAFT-0043  
Comment on FR Doc # 2014-05021

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## General Comment

See attached file(s)

## Attachments

4 21 14 DEIS comments vis a vis 2012 D-B Cracking Contention Supplements

32b-1-LR

Due to the length of this comment only the first paragraphs are reproduced in the comment response section. The full document can be found at the end of this Appendix or is ADAMS using the ADAMS accession number ML14122028.

SUNSI Review Complete  
Template = ADM - 013  
E-RIDS= ADM-03  
Add= E. Keegan (enk)

The following is provided as public comment on the NRC draft EIS re: Davis-Besse's proposed 20 year license extension

32b-1-LR (con't)

I have previously submitted comments regarding our environmental coalition's contention, dated Jan. 10, 2012, seeking a hearing, on Shield Building cracking at Davis-Besse, submitted to the NRC ASLB.

The following comments stem from our coalition's five supplements to that contention, submitted between Feb. and August of 2012.

**INTERVENORS' [FIRST] MOTION TO AMEND 'MOTION FOR  
ADMISSION OF CONTENTION NO. 5'  
(February 27, 2012)**

Posted online at:

<http://www.beyondnuclear.org/storage/Coalition%20filing%20contention%20amdt%20%2027%202012.pdf>

At page 2/102, we quoted U.S. Representative Kucinich (D-OH), who stated:

"...The reports showed conclusively that the cracking was not in "architectural" or "decorative" elements of the wall, as FirstEnergy publicly claimed, but ran throughout the line of the main outer rebar.

In fact, the cracking is so extensive that the NRC required FirstEnergy to assume, in its calculations of the strength of the wall, that the vertical outer rebar mat did not even exist.

When FirstEnergy made its presentation at the January 5 public hearing, its Site Vice-President, Mr. Barry Allen, admitted for the first time that the cracking was located along the line of the main outer rebar. But, Mr. Allen, did not mention FirstEnergy's previous misrepresentations or explain the significance of the new description. When I asked him about this discrepancy, his response was that FirstEnergy's investigation of the cracking had been ongoing, and that FirstEnergy had revealed all new information as it was discovered.

That would be a very appropriate response, if it were true. But, it is not true.

FirstEnergy knew in early October that the cracking was in the area of the main outer rebar. That is shown in the very first photo released by the NRC. Most of the tests that showed that cracking in the line of the main outer rebar were performed before FirstEnergy issued a statement to its shareholders on October 31, 2011 that repeated their misrepresentations. And, even as late as December 29, 2011, the NRC was still repeating this misleading description from FirstEnergy—"Cracking has been identified primarily in the architectural regions...." ("Q-and-As for Davis-Besse Shield Building Issues,"

12/29/11).

(Emphasis added)."

At page 3/102, we went on to state:

"A January 31, 2012 inspection report, ML12032A119, shows that FENOC discovered on October 31, 2011 that there were other areas of cracking, but also:

On October 31, 2011, the licensee identified additional indications of concrete cracking during IR testing towards the top of the SB wall, approximately between the 780 ft and 800 ft elevations. This area of indications was yet another one different from the laminar cracking initially identified adjacent to the RRVCH opening. The licensee entered this extent-of-condition issue for the SB cracking into their CAP as CR 2011-04648, informed the NRC via the Resident Inspectors' Office on site, and continued to investigate further to determine if any additional adverse conditions existed. P. 48 of report (p. 52 of .pdf)."

The public is indebted to Congressman Kucinich for clearly showing the severity of the cracking in Davis-Besse's Shield Building, which FENOC and even NRC had downplayed up to that point. The seriousness of the matter is all the more clear now, since the August/September 2013 revelation of worsening old cracks, and discovery of new ones.

Re: the Jan. 31, 2012 NRC Inspection Report confirmation of cracking in the top 20 feet of the Shield Building wall, near the dome, it is still unclear, at this late date, whether the originally formulated cracking AMP, or any update to it, is comprehensive enough to account for the status of cracking damage at the upper reaches of the Shield Building.

That Jan. 31, 2012 NRC Inspection Report, cited in the contention supplement, also reported on NRC intercepting sub-standard rebar, which FENOC was about to install in the access opening repair in late 2011. Although NRC Staff claimed to have prevented that mistake from being made, what's to explain the rebar damage done by the hydro-demolition to open the 2014 access opening? Did sub-standard rebar get installed in 2011 after all?

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**INTERVENORS' [SECOND] MOTION TO AMEND AND SUPPLEMENT  
PROPOSED CONTENTION NO. 5 (SHIELD BUILDING CRACKING)  
(June 4, 2012)**

Posted online at:

<http://www.beyondnuclear.org/storage/June%204%202012%20Motn%20to%20Amend%20Supp%20Contn%205%20COMPLETE-1.pdf>

At p. 8/16, we stated:

"FENOC is developing a comprehensive engineering plan to re-establish the design and licensing basis conformance of the Shield Building. The plan is scheduled to be completed and issued by December 1, 2012. The plan will include a detailed structural analysis of the Shield Building and consider applicable effects."

As also stated further below, in regards to our FOURTH MOTION TO AMEND AND/OR SUPPLEMENT (July 23, 2012):

It's fair to say, at this late date (April 2014), that FENOC's supposed re-establishment of licensing basis design conformance is shaky at best. In fact, NRC has granted FENOC till mid-2014 to re-figure the root cause of Shield Building cracking, after the August/September 2013 revelation of worsening old cracks, and initiation of previously unseen new cracking.

At p.12/16, we also stated:

"Moreover, Davis-Besse has other water problems inside the shield building. In RAI responses dated May 24, 2011 (ML11151A90), the NRC staff had noted a "history of ground water infiltration into the annular space between the concrete shield building and steel containment." During a 2011 AMP audit, NRC staff also reviewed documentation that: [I]ndicated the presence of standing water in the annulus sand pocket region. The standing water appears to be a recurring issue of ground water leakage and areas of corrosion were observed on the containment vessel. In addition, during the audit the staff reviewed photographs that indicate peeling of clear coat on the containment vessel annulus area, and **degradation of the moisture barrier, concrete grout, and sealant in the annulus area that were installed in 2002-2003.**" (emphasis added)

It has since come to light that there were more problems with the access opening patch job in August/September 2002. Specifically, just as occurred in late 2011, the patch job in 2002 left air spaces or gaps in the resealed Shield Building wall. This growing, worsening accumulation of problems with both the Inner Steel Containment Vessel, as well as the Shield Building, are aging-related concerns with the Davis-Besse containment system, structures, and components (SSCs), that Intervenors' sought to address in the ASLB license extension proceeding, but thus far have been denied.

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**INTERVENORS' THIRD MOTION TO AMEND AND/OR SUPPLEMENT  
PROPOSED CONTENTION NO. 5 (SHIELD BUILDING CRACKING)  
(July 16, 2012)**

Posted online at:

<http://www.beyondnuclear.org/storage/3rd%20Motion%20COMPLETE%20supp%20cracked%20concrete%20containment%20contention%20July%2016%202012.pdf>

At section #1 (p. 3), our “Micro-cracking Present in Core-Bore Samples” challenge to FENOC should have been taken seriously, instead of denied. CTL had detected and reported micro-cracking to FENOC. FENOC essentially ignored the findings.

FENOC went on to claim that the cracking did not grow worse in 2011 and 2012. However, in August/September 2013, FENOC was forced to admit the old cracking had grown worse, and new cracking had initiated. However, FENOC has attempted to blur the issue, by claiming its 2013 testing techniques are more sensitive, implying the cracking “discovered” in 2013 were likely there all along in 2011 and 2012, but just couldn’t be detected (yet).

Intervenors urged that micro-cracking in core bore tests be taken more seriously in July 2012, a full year before FENOC began to do so in 2013. However, FENOC continues to downplay the significance of the micro-cracks it “discovered” in 2013. If its April 15, 2014 RAIs are any indication, however, NRC Staff seems to understand the 2013 micro-cracking “discovery” has serious implications for the 2017-2037 Shield Building cracking AMP.

In section #2, entitled “Radial Cracking” (pages 5-6), we cited NRC Staff criticism that FENOC had also ignored evidence of radial cracking in core bore samples. We concluded that “In effect, FENOC admits to multiple forms of cracking from multiple root causes.”

Grudgingly admits to them, we should add, for, no matter how many times we have raised concerns about multiple forms of cracking, likely of various root causes, and requiring a diversity of corrective actions, as well as aging management plans, FENOC has downplayed the significance, remaining focused on sub-surface laminar cracking, but has taken inadequate corrective action, and devised inadequate aging management plans, even on that.

At section #3 on p. 6, entitled “Deletion of Need for Further Investigation of Reinforcing Steel,” we challenged NRC’s suggestion that FENOC do less testing on reb. We urged that more testing on rebar, across the Shield Building, was needed. This is all the more clear now, that the 2014 hydro-demolition damaged rebar at the access opening.

But of course, revelations of outer rebar mat dysfunction due to the severe cracking (brought to light not by FENOC nor NRC transparency, openness, and accountability, but rather despite their obscurantism and secretiveness, thanks to Congressman Kucinich’s assertive devotion to public service), and exposed rebar on the exterior Shield Building surface, have long made it clear that the Davis-Besse Shield Building’s steel reinforcement structural integrity needs to be taken much more seriously by both FENOC and NRC.

After all, as revealed by Intervenors’ 2012 FOIA intervention, NRC Staffer Abdul Shiekh warned that a small addition stress could fail the Shield Building to the 90% level.

However, the Shield Building's Inner Face exposure to the elements, for several long years in the 1970s, before the dome was put in place, and before the Initial Construction Opening was closed, calls into question the structural integrity of the Inner Face rebar mat, as well. Was Abdul Sheikh's dire prediction too optimistic? As a part of Intervenor's years-long call for more frequent testing, in more locations, using diverse testing methodologies, we extend our call for comprehensive testing of the Shield Building's Inner Face.

As pointed out in our section #4, "Laminar Cracking in Main Steam Line Room" (pages 6-7), "The NRC Staff pointed out (RRCA at 6) that 'The root cause report has insufficient Impulse Response documentation to conclude that laminar cracking initiated in the shoulder regions and propagated to areas of high density reinforcement, specifically in the areas of the Main Steam Line Penetrations.' "

As mentioned immediately above, we too have called for more Impulse Response testing across the Shield Building, especially at strategic locations, such as those of high-density rebar, the Inner Face, and the access openings subjected to multiple rounds of piercing. The status of the Inner Face rebar mat, as mentioned above, is of high significance to the structural integrity of the entire Shield Building wall, given the degradation of the Outer Face rebar mat functionality due to severe concrete cracking. As mentioned, the Inner Face rebar mat's exposure to the elements for years on end calls its structural integrity into question.

Section #5 (p. 7-8) documents "Shield Building Dome Parapet Cracking" dating back to August 15, 1976. However, FENOC, and its predecessor Toledo Edison Co., kept this secret from the public until May, 2012 – for over 35 years! Of course, 1976 predates 1978, so this cracking can't possibly have the Blizzard of 1978 as its root cause. The August/September 2013 discovery of worsening cracking has sent FENOC back to the drawing board, for yet another revision to its already revised Root Cause Report. Unless and until FENOC understands the likely multiple root causes for multiple forms of cracking, it cannot determine the likely multiple corrective actions, and aging management plans, needed to address the worsening problem.

At section #6, "AMP Omits to Inspection of 2002 Shield Building Opening for Cracking." (p. 8). we called for Impulse Response tests on the 2011 access opening repair area of the Shield Building wall.

If this had been done, the huge air space or gap would have shown up clearly, instantly. Any acoustic test of that area of the Shield Building wall, even very basic ones, would have readily revealed the gap.

Yet, rather than require or perform even the most basic acoustic test, NRC Staff and FENOC both fought our contention and its supplements at every turn, throughout summer and autumn of 2012. At the end of the year, the ASLB simply rejected our contention and supplements, including this one.

If our warning had been heeded, another year or more (July 2012 to Feb. 2014) of full power operations with a Shield Building wall with a significantly reduced margin of safety (the gap, not to mention the cracking) could have been avoided.

Isn't a gap in the Shield Building wall a *prima facie* reduction in safety margin? And yet FENOC came out on day one saying it was not so. NRC has not contradict nor corrected FENOC, yet, on this assertion, two full months later.

Our charge, in section #7, "No Examination of Admitted Cracking of SB Dome Or Below-Grade Shield Building" (pages 8-9), that "the AMP is unduly narrow in scope, which provides a means of avoiding issues of aging management of the whole shield building and as well, other safety-related structures at Davis-Besse," is all the more relevant and compelling now, in light of the August/September 2013 admission of worsening cracking.

Re: section #8, "Use of Other Safety-Related Structures as Comparables Instead of as Inspection Targets" (pages 9-10), given the visual discovery of an "invisible" safety-related problem that has lurked unseen during many years of full power operations (the gaps in the Shield Building wall access opening area, not only from 2011 to 2014, but even from 2004 to 2011), we again call on more extensive, frequent, and diverse testing to check for both the "invisible" (sub-surface cracks and gaps) and the visible (as through visual examination not blocked by metal plates left in place, for no good reason, in the access opening from 2011 to 2014 – blocking visual identification of a large gap in the Shield Building wall).

Re: section #9, "Ettringite Penetration Beyond Outer Rebar Layer" (pages 10-11), the discovery of worsening cracking in August/September 2013, the discovery of repeated Shield Building wall gaps during many years of full power operations (2004-2011, and 2011-2014), as well as damage inflicted on the rebar by the hydro-demolition process in 2014, underscores the need for a clear and comprehensive status report of reinforcing steel across the structure, to ensure its ongoing integrity, and design functionality, from 2017 to 2037.

Re: section #10 (page 11), "Insufficiently-Detailed Extent of Condition Corrective Action #1," we point out that while Impulse Response as well as core bore testing can still – and should still – be conducted across the Shield Building's exterior face, the white wash of 2012 now precludes the visual examination of surface defects, such as surface cracking. A comprehensive visual examination of the Shield Building exterior should have been conducted prior to the white washing of 2012, but was not. Now, ongoing visual examination is impossible, as the evidence has been covered up. Thus, the importance of core bore and Impulse Response, as well as other testing methods, increases.

Re: section #11, "Slip-Form Friction Fiction" (pages 11-13), the 2014 damage to the access opening rebar from hydro-demolition, the recurring wall gaps (2002-2011; 2011-2014), and the severe, worsening cracking (1978-2014, although FENOC admitted in May 2012 that dome cracking had been documented in 1976) make clear that cumulative stresses on the Shield Building (including the slip-form friction dating back to earliest

construction, in the early 1970s) are a very serious and growing concern, demanding comprehensive root causes analyses, continuously updated monitoring of the status of the extent of conditions over the full structure and over time, and multiple corrective actions, as well as multiple aging management plans, to address multiple root causes and multiple worsening conditions.

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**INTERVENORS' FOURTH MOTION TO AMEND AND/OR SUPPLEMENT  
PROPOSED CONTENTION NO. 5 (SHIELD BUILDING CRACKING)  
(July 23, 2012)**

Posted online at:

<http://www.beyondnuclear.org/storage/4th%20Motion%20PII%20COMPLET.pdf>

Re: p.3-5/56, re: NRC's first line of inquiry, given the Aug./Sept. 2013 revelations of worsening cracking, chemical analyses to guard against carbonation, chloride, sulfate, and other chemical attack should be significantly strengthened.

Re: p.5-6/56, re: NRC's second line of inquiry, FENOC contractor PII's admission of no "reliable information about the rate of crack propagation" is now, clearly, all the more significant, given the revelations of Aug./Sept. 2013. Beginning on Feb. 27, 2012, with the publication of its Root Cause Report, blaming the Blizzard of 1978 as the culprit, and continuing through its Revised Root Cause Report of mid-May 2012, FENOC attempted to maintain the position that Shield Building cracking was frozen in time – that the damage was done over a few days in January 1978, but had not worsened since. This could no longer be maintained after revelations of worsening old cracking, and initiation of new cracking, in Aug./Sept. 2013. Thus, a much larger number of Shield Building locations must be tested, at a greater frequency, given this fundamental, and safety-significant, blind spot regarding "rate of crack propagation."

Re: NRC's third line of inquiry (p.7/56), "PII and FENOC need to develop better testing methods" for carbonation -- now more than ever, given the Aug./Sept. 2013 revelations. They indicate that the root cause(s) are insufficiently understood, and hence the corrective actions, and aging management plans, needed. In addition, such revelations as a mere one inch of concrete covering the outer rebar mat are exacerbated by additional rebar damage – as occurred due to the access opening hydro-demolition in Feb. 2014. The Shield Building concrete cracking, and rebar degradation/damage, are cumulative, aging-related risks, as Intervenors have repeatedly warned in their intervention.

Re: NRC's fourth line of inquiry (p.7-8/56), the contradiction between FENOC contractors CTL and PII re: micro-cracking is all the more significant in light of the Aug./Sept. 2013 revelations. PII's attempted elimination of "a fatigue/progressive failure mechanism" is not defensible, given the discovery of worsening old cracking, and



initiation of new cracking – revealed, reportedly, due to a new testing method, better able to detect micro-cracking (which PII earlier attempted to deny was present or possible).

Re: NRC's fifth line of inquiry (p.8-10/56), the Aug./Sept. 2013 revelations of aging-related cracking, combined with the added risks of recurrent Shield Building wall gaps (2002-2011, 2011-2014), and even hydro-demolition damage to rebar, demand that top-notch, careful, and comprehensive analyses, such as sensitivity studies, be carried out on all aspects of Shield Building cracking and rebar degradation. This is all the more important, given the doubts and concerns still swirling around conformance to design and licensing bases.

At p. 9/56, we stated:

"FENOC – which admitted in its February 2012 RCA [Root Cause Analysis] that the shield building cracking has left the shield building "non-conforming to the current design and licensing bases" - has also wrestled with this challenge. Perhaps seeking its own "path of least resistance" (not unlike a propagating crack in the Davis-Besse shield building), the nuclear utility chose the approach that allowed immediate return to full power operations, while kicking the can down the road on "re-establishing" licensing basis design conformance. The NRC Staff did not object to this, even as it struggled to understand the legal and regulatory justification for such a move. In fact, the Staff generously granted FENOC a grace period until December 2012, during which time FENOC will attempt to complete a design basis conformance re-evaluation, in order to address significant licensing non-conformances created by the severe shield building cracking."

It's fair to say, at this late date (April 2014), that FENOC's supposed re-establishment of licensing basis design conformance is shaky at best. In fact, NRC has granted FENOC till mid-2014 to re-figure the root cause of Shield Building cracking, after the August/September 2013 revelation of worsening old cracks, and initiation of previously unseen new cracking.

Re: NRC's seventh line of inquiry, we would simply like to repeat, verbatim, our concluding observations and assertions, in light of the Aug./Sept. 2013 revelations of worsening, age-related cracking:

"...could not the various cracking and other degradation at diverse locations on the shield building be attributable to not only the Blizzard of 1978's wind-driven precipitation into the exterior side walls, but also to a top-down dynamic, if not other causes to boot? Without a comprehensive root cause analysis, PII and FENOC cannot guarantee that age-related degradation of the shield building is comprehended, and that appropriate protections are in place to defend against it.

Intervenors also challenge the acceptability of FENOC performing only three full depth core bores. Three core bores across the entire surface of the huge shield building is not acceptable, is much too small a sample size. It provides a mere snap shot, frozen in time,

of mere cubic inches (and mere square inches of surface concrete), versus the thousands or tens of thousands or hundreds of thousands of cubic feet of shield building structures, which very well may be suffering worsening cracking over time.”

On Feb. 14, 2014, in *Toledo Blade* coverage of the revealed Shield Building gap, a FENOC spokeswoman claimed that the gap had not diminished any safety margins. This claim was repeated several days later, in the NRC event notification. However, as a member of the public asked on the Feb. 20, 2014 NRC Webinar re: steam generator replacement at Davis-Besse, how could the gap *not* have decreased safety margins? It appears on its face that safety margins must have been decreased. The questioner also pointed out to NRC that it had previously pledged to correct FENOC publicly when the utility made indefensible safety claims – but it has yet to do so regarding the Shield Building gap.

Given repeated Shield Building gaps (2002-2011, 2011-2014), worsening age-related cracking revealed in Aug./Sept. 2013, rebar damage from hydro-demolition in 2014, etc., the Shield Building risks at Davis-Besse are numerous and growing. Combine that with the lack of a sound root cause analysis (already clearly evident in 2012, as revealed in our contention supplement assertions cited here, but made all the more clear by the Aug./Sept. 2013 discoveries, and the need for FENOC to prepare yet another revised root cause analysis report by mid-2014), it's clear that Intervenors' contentions are worthy of hearing.

Also, NRC's questions about the structural integrity of the Inner Face of the Shield Building's concrete and rebar mat are similarly all the more significant now, that worsening cracking has been documented, as well as recurrent gaps, and still mysterious root cause(s). As revealed by Intervenors' FOIA request in 2012, NRC Staffer Abdul Shiekh warned about the risk of a 90% failure of the Shield Building, under the stress of even small additional loading. Intervenors cited this warning repeatedly in contention supplements in 2012. But now it must be asked, *isn't 100% failure possible*, given concerns about Inner Face concrete and rebar, including questions asked by NRC in 2012, which have never been answered or adequately addressed by FENOC since? As in 2012, Intervenors are still calling for comprehensive, and ongoing, testing of the Shield Building, including on its Inner Face – something entirely lacking from FENOC's AMP.

Re: NRC's eighth line of inquiry (p.16/56), NRC Staff question the very basis for FENOC's Blizzard of 1978 root cause explanation – whether or not moisture penetrating and freezing in concrete can account for the cracking. Given the fact that worsening crack was discovered in Aug./Sept. 2013, this does call into question the Blizzard of 1978 hypothesis. In fact, FENOC has currently undertaken a revision to its revised root cause analysis, due out by mid-2014.

NRC's ninth line of inquiry (p.16-18/56) asks:

“It appears if ice forms within this joint it would create radial stress on the parapet and top of SB [shield building] wall, at roof (and tensile loads on inside SB wall near roof).

Were any examinations (other than visual) performed on the roof or parapet? If not, why not. Were any type of examinations conducted at the inside surface of the SB wall just below the parapet to identify cracking? If not, why not? What actions proposed preclude this scenario from causing further cracking (e.g. is top surface sealing identified)?”

Intervenors have previously expressed concerns about this potential top-down moisture intrusion potential, caused by cracking in the dome/parapet area dating as far as back as 1976, before the Blizzard of 1978. Intervenors have also urged that a diverse array of testing methodologies (including visual and Impulse Response, but others beyond these as well) be used to ascertain the structural integrity of the Shield Building across its surface area and cross section, including on its Inner Face. Thus far, Intervenors’ calls have fallen on deaf ears.

Re: NRC’s tenth line of inquiry (p.18-19/56), given evidence of micro-cracking, as well as multiple directions of potential moisture penetration of the Shield Building wall (outside-in, inside-out, and top-down), much more rigorous and extensive testing of the Inner Face, thickness, and Outer Face of the Shield Building than FENOC’s AMP plans is called for. This is all the more necessary, after the Aug./Sept. 2013 revelations of worsening cracking of still unexplained origin.

Re: NRC’s eleventh line of inquiry (p.19-20/56), FENOC contractor PII admitted that its conclusion, that the Blizzard of 1978 – but not the similar Blizzard of 1977 – is the singular root cause of Shield Building cracking “is based on engineering judgement. There was no sensitivity analysis performed.”

Intervenors surmised that:

“NRC’s questions point out compellingly that there is not a single root cause to shield building cracking, but potentially multiple root causes. Despite this, PII and FENOC cling to their ultimate root cause theory, that the Blizzard of 1978 was the only explanation for shield building cracking. But given the presence of multiple kinds of cracking, located at diverse places across the huge shield building, NRC’s questions raise the specter that PII and FENOC have not adequately explained the origin of all cracking. This would leave the shield building vulnerable to yet unidentified cracking initiation and propagation dynamics.”

The discovery, in Aug./Sept. 2013, of worsening cracking, deepens the doubts about the Blizzard of 1978 root cause explanation’s accuracy. In fact, FENOC is currently re-evaluating its root cause hypothesis, with a new final report due out by mid-2014. Thus, currently, without a compelling understanding of the root cause(s) of Shield Building cracking and rebar dysfunction, there can be no confidence that merely weather sealing the Shield Building’s exterior some 40 years late will prevent further cracking. In fact, the findings of Aug./Sept. 2013 – one year after weather sealant was applied – show the opposite.

NRC's twelfth line of inquiry (p.20-24/56) was very significant, for it questioned the practice of FENOC and its contractors of using non-conservative figures and assumptions in its Shield Building cracking analyses. Intervenors showed the unacceptability of using such unjustifiable figures and assumptions, quoting NRC Staff such as Pete Hernandez and Abdul Shiekh, from communications obtained via FOIA. The two NRC Staff warned about downplaying the cracking's significance, not doing enough core bore testing to validate Impulse Response testing of limited usefulness, not adequately establishing the Shield Building's structural integrity, and not accounting for all stresses already endured by the Shield Building. They warned that small additional stresses could fail the Shield Building through 90% of its depth, with the reinforcing steel at the Outer Face detaching itself from the Shield Building structural concrete. They questioned whether or not the Shield Building will "stay standing."

Given the added stress on the Shield Building created by a large wall gap, from 2011 to 2014, recently revealed in Feb. 2014, it is all the more important that these faulty and questionable assumptions by FENOC and its contractors be comprehensively re-examined, as in a hearing on the merits of this contention.

A thirteenth area of NRC inquiry (p.24-26/56) involved out-of-level friction forces during construction, which have been little analyzed by FENOC, its contractors, or their predecessors. We quoted PII's admission: "We do not have information regarding the method of correcting the problem and whether it caused excessive friction forces." To the "growing list of stresses borne by the Davis-Besse shield building (which, during construction alone, included the following: "Noteworthy deviations during construction of the shield building walls were issues such as concrete with the wrong water to cement ratio, concrete with smaller coarse aggregate size, concrete with the wrong type of cement, exceeding shield building wall tolerance for plumb, installation of reinforcing steel, embeds, or reglets, and omission of blockouts. The shield building construction deviations are described in attachment 8.)," must now be added Shield Building wall gaps (2002-2011, 2011-2014), as revealed in Feb. 2014.

NRC's fourteenth area of inquiry (p.26-27/56) questions how evidence of varying depths of cracking comports with the Blizzard of 1978 root cause conclusion. This underscores a strong suspicion that another root cause, or multiple root causes, are to blame for the cracking. This suspicion was deepened considerably when worsening old cracking, and the initiation of new cracking, were discovered/admitted in Aug./Sept. 2013. In fact, FENOC has embarked on yet another round of revising its root cause explanation, a report due out later this year.

Thus, various kinds of cracking and other Shield Building degradation, caused by multiple root causes and growing worse over time, are added to the risks created by recurring Shield Building wall gaps (2002-2011, 2011-2014).

Similarly, NRC's fifteenth area of inquiry (p.27-28/56), concerning dense rebar, adds yet another element of risk to the long list mentioned just above. To this now must be added the rebar damaged by hydro-demolition to create the access opening in Feb. 2014, which

may be related to sub-standard rebar, documented in the Jan. 31, 2012 NRC Inspection Report, potentially installed to repair the 2011 access opening. As mentioned above, we cited this is INTERVENORS' [FIRST] MOTION TO AMEND 'MOTION FOR ADMISSION OF CONTENTION NO. 5' (February 27, 2012).

Along similar lines, NRC's sixteenth area of inquiry raised questions of sub-standard concrete, vulnerable to excessive thermal diffusivity (conductivity, specific heat) allowing deep penetration of not only moisture infiltration (for lack of exterior weather sealant for over four decades) but also heat flow, leading to severe cracking. Such questions have still not been addressed, and must be, given the latest developments (worsening cracking in Aug./Sept. 2013, Shield Building wall gap revealed in Feb. 2014), and the increased risks associated with them.

NRC's seventeenth line of inquiry (p.30-31/56) questioned FENOC's and its contractors' tendency to take non-conservative approaches, such as neglecting to account for the "abnormally" and "uniquely high thermal conductivity" measurements of the Davis-Besse Shield Building concrete in stress analyses. Such non-conservative approaches are even less defensible, given the 2013 revelations of worsening cracking, and the 2014 revelation of a large wall gap.

Re: NRC's eighteenth line of inquiry (p.31-32/56), PII's admission that "the [tensile and compressive] strengths of concrete can decrease over time due to aging-related mechanisms such as freeze-thaw cycles and chemical attacks" bolsters Intervenor's arguments that the cracked concrete containment contention is aging-related, and points to the obligation of a full hearing on the merits, as we stated in our 2012 motion to supplement. The worsening cracking revealed in 2013, combined with added risks such as the Shield Building wall gap revealed in Feb. 2014, add yet more weight to Intervenor's arguments of 2012.

NRC's nineteenth line of inquiry (p.32-34/56), concerned the build up of water and snow/ice on the Shield Building dome area due to poor to no drainage. NRC raised questions about the added stress from the weight of off-center loading, as from snow and ice. FENOC's contractor PII admitted pent up water would be just as bad. Combined with cracks in the Shield Building dome, as well as flaws with the weather sealant on the dome, both documented as early as 1976, pent up water, or melting snow or ice, was acknowledged by FENOC, PII, and even NRC as the second most likely root cause for the sub-laminar cracking. Despite this, it has been even been mentioned in the Feb. 27, 2012 Root Cause Report, nor the mid-May 2012 Revised Root Cause Report. Perhaps it will be mentioned in the mid-2014 revision to the Revised Root Cause Report? After all, cracking was documented as worsening in Aug./Sept. 2013, and questions linger about the weather sealant functionality at the dome/parapet intersection.

Re: NRC's twentieth line of inquiry (p.34-35/56), Intervenor re-affirm the need for FENOC to comprehensively age-manage the entire Shield Building, not cherry-picked areas thereof. This is all the more important now that aging-related cracking was documented in Aug./Sept. 2013, undermining FENOC's NRC-blessed Blizzard of 1978

root cause conclusion. As but one example, if Impulse Response, or any other basic acoustic test, had been performed on the access opening after the 2011 repair, the air space or gap would have been readily detected. This would have prevented over two years of full power operations with a clearly compromised containment. Relying on sheer luck – that the compromised containment was not tested between Dec. 2011 and Feb. 2014 – is a very risky form of nuclear safety regulatory policy.

Re: cherry-picking areas of the Shield Building for analysis, NRC's twenty-first line of inquiry prompted Intervenors to ask "what about a combination of adverse forces acting simultaneously on a severely compromised shielding building structure, not only at the 30' crack location, but also at equally vulnerable, or even more vulnerable, locations?" The Feb. 2014 Shielding Building wall gap shows this question to be quite significant, for this was a severely compromised, very vulnerable structure. The recurring wall gaps (2002-2011, 2011-2014) shows that neither FENOC nor NRC knows how to avoid them. What is to guarantee that current access opening repairs won't leave Shield Building wall gaps that will represent a serious decrease in containment safety margin for the period of extended operation (2017-2037)? What testing, to guard against further gaps within the various perimeters of past access openings, is NRC requiring of FENOC, if any? If no testing is being required, why not? Wouldn't such testing have instantly revealed the gap introduced in 2011, and thus prevented over two years of full power operations with a severely compromised containment structure?

To NRC's twenty-second area of inquiry (p.36-37/56), Intervenors responded:

"NRC's questions ("Why wasn't a similar FE model developed to evaluate the potential for growth of the existing cracking? Why isn't a more refined FE model or other applicable analysis needed as part of the corrective actions to monitor crack growth to ensure monitoring plans are adequate?") show that Intervenors' request for a hearing on these aging-related matters is reasonable as well. PII's inadequate responses and FENOC's AMP fail to answer or account for the NRC's safety-significant, aging-related questions. The daily and seasonal thermal forces, as well as environmental stresses, could pose a challenge to the already multiply-challenged shield building over the 2017 to 2037 license extension period. PII and FENOC, have not adequately accounted for all the cumulative loads and stresses."

The revelation of worsening cracking in Aug./Sept. 2013 underscores the importance of Intervenors' demand that FENOC's AMP be strengthened considerably. Intervenors also point out that such revelations as recurring Shield Building wall gaps (2002-2011, 2011-2014) must now be considered in light of other risk factors – such as increasing temperature extremes, including both summer highs, and winter lows, large temperature swings over short periods of time, and extreme weather, all attributable to human-caused climate change. Have FENOC and NRC, in both required safety and environmental reports, accounted for this "global weirding" weather wild card in their analyses of Shield Building functional integrity? In its Shield Building cracking root cause analyses and reports, FENOC, and its contractor PII, seem to have inappropriately assumed past weather norms, past daily and seasonal temperature fluctuations, as appropriate for

analyzing on-going Shield Building stresses, as has NRC in its analyses, such as the license extension EIS. As hinted at by the title of the Oscar-winning documentary "An Inconvenient Truth," and as attested to by the on-going scientific work of the United Nations Intergovernmental Panel on Climate Change (which, along with the documentary's filmmaker, Vice President Al Gore, were awarded the Nobel Peace Prize for their efforts to protect the climate), such assumptions are no longer conservative.

The NRC's twenty-third line of inquiry (p.37-38/56) focuses on the importance of areas of the Shield Building incorporating a dense concentration of rebar. This issue is all the more significant now, given the Feb. 2014 admission of hydro-demolition damage to rebar, which itself raises doubts about rebar quality installed into the Shield Building access opening repair work in late 2011. The degradation and damage to structural reinforcing steel across the Shield Building must be considered in light of other damage and degradation, including worsening cracking, recurring Shield Building wall gaps, etc.

NRC's twenty-fourth area of inquiry (p.38-40/56), regarding "crack initiation depth or growth rate," prompted this response by Intervenors:

"Intervenors assert that a rigorous sensitivity study should have been, and still should be, performed. PII and FENOC should model growth rate, as this is essential for an adequate shield building aging management plan and monitoring program over time, including any 2017 to 2037 license extension period."

After all, FENOC's contractor PII, as evidenced by NRC's line of questioning, admitted to very deep cracking of 14 inches in depth, about halfway through the 30 inch thick Shield Building wall.

Given the Aug./Sept. 2013 revelation of new crack initiation and old crack worsening, as well as no clear root cause(s) conclusion(s), extent(s) of condition(s), nor course(s) for corrective action(s) needed (all made clear by yet another revision to the root cause report, due out later this year), a clear and comprehensive understanding/determination of "crack initiation depth or growth rate" is all the more called for now. This could be provided by an ASLB hearing on the merits. This is all the more needed, given such added risks as recurring Shield Building wall gaps (2002-2011, 2011-2014), as revealed in Feb. 2014. Such recurring wall gaps demonstrate the inability of both FENOC and NRC to guarantee containment safety during the period of extended operations (2017-2037), an area that Intervenors continue to hope to address in an ASLB hearing on the merits.

To NRC's twenty-fifth area of inquiry (p.40-42/56), PII responded:

"Damage in the flute shoulders is concentrated on the southwest side of the building, which coincides with the predominant wind direction. Other parts of the building will still get wet. Based on the IR mapping, the laminar cracks that are not on the southwest side of the building are limited to regions with weak planes of concrete (due to high density

rebar). Weak planes of concrete will require less force to initiate cracks. Therefore, the observed result is expected.”

But FENOC has never provided empirical evidence even establishing, with statistical significance, that the cracking on the southwest face of the Shield Building is in fact worse than the cracking on the other faces.

Intervenors responded to FENOC’s and PII’s arguments thus:

“...the entire shield building surface containing high density rebar should be carefully examined for cracking. Davis-Besse is located on the Lake Erie shoreline. It has been exposed to countless episodes of moisture drenching, followed by freezing temperatures. Combined with information on the substandard heat transfer characteristics of Davis-Besse’s shield building concrete, discussed above, allowing deep freezing of water into the thickness of the shield building, the admission that high wind was not even needed to cause extensive cracking must be addressed across the structure. Weather-sealing the shield building 40 years late does not reverse the damage already inflicted. Nor does it preclude the need for a comprehensive aging management plan and corrective actions for damaged areas of the shield building which by PII’s admission above extends to all areas of dense rebar, if not beyond.”

FENOC has not undertaken a robust testing regimen for the areas of the Shield Building with densely concentrated rebar, nor has NRC required it. Given the worsening old cracking, and newly initiated cracking, revealed in Aug./Sept. 2013, FENOC has undertaken yet another revision to its Revised Root Cause Report of mid-May 2012. Thus, neither root cause(s), extent(s) of condition(s), corrective action(s), nor aging management plan(s) can be said to be adequate. In addition, other forms of damage, degradation, and decreased safety margins – due to rebar damage from hydro-demolition, Shield Building wall gaps, etc. – increase the risks of containment failure, both now and during the license extension period (2017-2037).

Responding to NRC’s twenty-sixth line of inquiry (p.42-43/56), Intervenors stated:

“Intervenors are concerned that PII’s assumption of concrete strength values, which are over-optimistically high, would tend to underestimate cracking and other damage across the shield building structure. Such faulty assumptions and dangerous underestimates must be addressed in a hearing.”

Intervenors continue, two years later, to assert the need for a hearing on the merits regarding Shield Building cracking, damage, and decreasing safety margins. The recurring Shield Building wall gaps (2002-2011, 2011-2014) revealed in Feb. 2014 prompts this latest call, for there is clearly no guarantee that FENOC nor NRC will prevent another round of Shield Building wall gaps in current access opening repairs, which means such containment failure risks will remain into the license extension period. Combined with the added risk of rebar damage, as was inflicted by hydro-demolition activities and revealed in Feb. 2014, as well as the specter of worsening cracking



(revealed in Aug./Sept. 2013), the overall stresses on the Shield Building merit close examination, before the 2017-2037 license extension approval is granted.

Re: NRC's twenty-seventh area of inquiry (p.43-44/56), concerning ever more significant "shield building crack initiation, crack growth, and crack arrest," intervenors re-assert that:

"...PII not be allowed to cherry-pick select areas of the shield building to test, which fit its predetermined theory, but exclude testing other areas of the shield building structure that could also be cracked or otherwise damaged. NRC itself has questioned the logic of PII's and FENOC's Blizzard of 1978 root cause conclusion for sub-surface laminar cracking – given that areas not in the direction of wind driven rain are also cracked, inexplicably. But the Blizzard of 1978 cannot explain shield building dome cracking that was documented as early as 1976. Nor can applying weather sealant 40 years late reverse damage already inflicted, as through the top-down moisture penetration model, where cracks and weather sealant failures in the dome area have allowed moisture penetration via that route downwards – moisture that originated not only from the Blizzard of 1978, but other precipitation events on the Lake Erie shoreline over the course of years and perhaps even decades.

Intervenors urge that their cracked concrete containment and Severe Accident Mitigation Alternatives (SAMA) contentions are inextricably interlinked because FENOC assumes a functioning shield building in its SAMA analyses. Given the severe cracking and other degradation of the shield building, that assumption no longer holds water." 32b-2-PA

Intervenors' objections are still valid, further bolstered by the Feb. 2014 revelations of recurring Shield Building wall gaps (2002-2011, 2011-2014) and rebar damage from hydro-demolition. Intervenors had warned that repeated creation of access openings could damage the Shield Building, as the Feb. 2014 hydro-demolition has done. To Intervenors' validated concerns must be added the growing risk revealed, in Aug./Sept. 2013, of worsening old cracks, and even the initiation of new ones.

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## General Comment

See attached file(s)

## Attachments

4 21 14 DEIS comment vis a vis 5th Cracking Contention Supplement dated 8 16 12

32c-1-LR

This comment refers to the collection of NRC documents received by the organization, Beyond Nuclear, as a result of the January 26, 2012 Freedom of Information Act request. Due to the length of the above comment will be in the comment response section. The document can be found in its entirety at the end of this appendix or in ADAMS at ML14122A029.

SUNSI Review Complete  
Template = ADM - 013  
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Add= E. Keegan (enk)

Comments re: Davis-Besse 20 year license extension vis a vis our environmental coalition's 5<sup>th</sup> Cracking Contention Supplement dated 8 16 12

[posted online at:

[www.beyondnuclear.org/storage/FOIA Appendix B contention supplement 8 16 2012.pdf](http://www.beyondnuclear.org/storage/FOIA Appendix B contention supplement 8 16 2012.pdf)]

**Document B/1** [undated; Davis-Besse Nuclear Power Plant, Unit Licensing Basis Seismic Ground Motion Concern. (3 pages)], pages 7-10/101 in the supplement:

The ACRS and NRC Staff expressed concerns about D-B's seismic qualifications. Where ACRS called for a factor of 0.20g ground acceleration as a conservative Safe Shutdown Earthquake, a mere 0.15g acceleration factor was called for in D-B's Updated Safety Analysis Report (USAR).

Given the Aug./Sept. 2013 revelations of worsening cracking, and the Feb. 2014 revelations of SB wall gaps and rebar damage from hydro-demolition activities to open the access opening, our concluding paragraph re: Document B/1 is more relevant than ever:

"NRC FOIA Response Number 1's inclusion of Document B/1 shows that 36 years [now 38] after ACRS and NRC Staff first expressed seismic risk concerns at Davis-Besse, these concerns still haunt the facility – now, frighteningly, in the context of a severely cracked shield building."

Of course, the 2011 Fukushima nuclear catastrophe should compel FENOC, NRC and ACRS to take seismic risks at D-B all the more seriously.

**Document B/2** [10/14/11; Email from P. Hernandez, NRR to J. Zimmerman, NRR RE: 2011-10-13, POP – Davis-Besse Containment Shield Building. (1 page)], p.10/101:

Despite NRC's early hopes and optimistic assumptions that the SB cracking would prove to be a "non-issue," it actually rendered the Outer Face Rebar Mat structurally dysfunctional. Combined with 2013's worsening cracking and 2014's wall gap and rebar damage, this is now all the more significant.

**Document B/4** [10/18/11; Email from S. CuardadoDeJesus (sic), NRR to R. Auluck, NRR et al. on Davis-Besse Shield Building Issue Summary. (2 pages)], p.11-12/101:

Based on Bechtel and Sargent and Lundy's "expert opinion the indications found in the concrete were a product of the hydro-blasting operations and not a pre-existing condition...The NRC inspectors concur with the actions taken to date by the licensee and continue to evaluate the licensee's preliminary conclusions that the indications are related

to the hydro-demolition and do not appear to be preexisting flaws in the concrete shield building.”

Although FENOC et al. backed away from this root cause theory, once cracking was discovered across the SB, far from the hydro-blasted access opening, Intervenor nonetheless asserted that hydro-demolition can inflict damage to the SB. In fact, FENOC et al. concurred that it was the first, most likely explanation for the cracking. Therefore it must be possible that hydro-demolition can, in fact, damage the SB.

Intervenor’s warning, that the second access opening in three years (2011 and 2014) made necessary by D-B’s unexpected early failure of the replacement reactor lid after just 7 years of service life, proved prescient, given not only the 2011-2014 SB wall gap, but also the rebar damage inflicted by hydro-blasting open the access opening for the steam generator replacements:

“This added breach by hydro-blasting in 2014 risks inflicting yet more damage on the shield building. This is an aging-related safety issue that could very well increase the safety and environmental risks of the proposed license extension operations from 2017 to 2037.”

Intervenor again assert that early failure resulting from a botched steam generator replacement project (challenged by Intervenor in a separate ASLB proceeding), or yet another early failure of a replacement lid, could well necessitate yet another access opening the SB before 2037, risking yet more hydro-blasting damage.

**Document B/9** [11/04/11, Email from P. Hernandez, NRR to E. Sanchez Santiago, RIII on Questions about Davis Besse Shield Building Report from DORL. (2 pages)], p.12-14/101:

NRC Staffer Hernandez wrote “I think the greater concern is will the SB stay standing and not whether or not the decorative concrete will fall off. Because the licensee has not performed core bores to see if there is cracking in the credited concrete, do they have a basis to say that the structural concrete will maintain a Seismic II/I condition?”

He wrote this about the sub-surface laminar cracking at the SB Outer Face rebar mat. The worsening of the cracking would not be revealed until Aug./Sept. 2013, and the added risks of SB wall gaps and rebar damage would not be revealed until Feb. 2014. These recent revelations only make his question, “will the SB stay standing,” all the more relevant now.

Till now, the SB Inner Face rebar mat has not been checked for cracking impacting its structural integrity, even though Intervenor has documented that the Inner Face was open to exposure to the elements (including moisture saturation and penetration, as well as freezing conditions, just as was the exterior of the SB from the early 1970s till August 2012) for several long years, before the SB dome was added, and before the Initial

Construction Opening was closed. This vulnerability of SB Inner Face rebar and concrete to degradation was especially true at the very top of the SB wall before the dome's installation, as previous Intervenor cracking contention/supplement filings have noted, based on NRC questioning and FENOC/PII responses.

**Document B/10** [11/07/11; Davis Besse Shield Building Issue NRC Technical Reviewer Focus Questions. (1 page)], p.14-15/101:

Re: NRC's question and Intervenors' response ("Is extent of condition adequately understood, given limited data points?" echoes Intervenors' questions along the same lines), we still feel the same way. The sites on the SB where cores bores are required should be increased significantly, as should the frequency of such testing.

Re: [Does the licensee's analysis provide reasonable assurance that the shield building will perform its design function? Why or why not?

a. If yes, does the shield building remain in conformance with all licensing and design basis requirements including required Codes and required safety margins? **Note that if the shield building is functional but nonconforming, then the licensee would be able to restart the plant, but would be expected to have a plan in place to restore conformance (additional analysis, repairs, or license amendment) at the next reasonable opportunity. (emphasis added)**], I'm not at all clear where this stands. Did FENOC provide that "restoration of licensing and design basis" by Dec. 1, 2012, as they were committed to do at the Oak Harbor High School show down in August 2012?

Re: NRC's question [3. Has the licensee provided reasonable assurance that the shield building will remain capable of performing its design function **in the near and distant future (i.e. the condition will not worsen)**? Why or why not? If not, are we comfortable until the next refuel outage (May 2012) and why, and **what additional actions from the licensee, if any, do we think are necessary going forward?** (emphasis added)], what's remarkable is that these questions have not been answered in the past two years, and are as relevant now as they were in 2012, if not more so.

**Document B/13** [11/09/11; Email from P. Hernandez, NRR to R. Auluck, NRR et al. Re: Davis Besse Shield Building teleconference. (1 page)], **Document B/15** [11/11/11; Email from J. Zimmerman, NRR to M. Evans, NRR re: DB shield building. (1 page)], and **Document B/16** [11/12/11; Discussion points relayed to the licensee after our internal technical discussion (1 page)], p. 15-19/101:

The tail-wagging-the-dog, where NRC aided and abetted FENOC's rush to restart the reactor despite unanswered questions and unanalyzed risks re: SB cracking, may also very well account for the SB wall gap discovered in Feb. 2014. It appears likely that, as the repair on the access opening was rushed, the gap resulted from carelessness in the

rush job. Intervenors' protested this rush job in their original cracking contention filed on Jan. 10, 2012, as well.

At page 18/101, we documented the NRC "Concern that sampling did not eliminate I.F. [Inner Face] cracking at top of SB (**different undefined failure mechanism Then [sic] in the shoulder**). Thus, core bore, chemical analysis, etc. testing, and on a frequent basis, of the Inner Face rebar and concrete should be part and parcel of the AMP going forward. Also, the current re-do of the root cause report further bolsters challenges Intervenors' have been raising for over two years, but have yet to receive any relief for from NRC or ASLB, such as in the form of a hearing on the merits of our cracking contention and its supplements.

Also, on p. 18/101, we documented NRC's concern that the extensive cracking 20 feet down from the top of the SB in an area of dense rebar "Challenges Prof. Darwin [a FENOC expert witness] concern that rebar splices be outside cracked region," and "Any splice in cracked regions require further evaluation – Prof. Darwin...Design calc – fully effective rebar. **unverified assumption (ACI 349.3R not applicable to laminar cracking)**". [emphasis added]

The damage to the rebar at the edges of the access opening in Feb. 2014 due to hydro-demolition raises the specter that Professor Darwin's caveats are being violated. The damaged rebar also raises questions about mistakes made during the access opening repair work in late 2011. Recurring mistakes (SB wall gaps, rebar damage) during SB access opening repairs (2002, 2011) raise the specter that such mistakes will again be made in 2014, which will decrease radiological containment safety margins during the 2017-2037 license extension.

**Document B/18** [11/15/11; Email from P. Hernandez, NRR to J. Zimmerman, NRR on Draft email. (1 page)], p.19/101: "This document states "**The licensee requested a delay of the public meeting to give them more time to finish the splice evaluation.** The NRC accepted so that we would have time to review the documents before the meeting," (emphasis added). Again, as at p.18/101, FENOC's struggle to account for structural integrity and design function of rebar splice areas is still a concern now, given indications of worsening cracking in Aug./Sept. 2013, as well as rebar damage from hydro-demolition revealed in Feb. 2014.

**Document B/19** [11/15/11; Email from P. Hernandez, NRR to M. Evans, NRR et al. RE: Updated Davis-Besse Containment Shield Building POP. (1 page)], p.20/101:

The safety significance of rebar splice regions in the context of cracking, as shown in preceding entries, is further reflected by NRC and FENOC's efforts to hastily postpone a public meeting "so that the licensee has more time to finish their calculations of the rebar splices and so that [NRC] can review them beforehand. It was at the licensee's request that it was changed." FENOC's struggle to account for structural integrity and design function of rebar splice areas is still a concern now, given indications of worsening

cracking in Aug./Sept. 2013, as well as rebar damage from hydro-demolition revealed in Feb. 2014.

**Document B/22** [11/17/11; Email from P. Hernandez, NRR to E. Sanchez Santiago, RIII on Davis Besse Operability question. (1 page)] and **Document B/24** [11/17/11; Email from P. Hernandez, NRR to M. Evans, NRR et al., on Davis Besse Operability question. (2 pages)], p.24/101:

Given that FENOC is currently re-doing its RCR, yet again, and the fact that restoration of licensing and design bases at D-B are still dubious, Intervenors made this prescient observation nearly two years ago:

"...NRC's Hernandez said, **"The basis for continued operation should be frequently and regularly reviewed until corrective actions are successfully completed."** Of course, few if any corrective actions were "successfully completed" between this November 17, 2011 email, and Davis-Besse's restart. But the corrective action schedule leading up to, and during, the proposed 2017-2037 license extension period also leaves a lot to be desired. FENOC's Aging Management Plan for shield building cracking includes only infrequent and irregular reviews of the basis for continued operation. In fact, apart from than applying weather sealant 40 years late, there are no corrective actions planned by FENOC. Impulse Response monitoring tests and bore hole sampling are very few and far between under the proposed FENOC AMP."

Intervenors' concerns have yet to be rectified, despite FENOC's admission to worsening cracking (Aug./Sept. 2013), as well as SB wall gaps and rebar damage (Feb. 2014).

**Document B/23** [11/17/11; Davis-Besse Containment System Primary Steel Containment and Shield Building. (1 page)], p.27-28/101:

We asserted:

"This document also claims "The shield building was designed to withstand forces generated by design bases seismic events," but this assertion is challenged, if not outright undermined, by Document B/1's revelations. Intervenors cite NRC's admission, "The existing as-found condition of cracking in the concrete of the shield building has raised questions on the ability of the structure to maintain its ability to perform its design functions under conditions that would introduce active forces (such as a seismic event or potentially rapid changes in the environmental conditions)," as supportive of its call for a hearing on the merits of these issues."

Abdul Sheikh warned in Document B/26 (see below) that **"I am concerned that the concrete will fail in this region due to bending in this region even under small loads."** (emphasis added). That added "small load" could be a seismic one, especially in an era of artificial earthquakes spawned by natural gas fracking, an activity that takes

place in the region surrounding Davis-Besse. After Fukushima, such risks are inexcusable.

**Document B/25** [11/21/11 (date barely visible on actual document, due to it being printed on top of NRC's letterhead); Davis-Besse Nuclear Power Station Containment Shield Building Issue. (8 pages)], p.28-39/101:

p.32/101

"...[T]he shield building cracking is also SAMA-related, for FENOC's Severe Accident Mitigation Alternatives analyses undoubtedly assumed an intact and functional shield building, not the severely cracked one of doubtful functionality that exists in reality. In fact, NRC concludes page 2 by acknowledging this: The existing as-found condition of cracking in the concrete of the shield building has raised questions on the ability of the structure to maintain its ability to perform its design functions under conditions that would introduce active forces in the structure (such as a seismic event or potentially rapid changes in environmental conditions).

...Dr. Darwin is quoted: "Thus, if the splices in the circumferential steel are located outside of the crack region, I agree with and support the conclusion..." But NRC itself (as in Document B/16, above) confirmed rebar splices are located inside the crack region: cracking at the "Top of shield building - 360° around 20' down from the top...Challenges Prof. Darwin concern that rebar splices be outside cracked region."

p.33/101

...Dr. Darwin is also quoted: "they [the lap splices in the laminar crack region] are currently carrying the normal environmental loading (such as seasonal thermal gradient) and have since the structure was constructed." In other words, since the building is still standing, it must be strong enough to handle relatively normal circumstances. But given the severe cracking, can the shield building withstand added stresses, such as due to natural disasters (earthquakes, tornadoes, tornado missiles, etc.) or a reactor accident?

...In Paragraph 2 on page 5, FENOC responds to NRC questioning: Lap splices entirely within the crack zone are conservatively assumed to give way and fail to transfer load. In a large concrete structure the reinforcement steel and concrete act in a membrane fashion. If a local lap splice is ineffective the load will transfer to the adjacent load carrying members. Local structural failures would only exist if a large number of lap splices were to line up in the same crack area. The horizontal reinforcement bars in the shield building were well staggered to preclude this very issue.

p.34/101

This is an entirely qualitative argument - and a very optimistic one at that -- not backed up by empirical data. Intervenors seek a more rigorous, conservative analysis, such as might occur via a hearing on the merits.



Page 5, paragraph 3 carries forth in the same qualitative manner. No empirical data is provided to ensure that cracks will not line up in a catastrophic way. Although FENOC and its experts assure us that the risk is low, no probability figure is actually given for the risk of a shield building failure with potentially catastrophic consequences.

Page 5, paragraph 4 of FENOC's response states:

Since the reinforcement steel development specified staggered bar splices and the reinforcement steel is lightly loaded, Dr. Darwin suggested that the development could be evaluated on a percentage basis. That is, if the loading in the section is one third of the allowable, then at least one third of the section must contain solid (uncracked) regions to fully utilize the reinforcement steel.

To intervenors, such an overly simplistic analysis, based on unsupported assumptions, is a very risky basis for reasonable assurance of shield building function for the next quarter century (2012 to 2037)."

Also on p.34/101

"FENOC goes on to state in the fifth paragraph on page 5, "Conservative assumptions have been made to limit the extremely difficult data collection efforts." Intervenor are concerned that, due to the expense and time required to undertake such "extremely difficult data collection efforts," FENOC's assumptions are not conservative, and its data collection efforts (IR testing, core bore sampling) are too few and far between, both spatially across the shield building structure, but also temporally (testing is much too infrequent under FENOC's AMP) over months, years, and even decades."

Given the added risks of worsening cracking, SB wall gaps, and rebar damage, Intervenor re-assert no effort should be spared under the SB cracking AMP. Neither difficulty nor expense of testing methods or frequency is an excuse.

On p.35/101

"It is curious that the NRC did not require investigation of less-accessible areas, as well as whole sections of the shield building that FENOC simply assumes are not cracked, given the safety and environmental risks."

If a simple, basic acoustic test had been done on the access opening repair of 2011, it would have instantly revealed the gap.

On p.36/101

"On page 6 at "4)", even though NRC requests that FENOC "Confirm that both vertical and horizontal rebar if located in a crack region are not considered in the strength

evaluation,” FENOC nonetheless responds by assuming that half of the outside hoop reinforcement is effective, even though it has not investigated to make sure that cracking in those areas has not rendered outside hoop reinforcement completely ineffective.”

Given the worsening cracking revealed in Aug./Sept. 2013, as well as the SB wall gap and rebar damage revealed in Feb. 2014, NRC must require FENOC be more conservative in its assumptions about rebar structural integrity. These assumptions must be tested to confirm their accuracy.

p.36/101

“In the second paragraph under “4)”, FENOC explicitly states that the only places on the shield building where zero credit is taken for vertical reinforcement credit is at the flute shoulders and main steam penetrations. But this does not account for the cracked upper 20 feet of the shield building and the large uninvestigated portions of the remainder of it. Under the circumstances, FENOC should be made to empirically verify that the portions of the shield building being counted on to maintain safety margins are, in reality, still solid.”

The 2011-2014 damaged rebar at the SB access opening repair location shows that FENOC’s simple assumptions of rebar structural integrity across vast stretches of the SB are inaccurate and undermine “adequate protection” of public health, safety, and the environment.

p.36-37/101

“FENOC’s statement, “Note that the vertical and hoop reinforcement is actually present and sufficiently bonded and will provide the necessary serviceability requirements such as crack control as it has under normal operating conditions since the structure was built,” appears to assume, inappropriately, that the cracks will not grow worse over time. That question and concern, and the risks it raises, are at the very heart of Intervenors’ contention, as supplemented. Not only does the “It-Must-Still-Be-Functional-Because-It-Hasn’t-Failed-Yet” approach fail to account for worsening cracking over time from 2012 to 2037, but it also fails to address the impact of added stresses on the severely cracked shield building, such as natural disasters, reactor accident conditions, daily/seasonal/annual thermal cycles, and freeze/thaw cycles. These are aging-related concerns and disputes with the application.”

The cracking was shown to be growing worse with age, in Aug./Sept. 2013. Simply assuming rebar, as well as concrete, functionality, with AMP monitoring and testing, is indefensible.

p.37/101

[On page 7, under “5)”, NRC requests that FENOC “Ensure that the required rebar bond strength will carry the entire design load (18.5 ksi) plus adjacent load from adjacent rebar

in cracked area. FENOC responds that 12.4 ksi loads due to normal circumstances have been supported since the shield building was constructed, so the shield building is proven capable of withstanding at least that much stress. But: ...The Table also shows that a maximum stress of 21.7 ksi is expected in this reinforcement under combined dead, seismic and thermal load and 13.7 ksi for dead, wind and normal thermal load. Since we assume that outside reinforcement is to be treated ineffective in carrying any additional stress beyond 12.4 ksi, under accident thermal loads that may cause stresses in excess of what the rebar can carry (assumed to be 12.4 ksi), the reinforcement is assumed to detach itself from the outer section of the shell. Because there is no restraint provided by the reinforcement, the accident thermal gradient will tend to self relieve, albeit trying to cause an increase in the crack width until the section finds a new balance. (emphasis added)

Such an admission, that additional stress could "increase ... the crack width," is an admission of age-related degradation potential. It is also evidence that a strong enough stress could even "fail" the shield building, at least to the extent that the rebar will detach from the outer section of the concrete shell. The risk of such a failure would grow more likely, even under small additional stresses, if cracking worsens over time, such as during the license extension.]

The worsening cracking revealed in Aug./Sept. 2013 shows that additional stresses, other than time, may not even be required to further damage the SB. Certainly, additional stresses would simply hasten the damage.

**Document B/26** [11/22/11; Email from A. Sheikh, NRR to E. Sanchez Santiago, RIII on Questions for the Conference Call. (1 page)], p.39-42/101:

Given the significance of rebar lap splice located in cracking zones, as affirmed by none other than FENOC's expert witness, Dr. Darwin, himself, the following statements by NRC Staffer Abdul Sheikh are very significant:

p.40/101

"At "3.", Sheikh seems to identify problems with FENOC's work regarding the "lap splice issue." This is most significant, for FENOC's own expert, Dr. Darwin, emphasized the importance of lap splice regions, pointing out that his endorsement of FENOC's hypotheses only holds so long as the cracking does not exist in lap splice regions. At "4.", Sheikh identifies a related disconnect, stating: "If this is the assumption, stress used for lap splice calculation should account for 100% increase in the stress."

p.41/101

At "5.", Sheikh wrote: "The licensee justification for ignoring the dead (DL) and normal (To) in calculation of rebars splice does not appear to be justified. The stresses due to dead load and thermal loads will be locked in the rebars and cannot

be ignored.” Given that Sheikh had already warned of his concern that even “small loads” could cause concrete failure “due to bending,” and Dr. Darwin’s warning on the significance of lap splice regions, intervenors are most concerned about FENOC unjustifiably ignoring any stresses on the shield building in its analyses and calculations.

Similar concerns are elaborated in Sheikh’s point “6.”: “The licensee considers the allowable stress in the rebar to be 60 ksi and ignores a phi factor (0.9) in his evaluation for lap splice. In addition, the licensee has not accounted for any additional uncertainty due to field conditions.” Per Sheikh’s concerns, it is imperative that there be a full account of all such phi factors and uncertainties due to the field conditions.”

Given worsening cracking, SB wall gaps, and rebar damage, this rebar lap splice/cracking risk deserves focused attention in a hearing.

**Documents B/27** [11/23/11; Email from A. Howe, NRR to S. West, RIII et al. on Where do we stand on Davis Besse? (1 page)] and **B/28** [11/23/11; Email from A. Howe, NRR to M. Evans, NRR et al., on Call with Steve West on Davis Besse. (1 page)], p.42-44/101:

This document clearly lays out NRC’s rush, under pressure from FENOC, to approve reactor restart, despite deepening complexities and unanswered questions about the safety-significant SB cracking. NRC Staffers worked over time, including on weekends, evenings, and even over holidays, to provide FENOC the green light it was pressuring for. This rush now appears to have included a poor job repairing the SB access opening of late 2011, introducing a SB wall gap, as well as damaging rebar. This was followed by over two years (Dec. 2011 to Feb. 2014) of full power operations with a severely compromised SB.

**Document B/30** [11/27/11; Email from J. Zimmerman, NRR to M. Evans, NRR Re: Davis-Besse Draft CAL. (2 pages)], p.46-47/101:

Further documents NRC’s rush – over a holiday weekend -- to approve D-B reactor restart, despite unfinished safety-significant calculations, etc.

**Document B/31** [11/28/11; Email from B. Lehman, NRR to S. CuadradoDeJesus, NRR RE: Shield building discussion with Melanie next week. (1 page)], p.47/101:

NRC OGC attorney Brian Harris’s assertive insistence to attend NRR Staff meetings re: the cracking in D-B’s SB shows the license extension significance and relevance of the issue – he is the lead NRC attorney opposing our intervention.

**Document B/32** [12/01/11; Email from R. Haskell, NRR on New OpE Forum Posting (sic): Davis Besse – Cracks Discovered in Shield Building During Reactor Vessel Head Replacement. (1 page)], p.48-49/101:

p.48/101

“No explanation is given by this NRC FOIA response as to how the deepening complexity of questions and concerns about Davis-Besse’s shield building cracking could be resolved so quickly, in mere days or even hours, allowing NRC to confidently assure safety and authorize restart so quickly. As shown by NRC’s allowing FENOC until February 28, 2012 to submit its root cause report, only to allow it to amend the root cause report in mid-May because the original was so badly flawed and incomplete, it is now retrospectively clear that NRC’s questions and concerns were not resolved by the time the CAL was issued on December 2, 2011. Not just FENOC’s, but even NRC’s behavior, harkens back to the 2002 Hole-in-the-Head Fiasco, about which the NRC Office of Inspector General concluded that not only FENOC, but also NRC itself, was guilty of prioritizing FENOC profits over public safety (NRC OIG, “Event Inquiry Regarding NRC’s Regulation of Davis-Besse

p.49/101

Regarding Damage to the Reactor Vessel Head,” OIG-02-03S, 12/30/2002, <http://www.nrc.gov/reading-rm/doc-collections/insp-gen/2003/02-03s.pdf>).

Intervenors fear this NRC attitude of “reactor operations approval at any cost,” so clearly exemplified by the rushed December 2, 2011 CAL authorizing rushed restart, will affirm the supposed legitimacy of the politicized decision-making culture during the proposed 2017-2037 period, as well. That decision-making culture will be fleshing out the Davis-Besse AMP for cracking. A hearing is warranted to assure that politicization of aging management is as unlikely as possible.”

The NRC has now saw fit to require of FENOC yet another revision to the root cause report, due to the worsening cracking discovered in Aug./Sept. 2013. NRC has given FENOC till mid-2014 to complete it.

**Document B/34** [12/01/11; Email D. Morey, NRR to S. CuadradoDeJesus, NRR Re: Davis-Besse Shield Building. (1 page)], p.50/101, and **Document B/35** [12/02/11; Email from D. Morey, NRR to B. Lehman, NRR et al RE: Davis-Besse Shield Building. (1 page)], p.51/101:

Further documentation of NRC’s mad dash to approve rushed restart of D-B despite the SB cracking, despite a lack of even basic information about the cracking, and despite significant incomplete analyses and unanswered questions, perhaps in an effort to approve the restart before FENOC, tail wagging the dog fashion, simply did it anyway.

Such a rush job, it now appears, included a hasty repair of the access opening, which left a large gap in the wall, as well as damaged rebar.

**Document B/36** [12/02/11; Email from B. Lehman, NRR to S. Sakai, NRR et al. FW: Davis Besse POP. (2 pages)], p.52/101:

Any remaining questions within NRC's ranks were silenced by the decision to issue the CAL, slamming the door shut. NRC's internal contradictions are on full display, when you compare this email of finality, to ones sent just hours earlier, laying out significant areas of questioning, concern, and uncertainty not yet resolved.

**Document B/40** [12/06/11; Email from B. Lehman, NRR to S. CuadradoDeJesus, NRR on Shield Building RAI. (1 page)]:

p.60/101:

"...So many different forms of cracking, in widely different areas of the shield

p.61/101:

building, likely involve multiple root causes, which FENOC has not identified nor accounted for. Nor has NRC required FENOC to do so. Intervenors fear that such unaccounted-for root causes, as well as incomplete accounting of the extent of the cracking and safety/environmental risk significance, and consequently inadequate corrective actions, will lead to worsening of known cracks, not to mention initiation and worsening of unknown cracks. This, of course, would increase the risks."

The worsening cracking admitted to in Aug./Sept. 2013, as well as FENOC's need to redo its RCR yet again by mid-2014, seem to confirm Intervenors' August 2012 warnings and concerns as accurate and well founded.

**Document B/41** [12/06/11; Presentation Slides on Davis-Besse Shield Building Crack. (6 pages)]:

p.62/101

"...Intervenors are concerned that FENOC's response, based on Dr. Darwin's advice, is inadequate – that merely broad *strokes* of understanding are good enough, that not "every square inch" of the building need be checked. Intervenors assert that neglecting to perform confirmatory tests on vast areas of the shield building could miss large areas of severe cracking, which have rendered the shield building unfit for safety or

environmental duty, and will cause this to only worsen over time, due to age-related degradation worsening both known, and currently unknown, cracking.”

Compare this to the access opening repair put in place in late 2011. A significant gap in the SB wall, combined with damaged rebar, made this area of the containment prone to failure, if it had been tested by additional stresses. Luckily, it was not. Are there other areas of gaps or damaged rebar across the SB wall of which FENOC, and NRC, are currently unaware? Why is testing to confirm structural integrity across the SB not being required?

p.62/101:

“...NRC also states that the “Licensee’s Position” is that “Primary concern is ability of outside rebar to perform its intended function. **Observations of construction opening and testing indicate concrete is firmly attached to rebar mat**”. But this flies in the face of the admission, by both NRC and FENOC, that the outer rebar layer is dysfunctional.” (emphasis added)

Ironically, it was FENOC’s – and NRC’s – lack of observation that led to the SB wall gap and rebar damage, revealed in Feb. 2014. That lack of observation allowed for more than two years of full power operations (Dec. 2011 to Feb. 2014), with a severely compromised SB.

Re: p.63/101

[“...NRC mentions the need for FENOC to “Determine root cause and develop a long-term monitoring program (due 2/28/12)”. FENOC failed on both scores. Although FENOC did submit a root cause report by 2/28/12, NRC identified so many

p.64/101

holes in it that FENOC was forced to submit a revised root cause analysis report in mid-May. David Lochbaum, Director of the Nuclear Safety Project at the Union of Concerned Scientists, pointed out to NRC Region 3 Administrator, Chuck Casto, in late May that this was a prima facie violation of 10CFR50.9 requirements that FENOC submit complete and accurate information by the February 28, 2012 deadline. But NRC has done nothing to enforce this regulation, nor hold FENOC accountable for its violation. In addition, FENOC did not publish its “long-term monitoring program” (its AMP) till April 4, 2012 -- over a month late. Even then, FENOC’s AMP was woefully inadequate, and remains so to this day.”]

That was nothing. Now, in the aftermath of the Aug./Sept. 2013 worsening cracking, FENOC is again re-doing its RCR. The latest version is not due till mid-2014 – well over two years later than the original deadline for the RCR.

Re: p.64/101

[“...NRC also mentions requiring FENOC to “Select multiple un-cracked areas to investigate to verify the cracking is not spreading (due 90 days)”. But the only un-cracked areas to be examined are located right next to already known cracks. A shield building-wide look is not being required, so severe cracking in large areas of the shield building could be occurring, that FENOC has simply assumed is not there.”]

This is all the more ironic in light of the fact that a single, basic acoustic test would have revealed the SB wall gap of 2011-2014. Simply assuming structural integrity is not adequate to protect public health, safety, and the environment.

**Document B/44** [12/13/11; Email from M. Galloway, NRR to A. Sheikh, NRR et al., RE: Davis-Besse Shield Building. (1 page)], p.66/101:

NRC Staffer Abdul Sheikh admits “Davis Bessee [sic] shield building has not been designed for containment accident pressure and temperature.”

If the Davis-Besse concrete, steel reinforced shield building was not even designed for the levels of pressure and temperature that would result from a steel containment accidental breach, then it stands to reason that a severely cracked shield building would be even more vulnerable to catastrophic failure than an un-cracked shield building. In fact, Abdul Sheikh himself, in Document B/26, stated “I am concerned that the concrete will fail in this region due to bending in this region even under small loads.” As Sheikh indicates above, a breach of the steel containment vessel at Davis-Besse would subject the severely cracked shield building not to “small loads,” but to accident pressures and temperatures that it was never designed to withstand, even when brand new and un-cracked!



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## General Comment

See attached file(s)

## Attachments

Davis Besse 20 More Years of Radioactive Russian Roulette Nov 2010 corrected May 10 2011

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## Davis-Besse Atomic Reactor: 20 MORE Years of Radioactive Russian Roulette on the Great Lakes shore?!

### INTRODUCTION

FirstEnergy has applied to the U.S. Nuclear Regulatory Commission (NRC) for a 20 year operating license extension at its nearly 34-year-old Davis-Besse nuclear power plant near Oak Harbor, Ohio, just over 20 miles east of Toledo.<sup>1</sup> If approved, Davis-Besse would be permitted to operate for 60 years, until 2037 (its original license, granted in 1977, is currently set to expire at the end of 40 years of operations, in 2017). Beginning a decade ago, NRC has rubberstamped 59 of 59 license "renewals" sought by industry,<sup>2</sup> including at the oldest operating reactors in the U.S., despite some of them having very serious, documented safety risks due to age-related degradation. The NRC Office of Inspector General, however, has reported serious problems with NRC's license extension program: NRC staff have "cut and paste" the nuclear utility's own work, sometimes word for word, falsely presenting it as independent safety analysis, then once license extensions are rubberstamped, destroyed the working documents that formed the basis for "renewal" approvals.<sup>3</sup>

But Davis-Besse is one of the most problem-plagued atomic reactors in the entire country. For example, NRC acknowledges that Davis-Besse has suffered six (out of a total of 34 incidents so designated nationwide) "significant accident sequence precursors" between 1969 and 2005, three times more than any other American nuclear plant. This includes the September 24, 1977 "stuck-open pressurizer PORV" (Pilot-Operated Relief Valve) at Davis-Besse, an almost identical accident precursor that unfortunately did lead to a 50% core meltdown at Three Mile Island (TMI), Pennsylvania just a year and a half later. NRC has calculated that this 1977 accident precursor at Davis-Besse had a 7% "core damage probability" (CDP), making it the fourth most serious accident in the entire industry during the time period in question, surpassed only by the 1979 TMI meltdown, 1975 Browns Ferry, AL fire (assigned a 20% CDP), and the 1978 Rancho Seco, CA steam generator dryout (assigned a 10% CDP).<sup>4</sup> (However, it deserves mentioning that the Fermi 1 plutonium breeder reactor located in Monroe, Michigan – 30 miles across Lake Erie, and visible with the naked eye, from Davis-Besse – also suffered a partial core meltdown just a few years earlier than NRC's timeframe above, in 1966.<sup>5</sup>) But the 9/24/77 TMI precursor accident was but the first of numerous times "We Almost Lost Toledo," but one of many skeletons in Davis-Besse's closet.

### Three Mile Island meltdown precursor incident, September 24, 1977

Very fortunately for Toledo and points downstream and downwind, including Cleveland, the fledgling, six-month-old Davis-Besse reactor was only operating at 9% power<sup>6</sup> when "a spurious half-trip of the steam and feedwater rupture control system initiated closure of the startup feedwater valve. This resulted in reduced water level in SG [steam generator] "2." The pressurizer PORV lifted nine times and then stuck open because of rapid cycling."<sup>7</sup> Obscured by such NRC techno-engineering "Nukespeak"<sup>8</sup> is that this unforeseen "break-in phase" accident created instant chaos in the Davis-Besse control room, bewildering the highly trained operators, leaving them in "complete confusion" for over 20 minutes as they tried to stabilize the suddenly and inexplicably out-of-control reactor. Over three hundred bells and flashing lights were simultaneously signaling alarm as a water column displaced the steam bubble "shock absorber" and filled the pressurizer on the very top of the reactor, risking any sudden jolt fracturing safety-significant pipes, and as the Number 2 Steam Generator risked boiling dry, which could cause dangerous overheating and even a "loss-of-coolant-accident" in the hellishly hot reactor core. Operators "grasped at straws," rashly deciding to chuck emergency manual procedures that only seemed to be making matters worse in this unprecedented accident situation. Luckily for the unsuspecting cities just to the east and west, an operator spotted a gauge reading that resolved the perplexing puzzle, and corrective action was taken at the 26<sup>th</sup> minute of the crisis that brought the situation under control.<sup>9</sup>

Despite such a wild roller coaster ride, almost no one within the industry, including at reactor design firm Babcock and Wilcox, grasped the gravity of this accident. Most NRC officials were of the mindset that Davis-Besse personnel had acted appropriately, that the situation had been satisfactorily resolved, and that there were no more lessons to learn from the incident. However, an NRC regional inspector, James Creswell, from the Chicago office refused to "shut up." After first exhausting normal channels by working, in vain, within the system, Creswell – at great personal risk to his career and livelihood – bypassed his nay-saying chain of command and

directly communicated the significance of the accident, and his unresolved concerns, to the attention of NRC Commissioners Bradford and Ahearn, as well as their technical staff, on March 22, 1979. Tragically, it was too late -- the TMI meltdown occurred just six days later, following an almost identical accident sequence as had begun to unfold at Davis-Besse 18 months earlier. Creswell was later honored by NRC for his efforts, as the agency tried to clean up its ruined image after the TMI disaster.<sup>10</sup>

Later in 1977, Davis-Besse experienced another "significant accident sequence precursor," when Emergency Feedwater (EFW) pumps became inoperable during a test. NRC reported "During EFW pump testing, operators found that control over both pumps was lost because of mechanical binding in the governor of one pump and blown control power supply fuses for the speed changer motor on the other pump." NRC calculated that this incident had a core damage probability of 1/200, or 0.5%.<sup>11</sup> But Davis-Besse's very bad *first* year of operations was just the beginning.

#### "The Worst Accident Since TMI" -- Loss of cooling to reactor core for 12 minutes, June 9, 1985

Due to a convoluted combination of equipment malfunction and unavailability resulting from deferred maintenance, inexplicable "spurious actuation" in safety critical systems, operator error, and even overzealous security precautions that interfered with emergency actions, on June 9, 1985 at Davis-Besse, "several steps had been taken along the pathway to meltdown, but fortunately that journey was halted in time."<sup>12</sup> Even NRC admits that Davis-Besse faced a 1% "core damage probability" when, despite the reactor being scrambled,<sup>13</sup> there was a complete loss of feedwater to steam generators essential for core cooling. NRC's summary of the incident states: "While at 90-percent power, the reactor tripped with main feedwater (MFW) pump "1" tripped and MFW pump "2" unavailable. Operators made an error in initiating the steam and feedwater rupture control system and isolated EFW [emergency feedwater] to both steam generators (SGs). The PORV actuated three times and did not reseal at the proper RCS [reactor coolant system] pressure. Operators closed the PORV block valves, recovered EFW locally, and used HPI [high pressure injection] pump "1" to reduce RCS pressure."<sup>14</sup> Such technical language obscures the fact that plant personnel had to sprint through darkened corridors with bolt cutters, not knowing if they had the proper keys or access cards to open locked security doors, in order to cut through chains securing valves, so they could manually open them to restore water flow to steam generators in order to cool the reactor core, with each passing minute increasing the risk of a loss-of-coolant-accident, nuclear fuel damage, and even a meltdown.<sup>15</sup>

As Dave Lochbaum at Union of Concerned Scientists clearly relates, Davis-Besse came within 37 minutes of partially uncovering the core of its cooling water supply, and 41 minutes of completely uncovering the core; as he points out, TMI's core was never fully uncovered, but it was uncovered enough to half melt down.<sup>16</sup> As if describing a tense scene from an Indiana Jones movie, Lochbaum also recounts how "Now that the main feedwater pumps and the backup auxiliary feedwater pumps had all crapped out, workers turned to [a dangerously substandard, previously] intentionally disabled motor-driven startup feedwater pump. An operator raced through the plant taking five manual actions in four different locations (including re-installing the fuses)."<sup>17</sup>

As summarized by Tom Henry in the *Toledo Blade*, "Davis-Besse experienced a 12-minute interruption in the feedwater flow to steam generators... The potentially catastrophic event idled the plant for more than a year."<sup>18</sup> Henry added "...the Nuclear Regulatory Commission referred to the 1985 accident as the worst since *Three Mile Island in 1979*... A report prepared for the U.S. House Subcommittee on Energy Conservation and Power just days after the June 9, 1985, event suggested that the coolant-water episode at Davis-Besse should not have surprised the NRC. The report said 48 problems concerning Davis-Besse's auxiliary feed-water system had been reported by [FirstEnergy forerunner] Toledo Edison since July, 1979. The plant unexpectedly shut down 40 times between 1980 and 1985 - at least half of those times because of hardware problems and at least nine times because of human error."<sup>19</sup> (emphasis added) Dubbing it "decades of decadence" at Davis-Besse, Lochbaum has emphasized that had *any* of the numerous equipment problems been addressed in a timely manner, rather than multiple simultaneous shortcuts on safety taken and maintenance jobs long deferred, the entire accident could have been avoided.<sup>20</sup>

In fact, two of the incidents in the early 1980s mentioned by Henry also rose to the level of "significant accident precursors," according to NRC. On April 19, 1980, Davis-Besse lost two essential busses, causing a 1/1000 core damage probability; NRC reported "When the reactor was in cold shutdown, two essential busses were lost due to breaker ground fault relay actuation during an electrical lineup. Decay heat drop line valve was shut, and air was drawn into the suction of the decay heat removal pumps, resulting in loss of a decay heat removal path."<sup>21</sup> And on June 24, 1981, Davis-Besse lost a vital bus, coupled with the failure of an EFW pump, as

well as a main steam safety valve lifting and failing to reset. NRC reported "With the plant at 74-percent power, the loss of bus "E2" occurred due to a maintenance error during CRDM [control rod drive mechanism] breaker logic testing. A reactor trip occurred, due to loss of CRDM power (bus "E2"), and instrumentation power was also lost (bus "E2" and a defective logic card on the alternate source). During the recovery, EFW pump "2" failed to start due to a maladjusted governor slip clutch and bent low speed stop pin. A main steam safety valve lifted, and failed to reset (valve was then gagged)." This resulted in a 1/500, or 0.2%, core damage probability.<sup>22</sup>

In addition, then-owner Toledo Edison was fined for an odd incident not unrelated to the 1985 close call. In a misguided, botched attempt to appease anti-nuclear watchdogs after the loss of coolant accident, a former U.S. Nuclear Navy submarine commander was brought onboard as plant manager, supposedly in order to make Davis-Besse "ship shape." However, his "command and control" approach left a bit to be desired with the public and even his fellow employees, and he left after just a couple of years. The final straw came during the holidays in the mid to late 1980s, when the plant manager entered the Davis-Besse control room visibly drunk, cursing the busy reactor operators, and having to be physically restrained and dragged out by plant security when he tried to pick a fight.<sup>23</sup>

Again, the major fiascos of Davis-Besse's first decade of operations would be followed by more.

### Direct hit by tornado, June 24, 1998

An F2 tornado, with wind speeds of 113 to 157 miles per hour, scored a direct hit on Davis-Besse, with the funnel cloud passing between the cooling tower and the containment building. The control room operators, running the reactor at 99% power, had little to no advance warning of the twister, until alerted by the guard shack, which had spotted it approaching the plant. Although the reactor was then immediately scrammed, a large amount of radioactive decay heat in the core would need to be actively cooled for many hours, even days. As a safety precaution, operators immediately attempted to initiate the plant's two emergency diesel generators (EDGs). However, the first EDG initially failed to start, and was forced more than once over the course of the next day to be declared inoperable due to overheating of the room housing it. In addition, the second EDG was later declared inoperable "due to an apparent problem with the governor control." This "uncertainty of the operability of the EDGs" was a very serious concern, as the tornado had caused extensive damage to Davis-Besse's electrical switchyard, as well as to the region's electrical transmission lines, leading to a complete loss of offsite power that lasted for nearly 27 hours. Thus, the EDGs were needed to cool the thermally hot core, as well as to cool the irradiated nuclear fuel storage pool, for over a day. Complete failure of both the offsite power supply, as well as the EDGs, could lead to core damage and even a meltdown in a short period of time, as well as boil off of the radioactive waste storage pool's cooling water supply, which could cause spontaneous combustion of the irradiated nuclear fuel within a day or two. Such a reactor meltdown and/or pool fire could result in catastrophic radioactivity releases.<sup>24</sup> In addition to the dicey electricity supply to run vital safety and cooling systems, Davis-Besse's emergency alert system and communications were largely destroyed or inoperable. For example, most of the emergency sirens across Ottawa County no longer worked after the electrical distribution system was so severely damaged. Ironically, when needed most, the emergency sirens did not work. Thus, the public would have been "in the dark" had there been radiological releases, and Davis-Besse could not even communicate with the State of Ohio or neighboring counties to coordinate emergency response.<sup>25</sup>

### 3/16<sup>th</sup> of an inch from a meltdown?! The reactor with a hole in its head, March, 2002

The infamous 2002 "reactor hole-in-the-head" fiasco, due to Davis-Besse's "multiple conditions coincident with reactor pressure vessel (RPV) head degradation" – namely, cracked control rod drive mechanism nozzles, a massive acid corrosion hole through the reactor lid, exacerbated by potential clogging of the emergency sump, as well as degradation of the high-pressure injection (HPI) pumps during core cooling water recirculation – is considered by the U.S. Government Accountability Office as **"the most serious safety issue confronting the nation's commercial nuclear power industry since Three Mile Island in 1979."**<sup>26</sup> (emphasis added) As recently summarized by Tom Henry in the *Toledo Blade*, "...in 2002, Davis-Besse's old nuclear reactor head nearly burst. The lid was weakened by massive amounts of acid that had leaked from the reactor over several years. The acid induced heavy corrosion on top of the head. Radioactive steam would have formed in a U.S. nuclear containment vessel for the first time since the 1979 half-core meltdown of Three Mile Island Unit 2 in Pennsylvania if Davis-Besse's lid had been breached. The only thing preventing that was a thin stainless steel liner that had started to crack and bulge, records show. Correcting the problem kept the Davis-Besse [reactor] idle

a record two years. Federal prosecutors later described the incident as **one of the biggest cover-ups in U.S. nuclear history**. Two former Davis-Besse engineers were convicted of withholding information and put on probation; the utility itself wound up paying a record \$33.5 million in civil and criminal fines<sup>27</sup>; this represents the **"largest single fine ever proposed by the NRC."**<sup>27</sup> (emphasis added)

NRC's own Office of Inspector General concluded that not only FirstEnergy, but also the NRC under the chairmanship of Richard Meserve, had prioritized the nuclear utility company's profits over public safety.<sup>28</sup> U.S. Representative Dennis Kucinich (Democrat-Ohio), responding to the GAO report entitled "NRC Needs to More Aggressively and Comprehensively Resolve Issues Related to the Davis-Besse Nuclear Power Plant Shutdown"<sup>29</sup> – an investigation he had requested in the first place – said "The General Accounting Office (GAO) Report highlights shocking, serious and dangerous systemic problems at the Nuclear Regulatory Commission (NRC). Problems that call into question whether the agency can, as it is currently run, continue to perform its most fundamental functions-to protect public safety. This report reveals failures at almost every rung of the bureaucratic ladder at the NRC. **The crisis at Davis-Besse is the most serious safety issue to face a commercial nuclear power plant since Three Mile Island.** The GAO report shows that the NRC was ill equipped, ill informed and far too slow to react. The NRC's reaction to Davis-Besse was inadequate, irresponsible and left the public at grave risk."<sup>30</sup> (emphasis added)

#### **The Northeast Blackout of 2003 – caused by FirstEnergy's sagging money tree?!**

The U.S.-Canada Power System Outage Task Force reported in its "Final Report on the August 14, 2003 Blackout in the United States and Canada: Causes and Recommendations"<sup>31</sup> – regarding the second biggest power outage in history, affecting 55 million people in 8 U.S. states and Ontario – that the main cause involved FirstEnergy's failure to trim trees in its Ohio service area, combined with extensive maintenance backlogs as well as computer and communications system breakdowns. Could it be that FirstEnergy, in the midst of paying over \$139,200,000 in costs<sup>32</sup> (replacement power, repairs, etc.) associated with the hole-in-the-head fiasco (costs which would grow to over \$600 million altogether) at Davis-Besse due to the hole-in-the-head, and facing intense scrutiny by NRC and other government agencies such as the U.S. Department of Justice (which would eventually lead to civil and criminal charges and convictions), was experiencing "cash-flow challenges" and "other distractions" that contributed to these tree-trimming and maintenance backlogs? Ironically, the power outage forced the shutdown of dozens of atomic reactors in the U.S. and Canada – a safety pre-caution during such grid instability.

#### **Two holes in your reactor's head are better than one?! March 12, 2010**

Tom Henry has also reported that "Davis-Besse resumed operation in 2004 but was unexpectedly sidelined again for several weeks earlier this year [2010] after a 25-year-old reactor head the utility had installed to replace the original one showed signs of premature aging. Officials said the device was made of an inferior alloy. Several of its metal nozzles became brittle and starting cracking."<sup>33</sup> Lochbaum reports "In March 2010, workers at Davis-Besse discovered indications that two CRDM nozzles in the reactor vessel head purchased to replace the original head that CRDM nozzle leakage damaged beyond repair have through-wall cracks that leaked borated water onto the carbon steel reactor vessel head."<sup>34</sup> In all, 24 of the 69 CRDM nozzles were found to have flaws, Henry reports. The new vessel head was supposed to last 15 years, but was failing after just 6 years. Apparently, an inferior metal alloy, now being phased out across the industry, was used in the lid's manufacture, and Davis-Besse inspectors missed the problem when the lid was purchased from Consumers Energy's built, but never operated, Midland nuclear power plant in Michigan.<sup>35</sup> Lochbaum points out that The CRDM nozzle leakage identified in 2002 clearly constituted "significant conditions adverse to quality" – the NRC imposed the majority of its \$5.45 million record fine for it. This federal regulation required the licensee to take corrective action to preclude recurrence. The 2010 recurrence demonstrates that Criterion XVI (Corrective Action) in Appendix B (Quality Assurance Criteria for Nuclear Power Plants and Fuel Preprocessing Plans) to 10 CFR [Code of Federal Regulations] Part 50 -- had been violated. In response to this latest regulatory violation, on April 5, 2010, Dave Lochbaum at UCS filed a petition with the NRC entitled "Request for Restoration and Maintenance of Adequate Protection of Public Health and Safety at the Davis-Besse Nuclear Plant," citing NRC regulations and requirements that allow for "zero reactor coolant pressure boundary leakage during operation with the requirement to shut down the reactor within six hours if such leakage occurs."<sup>36</sup> Despite this, NRC allowed Davis-Besse to return to service in early summer, 2010.

### Radioactive Risks Piling Up on the Lake Erie Shoreline

The U.S. Department of Energy (DOE) estimates that Davis-Besse had, by the spring of 2010, generated about 557 tons of highly radioactive irradiated nuclear fuel.<sup>37</sup> DOE projects that if Davis-Besse operates for a total of 50 years (till 2027), it will generate over 900 tons of irradiated nuclear fuel.<sup>38</sup> If it operated a decade beyond that, as FirstEnergy has applied to do, the reactor would generate yet another 20 to 30 tons of irradiated nuclear fuel annually, or an additional 200 to 300 tons during that additional decade of operations.

Davis-Besse's indoor pool for storing high-level radioactive wastes was "packed to the gills" by the mid-1990s, at which point it proposed loading horizontal outdoor "bunkers" (unfortified) of concrete and steel – "dry" storage casks – to serve as "overflow parking." NRC identified serious problems with 3 of the "NUHOMS" dry storage casks, manufactured by Vectra Technologies (later taken over by Transnuclear, Inc., a subsidiary of the French government owned nuclear giant Cogema, now called Areva) fully loaded with irradiated nuclear fuel at Davis-Besse. The casks were discovered to have been built below technical specifications: the aggregate used to fabricate the casks' outer concrete walls – essential for radiation shielding – was poor quality, and the steel alloy walls of the inner metallic canisters actually containing the irradiated nuclear fuel were ground too thin along the weld lines, in violation of technical specifications. The Toledo Coalition for Safe Energy challenged the safety and quality assurance of this proposal in 1994, but was overruled by NRC, which allowed loading of casks to begin in 1995. These faulty casks remain fully loaded with high-level radioactive waste onsite at Davis-Besse to this day, 15 years later.<sup>39</sup>

The vast majority of Davis-Besse's irradiated nuclear fuel is still stored in its pool – vulnerable to cooling water drain downs or boil offs due to accident (such as heavy load drops), natural disaster (such as tornadoes), or intentional terrorist attacks. Without cooling water, wastes in the pool could catch fire within hours, resulting in 25,000 latent cancer deaths, due to large amounts of such hazardous radioactive isotopes as Cesium-137 escaping in the smoke and blowing downwind, depositing lethal fallout as far away as 500 miles.<sup>40</sup> However, as time goes on, more and more dry casks are being loaded with older irradiated nuclear fuel at Davis-Besse, in order to free up room in the storage pool for the hellishly hot and radioactive rods just removed from the operating reactor core during re-fueling outages.

Dry casks themselves are vulnerable to accidents, are not designed to withstand terrorist attacks, and will eventually degrade with exposure to the elements and need to be unloaded and replaced with new containers.<sup>41</sup> NRC recently updated its "Nuclear Waste Confidence Findings and Rule," asserting that "the nation's spent nuclear fuel can be safely stored for at least 60 years beyond the licensed life of any reactor and that sufficient repository capacity will be available when necessary."<sup>42</sup> NRC's "confidence" in the opening of a repository is suspect: President Obama has cancelled the proposed Yucca Mountain, Nevada repository, the only "deep geologic" dumpsite to be studied for high-level radioactive waste disposal in the U.S. for the past 23 years. NRC is thus perpetrating a "con game"<sup>43</sup> on the American people, and blocking any consideration of irradiated nuclear fuel generation risks in new reactor combined construction and operating license application proceedings, as well as in old reactor license extension proceedings, such as the one now underway at Davis-Besse.

Thus, NRC has already "blessed" high-level radioactive wastes remaining at Davis-Besse for a century, until 2077. If NRC rubberstamps a 20 year license extension, the irradiated nuclear fuel could remain onsite until 2097. However, the NRC Commissioners have also "directed the NRC staff to conduct additional analysis for [even] longer-term storage," ordering staff to submit a "plan to the Commission for the long-term rulemaking by the end of the calendar year [2010]."<sup>44</sup> Thus, NRC could soon approve irradiated nuclear fuel remaining at Davis-Besse – on the shoreline of the Great Lakes, 20% of the world's surface fresh water, and drinking supply for 40 million people – for *centuries* into the future, despite the safety, security, health, and environmental risks.

High-level radioactive wastes are one of the most hazardous substances ever generated by humankind. While electricity is but a fleeting byproduct, irradiated nuclear fuel will remain deadly and need to be isolated from the living environment "forevermore."<sup>45</sup> Without radiation shielding, it can deliver a lethal dose of gamma radiation in seconds or minutes, even decades after removal from the reactor. Alpha particle emitters, however, such as Plutonium-239 – a microscopic speck of which, if inhaled, could initiate lung cancer – will remain hazardous for hundreds of thousands of years. Other radioactive isotopes will remain deadly far longer – Iodine-129, for example, has a 157 million year hazardous persistence.

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## Ongoing Problems

As shown, Davis-Besse's woes are not confined to the past. Radioactive leaks have occurred in recent years.

On July 31, 2006, FirstEnergy publicly admitted four "occurrences of inadvertent releases of radioactive liquids that had the potential to reach groundwater," adding Davis-Besse to the growing list of 102 reactors in the U.S. that have leaked radioactivity into the environment since the early 1960s (and as the reactor ages, such leaks will become more likely).<sup>46</sup> These four "inadvertent releases of radioactive liquids" were, specifically:

[1] Following a primary to secondary leak, contaminated secondary resin was transferred to the South Settling Basin, where it remains. The Davis-Besse South Settling Basin was designed to accept spent resin from backwashed secondary polishing demineralizers. Spent resins from the secondary polishers are no longer directed to this basin. [2] Water from the Backwash Receiver Tank leaked into the ground from a break in a 3-inch line located between the Backwash Receiver Tank and the South Settling Basin. The line break was excavated and repaired, and 7 cubic yards of contaminated soil was sent to a disposal facility. [3] Primary grade water was spilled onto the ground near the Borated Water Storage Tank while draining the Hydrogen Addition System. Approximately 20 cubic yards of contaminated soil was excavated from the area and shipped to a disposal facility. [4] While pumping water from the North Settling Basin to the Collection Box, the discharge hose from the pump fell out of the Collection Box and spilled water containing **low-level** [sic, emphasis added] tritium (**4 E+04 pCi/L**) [that is 4 X 10,000 picoCuries per liter, twice the U.S. Environmental Protection Agency's permissible concentration level for tritium contamination under the Safe Drinking Water Act] onto the ground.<sup>47</sup>

In October, 2008, Davis-Besse admitted an uncontrolled release of tritium – carcinogenic, mutagenic, and teratogenic<sup>48</sup> -- discovered by a fluke when workers checked fire protection systems.<sup>49</sup>

Of course, Davis-Besse – as with every operating reactor in the U.S. -- has permission from NRC, EPA and other government agencies to release radioactivity into air, water, and soil on a "routine" basis,<sup>50</sup> despite the fact that every radiation exposure, no matter how small, carries a health risk, and those risks are cumulative.<sup>51</sup>

Then, on June 25, 2009, an explosion took place in Davis-Besse's electrical switchyard. Well over a year later, NRC is still investigating the accident, criticizing FirstEnergy's response as "too narrow in scope," including its failure to specify how it will prevent such explosions from happening again.<sup>52</sup>

And in November, 2009, a Davis-Besse security guard inexplicably managed to shoot himself in the leg, calling into question the competence, and even safety risks, associated with the reactor's security force.<sup>53</sup>

## Conclusion

The litany of serious close calls listed above could have led to loss-of-coolant in the Davis-Besse atomic reactor's core, meltdown, and a catastrophic radioactivity release on the Great Lakes shoreline, between Toledo and Cleveland. How bad might that have been in terms of casualties and property damage? The 1982 NRC and Sandia National Lab report, "Calculation of Reactor Accident Consequences," or CRAC-2, found that a major radioactivity release from Davis-Besse could cause 1,400 "peak early fatalities," 73,000 "peak early injuries," and 10,000 "peak cancer deaths." An \$84 billion figure for property damage was given. However, population growth in the past 28 years must be accounted for, which would likely make such casualty numbers even worse today. And when adjusted for inflation to present day dollar values, property damages could now top \$185 billion. And it has recently been revealed that NRC, EPA, and the Federal Emergency Management Agency (FEMA) disagree about which agency would lead the longer term clean up after a major radioactivity release, and where the funding would come from, calling into question disaster planning and severe accident mitigation analysis upon which Davis-Besse's 20 year license extension approval by NRC would be based.<sup>54</sup>

The TMI and Fermi 1 meltdowns, the Davis-Besse Sept. 24, 1977 incident, and the 1986 Chernobyl reactor explosion and fire represent "break-in phase" accidents – new reactors, at significantly elevated risk due to unrecognized design flaws, construction mistakes, or inexperienced operators "working the bugs out" the hard way. Even during "middle age," as shown by Davis-Besse's June 9, 1985 incident – even with more experienced staff and "broken in" systems – risks still persist at atomic reactors. However, as reactors age and their systems, structures and components degrade and wear out, "break down phase" accident risks significantly increase. Such risks are made even worse as experienced plant personnel retire from the workforce. The year 2000 Indian Point,

NY steam generator tube rupture, as well as the 2002 Davis-Besse hole-in-the-head fiasco, are examples of such "old age" breakdowns.<sup>55</sup>

If the first 34 years have been this troubled, what kind of unpleasant surprises does Davis-Besse have in store in the next several decades? Is an additional 20 years of operations at Davis-Besse, which has already repeatedly experienced more brushes with disaster than almost any other U.S. reactor, worth the risks? Incredibly, 60 years of risky reactor operations and radioactive waste generation at Davis-Besse may be just the beginning. The nuclear power industry, NRC, DOE, and national nuclear labs are now pushing for 80 years of operations at U.S. atomic reactors.<sup>56</sup> Will the radioactive Russian roulette at Davis-Besse end before it's too late? Davis-Besse should be shut down as soon as possible, and replaced with safe, secure, clean, reliable, and ever more cost competitive energy efficiency<sup>57</sup> and renewable alternatives<sup>58</sup> such as wind<sup>59</sup> and solar power.<sup>60</sup>

Prepared 11/19/2010 by Kevin Kamps, Beyond Nuclear.

For more information, contact Beyond Nuclear's Radioactive Waste Watchdog, Kevin Kamps, by calling (301) 270-2209x1, or emailing [kevin@beyondnuclear.org](mailto:kevin@beyondnuclear.org). You can also check out Beyond Nuclear's website at [www.beyondnuclear.org](http://www.beyondnuclear.org).

#### Endnotes

<sup>1</sup> See <http://www.nrc.gov/info-finder/reactor/davi.html>.

<sup>2</sup> See NRC's Status of License Renewal Applications and Industry Activities at <http://www.nrc.gov/reactors/operating/licensing/renewal/applications.html>.

<sup>3</sup> NRC OIG, AUDIT REPORT, Audit of NRC's License Renewal Program, OIG-07-A-15, September 6, 2007.

<sup>4</sup> NRC Commission Document SECY-05-0192, Attachment 2, "Results, Trends, and Insights from the Accident Sequence Precursor (ASP) Program," Table 11, "Significant accident sequence precursors during the 1969-2005 period," pages 20-26, <http://www.nrc.gov/reading-rm/doc-collections/commission/secys/2005/secy2005-0192/attachment2.pdf>.

<sup>5</sup> John G. Fuller, *We Almost Lost Detroit*, Reader's Digest Books, 1975, Berkley, 1984.

<sup>6</sup> Mike Gray and Ira Rosen, *The Warning: Accident at Three Mile Island*, Chapter 2, "Toledo, September 24, 1977," W.W. Norton and Company, New York, 1982, 2003, page 32.

<sup>7</sup> NRC SECY-05-0192, *ibid*.

<sup>8</sup> Hilgartner, S., Bell, R.C., O'Conner, R., *Nukespeak: The Selling of Nuclear Technology in America*, Sierra Club Books, 1982.

<sup>9</sup> *The Warning*, *ibid*.

<sup>10</sup> *The Warning*, *ibid*.

<sup>11</sup> NRC, *ibid*., citing LER [Licensee Event Report] 346/77-110.

<sup>12</sup> David Lochbaum, "Davis-Besse: Back to the Future," Issue Brief, Union of Concerned Scientists, [http://www.ucsusa.org/assets/documents/nuclear\\_power/20050609-db-ucs-backgrounder-feedwater-event.pdf](http://www.ucsusa.org/assets/documents/nuclear_power/20050609-db-ucs-backgrounder-feedwater-event.pdf).

<sup>13</sup> SCRAM originally referred to the "Safety Control Rod Axe Man" – literally, a man with an axe who would have chopped a rope to drop a control rod into the uranium pile in hopes of snuffing out an out of control chain reaction – at the world's first atomic reactor, built by Enrico Fermi's team at the University of Chicago squash courts under the football stadium. Scram now refers to the automatic insertion of control rods to shut a reactor down due to off-normal conditions. Even after scrambling, reactors must be actively cooled for days due to hellishly high thermal heat from radioactive decay in the core's irradiated nuclear fuel.

<sup>14</sup> NRC, *ibid*., citing LER [Licensee Event Report] 346/85-013, entitled "Reactor Trip and Total Loss of Feedwater Event at Davis-Besse," dated Dec. 18, 1985.

<sup>15</sup> See, for example, NRC, Loss of Main and Auxiliary Feedwater Event at the Davis-Besse Plant on June 9, 1985, Report NUREG-1154, US Nuclear Regulatory Commission, Washington, DC, July 1985, as well as NRC's Oct. 15, 1985 INFORMATION NOTICE NO. 85-80: TIMELY DECLARATION OF AN EMERGENCY CLASS, IMPLEMENTATION OF AN EMERGENCY PLAN, AND EMERGENCY NOTIFICATIONS (<http://www.orau.org/ptp/PTP%20Library/library/NRC/Info/in85080.PDF>), and NRC's July 10, 1986



INFORMATION NOTICE NO. 86-55: DELAYED ACCESS TO SAFETY-RELATED AREAS AND EQUIPMENT DURING PLANT EMERGENCIES (<http://www.ora.u.org/ptp/PTP%20Library/library/NRC/Info/in86055.pdf>)

<sup>16</sup> Lochbaum, "Davis-Besse: Back to the Future," *ibid.*

<sup>17</sup> Lochbaum, "Davis-Besse: Back to the Future," *ibid.*

<sup>18</sup> Tom Henry, *Toledo Blade*, "Public asked for its input on license extension at Davis-Besse: Nuclear plant seeks OK for 20 more years," Nov. 1, 2010, <http://www.toledoblade.com/article/20101101/NEWS16/10310341>.

<sup>19</sup> Tom Henry, *Toledo Blade*, "Davis-Besse Reactor Near to a Dismal Record," Aug. 31, 2003, <http://www.ohiocitizen.org/campaigns/electric/2003/dismal.htm>.

<sup>20</sup> Lochbaum, "Davis-Besse: Back to the Future," *ibid.*

<sup>21</sup> NRC Commission Document SECY-05-0192, *ibid.*, citing LER [Licensee Event Report] 346/80-029.

<sup>22</sup> NRC, *ibid.*, citing LER [Licensee Event Report] 346/81-037.

<sup>23</sup> Personal communication with Toledo Safe Energy Coalition attorney Terry Lodge, November 7, 2010.

<sup>24</sup> See, for example, Technical Study of Spent Fuel Pool Accident Risk at Decommissioning Nuclear Power Plants (NRC, NUREG-1738, 2001), as well as the 1982 NRC/Sandia National Lab report, "Calculation of Reactor Accident Consequences" (CRAC-2).

<sup>25</sup> See: NRC news releases, both dated June 25, 1998, "NRC TEAM DISPATCHED TO DAVIS-BESSE NUCLEAR PLANT," (<http://permanent.access.gpo.gov/lps11598/www.nrc.gov/reading-rm/doc-collections/news/1998/98-40iij.html>), and "NRC INSPECTION TEAM MONITORING DAVIS-BESSE PLANT RESPONSE TO TORNADO DAMAGE AND LOSS OF OFFSITE POWER," (<http://permanent.access.gpo.gov/lps11598/www.nrc.gov/reading-rm/doc-collections/news/1998/98-40aiij.html>); see also LICENSEE EVENT REPORT (LER) 1998-006-00, "Tornado Damage to Switchyard Causing Loss of Offsite Power," EVENT DATE 6/24/98, REPORT DATE 08/21/1998.

<sup>26</sup> U.S. General Accounting Office, Report to Congressional Requestors, "NUCLEAR REGULATION: NRC Needs to More Aggressively and Comprehensively Resolve Issues Related to the Davis-Besse Nuclear Power Plant's Shutdown," GAO-04-415, May 2004.

<sup>27</sup> Tom Henry, *Toledo Blade*, "Public asked for its input on license extension at Davis-Besse: Nuclear plant seeks OK for 20 more years," Nov. 1, 2010, <http://www.toledoblade.com/article/20101101/NEWS16/10310341>. For more information on FirstEnergy's record-breaking fines and penalties, see NRC "NOTICE OF VIOLATION AND PROPOSED IMPOSITION OF CIVIL PENALTIES - \$5,450,000; (NRC OFFICE OF INVESTIGATIONS REPORT NO. 3-2002-006; NRC SPECIAL INSPECTION REPORT NO. 50-346/2002-08(DRS)); DAVIS-BESSE NUCLEAR POWER STATION," April 21, 2005, <http://www.nrc.gov/reading-rm/doc-collections/enforcement/actions/reactors/ea05071.html> as well as U.S. Dept. of Justice press release, "Firstenergy Nuclear Operating Company to Pay \$28 Million Relating to Operation of Davis-Besse Nuclear Power Station," Jan. 20, 2006, [http://www.justice.gov/opa/pr/2006/January/06\\_enrd\\_029.html](http://www.justice.gov/opa/pr/2006/January/06_enrd_029.html). For more information on this Davis-Besse near-disaster, and its aftermath, see the extensive coverage by Henry in the *Toledo Blade*, as well as by John Funk and John Mangels in the *Cleveland Plain Dealer*, beginning in early 2002 and continuing for months and even years after. Also search for Davis-Besse at [www.ucsusa.org](http://www.ucsusa.org) for numerous reports and backgrounders by Dave Lochbaum. For instance, Lochbaum's *Walking a Nuclear Tightrope: Unlearned Lessons of Year-plus Reactor Outages*, viewable at [http://www.ucsusa.org/nuclear\\_power/nuclear\\_power\\_risk/safety/walking-a-nuclear-tightrope.html](http://www.ucsusa.org/nuclear_power/nuclear_power_risk/safety/walking-a-nuclear-tightrope.html), provides a detailed chronicle of Davis-Besse's over two year shutdown.

<sup>28</sup> Event Inquiry Regarding NRC's Regulation of Davis-Besse Regarding Damage to the Reactor Vessel Head, Case No. 02-03S, December 30, 2002, <http://www.nrc.gov/reading-rm/doc-collections/insp-gen/2003/02-03s.pdf>

<sup>29</sup> U.S. General Accounting Office, "NUCLEAR REGULATION: NRC Needs to More Aggressively and Comprehensively Resolve Issues Related to the Davis-Besse Nuclear Power Plant's Shutdown," *ibid.*

<sup>30</sup> "Statement of Congressman Dennis J. Kucinich on the GAO Report on the Davis-Besse Nuclear Power Plant," May 18, 2004, <http://www.kucinich.house.gov/News/DocumentSingle.aspx?DocumentID=26006>.

<sup>31</sup> April 2004, <https://reports.energy.gov/BlackoutFinal-Web.pdf>.

<sup>32</sup> See the Feb. 13, 2003 entry regarding Davis-Besse's long shutdown at [http://www.ucsusa.org/assets/documents/nuclear\\_power/davis-besse-ii.pdf](http://www.ucsusa.org/assets/documents/nuclear_power/davis-besse-ii.pdf), in Dave Lochbaum of UCS's report *Walking a Nuclear Tightrope: Unlearned Lessons of Year-plus Reactor Outages*, viewable at [http://www.ucsusa.org/nuclear\\_power/nuclear\\_power\\_risk/safety/walking-a-nuclear-tightrope.html](http://www.ucsusa.org/nuclear_power/nuclear_power_risk/safety/walking-a-nuclear-tightrope.html).

<sup>33</sup> Henry, Nov. 1, 2010, *ibid.*

<sup>34</sup> [http://www.ucsusa.org/assets/documents/nuclear\\_power/20100405-db-ucs-petition-pressure-boundary-leakage-1.pdf](http://www.ucsusa.org/assets/documents/nuclear_power/20100405-db-ucs-petition-pressure-boundary-leakage-1.pdf).

<sup>35</sup> Tom Henry, "FirstEnergy acted appropriately over Davis-Besse event, NRC says," September 11, 2010, *Toledo Blade*, <http://www.toledoblade.com/article/20100911/NEWS16/9100370>.

<sup>36</sup> [http://www.ucsusa.org/assets/documents/nuclear\\_power/20100405-db-ucs-petition-pressure-boundary-leakage-1.pdf](http://www.ucsusa.org/assets/documents/nuclear_power/20100405-db-ucs-petition-pressure-boundary-leakage-1.pdf).

<sup>37</sup> DOE/EIS-0250, Final Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada, Appendix A, Inventory and Characteristics of Spent Nuclear Fuel, High-Level Radioactive Waste, and Other Materials, Table A-7, Proposed Action spent nuclear fuel inventory (MTHM), page A-15, February 2002, [http://nepa.energy.gov/nepa\\_documents/EIS/EIS0250/VOL\\_2/VOL\\_2\\_A.PDF](http://nepa.energy.gov/nepa_documents/EIS/EIS0250/VOL_2/VOL_2_A.PDF).

<sup>38</sup> DOE/EIS-0250, Final Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada, Appendix A, Inventory and Characteristics of Spent Nuclear Fuel, High-Level Radioactive Waste, and Other Materials, Table A-8, Inventory Modules 1 and 2 spent nuclear fuel inventory (MTHM), page A-16, February 2002, [http://nepa.energy.gov/nepa\\_documents/EIS/EIS0250/VOL\\_2/VOL\\_2\\_A.PDF](http://nepa.energy.gov/nepa_documents/EIS/EIS0250/VOL_2/VOL_2_A.PDF).

<sup>39</sup> Personal communication with Toledo Safe Energy Coalition attorney Terry Lodge, November 7, 2010.

<sup>40</sup> Technical Study of Spent Fuel Pool Accident Risk at Decommissioning Nuclear Power Plants (NRC, NUREG-1738, 2001). See also Robert Alvarez, Jan Beyea, Klaus Janberg, Jungmin Kang, Ed Lyman, Allison Macfarlane, Gordon Thompson, Frank N. von Hippel, "Reducing the Hazards from Stored Spent Power-Reactor Fuel in the United States," *Science and Global Security*, 11:1-51, Princeton University, Princeton, NJ, January 2003.

<sup>41</sup> Kevin Kamps, "Get the Facts on High-Level Atomic Waste Storage Casks," NIRS, updated July 15, 2004, <http://www.nirs.org/radwaste/atreactorstorage/drycaskfactsheet07152004.pdf>.

<sup>42</sup> NRC news release No. 10-162, "NRC APPROVES UPDATES TO NUCLEAR WASTE CONFIDENCE FINDINGS AND RULE," September 15, 2010.

<sup>43</sup> Con game, U.S. slang for confidence game, is defined by the *World Book Dictionary* (Doubleday and Company, Inc., Chicago, 1985) as "a fraud in which the swindler persuades his victim to trust him, especially with money or valuables."

<sup>44</sup> NRC, "NRC APPROVES UPDATES TO NUCLEAR WASTE CONFIDENCE FINDINGS AND RULE," *ibid*.

<sup>45</sup> Donald L. Barlett and James B. Steele, *Forevermore: Nuclear Waste in America*, W.W. Norton, New York, 1985.

<sup>46</sup> Paul Gunter, "Leak First, Fix Later: Uncontrolled and Unmonitored Radioactive Releases from Nuclear Power Plants," *Beyond Nuclear*, April 2010, <http://www.beyondnuclear.org/reports/>.

<sup>47</sup> "Davis-Besse Nuclear Power Station Response to Groundwater Protection - Data Collection Questionnaire," included as Attachment 2 (question 3, page 2 of 3) in July 31, 2006 submittal from Gary R. Leidich, President and Chief Nuclear Officer, FENOC, addressed to the Document Control Desk at NRC, entitled "SUBJECT: Groundwater Protection - Data Collection Questionnaire."

<sup>48</sup> "Tritium: A Universal Health Threat Released by Every Nuclear Reactor," March 2010, <http://www.beyondnuclear.org/storage/documents/Tritiumbasicinfofinal.pdf>.

<sup>49</sup> Tom Henry, "Davis-Besse radioactive leak is fixed," October 25, 2008, *Toledo Blade*, <http://www.toledoblade.com/apps/pbcs.dll/article?AID=/20081025/NEWS16/810250355>.

<sup>50</sup> "Routine Radioactive Releases from Nuclear Power Plants in the United States: What Are the Dangers?" *Beyond Nuclear*, Jan. 2009, <http://www.beyondnuclear.org/storage/documents/rrus.pdf>.

<sup>51</sup> "All Levels of Radiation Confirmed to Cause Cancer," NIRS press release, June 30, 2005, referring to the findings of the U.S. National Academies of Science (NAS) in its BEIR VII, or seventh Biological Effects of Ionizing Radiation report, on "Health Risks from Exposure to Low Levels of Ionizing Radiation," <http://www.nirs.org/press/06-30-2005/1>.

<sup>52</sup> "NRC to push probe of Davis-Besse blast," *Toledo Blade*, November 2, 2010, <http://www.toledoblade.com/article/20101102/NEWS16/101109957>.

<sup>53</sup> Tom Henry, "Davis-Besse security guard injured when gun discharges," *Toledo Blade*, November 28, 2009, <http://www.toledoblade.com/article/20091128/NEWS16/911280355>.

<sup>54</sup> Douglas Guarino, "Agencies Struggle To Craft Offsite Cleanup Plan For Nuclear Power Accidents," *Inside EPA*, originally posted and dated Nov. 10, 2010, <http://environmentalnewsstand.com/Environmental-NewsStand->

[General/Public-Content/agencies-struggle-to-craft-offsite-cleanup-plan-for-nuclear-power-accidents/menu-id-608.html](http://www.epa.gov/epa/General/Public-Content/agencies-struggle-to-craft-offsite-cleanup-plan-for-nuclear-power-accidents/menu-id-608.html).

<sup>55</sup> David Lochbaum, Union of Concerned Scientists, "U.S. Nuclear Plants in the 21<sup>st</sup> Century: The Risk of a Lifetime," May 2004, [http://www.ucsusa.org/assets/documents/nuclear\\_power/nuclear04fnl.pdf](http://www.ucsusa.org/assets/documents/nuclear_power/nuclear04fnl.pdf).

<sup>56</sup> Matthew L. Wald, "An 80-Year Run for Nuclear Reactors?", Green: A Blog about Energy and the Environment, New York Times, November 2, 2010, <http://green.blogs.nytimes.com/2010/11/02/an-80-year-run-for-nuclear-reactors/>.

<sup>57</sup> Max Neubauer, R. Neal Elliott, Amanda Korane, John A. "Skip" Laitner, Vanessa McKinney, Jacob Talbot, and Dan Trombley, *Shaping Ohio's Energy Future: Energy Efficiency Works*, American Council for an Energy Efficient Economy (ACEEE), Summit Blue Consulting, ICF International, and Synapse Energy Economics, ACEEE Report E092, March 2009. <http://www.aceee.org/sites/default/files/publications/researchreports/E092.pdf>.

<sup>58</sup> Dr. Arjun Makhijani, *Carbon-Free and Nuclear-Free: A Roadmap for U.S. Energy Policy*, RDR Books, Muskegon, MI and IEER Press, Takoma Park, MD, 2007, <http://carbonfreenuclearfree.org/> and <http://www.ieer.org/carbonfree/>

<sup>59</sup> U.S. Department of Energy, National Renewable Energy Laboratory, Wind Powering America, Ohio Offshore Wind Map and Resource Potential, [http://www.windpoweringamerica.gov/windmaps/offshore\\_states.asp?stateab=oh](http://www.windpoweringamerica.gov/windmaps/offshore_states.asp?stateab=oh) and Ohio Wind Map and Resource Potential, [http://www.windpoweringamerica.gov/wind\\_resource\\_maps.asp?stateab=oh](http://www.windpoweringamerica.gov/wind_resource_maps.asp?stateab=oh).

<sup>60</sup> Toledo area companies pioneering solar panel manufacture include Willard & Kelsey Solar Group LLC (<http://wksolargroup.com/>) in Perrysburg, Ohio, Xunlight Corp. in Toledo (<http://www.xunlight.com/>), and First Solar Inc. (<http://www.firstsolar.com/en/index.php>), which is based in Arizona but has its only North American factory in Perrysburg Township, Ohio.

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## General Comment

See attached file(s)

## Attachments

Snow Job Recent Revelations 8 8 2012

SUNSI Review Complete  
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## Beyond Nuclear Fact Sheet

# What Humpty Dumpty doesn't want you to know<sup>1</sup>: *Davis-Besse's Cracked Containment Snow Job*<sup>2</sup>

32e-1-LR

### Introduction: Alas, in atomic blunderland...

Recently, numerous revelations have come to light about the likely origin(s), severity, and risks of the FirstEnergy Nuclear Operating Company's (FENOC) Davis-Besse atomic reactor's concrete containment "shield building" cracking. Many of these have surfaced thanks to a Freedom of Information Act (FOIA) request, submitted in Jan. 2012 by Beyond Nuclear, and only partially responded to by the U.S. Nuclear Regulatory Commission (NRC) beginning in June. Beyond Nuclear was forced to file the FOIA request when NRC Region 3 Acting Administrator, Cynthia Pedersen, during a public meeting at Camp Perry, Ohio, on Jan. 5, 2012, refused to provide documents, despite public requests, about her decision to approve FENOC's rushed re-start of Davis-Besse on Dec. 2, 2011.

Beyond Nuclear, in coalition with Citizens Environment Alliance of Southwestern Ontario, Don't Waste Michigan, and the Green Party of Ohio, has challenged the 20-year license extension sought by FENOC at Davis-Besse since 2010. The coalition, represented by Toledo attorney Terry Lodge, himself a 35-year watchdog on the problem-plagued atomic reactor, has closely monitored the cracking issue since it was first disclosed last Oct., submitting a contention to NRC's Atomic Safety (sic) and Licensing Board (ASLB) on Jan. 10, 2012.<sup>3</sup> The ASLB is soon to rule on whether or not the cracking contention will be given its "day in court" (although Intervenor's eyes are open: it must be remembered that ASLBs and NRC have rubberstamped 73 license extensions at reactors across the U.S. since 2000<sup>4</sup>).

When FENOC claimed at the end of Feb. that the Blizzard of 1978 was the root cause of the cracking, the coalition instantly dubbed it a "Snow Job."<sup>5</sup> Congressman Dennis Kucinich (D-OH) echoed this charge on the floor of the U.S. House of Representatives June 21<sup>st</sup>, the day NRC itself endorsed the theory.<sup>6</sup> He questioned whether it was just another "in a series of desperate lies" by FENOC, in a bid to keep the dangerously degraded 35-year-old reactor running. While FENOC, and even NRC, had tried to downplay the cracking as non-structural, merely involving "cosmetic," "decorative" or "architectural" elements of the shield building, on Feb. 8, 2012 Kucinich revealed that it is so severe that the *structural* outer rebar layer must be considered dysfunctional.<sup>7</sup> This revelation led to the coalition's first contention supplement.<sup>8</sup>

FENOC pressured for, and NRC approved, the rushed restart of Davis-Besse, despite not knowing the "root cause(s)," extent, or safety implications of the unprecedented, "unique" severe cracking. As more light has been shined, the illusion that Humpty Dumpty can be put back together again has begun to flicker and fade. Despite FENOC's and NRC's attempts at talking a good line, Davis-Besse's "Alas, in Atomic Blunderland" journey through the cracked Looking Glass has grown more harrowing. In their pursuit of high-risk profits, the utility and its captured "safety regulator" want to take regional residents down the rabbit hole for another quarter-century. NRC is plodding along towards yet another rubberstamp, of the proposed 2017-2037 license extension at Davis-Besse, despite the worsening "break down phase"<sup>9</sup> risks at the reactor, which perhaps has experienced more close calls with catastrophe than any other in the U.S.<sup>10</sup>

### Pre-operations construction flaws

FENOC's Feb. 28, 2012 root cause report (RCR)<sup>11</sup> was so half-baked, NRC ordered it back to the kitchen. This led the Union of Concerned Scientists Nuclear Safety Project Director, David Lochbaum, to charge that the failure to provide complete and correct information by the deadline was a regulatory violation, but NRC has taken no enforcement action.<sup>12</sup> It also led FENOC to admit many remarkable things, previously undisclosed, in a May 16<sup>th</sup> Revised RCR.<sup>13</sup>

Asked by NRC why it had not applied weather sealant on the exterior of the concrete shield building during construction in the 1970s, FENOC simply responded in its Revised RCR that it had not been required to do so.<sup>14</sup> This still does not explain, however, why *all* other, less safety significant concrete buildings on-site *were* weather sealed. FENOC's only explanation, so far, is that it did so for aesthetic reasons, as those buildings appeared "splotchy."

Also in the 1970s, during licensing and construction, before operations, NRC's Advisory Committee on Reactor Safeguards (ACRS) warned that more destructive earthquake forces (0.20g bedrock ground acceleration) than the nuclear utility actually had used (0.15g) needed to be considered for design of safety significant systems, structures, and components. However, NRC let Davis-Besse fire up in 1977, *before* addressing this concern, making reactor operations a done deal. To this day, FENOC is still using such non-conservative assumptions, such as to determine the "functionality" of its severely cracked shield building.<sup>15</sup>

Over 35 years after the fact, FENOC revealed in its May 2012 Revised RCR that cracking on the shield building dome had actually first been documented in August 1976, *over a year before the Blizzard of 1978*.<sup>16</sup> Other defects on the dome, such as poorly applied weather sealant, were admitted; photos from the 1970s revealed "standing water between roof dome and parapet and... 'freeze-thaw damage in the roof concrete.'" <sup>17</sup> FENOC's contractor, Performance Improvement International (PII), admits the possibility of "the entire roof filling up with water."<sup>18</sup>

This standing water on the shield building roof led NRC to question whether a "top-down" water leakage pathway might also provide a partial explanation for the cracking.<sup>19</sup> In fact, PII admitted "The second most likely scenario is that during the blizzard, water intruded from the cracks in the dome of the structure and trapped in small gaps between the rebar and concrete. Upon freezing, the volume expansion of ice produced significant radial stresses that resulted in the observed cracking." This prompted NRC to ask "Is this scenario also identified and explained in the FENOC RCR [Root Cause Report]? If so where? If not, why not?"<sup>20</sup>

PII has also admitted "Noteworthy deviations during construction of the shield building walls were issues such as concrete with the wrong water to cement ratio, concrete with smaller coarse aggregate size, concrete with the wrong type of cement, exceeding shield building wall tolerance for plumb, installation of reinforcing steel, embeds, or reglets, and omission of blockouts."<sup>21</sup>

Regarding the "out of plumb" (out of level) issue, NRC Staff required FENOC to provide additional information in the Revised RCR "regarding slip-form induced friction forces resulting in laminar cracking as a potential failure mode. . .". Nowhere throughout its height is the shield building within the required 1" plumb tolerance. According to measurements at the time of the concrete pours for the building, the "[o]ut of tolerance exceeds the 1 inch in 25 feet specified by 2-3/4 inches."<sup>22</sup> NRC questioned whether the added stress from the construction error might also be a root cause of the sub-surface laminar cracking, as shown possible by previous research.<sup>23</sup>

FENOC's predecessor, Toledo Edison, and the construction contractor, Bechtel, decided to disregard the error, conducting no repairs.<sup>24</sup> Bechtel Engineering concluded at the time of the 1971 construction that "The affect this has on

the shield building structural integrity were found to be insignificant. Bechtel Engineering approves the Use As Is disposition for the structure and recommends that all interface work be adjusted to meet the as-built alignment of the structure." But as Michael Keegan of Intervenor group Don't Waste Michigan has commented, "The concept of 'Use As Is,' when it comes to operating a nuclear power plant, is a risky proposition."<sup>25</sup>

In conducting analysis of whether the out-of-plumb "lean" of the shield building might have influenced or caused some of the cracking, FENOC denied that "[f]riction forces from geometry changes and the slip-form not in level have resulted in concrete delamination."<sup>26</sup> But PII cast doubt on this conclusion, admitting "Documentation of the Out of Plumb condition was limited to the documents provided. We do not have information regarding the method of correcting the problem and whether it caused excessive friction forces."<sup>27</sup>

In addition, sub-standard concrete (in terms of thermal diffusivity, conductivity and specific heat) has likely allowed damaging freezing to occur, deep into the shield building sub-surface.<sup>28</sup> What other vulnerabilities does such substandard concrete expose the Davis-Besse shield building to on an ongoing basis?

### **Cracking here, cracking there, cracking everywhere**

Contrary to FENOC's attempt to focus attention exclusively on a single type of cracking, supposedly caused by the Blizzard of 1978, there are actually multiple kinds of cracking located at diverse locations across the shield building. These likely have resulted from more than one root cause, perhaps acting in combination. This would require a multi-faceted "corrective action," but FENOC proposes a single "fix": weather coating the shield building, 40 years late.

FENOC's exclusive focus has been on sub-surface, laminar cracking, albeit located in different areas across the shield building: "(#1) Extensive cracking in the shoulder region, (#2) Cracking in the structural region outside the flute shoulder region near the main steam piping penetrations, (#3) Cracking indications via [Impulse] Response (IR) mapping in the cylindrical portion of the building near the top of the building at the interface between the domed roof and the cylindrical wall...IR mapping and core boring continues as the licensee evaluates the top 20' of the building."<sup>29</sup>

To FENOC, the only cracking worthy of note or analysis in the first 35 years of operations at Davis-Besse was laminar (and especially sub-surface laminar) cracking - a fallacious perspective. FENOC has given short shrift to surface cracking, dome cracking, micro-cracking, and radial cracking.<sup>30</sup>

In its Revised RCR, FENOC admitted, 36 years after the fact: "*On August 15, 1976 the Toledo Edison Company construction superintendent documented an examination of the shield building dome parapet that found a cracked and broken architectural flute shoulder corner at approximately 292 degree azimuth. There were also other hairline shrinkage cracks in the dome parapet at both corners of each architectural flute shoulder, at mid-width of each flute, and vertical around the periphery of the parapet...One small area of the latex coating at approximately 315 degrees mid-way up the shield building dome was found peeling and chipping from being applied too heavily (~1/4 inch). That coating was identified for removal with the area reapplied using a thinner layer of the same latex.*"<sup>31</sup>

NRC's Pete Hernandez wrote on 11/4/11: "...the crack is pervasive along the entire surface, spidering in all directions, similar to a pane of tempered glass breaking...The core bores have shown that the cracks are at different depths."<sup>32</sup> While much focus has been on cracking at the outer layer of steel reinforcement (rebar) a few inches beneath the exterior side wall of the shield building, in fact, FENOC admits the following crack depths (in inches): 4, 5, 6, 6.3, 6.5, 7, 7.5, 8, 9, 9.25, 14, 14.5, 14.75, 15.75.<sup>33</sup> A 15-inch deep crack would extend a full half way through the 30-inch thick shield building side wall; it would extend about a third of the way through the thicker shoulder areas. PII acknowledges the likelihood that moisture has penetrated the shield building wall 14 inches deep, with the implication that cracking could consequently extend an inch deeper than that.<sup>34</sup>

The NRC criticized FENOC that "The root cause report did not address micro-cracking that was identified in PII Exhibit 2. The root cause report contradicts this evidence, and states that micro-cracking was not identified."<sup>35</sup> Near-surface concrete micro-cracking was also observed by another FENOC contractor, CTL.<sup>36</sup>

There is indisputably a connection between micro-cracking and age-related degradation, raising the specter that cracking could grow significantly worse over the 20-year license extension.

The NRC Staff found that "[t]he root cause report additionally did not discuss radial cracking identified in numerous core bores."<sup>37</sup> These longitudinal/radial cracks were attributed to concrete shrinkage during the curing process. Radial cracks run perpendicular to the cracking that FENOC addressed in the RCR. Thus the Revised RCR identifies an entirely different cracking mode which is not explained by the "Blizzard of '78."

As revealed in 2011 NRC Requests for Additional Information (RAIs), and FENOC's responses thereto, in addition to cracking of its side wall, other forms of degradation afflict the shield building. Aggressive (chemically corrosive), infiltrating and standing groundwater in the sand bed region, for example, has degraded the moisture barrier at the base of the shield building, as well as corroded the inner steel containment vessel. (In addition, other areas of the steel containment have also exhibited corrosion, as towards the top, due to a corrosive boric acid leak from the refueling channel associated with the reactor cavity.) Concrete spalling (chipping or splintering off) has been documented on the shield building, as well. At one location, bare steel rebar, exposed to air, has been observed, making it vulnerable to the elements and corrosion.<sup>38</sup>

The presence of so many different forms of cracking/degradation all across the shield building may comprise a cumulative effect wherein they could all add up (especially where they are close together) to "fail" the shield building if a powerful enough force, such as an earthquake, tornado, internal meltdown related pressures, etc. were to occur at Davis-Besse.<sup>39</sup>

### **Downplaying the severity and safety risks of the cracks, versus CRAC-2**

While FENOC, and even NRC Region 3 Office of Public Affairs staff, spoke of only "cosmetic," "architectural" or "decorative" elements of the shield building being impacted by the cracking, NRC's Pete Hernandez stated in an internal agency email on 11/4/11: "I think the greater concern is will the SB stay standing, and not whether or not the decorative concrete will fall off. Because the licensee has not performed core bores to see if there is cracking in the credited concrete, do they have a basis to say that the structural concrete will maintain a Seismic II/I condition?"<sup>40</sup>

Hernandez admitted that the significance of the cracking was being downplayed, and asked "How can an analysis be done on the structurally credited concrete if no data from that area, in the form of core bores, has been taken? Shouldn't the structural integrity of the shoulders be calculated as well?" He warned against "[ignoring] the rest of the building altogether," and asked "if they are ignoring all that concrete, it seems to be the opposite of conservative for evaluating the mechanical loads."<sup>41</sup>

Finally, Hernandez asked "Because cracks have been found through multiple core bores, shouldn't the appropriate calculations account for the combined effects of cracks in all the shoulders...Isn't [Impulse Response] mapping only useful at a limited depth too, so that using it to evaluate a 48" thick piece of concrete is not realistic?"<sup>42</sup>

NRC's Abdul Sheikh echoed Hernandez on 11/22/11. Sheikh quoted FENOC's own assumption that "because the bond strength of reinforcement with laminar cracking next to it cannot be quantified, outside face hoop reinforcement in these regions is treated as ineffective --- for ultimate strength calculations." He concluded "If this assumption is correct



only 3-4 inches of the concrete on the inside face can be used in the structural analysis." Sheikh again quoted FENOC, "Since we assume that outside reinforcement is to be treated ineffective in carrying any additional stress beyond 12.4 ksi, under accident thermal loads that may cause stresses in excess of what the rebar can carry...the reinforcement is assumed to detach itself from the outer section of the shell." He then concluded "**I am concerned that the concrete will fail in this region due to bending in this region even under small loads.**" Is Sheikh describing the potential for failure of the outer 90% -- or 27 of 30 inches -- of the shield building wall?<sup>43</sup>

Although NRC, behind closed doors, admitted to itself on 11/21/11 "we conservatively assume it can carry no load under design basis conditions," it took U.S. Representative Dennis Kucinich's vigilance, his confrontation of FENOC's Nuclear Vice President Barry Allen at the Camp Perry meeting on 1/5/12, and his persistence, to cut through the obfuscation and clearly set the record straight for the public on 2/8/12: the extensive cracking at the outer steel reinforcement layer, located 3 to 4 inches deep under concrete at the exterior of the shield building wall, had rendered it incapable of performing its structural, safety function.<sup>44</sup>

As mentioned above, Davis-Besse's steel containment, a mere 1.5 inches thick when brand new four decades ago, is corroded. What if it were to fail during a reactor disaster, subjecting the severely cracked concrete shield building to high temperature and pressure?

Alarming, Sheikh went on to state "[The Davis Besse] shield building has not been designed for containment accident pressure and temperature."<sup>45</sup> If the Davis-Besse concrete, steel reinforced shield building, when it was brand new four decades ago, was not even designed for the levels of pressure and temperature that would result from a steel containment vessel accidental breach, then it stands to reason that a *severely cracked* shield building would be even more vulnerable to catastrophic failure.

What would be the consequences if both Davis-Besse's 1.5 inch thick inner steel containment vessel, and its 2.5 foot thick, severely cracked, outer concrete shield building, were to fail during a reactor accident? The shield building would then fail to contain potentially catastrophic amounts of hazardous radioactivity escaping from the reactor core. The shield building would not be able to "sweep and filter" the radioactivity before discharging it through a venting system, into the environment. Rather, the radioactivity releases could escape directly, unfiltered, into the outside air, to blow downwind, flow downstream, and fallout over vast areas, harming people and the environment, up the food chain and down the generations.

How bad would the casualties and property damage be? The NRC-commissioned, Sandia National Lab-conducted "Calculation of Reactor Accident Consequences" (CRAC-2) report sheds terrifying light on this question. NRC actually tried to bury the report, but U.S. Congressman Ed Markey (D-MA, who wrote a four-page letter to NRC Chairman Jaczko, expressing his concerns about the recently revealed shield building cracking at Davis-Besse)<sup>46</sup> forced CRAC-2's publication via his congressional hearing powers in 1982.

CRAC-2 lists the following casualty and property damage figures from a catastrophic radioactivity release at Davis-Besse: 1,400 Peak Early Fatalities; 73,000 Peak Early Injuries; 10,000 Peak Cancer Deaths; \$84 billion in property damage. But CRAC-2 was based on 1970 U.S. Census data; populations around Davis-Besse have grown significantly in the past 42 years, meaning that those casualty figures would now be much worse.<sup>47</sup> And when adjusted for inflation from 1982 dollar figures, property damage would today surmount \$187 billion in 2010 dollar figures.<sup>48</sup>

FENOC recently admitted five major errors in its Severe Accident Mitigation Alternatives (SAMA) analyses, submitted with its Environmental Report in its license extension application. These include: "An inaccurate land area conversion

factor for acres to hectares was used"; "Dollar values for Ohio farmland and non-farmland used as inputs to the "MELCOR Accident Consequence Code System" (MACCS2) software used in support of the SAMA Analysis were not appropriate"; "The escalation of decontamination costs used in the SAMA Analysis was not performed per the guidance of Nuclear Energy Institute (NEI) 05-01 'Severe Accident Mitigation Alternatives (SAMA) Analysis Guidance Document,' November 2005, using the consumer price index"; "Use of core inventory isotopic 'activity' instead of isotopic 'mass' in the Modular Accident Analysis Program (MAAP) software code runs did not reflect updated industry guidance"; "The wind direction from the Davis-Besse Meteorological Tower was not converted from the 'blowing from' direction to the 'blowing toward' direction for use in the SAMA Analysis calculations. The data from the Davis-Besse Meteorological Tower is received in the 'blowing from' direction. However, the MACCS2 software requires wind direction data inputs to be provided in the 'blowing toward' direction. The data conversion was not performed properly."<sup>49</sup> Each of these mistakes could well mean that predictions of casualties and property damage resulting from a catastrophic radioactivity release at Davis-Besse have been dangerously under-estimated by FENOC itself, a point the environmental coalition has already alleged for two years.

32e-2-PA (cont.)

Remarkably, FENOC claims these errors did not change its conclusion that no safety upgrades at Davis-Besse are cost-beneficial or necessary to prepare for its proposed 20-year license extension. Shamelessly, at the same time it admitted these mistakes, FENOC had the temerity to move for summary dismissal of the environmental coalition's intervention contention challenging its SAMA analyses as dangerously flawed.<sup>50</sup>

#### Cherry-picking the most convenient root cause of the cracks, ignoring the others

Despite the comprehensive damage already known in Davis-Besse's shield building, intervenors are concerned that FENOC and its contractors may have cherry-picked less-vulnerable areas of the shield building, as well as incorporating smaller assumed loads into calculations, to avoid identifying areas of the shield building particularly vulnerable to crack propagation over time.<sup>51</sup> A comprehensive accounting of the safety significance of *all* cracking, its various root causes, and all needed corrective actions is required. The root cause of each kind of cracking and other shield building degradation must be accurately determined, so that adequate corrective actions and aging management plans can be put in place.<sup>52</sup>

NRC, FENOC, and nuclear contractors Bechtel and Sargent & Lundy first believed the cracking was due to hydro-demolition used to breach the shield building to put the third lid in a decade (2002-2011) onto the reactor. FENOC plans yet another hydro-demolition in 2014 to replace degraded steam generators, risking further damage to the shield building. (Even then, the major "organ transplant" might not work: replacement steam generators at San Onofre nuclear power plant in California have experienced dangerous and sudden premature degradation, resulting in a safety shutdown since January that could permanently close the two reactors.)

Although certain NRC staffers have warned against over-simplifying the root cause analysis,<sup>53</sup> in the end, the agency rubberstamped FENOC's Blizzard of 1978 "snow job."<sup>54</sup> While NRC had many doubts about FENOC's exclusive theory, and wondered about numerous other potential root causes, little to none of this questioning behind closed doors has been communicated by NRC to the *public* in any meaningful way – apparently, intentionally so.

In an internal, high level briefing, NRC staff cited "Potential causes: thermal loading and structural discontinuities," but added "OK for examples of likely causes if NRC internal presentation. Licensee likely will investigate other potential causes in their root cause evaluation."<sup>55</sup> (emphasis in original) So it seems that NRC is comfortable saying one thing to itself behind closed doors, but saying another thing to the public and media – or saying nothing to them at all.

As documented at one of 27 areas of NRC's questioning<sup>56</sup> ("Item 46"), PII itself has admitted that "The second most likely scenario [root cause for shield building laminar cracking] is that during the blizzard, water intruded from the cracks in

the dome of the structure and trapped in small gaps between the rebar and concrete. Upon freezing, the volume expansion of ice produced significant radial stresses that resulted in the observed cracking." The NRC then asked, "Is this scenario also identified and explained in the FENOC RCR [Root Cause Report]? If so where? If not, why not?"<sup>57</sup> Incredibly, FENOC didn't even mention this "second most likely" root cause in its revised RCR, despite PII having explicitly acknowledged NRC's question.

NRC also asked about the potential for an uneven snow load transfer causing damaging forces at the top of the shield building wall. PII responded, frighteningly, "but it wouldn't be any worse than the entire roof filling up with water. A previous vendor did a calc on the latter and the stresses were relatively small."<sup>58</sup> PII didn't provide the "vendor calc," but did dismiss the concern. However, intervenors are concerned that standing water on the roof (documented in photos from the 1970s), combined with dome and parapet cracking, could have been a repeated root cause of cracking over years and decades of rain storms, and melting snow and ice, along the Lake Erie shore. This problem could continue into the future.

Intervenors wonder how a list of "at least 8" potential root causes for cracking, several of which "could be [in] combination," got whittled down by FENOC to its exclusive explanation, the Blizzard of 1978? It appears to intervenors that FENOC cherry-picked a single root cause that it could claim was not aging related, thereby minimizing the needed corrective actions (to a single act, simply weather sealing the shield building, albeit 40 years late), allowing it to deny the possibility that cracking could worsen over time, as it carries out full power operations for another quarter-century (2012-2037).<sup>59</sup>

FENOC and its contractors repeatedly demonstrate a lackadaisical approach to data collection/root cause investigation. There is a routine lack of sensitivity studies.<sup>60</sup> PII admits that its analyses are "preliminary and approximate," yet, there appear to be no comprehensive and conclusive analyses planned in follow up.<sup>61</sup> Assumptions have been made that the shield building's concrete is stronger than it actually is, although supportive data is absent.<sup>62</sup> This laziness even extends to FENOC's Aging Management Plan (AMP) for the cracked shield building announced on April 4, 2012: planned monitoring tests over the years and decades into the future are very few and far between.<sup>63</sup>

While investigating the root cause and extent of the cracking, FENOC and its contractors chose not to do tests because they were too challenging, expensive, and time consuming.<sup>64</sup> Tests were even aborted because of high winds, and power failure to a test rig, but then never completed later, once the wind died down and the power was restored. (The intervenors have shown that "high winds," also known as wind power, as well as solar PV, are excellent replacements for Davis-Besse's 908 megawatts of electricity! Although the ASLB granted a hearing on the renewable alternatives contention against the license extension, the NRC Commissioners voted 5 to 0 to block it.<sup>65</sup> The intervenors plan to appeal that decision to the federal courts at the earliest opportunity.)

FENOC and its contractors' performance does not compare well with international standards, and needs to be improved. NRC asked: "Work in Sweden that indicates non-linear FE [Finite Element] models have been used to predict cracking of reinforced concrete under shear loads. Why wasn't a similar FE model developed to evaluate the potential for growth of the existing cracking? Why isn't a more refined FE model or other applicable analysis needed as part of the corrective actions to monitor crack growth to ensure monitoring plans are adequate?"<sup>66</sup> The cracking is so little understood that FENOC's contractor PII admits it does not know how fast cracks are growing.<sup>67</sup>

PII also offers a weak explanation of the carbonation results. Based on the result of testing at Oak Ridge Nuclear Lab, Rep. Kucinich called attention to the significance of carbonation as a potential root cause, in a letter to NRC Chairman Jaczko last November.<sup>68</sup> PII has attempted to dodge addressing the significance of carbonation on core bores by claiming that once extracted, "exposure to air prior to testing" could have caused the evident carbonation. PII and FENOC need to develop better testing methods, ones that don't destroy the subject matter being studied, rendering all results meaningless. This is a very poor scientific, technical, and engineering basis upon which to establish a safe and

sound 20-year license extension at an atomic reactor with a severely cracked shield building of still-dubious origin(s).<sup>69</sup>

Most tellingly, NRC even questions the logic of FENOC's supposed root cause explanation: "Explain how 1978 blizzard conditions can explain cracking in the entire shield building? For example, if blizzard wind was in a single direction, how was water driven into all flute shoulders explained?"<sup>70</sup>

PII simply responded: "Damage in the flute shoulders is concentrated on the southwest side of the building, which coincides with the predominant wind direction. **Other parts of the building will still get wet.** Based on the IR mapping, the laminar cracks that are not on the southwest side of the building are limited to regions with weak planes of concrete (due to high density rebar). Weak planes of concrete will require less force to initiate cracks. Therefore, the observed result is expected."<sup>71</sup> (emphasis added)

Thus, PII admits that areas of the shield building surface containing dense rebar, which was not subjected to high wind, but was simply exposed to moisture, were also vulnerable to severe cracking. For this reason, the entire shield building surface containing high density rebar should be carefully examined for cracking. Davis-Besse is located on the Lake Erie shoreline. It has been exposed to countless episodes of moisture drenching, followed by freezing temperatures. Considering the sub-standard heat transfer characteristics of Davis-Besse's shield building concrete, allowing deep freezing of water into the thickness of the shield building, the admission that high wind was not even needed to cause extensive cracking must be addressed across the structure. Weather-sealing the shield building 40 years late does not reverse the damage already inflicted. Nor does it preclude the need for a comprehensive aging management plan and corrective actions for damaged areas of the shield building, which by PII's admission above extends to all areas of dense rebar, if not beyond.<sup>72</sup>

"[P]hysical evidence of moisture migration uniformly through the concrete for the full depth of the cores (over 4 inches)" would seem to indicate that the outer layer of rebar, located under 3 inches of exterior concrete, has been overtaken by moisture over the life of the shield building. Such moisture interaction with the steel reinforcement would have provided a corrosive environment. Corrosion of rebar could have contributed to shield building cracking.<sup>73</sup> Finding ettringite (a hydrous calcium aluminium sulfate mineral, evidence of moisture exposure in concrete) at 4-3/4" would seem to indicate potential for rebar corrosion, which would seriously worsen cracking and loss of bond strength between concrete and rebar. FENOC's conclusion that there is no problem with rebar corrosion whatsoever is not consistent with the conclusion to be drawn from the utility's own core-bore samples.<sup>74</sup>

The Blizzard of 1978 cannot explain shield building dome cracking that was documented as early as 1976. And, significantly, NRC has admitted that the cracking at the top of the shield building occurred due to a "**different undefined failure mechanism [than] in the shoulder[s].**"<sup>75</sup> That is, it also cannot be explained by the Blizzard of 1978.

NRC inquires into a potential cracking root cause which intervenors have also raised in their contention: "Could a third environmental scenario (e.g. wind-driven rain & freezing conditions, moisture intrusion and loading) [have] existed after completion of the SB [Shield Building] wall, but prior to dome installation (May 1971-August 1975) [and] generated sufficient forces at inner rebar mat to cause laminar cracks? Was this investigated? Explain."<sup>76</sup>

Not only was the interior of the shield building exposed to the elements for 4 years and 3 months, as it awaited installation of the dome covering; such exposure continued even longer, due to the sidewall's "initial construction opening," as well as two "temporary openings" for reactor vessel head closure (lid) replacements in 2002 and 2011.<sup>77</sup> Another temporary opening is planned for 2014 to replace degraded steam generators.

#### **NRC acrobatic "aligning" on a regulatory tightrope**

In the aftermath of Davis-Besse's 2002 Hole-in-the-Head Fiasco, NRC's Office of Inspector General, in charge of investigating allegations of NRC wrongdoing, concluded that not only FENOC, but also NRC itself, was guilty of

prioritizing FENOC profits over public safety.<sup>78</sup> With so-called “safety regulators” like that, who needs industry-captured rubberstamps? Intervenors fear this NRC attitude of “reactor operations approval at any cost,” so clearly exemplified by the rushed December 2, 2011 Confirmatory Action Letter (CAL) authorizing Davis-Besse’s rushed restart, despite its recently revealed cracking, will prevail in decision making regarding the proposed 2017 to 2037 license extension, as well.

Originally, FENOC had wanted to begin restarting the reactor as early as 11/18/11, and pressured NRC for approval. Although NRC didn’t agree instantly,<sup>79</sup> it did work overtime – evenings, weekends, and through the Thanksgiving holiday – to rush its approval by December 2, 2011, despite many unanswered questions and unresolved concerns.

NRC’s threading the regulatory needle, its staff at all levels reaching “alignment” to allow reactor restart despite the “unique operating experience” at Davis-Besse (unprecedented cracking), is widely apparent in the FOIA response.<sup>80</sup>

On 11/17/11, NRC’s Pete Hernandez<sup>81</sup> revealed the confusing regulatory contortions used to support a rushed reactor restart despite the cracking’s violation of Davis-Besse’s licensing and design bases: “I understand that the question of Operability vs design basis was posed and that if the SB issue is in operations space, are qualitative evaluations the extent of review required by the licensee?”

To answer that, the distinction between Operability and Functionality needs to be understood. The most clear way I’ve had it explained is that the determination of Operability is tied to the Tech Specs [TSs] for the specific plant. If the Tech Specs are met, then it is operable. (An operability determination is usually prompted by degraded conditions, nonconforming conditions, or the discovery of an unanalyzed condition.) Functionality is tied to the design bases documented in the FSAR [Final Safety Analysis Report] and thereby tied to the Current Licensing Basis.

From IMC9900

“If an SSC [System, Structure or Component] described in the TSs is determined to be operable even though a degraded or nonconforming condition is present, the SSC is considered ‘operable but degraded or nonconforming.’ An SSC that is determined to be operable but degraded or nonconforming is considered to be in compliance with its TS LCO [Limiting Condition for Operability], and the operability determination is the basis for continued operation. The basis for continued operation should be frequently and regularly reviewed until corrective actions are successfully completed.”

The licensee decided to not enter into an Operable but Degraded or Nonconforming determination and that the cracking issue is a design basis question hence functionality.

Speculating: The cracks in the building qualify as an unanalyzed condition so for the licensee to Operate with a degraded or nonconforming condition, they would have to develop a plan to fix the issue through their CA [Corrective Action] process. However, the licensee has stated that the SB is Operable as is, so there is nothing to fix. This still leaves the issue of the cracks unresolved so they are trying to prove that the cracks do not affect the functionality of the building. This led them to the design basis evaluations.”

A master of NRC regulatory Nukespeak<sup>82</sup> put it concisely: “Note that if the shield building is functional but nonconforming, then the licensee would be able to restart the plant, but would be expected to have a plan in place to restore conformance (additional analysis, repairs, or license amendment) at the next reasonable opportunity.”<sup>83</sup>

## Appendix A

What "restoring conformance" will entail, or when it will be completed, has yet to be worked out – but Davis-Besse is allowed to operate at full power, nonetheless, despite the cracked shield building. Regarding "The basis for continued operation should be frequently and regularly reviewed until corrective actions are successfully completed," the *only* corrective action FENOC plans is to apply weather sealant, albeit 40 years late, and infrequently carry out a small number of monitoring tests in the future.<sup>84</sup>

With such assistance, NRC's credulous Pete Hernandez was able to add yet more regulatory justification to allowing the severely cracked Davis-Besse nuclear power plant (of very questionable conformance to licensing and design bases, at best) to rush restart:

"The licensee's position is that the shield building is operational and conforming. That means it meets all design and code requirements including required safety margins. If they went down the operable but nonconforming route, and if we agreed with the conclusion, they could start up the plant, but we would expect them to have in place a plan to restore conformance at the next reasonable opportunity.

Currently they've given us a qualitative analysis to support their position that the shield building is functional and fully conforming. For NRC to accept and agree, which would mean no additional actions would be necessary to restore conformance, the licensee must provide reasonable assurance to show **operability or functionality** and provide a logical, supported basis that allows our technical reviewers to reasonably reach the same conclusion. In this case, **the qualitative arguments did not provide the logical, supported basis for our technical reviewers to reach the operability conclusion. So we asked them if they could provide additional assurance by in some way quantifying their analysis based upon good engineering principles.**" (emphasis added)<sup>85</sup>

Such helpful assistance by the regulator to the regulated resembles a teacher (NRC) aiding the student (FENOC) a bit too much, over and over again, to pass the test. In fact, as revealed in a 1/31/12 NRC Inspection Report, other recent examples can be cited of such behavior: had NRC inspectors not been looking over FENOC's shoulder, an uninspected replacement lid would have been installed on the reactor, and bad rebar would have been cemented into the shield building side wall to patch the recent construction opening.<sup>86</sup>

Just hours before NRC restart authorization was given, technical staff recognized many serious concerns remained unresolved: "...the location and direction of the crack are not clear from the diagrams...I think we should say that operability is still being discussed. **If D-B is allowed to start up, there needs to be a slide describing why it is OK...**the [License Renewal] impact needs to be clearer...Degraded concrete is a Part 50 issue affecting license renewal...[Division of License Renewal] needs to understand if the degradation is age-related and progressive etc. and how the effect will be managed...DLR has prepared a draft [Request for Additional Information] asking the applicant to explain how the unique [Operating Experience] will be addressed by its AMPs [Aging Management Plans]...This will be tracked as an Open Item in SER [Safety Evaluation Report]."<sup>87</sup> (emphasis added) Even though these questions and concerns were written at 9:16 AM, and NRC still had technical staff doing field investigations at Davis-Besse on safety calculations only provided by FENOC the previous day, by 3:47 PM "Tech staff unanimously concurred on the decision that the licensee provided reasonable assurance for the Shield Building will (sic) perform its safety function. There are no further questions from the NRC to be answered before startup can commence." The CAL was immediately issued approving reactor restart, Region 3 Office of Public Affairs notified the media after business hours on a Friday afternoon (stating Davis-Besse was 40 miles from Toledo, when NRC's own website reports the distance as 21 miles), and "The licensee expects to enter Mode 4 today December 2, 2011 at 1800 and continue progressing with plant start up."<sup>88</sup> The reactor had returned to full power operations by December 6<sup>th</sup>.

Although they had worked overtime to rush the restart, afterwards it was party time, as reflected in the unfortunately worded email "With all the [holiday] parties and frequent interruptions I almost forgot to get in touch with you on the issue with the shield building [Requests for Additional Information]..."<sup>89</sup> Intervenor, by contrast, have been forced to work long hours through the past two holiday seasons, in December 2010 to file their original hearing request petition and contentions by the 12/27/10 deadline, and in December 2011 to prepare for the 1/5/12 Camp Perry meeting, as well as prepare their 1/10/12 cracking contention submission, in the face of efforts by FENOC as well as NRC to obscure the facts, downplay the risks, and withhold documents.

The next morning (a Saturday), NRC's Jacob Zimmerman gloated about the 12/2/11 press release: "I think they did a nice job crafting it. I especially like that they addressed fully documenting the decision." He concluded his email, most ironically, at least from the perspective of those concerned with safety at Davis-Besse, "Have a great weekend!"<sup>90</sup>

In the press release, the topmost FENOC commitment to NRC is listed as: "Determine and provide the root cause of the cracks in the shield building, corrective actions, and develop a long-term monitoring program." But NRC Region 3 Office of Public Affairs staff had previously assured the media and public that such issues would be resolved *prior* to restart. For example, as mentioned in our original contention submitted on January 10, 2012, the *Cleveland Plain Dealer* reported on October 12, 2011, two days after the shield building cracks had first been announced: "The significance of the crack is not clear at this point," NRC spokeswoman Viktoria Mytling said. "We will review what the company and its engineers find, and we are doing our own independent assessment," she said. "We will have to resolve this issue before they restart the reactor."<sup>91</sup> (*emphasis added*)

Similarly, Rep. Kucinich had requested a public meeting about the shield building cracking *prior* to reactor restart. Instead, NRC did not hold the Camp Perry meeting till more than a month *after* restart.

Zimmerman was previously Bulletin 2001-01 Lead Project Manager in August 2001, involving Circumferential Cracking of Reactor Pressure Vessel Head Penetration Nozzles. Ironically enough, these were the ill-fated orders *not* carried out at Davis-Besse, which seven months later led to what the Government Accountability Office has called the most infamous incident at a U.S. nuclear reactor since the 1979 Three Mile Island meltdown – the 2002 Hole-in-the-Head Fiasco. Strangely, Zimmerman shared the 2001 Communications Plan with NRC Region III staffer David Hills on 11/23/11, on the very eve of NRC's Thanksgiving holiday overtime work to rush the Davis-Besse restart approval.<sup>92</sup>

Over nine months later, forced to obtain the documents via FOIA, Intervenor, are still trying to "fully document" how this rushed decision was made. Although Intervenor, filed their FOIA request on 1/26/12, NRC did not begin to provide responses until 6/12/12. Even now, after four Appendixes (A, B, C, and D) have been provided, NRC admits "We are continuing to process your request."

NRC continued to wrestle with attempting to justify the violation of its regulations, even weeks after they had already approved restart, as revealed in these excerpts from internal emails: "Decision was made to leave code compliance questions out of the CAL and to focus on confirming assumptions made in the operability calculations."<sup>93</sup>; "I need help filling out slides 11 & 12, especially explaining why the CAL did not address questions regarding code compliance."<sup>94</sup> This begs the question, is Davis-Besse in violation of its licensing and design bases, due to the shield building cracking? If yes, then how can it be allowed to operate?

Limited by legalistic NRC proceeding rules to raising 2017-2037 issues, since 1/10/12, Intervenor, have contended that the "extensive cracking of (yet) unknown origin in the Davis-Besse shield building/secondary reactor radiological containment structure is an aging-related feature of the plant, the condition of which precludes safe operation of the

atomic reactor beyond 2017 for any period of time, let alone the proposed 20-year license period." The ASLB has indicated it will soon rule on the admissibility of Intervenor's cracking contention.

The SER, issued on 7/31/12,<sup>95</sup> includes not one, but four, open items: "management of shield building cracks during the period of extended operations; operating experience review prior to entering the period of extended operations; time-limited aging analyses of reactor vessel neutron embrittlement; and pressure-temperature limits." An embrittled reactor pressure vessel, given its metal's loss of ductility, can fracture like a hot glass under cold water due to pressurized thermal shock (PTS) if the emergency core cooling system is activated. Despite this, NRC has repeatedly weakened its PTS safety standards, in order to allow old, dangerously degraded reactors like Davis-Besse to keep operating.<sup>96</sup> Davis-Besse is the hottest operating atomic reactor in the U.S., one theory for why it has required three lids in a single decade (2002-2011). And such a sudden drop, from such high temperatures, due to ECCS activation in an emergency would exacerbate PTS risks.

32e-3-LR

**Conclusion: Make a killing while getting away with murder**

From Robert Pollard's *The Nugget File* to David Lochbaum's *Fission Stories*, Union of Concerned Scientists has a way with words, coming up with some catchy and clever titles for their nuclear safety (or lack thereof) reports. As NRC OIG documented at Davis-Besse in 2002, NRC putting profits first, and "Safety Second,"<sup>97</sup> nearly led to the breach of the reactor lid, and a Loss of Coolant Accident. Allowing a rogue regulator to spin the "wheel of misfortune"<sup>98</sup> for another 20 years of "Regulatory Roulette"<sup>99</sup> at a reactor deep in its "Break Down Phase" on the "Bath Tub Curve"<sup>100</sup> means "Living on Borrowed Time."<sup>101</sup>

How many radioactive bullets can we dodge at Davis-Besse? We cannot let this 35-year long "game" of Radioactive Russian Roulette go on for another 25 years.<sup>102</sup>

As the environmental coalition intervening against the license extension defended its renewable alternatives and Severe Accident Mitigation Alternatives analyses contentions before the ASLB in Port Clinton, Ohio on March 1, 2011, they could not have known that the Fukushima nuclear catastrophe would begin ten days later. And yet, every day that Davis-Besse continues to operate with its severely cracked concrete containment is invitation for disaster. God forbid the worst happen, but if it does, it can't be called an "accident" any longer,<sup>103</sup> after decades of repeated near-misses, and countless warnings by concerned Downwinders and environmental groups.

Why are such risks being taken? So that FENOC executives and shareholders can make killer profits, salaries, and returns on their investment (thanks to almost all costs, risks, and liabilities being transferred to the public), from electricity sales by a reactor that should have long ago been shut down for good. Intervenor's have already proven beyond the shadow of a doubt that wind and solar PV power can readily replace Davis-Besse's 908 megawatts of electricity, cost-effectively, reliably (without 2 year safety shutdowns, as at Davis-Besse from 2002-2004),<sup>104</sup> and much more safely, securely, and cleanly. Germany is showing that a major economy, the 4<sup>th</sup> largest in the world, can strive to be nuclear-free within a decade, and even fossil fuel-free by mid-century to reach climate goals, while growing the economy and creating large numbers of jobs via green energy – a visionary future northwest Ohio and southeast Michigan can and should pursue as well.<sup>105</sup>

Perched, as Davis-Besse is, on the shoreline of the Great Lakes, 20% of the world's surface fresh water, and drinking water supply for 40 million people in the U.S., Canada, and numerous Native American/First Nations, there is a lot to lose.

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Beyond Nuclear aims to educate and activate the public about the connections between nuclear power and nuclear weapons and the need to abandon both to safeguard our future. Beyond Nuclear advocates for an energy future that is sustainable, benign and democratic.

#### End Notes

<sup>1</sup> "...When I use a word," Humpty Dumpty said, in rather a scornful tone, 'it means just what I choose it to mean — neither more nor less.'

'The question is,' said Alice, 'whether you **can** make words mean so many different things.'

'The question is,' said Humpty Dumpty, 'which is to be master — that's all.'

*Through the Looking Glass*, by Lewis Carroll; see also Beyond Nuclear board member and investigative journalist Karl Grossman's book, *Cover Up: What You are Not Supposed to Know about Nuclear Power*, <http://www.thepermanentpress.com/p-354-cover-up.aspx>.

<sup>2</sup> Snow Job: A systematic deception; an effort to deceive, persuade, or overwhelm with elaborate, often insincere talk. This slangy expression, originating in the military during World War II, presumably alludes to the idiom "snow under."

<sup>3</sup> Press release:

<http://www.beyondnuclear.org/storage/crack%20contention%201%2010%202012%20press%20release.pdf>; contention: [http://www.beyondnuclear.org/storage/Davis-Besse\\_Contention\\_5\\_Cracked\\_Shield\\_Building1.pdf](http://www.beyondnuclear.org/storage/Davis-Besse_Contention_5_Cracked_Shield_Building1.pdf)

<sup>4</sup> <http://www.nrc.gov/reactors/operating/licensing/renewal/applications.html#completed>

<sup>5</sup> <http://www.beyondnuclear.org/home/2012/3/2/davis-besse-blames-blizzard-of-78-for-containment-cracks-but.html>

<sup>6</sup> <http://kucinich.house.gov/news/documentsingle.aspx?DocumentID=300471>

<sup>7</sup> <http://www.beyondnuclear.org/home/2012/2/22/congressman-kucinich-puts-the-truth-at-davis-besse.html>

<sup>8</sup> Intervenors' Motion to Amend 'Motion for Admission of Contention No. 5,' Feb. 27, 2012,

<http://www.beyondnuclear.org/home/2012/2/27/environmental-coalition-supplements-davis-besse-cracked-cont.html>

<sup>9</sup> "Break down phase" and "Bath tub curve" are phrases coined by David Lochbaum, director of the Nuclear Safety Project at the Union of Concerned Scientists. Learn more at this link:

<http://www.beyondnuclear.org/home/2012/6/7/davis-besse-kept-from-re-starting-due-to-reactor-coolant-sys.html>

<sup>10</sup> <http://www.beyondnuclear.org/storage/Davis%20Besse%2020%20More%20Years%20of%20Radioactive%20Russian%20Roulette%20Nov%202010%20corrected%20Dec%2028%202010.pdf>

## Appendix A

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- <sup>11</sup> FENOC Root Cause Report, RCR, 2/28/2012, <http://www.beyondnuclear.org/storage/Feb%2028%20Snow%20Job.pdf>
- <sup>12</sup> <http://www.beyondnuclear.org/storage/20120525-db-ucs-nrc-50-9-violation.pdf>
- <sup>13</sup> NRC ADAMS accession number ML12142A053.
- <sup>14</sup> FENOC RCR, page 38 of 131 on PDF counter.
- <sup>15</sup> NRC FOIA response, Appendix B, Document B/1, Undated, Davis-Besse Nuclear Power Plant, Unit Licensing Basis Seismic Ground Motion Concern, 3 pages.
- <sup>16</sup> FENOC RRCR, page 34 of 131 on PDF counter.
- <sup>17</sup> INTERVENORS' FOURTH MOTION TO AMEND AND/OR SUPPLEMENT PROPOSED CONTENTION NO. 5 (SHIELD BUILDING CRACKING), July 23, 2012: <http://www.beyondnuclear.org/storage/4th%20Motion%20PII%20COMPLET.pdf>, pages 16-17; see also PII revised root cause assessment report: NRC ADAMS Accession Number ML12138A037. PII's RRCAR is dated 4/20/12. However, it was not sent to NRC by FENOC until 5/14/2012. It was not docketed at ADAMS until 5/24/2012.
- <sup>18</sup> INTERVENORS' FOURTH MOTION, page 32.
- <sup>19</sup> PII revised root cause assessment report, RRCAR; INTERVENORS' FOURTH MOTION.
- <sup>20</sup> INTERVENORS' FOURTH MOTION, page 11.
- <sup>21</sup> INTERVENORS' FOURTH MOTION, beginning at page 25.
- <sup>22</sup> FENOC Revised RCR, page 95. FENOC's RRCR is dated May 16, 2012. Its NRC ADAMS Accession Number is ML12142A053.
- <sup>23</sup> PII RRCAR, Item 13, page ii.
- <sup>24</sup> PII Revised Root Cause Assessment Report, April/May 2012, page ii; FENOC RRCR, page 5, 95, etc.
- <sup>25</sup> "Davis-Besse allowed to restart operations," BY DAVID PATCH, BLADE STAFF WRITER, Toledo Blade, Dec. 3, 2011.
- <sup>26</sup> Intervenors' Third Motion to Amend and/or Supplement Proposed Contention No. 5 (Shield Building Cracking), July 16, 2012, <http://www.beyondnuclear.org/storage/3rd%20Motion%20COMPLET%20supp%20cracked%20concrete%20Containment%20contention%20July%2016%202012.pdf>, pages 11 to 12.
- <sup>27</sup> PII RRCAR, ML12138A037 at Appendix VI-34 (159/257 of .pdf).
- <sup>28</sup> INTERVENORS' FOURTH MOTION, pages 29-30.
- <sup>29</sup> NRC FOIA response, Appendix B, Document B/25, 11/21/11, Davis-Besse Nuclear Power Station Containment Shield Building Issue, 1 page.

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<sup>30</sup> Intervenors' Third Motion, see page 5.

<sup>31</sup> FENOC RRCR, page 34 of 131 on PDF counter.

<sup>32</sup> See also INTERVENORS' FOURTH MOTION, page 27.

<sup>33</sup> Attachment 3, Shield Building Core Bore Summary, FENOC Revised RCR, beginning at page 80.

<sup>34</sup> INTERVENORS' FOURTH MOTION, page 39.

<sup>35</sup> See Intervenors' Third Motion, page 3 and 6.

<sup>36</sup> INTERVENORS' FOURTH MOTION, page 8.

<sup>37</sup> Intervenors' Third Motion, Page 5.

<sup>38</sup> See, for example, NRC FOIA response, Appendix A, Document A/5, 11/30/11, NRC ADAMS Accession Number ML11356A037, Email from S. CuadradoDeJesus, NRR to R. Plasse, RIII on Davis-Besse Request for Additional Information Response, 775 pages.

<sup>39</sup> Intervenors' Third Motion, page 7 to 8.

<sup>40</sup> NRC FOIA response Appendix B, Document B/9, 11/04/11, Email from P. Hernandez, NRR, to E. Sanchez Santiago, RIII, on Questions about Davis Besse Shield Building Report from DORL, 2 pages.

<sup>41</sup> Ibid.

<sup>42</sup> Ibid.

<sup>43</sup> NRC FOIA response Appendix B, Document B/26, 11/22/11 Email from A. Sheikh, NRR to E. Sanchez Santiago, RIII on Questions for the Conference Call, 1 page; and pages 23-24 of <sup>43</sup> INTERVENORS' FOURTH MOTION.

<sup>44</sup> <http://www.beyondnuclear.org/home/2012/2/22/congressman-kucinich-puts-the-truth-at-davis-besse.html>.

<sup>45</sup> NRC FOIA response, Appendix B, Document B/44, 12/13/11, Email from M. Galloway, NRR to A. Sheikh, NRR et al., RE: Davis-Besse Shield Building, 1 page.

<sup>46</sup> NRC FOIA response, Appendix A, Document A/2, 10/14/11, NRC ADAMS Accession Number ML1129sA005, Letter from Sen. (sic) Markey to Chairman Jaczko on Safe Operation of Davis-Besse, 4 pages.

<sup>47</sup> <http://www.ap.org/company/awards/part-iii-aging-nukes>

<sup>48</sup> <http://www.beyondnuclear.org/storage/CRAC%20%20chart%20for%20drop%20final.pdf>.

<sup>49</sup> [http://www.beyondnuclear.org/storage/L-12-244%20Amd%2029%20%20ER%20SAMA%20Update\\_FINAL%202012-07-16.pdf](http://www.beyondnuclear.org/storage/L-12-244%20Amd%2029%20%20ER%20SAMA%20Update_FINAL%202012-07-16.pdf), page 4 of 117 on PDF counter.

<sup>50</sup> Ibid.

## Appendix A

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<sup>51</sup> INTERVENORS' FOURTH MOTION, page 35.

<sup>52</sup> INTERVENORS' FOURTH MOTION, page 38.

<sup>53</sup> "The technical review by NRC staff in RIII and NRR continues. Over the course of the past several days, the licensee has changed its approach for evaluating/analyzing the observed cracking in the shield building. The changes are driven by identification of additional cracking, challenges/feedback from NRC staff, and from ongoing engineering assessments by the licensee (sic, licensee) and its consultants. The changing nature of the licensee's approach has added time and complexity to the review." NRC FOIA response, Appendix B, Document B/28, 11/23/11, Email from A. Howe, NRR to M. Evans, NRR et al., on Call with Steve West on Davis Besse.

<sup>54</sup> NRC press release, "NRC Concludes its Review of FENOC'S Root Cause Analysis of Davis-Besse Shield Building Cracks," Document Number III-12-023, 6/21/2012.

<sup>55</sup> Slide 21, NRC FOIA response, Document B/48, 12/15/11, Email from P. Hernandez, NRR to A. Erickson, NRR, FW: ET/LT Brief 12-22-11 – Containment Delamination Davis-Besse/CR-3, 5 pages.

<sup>56</sup> See "Summary of Revisions in Version 2," PII Revised Root Cause Assessment Report, 4/20/12, pages i to iv (17 to 20 on PDF counter); these "Revisions" provided the new information which formed the basis for INTERVENORS' FOURTH MOTION.

<sup>57</sup> INTERVENORS' FOURTH MOTION, Page 33.

<sup>58</sup> INTERVENORS' FOURTH MOTION, page 32.

<sup>59</sup> NRC FOIA response, Appendix B, Document B/51, 01/19/12, Davis-Besse Root Cause Review – Status Call 1/19/2012, 3 pages.

<sup>60</sup> INTERVENORS' FOURTH MOTION, page 8-9.

<sup>61</sup> INTERVENORS' FOURTH MOTION, page 19.

<sup>62</sup> INTERVENORS' FOURTH MOTION, page 31.

<sup>63</sup> FENOC's Aging Management Plan (AMP), April 4, 2012, NRC ADAMS Accession Number ML12097A216.

<sup>64</sup> INTERVENORS' FOURTH MOTION, Pages 11-12, and 16.

<sup>65</sup> <http://www.beyondnuclear.org/home/2012/4/10/toledo-blade-editorializes-in-support-of-consideration-of-re.html>

<sup>66</sup> INTERVENORS' FOURTH MOTION, page 36.

<sup>67</sup> INTERVENORS' FOURTH MOTION, page 6.

<sup>68</sup> <http://kucinich.house.gov/news/documentsingle.aspx?DocumentID=270017>; it was this letter that ultimately led to the public meeting at Camp Perry on 1/5/12.

<sup>69</sup> INTERVENORS' FOURTH MOTION, page 7.

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- <sup>70</sup> INTERVENORS' FOURTH MOTION, page 40.
- <sup>71</sup> INTERVENORS' FOURTH MOTION, page 41.
- <sup>72</sup> INTERVENORS' FOURTH MOTION, page 41 to 42.
- <sup>73</sup> INTERVENORS' FOURTH MOTION, page 4.
- <sup>74</sup> Intervenors' Third Motion, page 10 to 11.
- <sup>75</sup> NRC FOIA response, Appendix B, Document B/16, 11/12/11, Discussion points relayed to the licensee after our internal technical discussion, 1 page.
- <sup>76</sup> INTERVENORS' FOURTH MOTION, page 11.
- <sup>77</sup> FENOC's slide show presentation at Camp Perry, 1/5/12, showing breaches of the shield building since construction.
- <sup>78</sup> NRC OIG, "Event Inquiry Regarding NRC's Regulation of Davis-Besse Regarding Damage to the Reactor Vessel Head," OIG-02-035, 12/30/2002, <http://www.nrc.gov/reading-rm/doc-collections/insp-gen/2003/02-035.pdf>
- <sup>79</sup> "The technical review by NRC staff in RIII and NRR continues. Over the course of the past several days, the licensee has changed its approach for evaluating/analyzing the observed cracking in the shield building. The changes are driven by identification of additional cracking, challenges/feedback from NRC staff, and from ongoing engineering assessments by the licensee (sic, licensee) and its consultants. The changing nature of the licensee's approach has added time and complexity to the review." NRC FOIA response, Appendix B, Document B/28, 11/23/11, Email from A. Howe, NRR to M. Evans, NRR et al., on Call with Steve West on Davis Besse, 1 page.
- <sup>80</sup> Examples of the "unique OE" include: "No ACI [American Concrete Institute] standard for evaluation and no licensee structural evaluation," NRC FOIA response, Appendix B, Document B/16, 11/12/11, Discussion points relayed to the licensee after our internal technical discussion, 1 page; "...there is no ASTM standard test appropriate for this purpose," INTERVENORS' FOURTH MOTION, pages 39-40.
- <sup>81</sup> NRC FOIA response, Appendix B, Document B/22, 11/17/11, Email from P. Hernandez, NRR to E. Sanchez Santiago, RIII on Davis Besse Operability question, 1 page.
- <sup>82</sup> <http://www.consortiumnews.com/2011/031511b.html>
- <sup>83</sup> NRC FOIA response, Appendix B, Document B/10, 11/07/11, Davis Besse Shield Building Issue NRC Technical Reviewer Focus Questions, 1 page.
- <sup>84</sup> FENOC's AMP, April 4, 2012.
- <sup>85</sup> NRC FOIA response, Appendix B, Document B/24, 11/17/11, Email from P. Hernandez, NRR to M. Evans, NRR et al., on Davis Besse Operability questions, 2 pages.
- <sup>86</sup> <http://www.beyondnuclear.org/home/2012/2/25/nrc-inspection-report-reveals-more-problems-at-davis-besse-i.html>

## Appendix A

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- <sup>87</sup> NRC FOIA response, Appendix B, Document B/35, 12/02/11, Email from D. Morey, NRR to B. Lehman, NRR et al RE: Davis-Besse Shield Building, 1 page.
- <sup>88</sup> NRC FOIA response, Appendix B, Document B/36, 12/02/11, Email from B. Lehman, NRR to S. Sakai, NRR et al. FW: Davis Besse POP, 2 pages.
- <sup>89</sup> NRC FOIA response, Appendix B, Document B/45, 12/13/11, Email from A. Sheikh, NRR to B. Lehman, NRR et al RE: Davis-Besse Shield Building RAI, 2 pages.
- <sup>90</sup> NRC FOIA response, Appendix B, Document B/37, 12/03/11, Email from J. Zimmerman, NRR to M. Evans, NRR et al., Fw: Press Release has been issued. Attachment is publicly available at (sic), 3 pages.
- <sup>91</sup> [http://www.cleveland.com/business/index.ssf/2011/10/nrc\\_firstenergy\\_concerned\\_abou.html](http://www.cleveland.com/business/index.ssf/2011/10/nrc_firstenergy_concerned_abou.html)
- <sup>92</sup> FOIA response, Appendix B, Document B/29, 11/23/11, Email from J. Zimmerman, NRR to D. Hills, RIII on NSLAOrdersCommPlan.wpd, 5 pages.
- <sup>93</sup> NRC FOIA response, Appendix B, Document B/48, 12/15/11, Email from P. Hernandez, NRR to A. Erickson, NRR, FW: ET/LT Brief 12-22-11 – Containment Delamination Davis-Besse/CR-3, 5 pages.
- <sup>94</sup> FOIA response, Appendix B, Document B/46, 12/14/11, Email from P. Hernandez, NRR to E. Sanchez Santiago, RIII et al., FW: ET/LT Brief 12-22-11 – Containment Delamination Davis-Besse/CR-3, 1 page.
- <sup>95</sup> See NRC press release, "NRC Issues Safety Evaluation Report with Open Items for Davis-Besse Nuclear Plant License Renewal Application," August 1, 2012, ADAMS Accession Number ML12214A274.
- <sup>96</sup> "Aging Nukes," by Jeff Donn, AP, Part I: <http://www.ap.org/company/awards/aging-nukes>
- <sup>97</sup> <https://www.kirkusreviews.com/book-reviews/union-of-concerned-scientists/safety-second-the-nrc-and-american-nuclear-power/#review>
- <sup>98</sup> Thanks to Beyond Nuclear Launch Partner Keith Gunter for coming up with that one!
- <sup>99</sup> [http://www.ucsusa.org/assets/documents/nuclear\\_power/nuclear-power-radioactive-releases.pdf](http://www.ucsusa.org/assets/documents/nuclear_power/nuclear-power-radioactive-releases.pdf)
- <sup>100</sup> <http://www.beyondnuclear.org/home/2012/6/4/the-nrcs-latest-crazy-idea-an-80-year-license-to-kill.html>
- <sup>101</sup> <http://www.beyondnuclear.org/nrc/2012/3/7/living-on-borrowed-time-us-nuclear-power-safety-one-year-aft.html>
- <sup>102</sup> <http://www.beyondnuclear.org/storage/Davis%20Besse%2020%20More%20Years%20of%20Radioactive%20Russian%20Roulette%20Nov%202010%20corrected%20Dec%2028%202010.pdf>
- <sup>103</sup> Thanks to Dave Kraft, Ex. Dir. of NEIS in Chicago for the concept.
- <sup>104</sup> [http://www.ucsusa.org/nuclear\\_power/nuclear\\_power\\_risk/safety/walking-a-nuclear-tightrope.html](http://www.ucsusa.org/nuclear_power/nuclear_power_risk/safety/walking-a-nuclear-tightrope.html)
- <sup>105</sup> <http://ieer.org/projects/carbon-free-nuclear-free/>

**APPENDIX B**  
**NATIONAL ENVIRONMENTAL POLICY ACT ISSUES FOR LICENSE**  
**RENEWAL OF NUCLEAR POWER PLANTS**





## NATIONAL ENVIRONMENTAL POLICY ACT ISSUES FOR LICENSE RENEWAL OF NUCLEAR POWER PLANTS

NUREG-1437, *Generic Environmental Impact Statement for License Renewal of Nuclear Power Plants* (referred to as the GEIS), document the results of the U.S. Nuclear Regulatory Commission (NRC) staff's (staff's) systematic approach to evaluating the environmental impacts of renewing the licenses of individual nuclear power plants. The GEIS was originally published in 1996 and Addendum 1 to the GEIS, which only addresses transportation issues, was published in 1999. Of the 92 total environmental issues that the staff identified in the 1996 GEIS, the staff determined that 69 are generic to all plants (Category 1), while 21 issues must be discussed on a site-specific basis (Category 2). Two other issues, environmental justice and the chronic effects of electromagnetic fields, are uncategorized and must be evaluated on a site-specific basis.

Table B-1 in this appendix lists all 92 environmental issues, including the possible environmental significance (SMALL, MODERATE, LARGE, or uncategorized) as appropriate. This table is provided in Chapter 9 of the 1996 GEIS.

On June 20, 2013, the NRC published a final rule (78 FR 37282) revising its environmental protection regulation, Title 10 of the Code of Federal Regulations (10 CFR) Part 51, "Environmental protection regulations for domestic licensing and related regulatory functions." Specifically, the final rule updates the potential environmental impacts associated with the renewal of an operating license for a nuclear power reactor for an additional 20 years. A revised GEIS (NRC 2013b), which updates the 1996 GEIS, provides the technical basis for the final rule. The revised GEIS specifically supports the revised list of NEPA issues and associated environmental impact findings for license renewal contained in Table B-1 in Appendix B to Subpart A of the revised 10 CFR Part 51. The revised GEIS and final rule reflect lessons learned and knowledge gained during previous license renewal environmental reviews. In addition, public comments received on the draft revised GEIS and rule and during previous license renewal environmental reviews were reexamined to validate existing environmental issues and identify new ones.

This SEIS, which discusses the environmental impacts associated with Davis-Besse license renewal, is reviewed against the criteria from the 1996 GEIS. However, new issues identified, or recategorized, in the 2013 GEIS are also included in this SEIS. The new Category 1 issues identified in the 2013 GEIS which are discussed and evaluated in this SEIS are geology and soils, exposure of terrestrial organisms to radionuclides, exposure of aquatic organisms to radionuclides, human health impact from chemicals, and physical occupational hazards. New Category 2 issues that are addressed in this SEIS are radionuclides released to groundwater, effects on terrestrial resources (non-cooling system impacts), minority and low-income populations (i.e., environmental justice), and cumulative impacts.

**Table B–1. Generic Summary Findings on NEPA Issues for License Renewal of Nuclear Power Plants**

Issue	Type of Issue	Finding
<b>Surface water quality, hydrology, and use</b>		
Impacts of refurbishment on surface water quality	Generic	SMALL. Impacts are expected to be negligible during refurbishment because best management practices are expected to be employed to control soil erosion and spills.
Impacts of refurbishment on surface water use	Generic	SMALL. Water use during refurbishment will not increase appreciably or will be reduced during plant outage.
Altered current patterns at intake and discharge structures	Generic	SMALL. Altered current patterns have not been found to be a problem at operating nuclear power plants and are not expected to be a problem during the license renewal term.
Altered salinity gradients	Generic	SMALL. Salinity gradients have not been found to be a problem at operating nuclear power plants and are not expected to be a problem during the license renewal term.
Altered thermal stratification of lakes	Generic	SMALL. Generally, lake stratification has not been found to be a problem at operating nuclear power plants and is not expected to be a problem during the license renewal term.
Temperature effects on sediment transport capacity	Generic	SMALL. These effects have not been found to be a problem at operating nuclear power plants and are not expected to be a problem during the license renewal term.
Scouring caused by discharged cooling water	Generic	SMALL. Scouring has not been found to be a problem at most operating nuclear power plants and has caused only localized effects at a few plants. It is not expected to be a problem during the license renewal term.
Eutrophication	Generic	SMALL. Eutrophication has not been found to be a problem at operating nuclear power plants and is not expected to be a problem during the license renewal term.
Discharge of chlorine or other biocides	Generic	SMALL. Effects are not a concern among regulatory and resource agencies, and are not expected to be a problem during the license renewal term.
Discharge of sanitary wastes and minor chemical spills	Generic	SMALL. Effects are readily controlled through National Pollutant Discharge Elimination System (NPDES) permit and periodic modifications, if needed, and are not expected to be a problem during the license renewal term.
Discharge of other metals in wastewater	Generic	SMALL. These discharges have not been found to be a problem at operating nuclear power plants with cooling-tower-based heat dissipation systems and have been satisfactorily mitigated at other plants. They are not expected to be a problem during the license renewal term.

Issue	Type of Issue	Finding
Water use conflicts (plants with once-through cooling systems)	Generic	SMALL. These conflicts have not been found to be a problem at operating nuclear power plants with once-through heat dissipation systems.
Water use conflicts (plants with cooling ponds or cooling towers using makeup water from a small river with low flow)	Site-specific	SMALL OR MODERATE. The issue has been a concern at nuclear power plants with cooling ponds and at plants with cooling towers. Impacts on instream and riparian communities near these plants could be of moderate significance in some situations. See § 51.53(c)(3)(ii)(A).
<b>Aquatic ecology</b>		
Refurbishment	Generic	SMALL. During plant shutdown and refurbishment, there will be negligible effects on aquatic biota because of a reduction of entrainment and impingement of organisms or a reduced release of chemicals.
Accumulation of contaminants in sediments or biota	Generic	SMALL. Accumulation of contaminants has been a concern at a few nuclear power plants but has been satisfactorily mitigated by replacing copper alloy condenser tubes with those of another metal. It is not expected to be a problem during the license renewal term.
Entrainment of phytoplankton and zooplankton	Generic	SMALL. Entrainment of phytoplankton and zooplankton has not been found to be a problem at operating nuclear power plants and is not expected to be a problem during the license renewal term.
Cold shock	Generic	SMALL. Cold shock has been satisfactorily mitigated at operating nuclear plants with once-through cooling systems, has not endangered fish populations, or been found to be a problem at operating nuclear power plants with cooling towers or cooling ponds, and is not expected to be a problem during the license renewal term.
Thermal plume barrier to migrating fish	Generic	SMALL. Thermal plumes have not been found to be a problem at operating nuclear power plants and are not expected to be a problem during the license renewal term.
Distribution of aquatic organisms	Generic	SMALL. Thermal discharge may have localized effects but is not expected to affect the larger geographical distribution of aquatic organisms.
Premature emergence of aquatic insects	Generic	SMALL. Premature emergence has been found to be a localized effect at some operating nuclear power plants but has not been a problem and is not expected to be a problem during the license renewal term.
Gas supersaturation (gas bubble disease)	Generic	SMALL. Gas supersaturation was a concern at a small number of operating nuclear power plants with once-through cooling systems but has been satisfactorily mitigated. It has not been found to be a problem at operating nuclear power plants with cooling towers or cooling ponds and is not expected to be a problem during the license renewal term.

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Issue	Type of Issue	Finding
Low dissolved oxygen in the discharge	Generic	SMALL. Low dissolved oxygen has been a concern at one nuclear power plant with a once-through cooling system but has been effectively mitigated. It has not been found to be a problem at operating nuclear power plants with cooling towers or cooling ponds and is not expected to be a problem during the license renewal term.
Losses from predation, parasitism, and disease among organisms exposed to sublethal stresses	Generic	SMALL. These types of losses have not been found to be a problem at operating nuclear power plants and are not expected to be a problem during the license renewal term.
Stimulation of nuisance organisms (e.g., shipworms)	Generic	SMALL. Stimulation of nuisance organisms has been satisfactorily mitigated at the single nuclear power plant with a once-through cooling system where previously it was a problem. It has not been found to be a problem at operating nuclear power plants with cooling towers or cooling ponds and is not expected to be a problem during the license renewal term.
<b>Aquatic ecology (for plants with once-through and cooling-pond heat dissipation systems)</b>		
Entrainment of fish and shellfish in early life stages	Site-specific	SMALL, MODERATE, OR LARGE. The impacts of entrainment are small at many plants but may be moderate or even large at a few plants with once-through and cooling-pond cooling systems. Further, ongoing efforts in the vicinity of these plants to restore fish populations may increase the numbers of fish susceptible to intake effects during the license renewal period, such that entrainment studies conducted in support of the original license may no longer be valid. See § 51.53(c)(3)(ii)(B).
Impingement of fish and shellfish	Site-specific	SMALL, MODERATE, OR LARGE. The impacts of impingement are small at many plants but may be moderate or even large at a few plants with once-through and cooling-pond cooling systems. See § 51.53(c)(3)(ii)(B).
Heat shock	Site-specific	SMALL, MODERATE, OR LARGE. Because of continuing concerns about heat shock and the possible need to modify thermal discharges in response to changing environmental conditions, the impacts may be of moderate or large significance at some plants. See § 51.53(c)(3)(ii)(B).
<b>Aquatic ecology (for plants with cooling-tower-based heat dissipation systems)</b>		
Entrainment of fish and shellfish in early life stages	Generic	SMALL. Entrainment of fish has not been found to be a problem at operating nuclear power plants with this type of cooling system and is not expected to be a problem during the license renewal term.
Impingement of fish and shellfish	Generic	SMALL. The impingement has not been found to be a problem at operating nuclear power plants with this type of cooling system and is not expected to be a problem during the license renewal term.
Heat shock	Generic	SMALL. Heat shock has not been found to be a problem at operating nuclear power plants with this type of cooling system and is not expected to be a problem during the license renewal term.

Issue	Type of Issue	Finding
<b>Groundwater use and quality</b>		
Impacts of refurbishment on groundwater use and quality	Generic	SMALL. Extensive dewatering during the original construction on some sites will not be repeated during refurbishment on any sites. Any plant wastes produced during refurbishment will be handled in the same manner as in current operating practices and are not expected to be a problem during the license renewal term.
Groundwater use conflicts (potable and service water; plants that use <100 gallons per minute (gpm))	Generic	SMALL. Plants using less than 100 gpm are not expected to cause any groundwater use conflicts.
Groundwater use conflicts (potable and service water, and dewatering plants that use >100 gpm)	Site-specific	SMALL, MODERATE, OR LARGE. Plants that use more than 100 gpm may cause groundwater use conflicts with nearby groundwater users. See § 51.53(c)(3)(ii)(C).
Groundwater use conflicts (plants using cooling towers withdrawing makeup water from a small river)	Site-specific	SMALL, MODERATE, OR LARGE. Water use conflicts may result from surface water withdrawals from small water bodies during low flow conditions which may affect aquifer recharge, especially if other groundwater or upstream surface water users come online before the time of license renewal. See § 51.53(c)(3)(ii)(A).
Groundwater use conflicts (Ranney wells)	Site-specific	SMALL, MODERATE, OR LARGE. Ranney wells can result in potential groundwater depression beyond the site boundary. Impacts of large groundwater withdrawal for cooling tower makeup at nuclear power plants using Ranney wells must be evaluated at the time of application for license renewal. See § 51.53(c)(3)(ii)(C).
Groundwater quality degradation (Ranney wells)	Generic	SMALL. Groundwater quality at river sites may be degraded by induced infiltration of poor-quality river water into an aquifer that supplies large quantities of reactor cooling water. However, the lower quality infiltrating water would not preclude the current uses of groundwater and is not expected to be a problem during the license renewal term.
Groundwater quality degradation (saltwater intrusion)	Generic	SMALL. Nuclear power plants do not contribute significantly to saltwater intrusion.
Groundwater quality degradation (cooling ponds in salt marshes)	Generic	SMALL. Sites with closed-cycle cooling ponds may degrade groundwater quality. Because water in salt marshes is brackish, this is not a concern for plants located in salt marshes.

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Issue	Type of Issue	Finding
Groundwater quality degradation (cooling ponds at inland sites)	Site-specific	SMALL, MODERATE, OR LARGE. Sites with closed-cycle cooling ponds may degrade groundwater quality. For plants located inland, the quality of the groundwater in the vicinity of the ponds must be shown to be adequate to allow continuation of current uses. See § 51.53(c)(3)(ii)(D).
<b>Terrestrial ecology</b>		
Refurbishment impacts	Site-specific	SMALL, MODERATE, OR LARGE. Refurbishment impacts are insignificant if no loss of important plant and animal habitat occurs. However, it cannot be known whether important plant and animal communities may be affected until the specific proposal is presented with the license renewal application. See § 51.53(c)(3)(ii)(E).
Cooling tower impacts on crops and ornamental vegetation	Generic	SMALL. Impacts from salt drift, icing, fogging, or increased humidity associated with cooling tower operation have not been found to be a problem at operating nuclear power plants and are not expected to be a problem during the license renewal term.
Cooling tower impacts on native plants	Generic	SMALL. Impacts from salt drift, icing, fogging, or increased humidity associated with cooling tower operation have not been found to be a problem at operating nuclear power plants and are not expected to be a problem during the license renewal term.
Bird collisions with cooling towers	Generic	SMALL. These collisions have not been found to be a problem at operating nuclear power plants and are not expected to be a problem during the license renewal term.
Cooling pond impacts on terrestrial resources	Generic	SMALL. Impacts of cooling ponds on terrestrial ecological resources are considered to be of small significance at all sites.
Power line right of way (ROW) management (cutting and herbicide application)	Generic	SMALL. The impacts of ROW maintenance on wildlife are expected to be of small significance at all sites.
Bird collisions with power lines	Generic	SMALL. Impacts are expected to be of small significance at all sites.
Impacts of electromagnetic fields on flora and fauna	Generic	SMALL. No significant impacts of electromagnetic fields on terrestrial flora and fauna have been identified. Such effects are not expected to be a problem during the license renewal term.
Floodplains and wetland on power line ROW	Generic	SMALL. Periodic vegetation control is necessary in forested wetlands underneath power lines and can be achieved with minimal damage to the wetland. No significant impact is expected at any nuclear power plant during the license renewal term.

Issue	Type of Issue	Finding
<b>Threatened and endangered species</b>		
Threatened or endangered species	Site-specific	SMALL, MODERATE, OR LARGE. Generally, plant refurbishment and continued operation are not expected to adversely affect threatened or endangered species. However, consultation with appropriate agencies would be needed at the time of license renewal to determine whether or not threatened or endangered species are present and whether or not they would be adversely affected. See § 51.53(c)(3)(ii)(E).
<b>Air quality</b>		
Air quality during refurbishment (non-attainment and maintenance areas)	Site-specific	SMALL, MODERATE, OR LARGE. Air quality impacts from plant refurbishment associated with license renewal are expected to be small. However, vehicle exhaust emissions could be cause for concern at locations in or near nonattainment or maintenance areas. The significance of the potential impact cannot be determined without considering the compliance status of each site and the number of workers expected to be employed during the outage. See § 51.53(c)(3)(ii)(F).
Air quality effects of transmission lines	Generic	SMALL. Production of ozone and oxides of nitrogen is insignificant and does not contribute measurably to ambient levels of these gases.
<b>Land use</b>		
Onsite land use	Generic	SMALL. Projected onsite land use changes required during refurbishment and the renewal period would be a small fraction of any nuclear power plant site and would involve land that is controlled by the applicant.
Power line ROW	Generic	SMALL. Ongoing use of power line ROWs would continue with no change in restrictions. The effects of these restrictions are of small significance.
<b>Human health</b>		
Radiation exposures to the public during refurbishment	Generic	SMALL. During refurbishment, the gaseous effluents would result in doses that are similar to those from current operation. Applicable regulatory dose limits to the public are not expected to be exceeded.
Occupational radiation exposures during refurbishment	Generic	SMALL. Occupational doses from refurbishment are expected to be within the range of annual average collective doses experienced for pressurized-water reactors and boiling-water reactors. Occupational mortality risk from all causes including radiation is in the mid-range for industrial settings.
Microbiological organisms (occupational health)	Generic	SMALL. Occupational health impacts are expected to be controlled by continued application of accepted industrial hygiene practices to minimize exposure to workers.

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Issue	Type of Issue	Finding
Microbiological organisms (public health) (plants using lakes or canals, or cooling towers or cooling ponds that discharge to a small river)	Site-specific	SMALL, MODERATE, OR LARGE. These organisms are not expected to be a problem at most operating plants except possibly at plants using cooling ponds, lakes, or canals that discharge to small rivers. Without site-specific data, it is not possible to predict the effects generically. See § 51.53(c)(3)(ii)(G).
Noise	Generic	SMALL. Noise has not been found to be a problem at operating plants and is not expected to be a problem at any plant during the license renewal term.
Electromagnetic fields – acute effects (electric shock)	Site-specific	SMALL, MODERATE, OR LARGE. Electrical shock resulting from direct access to energized conductors or from induced charges in metallic structures have not been found to be a problem at most operating plants and generally are not expected to be a problem during the license renewal term. However, site-specific review is required to determine the significance of the electric shock potential at the site. See § 51.53(c)(3)(ii)(H).
Electromagnetic fields – chronic effects	Uncategorized	UNCERTAIN. Biological and physical studies of 60-hertz (Hz) electromagnetic fields have not found consistent evidence linking harmful effects with field exposures. However, research is continuing in this area and a consensus scientific view has not been reached.
Radiation exposures to public (license renewal term)	Generic	SMALL. Radiation doses to the public will continue at current levels associated with normal operations.
Occupational radiation exposures (license renewal term)	Generic	SMALL. Projected maximum occupational doses during the license renewal term are within the range of doses experienced during normal operations and normal maintenance outages, and would be well below regulatory limits.
<b>Socioeconomic impacts</b>		
Housing impacts	Site-specific	SMALL, MODERATE, OR LARGE. Housing impacts are expected to be of small significance at plants located in a medium or high population area and not in an area where growth control measures that limit housing development are in effect. Moderate or large housing impacts of the workforce associated with refurbishment may be associated with plants located in sparsely populated areas or in areas with growth control measures that limit housing development. See § 51.53(c)(3)(ii)(I).
Public services: public safety, social services, and tourism and recreation	Generic	SMALL. Impacts to public safety, social services, and tourism and recreation are expected to be of small significance at all sites.



Issue	Type of Issue	Finding
Public services: public utilities	Site-specific	SMALL OR MODERATE. An increased problem with water shortages at some sites may lead to impacts of moderate significance on public water supply availability. See § 51.53(c)(3)(ii)(I).
Public services: education (refurbishment)	Site-specific	SMALL, MODERATE, OR LARGE. Most sites would experience impacts of small significance but larger impacts are possible depending on site- and project-specific factors. See § 51.53(c)(3)(ii)(I).
Public services: education (license renewal term)	Generic	SMALL. Only impacts of small significance are expected.
Offsite land use (refurbishment)	Site-specific	SMALL OR MODERATE. Impacts may be of moderate significance at plants in low population areas. See § 51.53(c)(3)(ii)(I).
Offsite land use (license renewal term)	Site-specific	SMALL, MODERATE, OR LARGE. Significant changes in land use may be associated with population and tax revenue changes resulting from license renewal. See § 51.53(c)(3)(ii)(I).
Public services: transportation	Site-specific	SMALL, MODERATE, OR LARGE. Transportation impacts (level of service) of highway traffic generated during plant refurbishment and during the term of the renewed license are generally expected to be of small significance. However, the increase in traffic associated with the additional workers and the local road and traffic control conditions may lead to impacts of moderate or large significance at some sites. See § 51.53(c)(3)(ii)(J).
Historic and archaeological resources	Site-specific	SMALL, MODERATE, OR LARGE. Generally, plant refurbishment and continued operation are expected to have no more than small adverse impacts on historic and archaeological resources. However, the National Historic Preservation Act requires the Federal agency to consult with the State Historic Preservation Officer to determine whether or not there are properties present that require protection. See § 51.53(c)(3)(ii)(K).
Aesthetic impacts (refurbishment)	Generic	SMALL. No significant impacts are expected during refurbishment.
Aesthetic impacts (license renewal term)	Generic	SMALL. No significant impacts are expected during the license renewal term.
Aesthetic impacts of transmission lines (license renewal term)	Generic	SMALL. No significant impacts are expected during the license renewal term.
<b>Postulated accidents</b>		
Design basis accidents	Generic	SMALL. The staff has concluded that the environmental impacts of design-basis accidents are of small significance for all plants.

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Issue	Type of Issue	Finding
Severe accidents	Site-specific	SMALL. The probability weighted consequences of atmospheric releases, fallout onto open bodies of water, releases to groundwater, and societal and economic impacts from severe accidents are small for all plants. However, alternatives to mitigate severe accidents must be considered for all plants that have not considered such alternatives. See § 51.53(c)(3)(ii)(L).
<b>Uranium fuel cycle and waste management</b>		
Offsite radiological impacts (individual effects from other than the disposal of spent fuel and high level waste)	Generic	SMALL. Offsite impacts of the uranium fuel cycle have been considered by the Commission in Table S-3 of this part. Based on information in the GEIS, impacts on individuals from radioactive gaseous and liquid releases including radon-222 and technetium-99 are small.
Offsite radiological impacts (collective effects)	Generic	<p>The 100-year environmental dose commitment to the U.S. population from the fuel cycle, high level waste, and spent fuel disposal excepted, is calculated to be about 14,800 person rem, or 12 cancer fatalities, for each additional 20-year power reactor operating term. Much of this, especially the contribution of radon releases from mines and tailing piles, consists of tiny doses summed over large populations. This same dose calculation can theoretically be extended to include many tiny doses over additional thousands of years as well as doses outside the United States. The result of such a calculation would be thousands of cancer fatalities from the fuel cycle, but this result assumes that even tiny doses have some statistical adverse health effect which will not ever be mitigated (for example no cancer cure in the next thousand years), and that these doses projected over thousands of years are meaningful; however, these assumptions are questionable. In particular, science cannot rule out the possibility that there will be no cancer fatalities from these tiny doses. For perspective, the doses are very small fractions of regulatory limits, and even smaller fractions of natural background exposure to the same populations.</p> <p>Nevertheless, despite all the uncertainty, some judgment as to the regulatory NEPA implications of these matters should be made and it makes no sense to repeat the same judgment in every case. Even taking the uncertainties into account, the Commission concludes that these impacts are acceptable in that these impacts would not be sufficiently large to require the NEPA conclusion, for any plant, that the option of extended operation under 10 CFR Part 54 should be eliminated. Accordingly, while the Commission has not assigned a single level of significance for the collective effects of the fuel cycle, this issue is considered Category 1 (Generic).</p>

Issue	Type of Issue	Finding
Offsite radiological impacts (spent fuel and high level waste disposal)	Generic	<p>For the high level waste and spent fuel disposal component of the fuel cycle, there are no current regulatory limits for offsite releases of radionuclides for the current candidate repository site. However, if it is assumed that limits are developed along the lines of the 1995 National Academy of Sciences (NAS) report, "Technical Bases for Yucca Mountain Standards," and that in accordance with the Commission's Waste Confidence Decision, 10 CFR 51.23, a repository can and likely will be developed at some site which will comply with such limits, peak doses to virtually all individuals will be 100 millirem per year or less. However, while the Commission has reasonable confidence that these assumptions will prove correct, there is considerable uncertainty since the limits are yet to be developed, no repository application has been completed or reviewed, and uncertainty is inherent in the models used to evaluate possible pathways to the human environment. The NAS report indicated that 100 millirem per year should be considered as a starting point for limits for individual doses, but notes that some measure of consensus exists among national and international bodies that the limits should be a fraction of the 100 millirem per year. The lifetime individual risk from 100 millirem annual dose limit is about <math>3 \times 10^{-3}</math>.</p> <p>Estimating cumulative doses to populations over thousands of years is more problematic. The likelihood and consequences of events that could seriously compromise the integrity of a deep geologic repository were evaluated by the Department of Energy in the "Final Environmental Impact Statement: Management of Commercially Generated Radioactive Waste," October 1980. The evaluation estimated the 70-year whole-body dose commitment to the maximum individual and to the regional population resulting from several modes of breaching a reference repository in the year of closure, after 1,000 years, after 100,000 years, and after 100,000,000 years. Subsequently, the NRC and other federal agencies have expended considerable effort to develop models for the design and for the licensing of a high level waste repository, especially for the candidate repository at Yucca Mountain. More meaningful estimates of doses to population may be possible in the future as more is understood about the performance of the proposed Yucca Mountain repository. Such estimates would involve very great uncertainty, especially with respect to cumulative population doses over thousands of years. The standard proposed by the NAS is a limit on maximum individual dose. The relationship of potential new regulatory requirements, based on the NAS report, and cumulative population impacts has not been determined, although the report articulates the view that protection of individuals will adequately protect the population for a repository at Yucca Mountain. However, the EPA's generic repository standards in 40 CFR Part 191 generally provide an indication of the order of magnitude of cumulative risk to population that could result from the licensing of a Yucca Mountain repository, assuming the ultimate standards will be within the range of standards now under consideration. The standards in 40 CFR Part 191 protect the population by imposing the amount of radioactive material released over 10,000 years. The cumulative release limits are based on the</p>

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Issue	Type of Issue	Finding
Offsite radiological impacts (spent fuel and high level waste disposal) (cont.)		<p>EPA's population impact goal of 1,000 premature cancer deaths worldwide for a 100,000 metric ton (MT) repository.</p> <p>Nevertheless, despite all the uncertainty, some judgment as to the regulatory NEPA implications of these matters should be made and it makes no sense to repeat the same judgment in every case. Even taking the uncertainties into account, the Commission concludes that these impacts are acceptable in that these impacts would not be sufficiently large to require the NEPA conclusion, for any plant, that the option of extended operation under 10 CFR Part 54 should be eliminated. Accordingly, while the Commission has not assigned a single level of significance for the impacts of spent fuel and high level waste disposal, this issue is considered in Category 1 (Generic).</p>
Nonradiological impacts of the uranium fuel cycle	Generic	SMALL. The nonradiological impacts of the uranium fuel cycle resulting from the renewal of an operating license for any plant are found to be small.
Low-level waste storage and disposal	Generic	<p>SMALL. The comprehensive regulatory controls that are in place and the low public doses being achieved at reactors ensure that the radiological impacts to the environment will remain small during the term of a renewed license. The maximum additional onsite land that may be required for low-level waste storage during the term of a renewed license and associated impacts will be small.</p> <p>Nonradiological impacts on air and water will be negligible. The radiological and nonradiological environmental impacts of long-term disposal of low-level waste from any individual plant at licensed sites are small. In addition, the Commission concludes that there is reasonable assurance that sufficient low-level waste disposal capacity will be made available when needed for facilities to be decommissioned consistent with NRC decommissioning requirements.</p>
Mixed waste storage and disposal	Generic	SMALL. The comprehensive regulatory controls and the facilities and procedures that are in place ensure proper handling and storage, as well as negligible doses and exposure to toxic materials for the public and the environment at all plants. License renewal will not increase the small, continuing risk to human health and the environment posed by mixed waste at all plants. The radiological and nonradiological environmental impacts of long-term disposal of mixed waste from any individual plant at licensed sites are small. In addition, the Commission concludes that there is reasonable assurance that sufficient mixed waste disposal capacity will be made available when needed for facilities to be decommissioned consistent with NRC decommissioning requirements.
Onsite spent fuel	Generic	SMALL. The expected increase in the volume of spent fuel from an additional 20 years of operation can be safely accommodated on site with small environmental effects through dry or pool storage at all plants if a permanent repository or monitored retrievable storage is not available.
Nonradiological waste	Generic	SMALL. No changes to generating systems are anticipated for license renewal. Facilities and procedures are in place to ensure continued proper handling and disposal at all plants.

Issue	Type of Issue	Finding
Transportation	Generic	SMALL. The impacts of transporting spent fuel enriched up to 5 percent uranium-235 with average burnup for the peak rod to current levels approved by NRC up to 62,000 megawatt days per metric-ton uranium (MWd/MTU) and the cumulative impacts of transporting high-level waste to a single repository, such as Yucca Mountain, Nevada are found to be consistent with the impact values contained in 10 CFR 51.52(c), Summary Table S-4 – Environmental Impact of Transportation of Fuel and Waste to and from One Light-Water-Cooled Nuclear Power Reactor. If fuel enrichment or burnup conditions are not met, the applicant must submit an assessment of the implications for the environmental impact values reported in § 51.52.
<b>Decommissioning</b>		
Radiation doses	Generic	SMALL. Doses to the public will be well below applicable regulatory standards regardless of which decommissioning method is used. Occupational doses would increase no more than 1 man-rem caused by buildup of long-lived radionuclides during the license renewal term.
Waste management	Generic	SMALL. Decommissioning at the end of a 20-year license renewal period would generate no more solid wastes than at the end of the current license term. No increase in the quantities of Class C or greater than Class C wastes would be expected.
Air quality	Generic	SMALL. Air quality impacts of decommissioning are expected to be negligible either at the end of the current operating term or at the end of the license renewal term.
Water quality	Generic	SMALL. The potential for significant water quality impacts from erosion or spills is no greater whether decommissioning occurs after a 20-year license renewal period or after the original 40-year operation period, and measures are readily available to avoid such impacts.
Ecological resources	Generic	SMALL. Decommissioning after either the initial operating period or after a 20-year license renewal period is not expected to have any direct ecological impacts.
Socioeconomic impacts	Generic	SMALL. Decommissioning would have some short-term socioeconomic impacts. The impacts would not be increased by delaying decommissioning until the end of a 20-year relicensing period, but they might be decreased by population and economic growth.
<b>Environmental justice</b>		
Environmental justice	Uncategorized	NONE. The need for and the content of an analysis of environmental justice will be addressed in plant-specific reviews.

Source: 61 FR 28467, June 5, 1996



**APPENDIX C**  
**APPLICABLE REGULATIONS, LAWS, AND AGREEMENTS**





## **APPLICABLE REGULATIONS, LAWS, AND AGREEMENTS**

The Atomic Energy Act of 1954 (AEA) authorizes states to establish programs to assume U.S. Nuclear Regulatory Commission (NRC) regulatory authority for certain activities. For example, in accordance with Section 274 of the AEA, as amended, beginning on August 31, 1999, the State of Ohio assumed regulatory responsibility over the following:

- byproduct materials as defined in Section 11e.(1) of the Act;
- byproduct materials as defined in Section 11e.(2) of the Act;
- source materials;
- special nuclear materials in quantities not sufficient to form a critical mass;
- the regulation of the land disposal of byproduct, source, or special nuclear waste materials received from other persons; and
- the evaluation of radiation safety information on sealed sources or devices containing byproduct, source, or special nuclear materials and the registration of the sealed sources or devices for distribution, as provided for in regulations or orders of the NRC.

The Ohio Agreement State Program is administered by the Bureau of Radiation Protection in the Ohio Department of Health.

In addition to implementing some Federal programs, state legislatures develop their own laws. State statutes supplement as well as implement Federal laws for protection of air, water quality, and groundwater. State legislation may address Solid Waste Management Programs, locally rare or endangered species, and historic and cultural resources.

In addition, the Clean Water Act (CWA) allows for primary enforcement and administration through state agencies, provided the state program is at least as stringent as the Federal program and conforms to the CWA and delegation of authority for the Federal National Pollutant Discharge Elimination System (NPDES) Program from the Environmental Protection Agency (EPA) to the state. The primary mechanism to control water pollution is the requirement that direct dischargers to obtain an NPDES permit or in the case of states where the authority has been delegated from the EPA, a State Pollutant Discharge Elimination System (SPDES) permit, pursuant to the CWA.

One important difference between Federal regulations and certain state regulations is the definition of waters regulated by the state. Certain state regulations may include underground waters while the CWA only regulates surface waters.

### **C.1 Federal & State Environmental Requirements**

Certain environmental requirements, including some discussed earlier, may have been delegated to state authorities for implementation, enforcement, or oversight. Table C-1 provides a list of representative state environmental requirements that may affect license renewal applications (LRAs) for nuclear power plants.

**Table C–1. Federal and State Environmental Requirements**

*Davis-Besse Nuclear Power Station, Unit No. 1 (Davis-Besse) is subject to numerous state requirements regarding their environmental program. Those requirements are briefly described below.*

Agency	Law/Regulation	Requirements
NRC	Title 10 of the <i>Code of Federal Regulations</i> (CFR) Part 51	“Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions.” This part contains environmental protection regulations applicable to the NRC’s domestic licensing and related regulatory functions.
NRC	10 CFR Part 54	“Requirements for Renewal of Operating Licenses for Nuclear Power Plants.” This part focuses on managing adverse effects of aging rather than identification of all aging mechanisms. The rule is intended to ensure that important systems, structures, and components (SSCs) will continue to perform their intended function in the period of extended operation.
NRC	10 CFR Part 50	Regulations promulgated by the NRC pursuant to the Atomic Energy Act of 1954, as amended (68 Stat. 919), and Title II of the Energy Reorganization Act of 1974 (88 Stat. 1242), to provide for the licensing of production and utilization facilities. This part also gives notice to all persons who knowingly provide to any licensee, applicant, contractor, or subcontractor, components, equipment, materials, or other goods or services, that relate to a licensee’s or applicant’s activities subject to this part, that they may be individually subject to NRC enforcement action for violation of § 50.5.
<b>Air quality protection</b>		
Ohio EPA, Division of Air Pollution Control	Ambient Air Quality & Emergency Episode Standards Ohio Administrative Code Chapter 3745-25	Primary ambient air quality standards define levels of air quality, which are necessary, with an adequate margin of safety, to protect the public health. Secondary ambient air quality standards define levels of air quality, which are necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
Ohio EPA, Division of Air Pollution Control	Permits to Install New Sources of Pollution Ohio Administrative Code Chapter 3745-31	This chapter provides requirements for installation, modification, and operation of new and existing air contaminant sources at facilities that are not subject to Chapter 3745-77 of the Administrative Code. This chapter also provides requirements for installation and modification of air contaminant sources at facilities that are, or will be, subject to Chapter 3745-77 of the Administrative Code.
EPA	Clean Air Act (CAA) (42 U.S.C. § 7401 et seq.)	The Clean Air Act (CAA) is the law that defines EPA’s responsibilities for protecting and improving the nation’s air quality and the stratospheric ozone layer. The CAA requires EPA to set National ambient air quality standards for six common air pollutants—particle pollution (often referred to as particulate matter), ground-level ozone, carbon monoxide, sulfur oxides, nitrogen oxides, and lead.

Agency	Law/Regulation	Requirements
<b>Coastal zone protection</b>		
U.S. Department of Commerce	Coastal Zone Management Act of 1972 (16 U.S.C. § 1451-1464)	<p>The Congress finds and declares that it is the National policy to do the following:</p> <ul style="list-style-type: none"> <li>• to preserve, protect, develop, and where possible, to restore or enhance, the resources of the Nation's coastal zone for this and succeeding generations and</li> <li>• to encourage and assist the states to effectively exercise their responsibilities in the coastal zone through the development and implementation of management programs to achieve wise use of the land and water resources of the coastal zone, giving full consideration to ecological, cultural, historic, and esthetic values as well as the needs for compatible economic development.</li> </ul>
Ohio Department of Natural Resources—Office of Coastal Zone Management	Ohio Coastal Management Program Ohio Administrative Code Chapter 1506	In an effort to balance diverse economic and environmental interests, the Ohio Coastal Management Program sets forth the guidelines for use of Ohio's coastal resources to ensure their continued benefit for this and future generations.
<b>Water resources protection</b>		
EPA	Clean Water Act (CWA) (33 U.S.C. § 1251 et seq.)	The NPDES permit is required for plant industrial, sanitary, and storm water discharges to waters of the state. The NPDES permit requires the compliance of each point source with authorized discharge levels, monitoring requirements, and other appropriate requirements.
EPA	Section 401 of the CWA (33 U.S.C. § 1341)	Section 401 Water Quality Certification of the CWA requires a Section 401 water quality certification and payment of applicable fees before the issuance of a Federal permit or license to conduct any activity that may result in any discharge to waters of the state.
EPA	Section 404 of the CWA (33 U.S.C. § 1344)	Section 404 of the CWA established a program to regulate the discharge of dredged and fill material into waters of the U.S., including wetlands. The U.S. Army Corps of Engineers (USACE) and the EPA jointly administer this program. Under the 404 Program, no discharge of dredged or fill material is allowed if a practicable alternative exists that is less damaging to the aquatic environment or if the Nation's waters would be significantly degraded. A Federal permit is required to discharge dredged or fill material into wetlands and waters of the U.S.
EPA	Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 U.S.C. § 9601 et seq.)	Section 101 of CERCLA requires a permit to cover consumptive water use over 20,000 gallons per day (over a 30-day average) of surface and ground water.

Appendix C

Agency	Law/Regulation	Requirements
EPA	Wild and Scenic River Act (16 U.S.C. §1271 et seq.)	This act created the national wild and scenic rivers system, established to protect the environmental values of free flowing streams from degradation by impacting activities including water resources projects.
EPA	Floodplain Executive Order (No. 11988. May 24, 1977, 42 <i>Federal Register</i> (FR) 26951) and Wetlands Executive Order (No. 11990. May 24, 1977, 42 FR 26961)	Both Executive Orders require Federal agencies to consider the impacts of their actions on floodplains and wetlands through existing review procedures such as the National Environmental Policy Act of 1969 (NEPA).
<b>Waste management &amp; pollution prevention</b>		
EPA	Resource Conservation and Recovery Act (RCRA) (42 U.S.C. § 6901 et seq.)	Before a material can be classified as a hazardous waste, it must first be a solid waste as defined under the RCRA. Hazardous waste is classified under Subtitle C of the RCRA. All applicable generators of hazardous waste regulations are contained in 40 CFR Parts 261 and 262. Parts 261.5(a) and 261.5(e) contain requirements for conditionally-exempt small-quantity generators (CESQGs). Part 262.34(d) contains requirements for small-quantity generators (SQGs). Parts 262 and 261.5(e) contain requirements for large-quantity generators (LQGs).
EPA	Pollution Prevention Act (42 U.S.C. § 13101 et seq.)	This act formally established a National policy to prevent or reduce pollution at its source whenever feasible. It provides funds for state and local pollution prevention programs through a grant program to promote the use of pollution prevention techniques by business.
<b>Emergency planning &amp; response</b>		
Ohio EPA, Division of Air Pollution Control	Risk Management Program Ohio Administrative Code Chapter 3745-104	The intent of section 112(r) of the CAA is to prevent accidental releases to the air and mitigate the consequences of releases that do occur by focusing on prevention measures on chemicals that pose the greatest risk to the public and the environment. Under these requirements, industry has an obligation to prevent accidents and operate safely.

Agency	Law/Regulation	Requirements
Ohio EPA, Division of Air Pollution Control	Emergency Planning and Preparedness Ohio Administrative Code Chapter 1301:7-7-04	The Emergency Planning and Community Right-to-Know Act (EPCRA) was passed by Congress in 1986. EPCRA was included as Title III of the Superfund Amendments and Reauthorization Act (SARA) and is sometimes referred to as SARA Title III. EPCRA provides for the collection and availability of information regarding the use, storage, production, and release of hazardous chemicals to the public and emergency responders in your communities. The law promotes a working relationship among Government at all levels, business and community leaders, environmental and other public interest organizations, and individual citizens to improve hazard communications and emergency planning.
Ohio EPA, Division of Air Pollution Control	Toxic Release Inventory Rules Ohio Administrative Code Chapter 3745-100	These rules establish reporting requirements and schedules for each toxic chemical known to be manufactured (including imported), processed, or otherwise used in excess of an applicable threshold quantity. It applies only to facilities of a certain classification.
<b>Biotic resources protection</b>		
U.S. Fish & Wildlife Services (FWS)	Endangered Species Act (ESA) (16 U.S.C. § 1531 et seq.)	This act forbids any Government agency, corporation, or citizen from taking (harming or killing) endangered animals without an Endangered Species Permit.
FWS	Fish and Wildlife Coordination Act (16 U.S.C. § 661 et seq.)	To minimize adverse impacts of proposed actions on fish and wildlife resources and habitat, this act requires that Federal agencies consult Government agencies regarding activities that affect, control, or modify waters of any stream or bodies of water. It also requires that justifiable means and measures be used in modifying plans to protect fish and wildlife in these waters.
Ohio EPA, Division of Surface Water—Isolated Wetland Permitting	General and individual Isolated wetland permits Ohio Administrative Code Chapter 6111.021	A person that proposes to engage in an activity that involves the filling of an isolated wetland shall apply to the director for coverage under a general state-isolated wetland permit or shall apply for an individual state-isolated wetland permit. No person shall engage in the filling of an isolated wetland unless authorized to do so by a general or individual state-isolated wetland permit.
<b>Cultural resources protection</b>		
Advisory Council on Historic Preservation (ACHP)	National Historic Preservation Act (NHPA) (16 U.S.C. § 470 et seq.)	This act directs Federal agencies to consider the impact of their actions on historic properties. The NHPA also encourages state and local preservation societies.
Ohio Historic Preservation Office Ohio Historical Society	Historical Society Ohio Administrative Code Chapter 149-1-02	These are guidelines for archaeological investigations on public land, archaeological preserves, and sites listed in the state registry of archaeological landmarks.

## **C.2 Operating Permits and Other Requirements**

Several operating permit applications may be prepared and submitted, and regulatory approval or permits or both would be received prior to license renewal approval by the NRC. Table C-2 lists representative Federal, state, and local permits.

**Table C–2. Federal, State, and Local Permits and Other Requirements**

*Davis-Besse is subject to other requirements regarding various aspects of their environmental program. Those requirements are briefly described below.*

License, Permit, or Other Required Approval	Responsible Agency	Authority	Relevance & Status
License to operate	NRC	AEA (42 U.S.C. 2011, et seq.) 10 CFR 50.10	Operation of Davis-Besse Permit Number: NPF-3 Issued: 04/22/1977 Expires: 04/22/2017
Storage of spent nuclear fuel & high-level radioactive waste	NRC	10 CFR Part 72	Use of Radioactive waste cask Certificate Number: 1004 Issued: 01/23/1995 Expires: 01/31/2015 Certificate Number 1004 is in timely renewal in accordance with the requirements in 10 CFR 2.109. Because the Certificate holder filed an application to renew this certificate more than 30 days before the expiration date, the certificate will not be deemed to have expired until the application has been finally determined.
<b>Air quality protection</b>			
Permit to operate an air containment source	Ohio EPA, Division of Air Pollution Control	CAA, 40 U.S.C. 1857 et seq.; Ohio Air Pollution Control Act (Ohio Administrative Code Chapter 3745-31)	Operation of station auxiliary boiler Facility ID #: 0362000091 Permit Number: P0110436 Issued: 02/28/2013 Expires: 02/28/2023
<b>Water resources protection</b>			
NPDES	Ohio EPA, Division of Surface Water	CWA (33 U.S.C. 1251 et seq.); 40 CFR Part 122 Ohio Water Pollution Control Act (Ohio Revised Code 6111)	Construction of Switchyard project and control-discharge of storm water in Ottawa County, Carroll Township Ohio Permit No. 2GC02563*AG Issued: 12/21/2009 Expires: Upon Project Completion
NPDES	Ohio EPA, Division of Surface Water	CWA (33 U.S.C. 1251 et seq.); 40 CFR Part 122 Ohio Water Pollution Control Act (Ohio Revised Code 6111)	Treatment of wastewater and effluent discharge to surface receiving waters (Toussaint River and Lake Erie) Ohio Permit Number: 21B00011*JD Issued: 07/01/2011 Expires: 04/30/2016 (every 5 years)

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License, Permit, or Other Required Approval	Responsible Agency	Authority	Relevance & Status
Water withdrawal and use registration and file annual report	Ohio Department of Natural Resources, Division of Water Resources	Ohio Revised Code Section 1521.16	Withdrawal and use of more than 100,000 gallons of water daily from all sources Registration # 00598 Issued: 01/01/1990 Expires: Indefinite
<b>Waste management and pollution prevention</b>			
Notification of regulated waste activity	EPA	RCRA, as amended (42 U.S.C. s/s 321 et seq. (1976))	Generation and accumulation of hazardous waste EPA ID# OHD000720508 Issued: --- Expires: Indefinite
Report of regulated waste activity	Ohio EPA, Division of Hazardous Waste Management	Ohio Administrative Code Chapter 3745-52-41	Generation. Accumulation and offsite disposal of hazardous waste EPA ID# OHD000720508 Issued: Annual Reporting Expires: Indefinite
<b>Emergency planning and response</b>			
Hazardous material registration	U.S. Department of Transportation	Hazardous Materials Transportation Act (HMTA) (49 U.S.C. 1501 et seq.); AEA, as amended (42 U.S.C. 2011 et seq.); 49 CFR Parts 107 Subpart G, 172, 173, 174, 177, and 397	Transportation of hazardous materials Permit Number: 052112 020 004UW Issued: 05/22/2012 Expires: 06/30/2015 (Renewed Triennially)
License to deliver radioactive waste	Tennessee Department of Environment and Conservation	Tennessee Code Annotated 68-202-206	Shipment of radioactive material to a licensed disposal-processing facility within the State of Tennessee Tennessee Delivery License # T-OH003-15 Issued: Annually Expires: 12/31/2015
License to deliver radioactive waste	South Carolina Department of Health and Environmental Control	South Carolina Radioactive Waste Transportation and Disposal Act No. 429 of 1980	Shipment of radioactive material to a licensed disposal-processing facility within the State of South Carolina Permit Number: 0054-34-15-X Issued: 12/5/2014 Expires: 12/31/2015



License, Permit, or Other Required Approval	Responsible Agency	Authority	Relevance & Status
Underground storage tank registration	Ohio Department of Commerce, Division of State Fire Marshal	Ohio Administrative Code 1301: 7-9-04	Registration of underground diesel storage tanks T00001, T00002, and T00003 Facility # 62000072 Issued: Annually Expires: 06/30/2015
<b>Human health</b>			
X-ray generating equipment registration	Ohio Department of Health	Ohio Administrative Code 3701:1-38-03(C); Ohio Revised Code 3748.06 and 3748.07	Operation of X-ray generation Equipment Registration # 17-M-07181-005 Issued: Biennially Expires: 05/31/2016
<b>Biotic resource protection</b>			
Scientific Collection Permit	Ohio Department of Natural Resources, Division of Wildlife	Ohio Revised Code Section 1531.08	Collection of wildlife specimens for Radiological Environmental Monitoring Program (REMP) Permit Number: 15-112 Issued: 03/16/2014 Expires: 03/15/2015



**APPENDIX D**  
**CONSULTATION CORRESPONDENCE**



## **CONSULTATION CORRESPONDENCE**

The Endangered Species Act of 1973, as amended; the Magnuson–Stevens Fisheries Management Act of 1996, as amended; and the National Historic Preservation Act of 1966 require that Federal agencies consult with applicable state and Federal agencies and groups prior to taking action that may affect threatened and endangered species, essential fish habitat, or historic and archaeological resources, respectively. This appendix contains consultation documentation.

## Appendix D

**Table D–1. Consultation Correspondence**

<b>Author</b>	<b>Recipient</b>	<b>Date of Letter</b>
NRC (David J. Wrona, Chief)	Advisory Council on Historic Preservation (Mr. Reid Nelson, Director)	November 22, 2010 (ML102980140)
NRC (David J. Wrona, Chief)	Ohio Department of Natural Resources (David Graham, Chief)	November 22, 2010 (ML102980688)
NRC (David J. Wrona, Chief)	Ohio Department of Natural Resources (Brian Mitch, Environmental Review Manager)	November 23, 2010 (ML102980430)
NRC (David J. Wrona, Chief)	Delaware Nation (Edgar L. French)	November 23, 2010 (ML103000164)
NRC (David J. Wrona, Chief)	Forest County Potawatomi Community (Harold G. Frank)	November 23, 2010 (ML103000164)
NRC (David J. Wrona, Chief)	Hannahville Indian Community Council (Kenneth Meshigaud)	November 23, 2010 (ML103000164)
NRC (David J. Wrona, Chief)	Miami Tribe of Oklahoma (Floyd E. Leonard)	November 23, 2010 (ML103000164)
NRC (David J. Wrona, Chief)	Shawnee Tribe (Ron Sparkman)	November 23, 2010 (ML103000164)
NRC (David J. Wrona, Chief)	Wyandotte Nation (Leaford Bearskin)	November 23, 2010 (ML103000164)
NRC (David J. Wrona, Chief)	Peoria Tribe of Indians of Oklahoma (John P. Froman)	November 23, 2010 (ML103000164)
NRC (David J. Wrona, Chief)	Ottawa Tribe of Oklahoma (Charles Todd)	November 23, 2010 (ML103000164)
NRC (David J. Wrona, Chief)	National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) (Patricia Kurkul, Regional Administrator)	December 6, 2010 (ML102980692)
NRC (David J. Wrona, Chief)	Ohio Historic Preservation Office (Mark Epstein)	December 7, 2010 (ML102980687)
Peoria Tribe of Indians of Oklahoma (John P. Froman)	Chief, Rules and Directives Branch	December 8, 2010 (ML103570365)
U.S. Fish and Wildlife Service (FWS) (Mary M. Knapp, Field Supervisor)	NRC (Cindy Bladey, Chief)	December 16, 2010 (ML110060289)
NOAA NMFS (Mary A. Colligan, Assistant Regional Administrator)	NRC (David J. Wrona, Chief)	December 21, 2010 (ML110140230)
NRC (David J. Wrona, Chief)	FWS (Mary Knapp, Field Supervisor)	June 1, 2011 (ML11131A176)
NRC (David J. Wrona, Chief)	Delaware Nation (C.J. Watkins)	February 26, 2014
NRC (David J. Wrona, Chief)	Forest County Potawatomi Community (Harold G. Frank)	February 26, 2014

<b>Author</b>	<b>Recipient</b>	<b>Date of Letter</b>
NRC (David J. Wrona, Chief)	Hannahville Indian Community Council (Kenneth Meshigaud)	February 26, 2014
NRC (David J. Wrona, Chief)	Miami Tribe of Oklahoma (Douglas Lankford)	February 26, 2014
NRC (David J. Wrona, Chief)	Shawnee Tribe (Ron Sparkman)	February 26, 2014
NRC (David J. Wrona, Chief)	Wyandotte Nation (Billy Friend)	February 26, 2014
NRC (David J. Wrona, Chief)	Peoria Tribe of Indians of Oklahoma (John P. Froman)	February 26, 2014
NRC (David J. Wrona, Chief)	Ottawa Tribe of Oklahoma (Ethel Cook)	February 26, 2014
NRC (David J. Wrona, Chief)	FWS (Tom Melius, Midwest Regional Director)	February 27, 2014 (ML13177A030)
NRC (Briana Grange, Biologist)	FWS (Mary Knapp, Field Supervisor)	April 29, 2014 (ML14167A080)
FWS (Jennifer Finfera, Wildlife Biologist)	NRC (Briana A. Grange, Biologist)	May 2, 2014 (ML14167A081)
NRC (Briana A. Grange, Biologist)	FWS (Jennifer Finfera, Wildlife Biologist)	May 2, 2014 (ML14167A082)
FWS (Jennifer Finfera, Wildlife Biologist)	NRC (Briana A. Grange, Biologist)	May 4, 2014 (ML14167A084)
FWS (Jennifer Finfera, Wildlife Biologist)	NRC (Briana A. Grange, Biologist)	May 5, 2014 (ML14167A085)
NRC (Briana A. Grange, Biologist)	FWS (Jennifer Finfera, Wildlife Biologist)	May 5, 2014 (ML14167A086)
FWS (Jennifer Finfera, Wildlife Biologist)	NRC (Briana A. Grange, Biologist)	May 5, 2014 (ML14167A087)
NRC (Briana A. Grange, Biologist)	FWS (Jennifer Finfera, Wildlife Biologist)	May 6, 2014 (ML14139A000)
FWS (Jennifer Finfera, Wildlife Biologist)	NRC (Briana A. Grange, Biologist)	May 6, 2014 (ML14167A088)
FWS (Jennifer Finfera, Wildlife Biologist)	NRC (Briana A. Grange, Biologist)	May 27, 2014 (ML14167A089)
NRC (Briana A. Grange, Biologist)	FWS (Jennifer Finfera, Wildlife Biologist)	June 12, 2014 (ML14167A091)
FWS (Jennifer Finfera, Wildlife Biologist)	NRC (Briana A. Grange, Biologist)	June 16, 2014 (ML14168A614)
NRC (Briana A. Grange, Biologist)	FWS (Jennifer Finfera, Wildlife Biologist)	June 17, 2014 (ML14168A616)

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<b>Author</b>	<b>Recipient</b>	<b>Date of Letter</b>
NRC (David J. Wrona, Chief)	FWS (Tom Melius, Midwest Regional Director, Mary Knapp, Field Supervisor, and Jennifer Finfera, Wildlife Biologist)	September 15, 2014 (ML14246A119)
FWS (Forest Clark, Acting Field Supervisor)	NRC (David J. Wrona, Chief)	September 30, 2014 (ML14296A559)



**APPENDIX E**  
**CHRONOLOGY OF ENVIRONMENTAL REVIEW CORRESPONDENCE**



## **CHRONOLOGY OF ENVIRONMENTAL REVIEW CORRESPONDENCE**

This appendix contains a chronological listing of correspondence between the U.S. Nuclear Regulatory Commission (NRC) and external parties as part of its environmental review for Davis-Besse Nuclear Power Station, Unit 1. All documents, with the exception of those containing proprietary information are available electronically from the NRC's Public Electronic Reading Room found on the Internet at the following Web address:  
<http://www.nrc.gov/reading-rm.html>. From this site, the public can gain access to the NRC's Agencywide Documents Access and Management Systems (ADAMS), which provides text and image files of NRC's public documents. The ADAMS accession number for each document is included below.

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August 27, 2010	Letter from Barry S. Allen, "Davis-Besse Nuclear Power Station, Unit 1, Docket No. 50-346, License Number NPF-3, License Renewal Application and Ohio Coastal Management Program Consistency Certification" (ADAMS Accession No. ML102450565)
September 14, 2010	Letter to Deborah Rossman, Director, Ida Rupp Public Library "Maintenance of Reference Materials at the Ida Rupp Public Library in Regards to the Review of the Davis-Besse Nuclear Power Station, Unit 1, License Renewal Application" (ADAMS Accession No. ML102450342)
September 14, 2010	Letter to Mr. Clyde Scoles, Director, Toledo-Lucas County Public Library, "Maintenance of Reference Materials at the Toledo-Lucas County Public Library in Regards to the Review of the Davis-Besse Nuclear Power Station, Unit 1, License Renewal Application" (ADAMS Accession No. ML1024507070)
September 17, 2010	Letter to Barry S. Allen, Receipt and Availability of the License Renewal Application for the Davis-Besse Nuclear Power Station, Unit 1 (ADAMS Accession No. ML102300325)
September 20, 2010	Press Release: NRC Announces Availability of License Renewal Application for Davis-Besse Nuclear Plant (ADAMS Accession No. ML102630380)
September 24, 2010	E-mail from Megan Seymore, Wildlife Biologist, U.S. Fish and Wildlife Service, to Richard Bulavinetz, NRC, titled Davis-Besse Transmission line corridor (ADAMS Accession No. 103630080)
October 12, 2010	Memorandum to David Wrona, NRC, from Andy Imboden, NRC, Acceptance of License Renewal Application, Davis-Besse Nuclear Power Station, Unit 1 (ADAMS Accession No. ML102850303)
October 18, 2010	Letter to Barry S. Allen, Determination of Acceptability and Sufficiency for Docketing, and Opportunity for a Hearing Regarding the Application from FirstEnergy Nuclear Operating Company, for renewal of the Operating License for the Davis-Besse Nuclear Power Station, Unit 1 (ADAMS Accession No. ML102710584)
October 20, 2010	Letter to Barry S. Allen, "Notice of Intent to Prepare an Environmental Impact Statement and Conduct Scoping Process for License Renewal for the Davis-Besse Nuclear Power Station, Unit 1" (ADAMS Accession No. ML102700603)
October 22, 2010	Memorandum to David J. Wrona, NRC, from Paula Cooper, NRC, and Brian Harris, NRC, Forthcoming Meeting to Discuss the License Renewal Process and Environmental Scoping for Davis-Besse Nuclear Power Station License Renewal Application Review (ADAMS Accession No. ML102870261)
October 26, 2010	Press Release: NRC Announces Opportunity for Hearing on Application to Renew Operating License For Davis-Besse Nuclear Power Plant (ADAMS Accession No. ML102990387)

October 28, 2010	Press Release: NRC to Conduct Environmental Scoping Meeting as Part of the License Renewal Application for Davis-Besse: Meeting November 4 (ADAMS Accession No. ML103010069)
November 4, 2010	Transcript Davis-Besse License Renewal Public Meeting—Afternoon Session, pages 1–46 (ADAMS Accession No. 110140231)
November 4, 2010	Transcript Davis-Besse License Renewal Public Meeting—Evening Session, pages 1–37 (ADAMS Accession No. 110140232)
November 22, 2010	Letter from NRC to Reid Nelson, Director, Advisory Council on Historic Preservation (ACHP) Davis-Besse Nuclear Power Station, Unit 1, License Renewal Application Review (ADAMS Accession No. ML102980140)
November 22, 2010	Letter to David Graham, Chief, Division of Wildlife, Ohio Department of Natural Resources (OHDNR), “Request for List of Protected Species Within the Area Under Evaluation for the Davis-Besse Nuclear Power Station License Renewal Application Review” (ADAMS Accession No. ML102980688)
November 23, 2010	Letter to Brian Mitch, Environmental Review Manager, OHDNR, “Request for List of Protected Species Within the Area Under Evaluation for the Davis-Besse Nuclear Power Station License Renewal Application Review” (ADAMS Accession No. ML102980430)
November 23, 2010	Letter to Edgar L. French, Delaware Nation, “Request for Scoping Comments Concerning the Davis-Besse Nuclear Power Plant, Unit 1, License Renewal Application Review” (ADAMS Accession No. ML103000164)
November 23, 2010	Letter to Harold G. Frank, Forest County Potawatomi Community, “Request for Scoping Comments Concerning the Davis-Besse Nuclear Power Plant, Unit 1, License Renewal Application Review” (ADAMS Accession No. ML103000164)
November 23, 2010	Letter to Kenneth Meshigaud, Hannahville Indian Community Council, “Request for Scoping Comments Concerning the Davis-Besse Nuclear Power Plant, Unit 1, License Renewal Application Review” (ADAMS Accession No. ML103000164)
November 23, 2010	Letter to Floyd E. Leonard, Miami Tribe of Oklahoma, “Request for Scoping Comments Concerning the Davis-Besse Nuclear Power Plant, Unit 1, License Renewal Application Review” (ADAMS Accession No. ML103000164)
November 23, 2010	Letter to Ron Sparkman, Shawnee Tribe, “Request for Scoping Comments Concerning the Davis-Besse Nuclear Power Plant, Unit 1, License Renewal Application Review” (ADAMS Accession No. ML103000164)

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November 23, 2010	Letter to Leaford Bearskin, Wyandotte Nation, "Request for Scoping Comments Concerning the Davis-Besse Nuclear Power Plant, Unit 1, License Renewal Application Review" (ADAMS Accession No. ML103000164)
November 23, 2010	Letter to John P. Froman, Peoria Tribe of Indians of Oklahoma, "Request for Scoping Comments Concerning the Davis-Besse Nuclear Power Plant, Unit 1, License Renewal Application Review" (ADAMS Accession No. ML103000164)
November 23, 2010	Letter to Charles Todd, Ottawa Tribe of Oklahoma, "Request for Scoping Comments Concerning the Davis-Besse Nuclear Power Plant, Unit 1, License Renewal Application Review" (ADAMS Accession No. ML103000164)
December 6, 2010	Letter from NRC to Patricia Kurkul, National Oceanic and Atmospheric Administration Fisheries Service (NOAA), "Request for List of Protected Species Within the Area Under Evaluation for the Davis-Besse Nuclear Power Station License Renewal Application Review" (ADAMS Accession No. ML102980692)
December 7, 2010	Letter from NRC to Mark Epstein, Ohio State Historic Preservation Officer, "Davis-Besse Nuclear Power Station, Unit 1, License Renewal Application Review" (ADAMS Accession No. ML102980687)
December 11, 2010	Video Recording of Public Comments on the NRC Relicensing of the Davis-Besse Nuclear Plant in Columbus, Ohio (ADAMS Accession No. ML11348A013)
December 16, 2010	Letter from Mary Knapp, United States Department of the Interior, Fish and Wildlife Services, "Docket ID NRD-2010-0298" (ADAMS Accession No. ML110060289)
December 18, 2010	Transcript and Video Recording of the People's Hearing on Davis-Besse Relicensing (ADAMS Accession No. ML11209C080)
December 21, 2010	Letter from Mary A. Colligan, NOAA, "Re: Davis-Besse Nuclear Power Station" (ADAMS Accession No. ML110140230)
December 28, 2010	Letter to Barry S. Allen, "Schedule for the Conduct of Review of the Davis-Besse Nuclear Power Station, Unit 1, License Renewal Application" (ADAMS Accession No. ML103430580)
February 2, 2011	E-mail to Laura Bonneau, FWS, "Educational Program" (ADAMS Accession No. ML11236A085)
February 9, 2011	E-mail from Laura Bonneau, FWS, "Educational Program" (ADAMS Accession No. ML11235A564)
February 10, 2011	E-mail to Laura Bonneau, FWS, "Educational Program" (ADAMS Accession No. ML11236A083)
February 10, 2011	E-mail from Laura Bonneau, FWS, "Educational Program" (ADAMS Accession No. ML11235A558)

February 15, 2011	E-mail to Mary Knapp, FWS, for invitation to the license renewal environmental audit (ADAMS Accession No. ML11236A075)
February 15, 2011	E-mail from Mary Knapp, FWS, in response to audit invitation (ADAMS Accession No. ML11235A748)
February 15, 2011	E-mail to Brain Mitch, OHDNR, for invitation to the License renewal environmental audit (ADAMS Accession No. ML11236A077)
February 15, 2011	E-mail to Dave Snyder, OHPO, for invitation to the license renewal environmental audit (ADAMS Accession No. ML11236A079)
February 23, 2011	Letter to Barry S. Allen, "Requests for Additional Information (RAIs) for the Review of the Davis-Besse Nuclear Power Station, Unit 1, License Renewal Application (ADAMS Accession No. ML110130494)
February 28, 2011	Letter to Barry S. Allen, "Environmental Site Audit Regarding Davis-Besse Nuclear Power Station, Unit 1, License Renewal Application" (ADAMS Accession No. ML110190113)
March 4, 2011	E-mail to Mary Knapp, FWS, to provide environmental audit schedule (ADAMS Accession No. ML11236A069)
March 4, 2011	E-mail to Mark Epstein, OHPO, for invitation to the license renewal environmental audit (ADAMS Accession No. ML11236A071)
March 4, 2011	E-mail from Dave Snyder, OHPO, in response to audit invitation (ADAMS Accession No. ML11236A071)
March 4, 2011	E-mail to Dave Snyder, OHPO, for scheduling of Audit telephone conference (ADAMS Accession No. ML11236A073)
March 8, 2011	E-mail from Laura Bonneau, FWS, for confirmation of audit activities (ADAMS Accession No. ML11235A556 )
March 8, 2011	E-mail to Dave Snyder, OHPO, to provide audit-related conference call information (ADAMS Accession No. ML11236A067)
March 9, 2011	E-mail to Laura Bonneau, FWS, to provide audit-related conference call information and scheduling (ADAMS Accession No. ML11236A065 )
March 14, 2011	E-mail to Megan Seymour, FWS, to provide update on transmission line mapping (ADAMS Accession No. ML 1107303280)
March 23, 2011	Letter from Barry S. Allen, "Davis-Besse Nuclear Power Station, Unit 1, Docket No. 50-346, License Number NPF-3, Reply to RAI for the Review of the Davis-Besse Nuclear Power Station, Unit 1, License Renewal Application" (TAC No. ME4640) (ADAMS Accession No. ML110880058)
May 27, 2011	RAI responses from applicant, "Davis-Besse Nuclear Power Station, Unit 1, Docket No. 50-346, License Number NPF-3, Reply to RAIs for the Review of the Davis-Besse Nuclear Power Station, Unit 1, License Renewal Application" (TAC No. ME4613) Environmental Report (ADAMS Accession No. ML11193A093)

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April 20, 2011	Letter to Barry S. Allen, "RAI for the Review of the Davis-Besse Nuclear Power Station, Unit 1, License Renewal Application" (ADAMS Accession No. ML110910566)
April 26, 2011	Letter to Barry S. Allen, "RAI for the Review of the Davis-Besse Nuclear Power Station, Unit 1, License Renewal Application" (ADAMS Accession No. ML11094A099)
June 1, 2011	Letter to Mary Knapp, FWS, "Request for Lost of Federally Protected Species and Important Habitats within the Area Under Evaluation for the Davis-Besse Nuclear Power Station License Renewal Application Review" (ADAMS Accession No. ML11131A176)
June 3, 2011	Summary of site audit to support review of LRA of Davis-Besse Nuclear Power Station, Unit 1 (ADAMS Accession No. ML110820276)
June 24, 2011	Letter from Kendall W. Byrd, Davis-Besse Nuclear Power Station, Unit 1, Docket No. 50-346, License Number NPF-3, Reply to RAI for the Review of the Davis-Besse Nuclear Power Station, Unit 1, License Renewal Application (TAC No. ME4613) Environmental Report Severe Accident Mitigation Alternatives Analysis and License Renewal Application Amendment No.1 (ADAMS Accession No. ML11180A233)
July 11, 2011	Letter from Kendall W. Byrd, Davis-Besse Nuclear Power Station, Unit 1, Docket No. 50-346, License Number NPF-3, Ohio Department of Natural Resources, Office of Coastal Management Concurrence with Federal Consistency Certification Related to the Review of the Davis-Besse Nuclear Power Station, Unit 1, License Renewal Application Environmental Report (TAC No. ME4613) (ADAMS Accession No. ML11195A146)
August 1, 2011	Summary of scoping meeting held in support of the environmental review for the Davis-Besse Nuclear Power Station, Unit 1, LRA (ADAMS Accession No. ML11173A200)
August 15, 2011	Memorandum from John Parillo, NRC, to Travis L. Tate, Branch Chief, NRC, "RAI Response Clarifications from Davis-Besse Nuclear Power Station in Support of License Renewal Application" (TAC No. ME4613) (ADAMS Accession No. ML112270139)
August 31, 2011	Memorandum from Travis L. Tate, Branch Chief, NRC, to David J. Wrona, Branch Chief, NRC, "Evaluation of Severe Accident Mitigation Alternatives for Davis-Besse Nuclear Power Station" (TAC No. ME4613) (ADAMS Accession No. ML112300844)
September 1, 2011	Letter from Barry S. Allen, Davis-Besse Nuclear Power Station, Unit 1, Docket No. 50-346, License Number NPF-3, Reply to Supplemental RAI for the Review of the Davis-Besse Nuclear Power Station, Unit 1, License Renewal Application (TAC No. ME4613) Environmental Report Severe Accident Mitigation Alternatives Analysis (ADAMS Accession No. ML11250A068)



September 19, 2011	Letter from Kendall W. Byrd, Davis-Besse Nuclear Power Station, Unit 1, Docket No. 50-346, License Number NPF-3, License Renewal Application Amendment No. 16, Supplemental Information for the Review of the Davis-Besse Nuclear Power Station, Unit 1, License Renewal Application Environmental Report (TAC No. ME4613) (ADAMS Accession No. ML11266A062)
September 19, 2011	Letter from Kendall W. Byrd, Davis-Besse Nuclear Power Station, Unit 1, Docket No. 50-346, License Number NPF-3, License Renewal Application Amendment No. 17, Supplemental Information for the Review of the Davis-Besse Nuclear Power Station, Unit 1, License Renewal Application Environmental Report (TAC No. ME4613) (ADAMS Accession No. ML11266A009)
October 31, 2011	Letter to Barry S. Allen, "Schedule Revision for the Environmental and Safety Review of the Davis-Besse Nuclear Power Station, Unit 1, License Renewal Application" (ADAMS Accession No. ML11256A164)
July 16, 2012	Letter from John C. Dominy, Davis-Besse Nuclear Power Station, Unit 1, Docket No. 50-346, License Number NPF-3, Correction of Errors in the Davis-Besse Nuclear Power Station, Unit No. 1 License Renewal Application (TAC No. ME4613) Environmental Report Severe Accident Mitigation Alternatives Analysis, and License Renewal Application Amendment No. 29 (ADAMS Accession No. ML12200A024)
July 31, 2013	Letter to Barry S. Allen, "Schedule Revision for the Environmental and Safety Review of the Davis-Besse Nuclear Power Station, Unit 1, License Renewal Application" (ADAMS Accession No. ML13205A036)
October 9, 2013	Letter to Raymond A. Lieb, "Schedule Revision for the Safety Review of the Davis-Besse Nuclear Power Station, Unit 1, License Renewal Application" (ADAMS Accession No. ML13281A845)
November 6, 2013	Letter to Raymond A. Lieb, "Schedule Revision for the Environmental Review of the Davis-Besse Nuclear Power Station, Unit 1, License Renewal Application" (ADAMS Accession No. ML13302C207)
January 30, 2014	Letter to Raymond A. Lieb, "Schedule Revision for the Environmental Review of the Davis-Besse Nuclear Power Station, Unit 1, License Renewal Application" (ADAMS Accession No. ML14027A217)
February 24, 2014	Letter to Raymond A. Lieb, "Notice of Availability of the Draft Plant-Specific Supplement 52 to the Generic Environmental Impact Statement for License Renewal of Nuclear Plants Regarding Davis-Besse Nuclear Power Station, Unit 1" (ADAMS Accession No. ML14050A078)

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<p>March 6, 2014</p>	<p>Letter to Kenneth Westlake, "Notice of Availabilitiy of the Draft Plant-Specific Supplement 52 to the Generic Environmental Impact Statement for License Renewal of Nuclear Plants Regarding Davis-Besse Nuclear Power Station, Unit 1" (ADAMS Accession No. ML14057A422)</p>
<p>March 13, 2014</p>	<p>Press Release-14-09: NRC Seeks Public Comment on Draft Environmental Report for Davis-Besse Nuclear Plant License Renewal - Meetings Scheduled for March 25 (ADAMS Accession No. ML14073A645)</p>
<p>September 30, 2014</p>	<p>Letter to Raymond A. Lieb, "Schedule Revision for the Review of the Davis-Besse Nuclear Power Station, Unit 1, License Renewal Application" (ADAMS Accession No. ML14267A303)</p>
<p>November 28, 2014</p>	<p>Letter to Raymond A. Lieb, "Schedule Revision for the Review of the Davis-Besse Nuclear Power Station, Unit 1, License Renewal Application" (ADAMS Accession No. ML14329A479)</p>
<p>January 2015</p>	<p>Letter to Raymond A. Lieb, "Schedule Revision for the Review of the Davis-Besse Nuclear Power Station, Unit 1, License Renewal Application" (ADAMS Accession No. ML15022A253)</p>
<p>February 27, 2015</p>	<p>Letter to Raymond A. Lieb, "Schedule Revision and Project Manager Change for the Review of the Davis-Besse Nuclear Power Station, Unit 1, License Renewal Application" (ADAMS Accession No. ML15054A534)</p>

**APPENDIX F**  
**U.S. NUCLEAR REGULATORY COMMISSION STAFF EVALUATION OF**  
**SEVERE ACCIDENT MITIGATION ALTERNATIVES FOR DAVIS-BESSE**  
**NUCLEAR POWER STATION IN SUPPORT OF LICENSE RENEWAL**  
**APPLICATION REVIEW**



# U.S. NUCLEAR REGULATORY COMMISSION STAFF EVALUATION OF SEVERE ACCIDENT MITIGATION ALTERNATIVES FOR DAVIS-BESSE NUCLEAR POWER STATION IN SUPPORT OF LICENSE RENEWAL APPLICATION REVIEW

## F.1 Introduction

FirstEnergy Nuclear Operating Company (FENOC), on behalf of FirstEnergy Nuclear Generation Corporation, submitted to the U.S. Nuclear Regulatory Commission (NRC) an assessment of severe accident mitigation alternatives (SAMAs) for the Davis-Besse Nuclear Power Station, Unit 1 (Davis-Besse) as part of the Environmental Report (ER) (FENOC 2010). This assessment was based on the most recent Davis-Besse probabilistic risk assessment (PRA) available at that time, a plant-specific offsite consequence analysis performed using the MELCOR Accident Consequence Code System 2 (MACCS2) computer code (NRC 1998a), and insights from the Davis-Besse individual plant examination (IPE) (Centerior Energy 1993) and individual plant examination of external events (IPEEE) (Centerior Energy 1996). In identifying and evaluating potential SAMAs, FENOC considered SAMA candidates that addressed the major contributors to core damage frequency (CDF) and large early release frequency (LERF) at Davis-Besse, as well as SAMA candidates for other operating plants that have submitted license renewal applications (LRAs). FENOC identified 168 potential SAMA candidates. The SAMA candidates were reduced to 15 by eliminating SAMAs that are not applicable for one or more of the following reasons:

- The SAMA has design differences or has already been implemented at Davis-Besse.
- The SAMA is not applicable to Davis-Besse.
- The SAMA has estimated implementation costs that would exceed the dollar value associated with eliminating all severe accident risk at Davis-Besse.
- The SAMA is related to a non-risk significant system and, therefore, has a very low benefit.
- The SAMA is similar in nature and could be combined with another SAMA candidate.

FENOC assessed the costs and benefits associated with each of these 15 potential SAMAs and concluded in the ER that one of the candidate SAMAs evaluated is potentially cost-beneficial.

Based on a review of the SAMA assessment, the NRC issued a request for additional information (RAI) to FENOC by letter dated April 20, 2011 (NRC 2011a). Key questions concerned the following:

- additional details regarding the plant-specific PRA model and changes to CDF and LERF since the IPE,
- additional information on the internal and external reviews of the PRA model performed since the IPE,
- the process used to map Level 1 PRA results into the Level 2 analysis and group containment event tree (CET) end states into release categories,
- justification for the multiplier used for external events,

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- population assumptions used in the Level 3 analysis,
- the use of importance analysis in identifying plant-specific SAMA candidates, and
- further information on the cost-benefit analysis of several specific candidate SAMAs and low-cost alternatives.

FENOC submitted additional information to the NRC by letter dated June 24, 2011 (FENOC 2011). FENOC also provided clarifications to the RAI responses via e-mail on July 18 and July 27, 2011 (NRC 2011b). In response to the RAIs, FENOC provided the following information:

- identification of key factors for a significant change in CDF associated with particular version of the Davis-Besse PRA model,
- clarification of the scope of the peer reviews and the status of peer review findings,
- description of the process for mapping Level 1 results into the Level 2 analysis and for assigning CET sequences to release categories,
- a revised SAMA analysis reflecting a higher maximum benefit, higher external events multiplier, and the 95th percentile CDF,
- clarification of the sensitivity analysis,
- an assessment of SAMAs previously found to be potentially cost beneficial for Babcock and Wilcox (B&W) plants,
- additional rationale for not identifying SAMAs for many of the basic events on the risk importance lists,
- additional rationale for considering SAMAs related to improved procedures or training or automated functions that would eliminate high risk operator error,
- an assessment of SAMAs subsumed by other more costly SAMAs, and
- additional information regarding several specific SAMAs.

Subsequent to the RAI responses, FENOC submitted a supplement to the ER that corrected the following five errors in the SAMA assessment (FENOC 2012a):

- (1) An inaccurate land area conversion factor for acres to hectares was used.
- (2) Dollar values for Ohio farmland and non-farmland were selected from Ohio Department of Taxation 'tax assessment' values instead of 'appraised' values.
- (3) The escalation of decontamination costs was not performed in accordance with approved guidance.
- (4) Core inventory isotopic 'activity' was used instead of isotopic 'mass' in the Modular Accident Analysis Program (MAAP) software code runs in contrast to updated industry guidance.
- (5) The wind direction from the Davis-Besse Meteorological Tower was not converted from the 'blowing from' direction to the 'blowing toward' direction for use in the SAMA Analysis calculations.

Based on a review of this updated SAMA assessment, the NRC held a conference call with FENOC on September 25, 2012, to clarify the decontamination cost escalation factor used in the assessment and the updated release category results (FENOC 2012b).

FENOC's response to the RAIs, as well as FENOC's response to the ER supplement clarification questions, addressed all the concerns raised by the NRC staff.

An assessment of SAMAs for Davis-Besse is presented below.

## **F.2 Estimate of Risk for Davis-Besse**

FENOC's estimates of offsite risk at Davis-Besse are summarized in Section F.2.1. The summary is followed by the NRC staff's review of FENOC's risk estimates in Section F.2.2.

### **F.2.1 FENOC's Risk Estimates**

Two distinct analyses are combined to form the basis for the risk estimates used in the SAMA analysis; the Davis-Besse Level 1 and 2 PRA model, which is an updated version of the IPE (Centerior Energy 1993), and a supplemental analysis of offsite consequences and economic impacts (essentially a Level 3 PRA model) developed specifically for the SAMA analysis. The SAMA analysis is based on the most recent Davis-Besse Level 1 and Level 2 PRA model available at the time of the ER, which is referred to as "SAMA Analysis Model," and is a special update of the Davis-Besse Revision 4 PRA to support the SAMA evaluation. The scope of this Davis-Besse PRA does not include external events.

The Davis-Besse CDF is approximately  $9.8 \times 10^{-6}$  per year for internal events using a truncation value of  $5 \times 10^{-13}$  per year. This CDF includes contributions from internal flooding and high winds (not including tornado-generated missiles). When determined from the sum of the CET sequences, or Level 2 model, the release frequency (from all release categories including intact containment, early and late releases) is approximately  $1.0 \times 10^{-5}$  per year using a truncation value of  $5 \times 10^{-13}$  per year. The latter value was used as the baseline CDF in the SAMA evaluations. The CDF is based on the risk assessment for internally initiated events, which includes internal flooding. FENOC did not explicitly include the contribution from external events in the Davis-Besse PRA risk estimates; however, it did account for the potential risk reduction benefits associated with external events by multiplying the estimated benefits for internal events by a factor of 3.0. As a result of NRC review, FENOC revised the external events multiplier to a factor of 4.6. This is discussed further in Sections F.2.2 and F.6.2.

The breakdown of CDF by initiating event is provided in Table F-1. As shown in this table, loss of offsite power (LOOP), loss of component cooling water (CCW), and reactor or turbine trips are the dominant contributors to the CDF. Anticipated transient without scram (ATWS) sequences are modeled as a failure to trip after an initiating event; ATWS sequences contribute approximately 1 percent to CDF. Station blackout (SBO) sequences involve a LOOP (as the initiating event or following an initiating event), along with subsequent failure of power to both safety buses, (i.e., a loss of both emergency diesel generators (EDGs) and the SBO diesel generator); SBO sequences contribute approximately 5 percent to CDF and are dominated by sequences initiated by a LOOP.

**Table F-1. Davis-Besse Core Damage Frequency for Internal Events**

Initiating Event <sup>(a)</sup>	CDF (per year) <sup>(d)</sup>	% Contribution to CDF <sup>(d)</sup>
LOOP	$1.9 \times 10^{-6}$	19
Loss of CCW pump(s)	$1.7 \times 10^{-6}$	18
Reactor or turbine trip	$1.3 \times 10^{-6}$	13
Steam generator tube rupture (SGTR)	$6.2 \times 10^{-7}$	6
Loss of main feedwater	$5.7 \times 10^{-7}$	6
Main feedwater flow control <sup>(b)</sup>	$5.1 \times 10^{-7}$	5
Reactor vessel (RV) rupture	$5.0 \times 10^{-7}$	5
Small loss-of-coolant accident (LOCA)	$4.3 \times 10^{-7}$	4
Flooding in CCW pump room	$2.0 \times 10^{-7}$	2
Medium LOCA	$1.5 \times 10^{-7}$	2
Loss of service water pump room ventilation	$1.3 \times 10^{-7}$	1
Loss of direct current (DC) power from Bus d2p	$1.1 \times 10^{-7}$	1
Flooding in turbine building	$8.8 \times 10^{-8}$	1
Loss of non-nuclear instrumentation cabinets 1-4 (NNIX) DC power supply	$8.2 \times 10^{-8}$	1
Other <sup>(c)</sup>	$1.5 \times 10^{-6}$	15
<b>Total CDF (internal events)</b>	<b><math>9.8 \times 10^{-6}</math></b>	<b>100</b>

<sup>(a)</sup> This table is based on model quantification using  $5 \times 10^{-13}$  per year truncation.

<sup>(b)</sup> In response to an NRC staff RAI, FENOC explains that T2A-1 and T2B-1 are main feedwater flow control valve initiators, and T2A-2 and T2B-2 are the associated flow controller initiators. These four initiators combined form the main feedwater flow control initiator (FENOC 2011).

<sup>(c)</sup> This is calculated from information in ER Table E.3-1.

<sup>(d)</sup> Column totals may be different due to round off.

The Level 2 PRA model that forms the basis for the SAMA evaluation represents a complete revision of the original IPE Level 2 model. The current Level 2 model uses a single CET containing both phenomenological and systemic events. The Level 1 core damage sequences are grouped into core damage bins according to similarities in their impact on containment response. The core damage bins, together with the states of containment systems comprise the plant damage states (PDSs), which provide the interface between the Level 1 analysis and Level 2 CET analysis. The CET probabilistically evaluates the progression of the damaged core with respect to release to the environment. CET nodes are evaluated using supporting fault trees and logic rules. The CET end states are then examined for considerations of timing and magnitude of release and assigned to release categories.

The result of the Level 2 PRA is a set of 34 specific release categories, also referred to as source term categories, with their respective frequency and release characteristics. The results of this analysis for Davis-Besse are provided in Table E.3-13 of Appendix E to the ER (FENOC 2010). The frequency of each release category was obtained by summing the frequency of the individual accident progression CET endpoints assigned to each release category. Source terms were developed for each of the 34 release categories using the results



of Modular Accident Analysis Program (MAAP) Version 4.0.6 computer code calculations based on characteristics that determine the timing and magnitude of the release, whether or not the containment remains intact, and isotopic composition of the release material (FENOC 2010).

The offsite consequences and economic impact analyses use the MACCS2 code to determine the offsite risk impacts on the surrounding environment and public. Inputs for these analyses include plant-specific and site-specific input values for core radionuclide inventory, source term and release characteristics, site meteorological data, projected population distribution within a 50-mi (80-km) radius for the year 2040, emergency response evacuation planning, and economic parameters. The core radionuclide inventory corresponds to the end-of-cycle values for Davis-Besse operating at 2,827 megawatt thermal (MWt), which bounds the currently approved power level. The magnitude of the onsite impacts (in terms of cleanup and decontamination costs and occupational dose) is based on information provided in NUREG/BR-0184, "Regulatory Analysis Technical Evaluation Handbook" (NRC 1997a).

In response to an NRC staff RAI, FENOC estimated the dose to the population within 50 mi (80 km) of the Davis-Besse site to be approximately 0.0212 person-sievert (Sv) (2.12 person-rem) per year (FENOC 2012a). The breakdown of the total population dose by containment release mode is summarized in Table F-2. SGTR and interfacing system LOCA (ISLOCA), both containment bypass events, dominate the population dose risk at Davis-Besse.

**Table F-2. Breakdown of Population Dose by Containment Release Mode**

Containment release mode <sup>(a,b)</sup>	Population Dose (person-rem <sup>(c,d)</sup> per year)	% Contribution <sup>(d)</sup>
SGT	1.35	64
ISLOCA	0.35	17
Large containment isolation failure	0.02	1
Small containment isolation failure	0.06	3
Large early release	0.03	1
Sidewall failure (early)	0.03	1
Late containment failure	0.06	3
Basemat failure	0.21	10
No containment failure	0.02	1
<b>Total</b>	<b>2.12</b>	<b>100</b>

<sup>(a)</sup> This table is based on model quantification using  $5 \times 10^{-13}$  per year truncation.

<sup>(b)</sup> Estimated population doses calculated from revised information provided in Table E.3-21 of response to NRC staff RAI 4.b (FENOC 2011).

<sup>(c)</sup> One person-rem = 0.01 person-Sv.

<sup>(d)</sup> Column totals may be different due to round off.

## F.2.2 Review of FENOC's Risk Estimates

FENOC's determination of offsite risk at Davis-Besse is based on the following major elements of analysis:

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- the Level 1 and 2 risk models that form the bases for the 1993 IPE submittal (Centerior Energy 1993) and the external event analyses of the 1996 IPEEE submittal (Centerior Energy 1996);
- the major modifications to the IPE model that have been incorporated in the Davis-Besse PRA, including a complete revision of the Level 2 risk model; and
- the MACCS2 analyses performed to translate fission product source terms and release frequencies from the Level 2 PRA model into offsite consequence measures.

Each of these analyses was reviewed to determine the acceptability of the Davis-Besse risk estimates for the SAMA analysis, as summarized below.

The NRC staff's review of the Davis-Besse IPE is described in a safety evaluation report (SER) (NRC 1996). Based on the review of the original IPE submittal and responses to RAIs, the NRC staff concluded that the IPE submittal met the intent of generic letter (GL) 88-20, "Individual Plant Examination for Severe Accident Vulnerabilities" (NRC 1988); that is, the applicant's IPE process is capable of identifying the most likely severe accidents and severe accident vulnerabilities. Although no vulnerabilities were identified in the IPE, 11 improvements to the plant or procedures were identified. These improvements have been either implemented at the site or included in the SAMA evaluation process (FENOC 2010). These improvements are discussed in Section F.3.2.

There have been five revisions to the IPE model between the 1993 IPE submittal and the model used for the SAMA analysis. A listing of the major changes in each revision of the PRA was provided by FENOC in Section E.3.1.1.2 of the ER (FENOC 2010) and in response to an NRC staff RAI (FENOC 2011). The revisions to the IPE are summarized in Table F-3. FENOC clarified that the large decrease in CDF between Revision 0 and Revision 1 is primarily due to reduction in transient frequencies for reactor or turbine trips and loss of main feedwater. Additionally, the sizeable decrease between Revision 3 and Revision 4 was primarily due to update of data and an increase in the time operators have to trip the reactor cooling pumps following loss of seal cooling. A comparison of the internal events CDF between the 1993 IPE and the SAMA analysis model indicates a decrease of approximately 85 percent (from  $6.6 \times 10^{-5}$  per year to  $9.8 \times 10^{-6}$  per year).

**Table F–3. Davis-Besse Probabilistic Risk Assessment Historical Summary**

PRA Version	Summary of Changes From Prior Model	CDF (per year)
1993	IPE Submittal	$6.6 \times 10^{-5}$
Revision 0 Revision 1 Revision 2 1999	<ul style="list-style-type: none"> <li>Performed plant-specific update of failure rates, unavailability, common cause, initiating event frequency, and human reliability analysis (HRA)</li> <li>Made modifications to reflect plant and procedure changes including adding the SBO diesel generator (DG), removal of a startup feed pump, improvements to CCW and service water system modeling, update of SGTR emergency response modeling, and internal flooding modeling</li> <li>Improved model documentation to comply with draft PRA standard requirements</li> </ul>	$1.4 \times 10^{-5}$ $1.6 \times 10^{-5}$ $1.7 \times 10^{-5}$
Revision 3 5/2001	<ul style="list-style-type: none"> <li>Added explicit LERF model</li> <li>Addressed all Level B peer review findings</li> <li>Improved model quantification logistics including reducing truncation limit to <math>2.0 \times 10^{-10}</math></li> <li>Deleted ISLOCA sequence judged not credible and RV rupture as negligible</li> <li>Added conditional probability that reactor will trip due to loss of 4160 Volt Bus C or D</li> <li>Revised logic for loss of start-up feedwater due to circulating water flooding</li> <li>Revised success criteria for large and medium LOCAs to one of two core flood tanks</li> <li>Improved model documentation to comply with draft PRA standard requirements</li> </ul>	$1.3 \times 10^{-5}$
Revision 4 9/2007	<ul style="list-style-type: none"> <li>Updated model for new PRA software</li> <li>Increased available response time following loss of CCW for manual tripping of Reactor Coolant Pumps (RCPs) from 10 minutes to 1 hour</li> <li>Added tornado initiating events, excluding consideration of missile generation</li> <li>Performed module management changes</li> <li>Reduced truncation limit to <math>5.0 \times 10^{-13}</math></li> </ul>	$4.7 \times 10^{-6}$

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PRA Version	Summary of Changes From Prior Model	CDF (per year)
SAMA analysis model 7/2009	<ul style="list-style-type: none"> <li>• Reviewed and updated all system fault trees for system dependencies</li> <li>• Added RV rupture initiating event</li> <li>• Changed success criteria in case of a large LOCA back to two core flood tanks</li> <li>• Made model improvements to CCW and service water models to correct errors</li> <li>• Adjusted system fault trees to and reflect simultaneous alignments using split fraction</li> <li>• Revised common cause failure modeling to use of multiple greek letter approach</li> <li>• Updated HRA using Electric Power Institute (EPRI) HRA calculator</li> <li>• Structured support system initiating event modeling to comply with EPRI guidance (EPRI 2006)</li> <li>• Removed modules from fault trees</li> <li>• Added fire modeling functionality in preparation for performing a National Fire Protection Association (NFPA) 805 analysis</li> <li>• Improved modeling with respect to success gates and mutually exclusive terms</li> <li>• Adapted a two-step quantification approach to facilitate incorporation of recovery events</li> </ul>	$9.8 \times 10^{-6}$

The CDF value from the 1993 Davis-Besse IPE ( $6.6 \times 10^{-5}$  per year) is near the higher end of the range of the CDF values reported in the IPEs for B&W plants. Figure 11.6 of NUREG-1560 shows that the IPE-based internal events CDF for these plants range from about  $1 \times 10^{-5}$  per year to  $7 \times 10^{-5}$  per year, with an average CDF for the group of  $3 \times 10^{-5}$  per year (NRC 1997b). It is recognized that other plants have updated the values for CDF subsequent to the IPE submittals to reflect modeling and hardware changes. The internal events CDF result for Davis-Besse used for the SAMA analysis ( $9.8 \times 10^{-6}$  per year, including internal flooding) is comparable to that for other plants of similar vintage and characteristics.

The NRC staff considered the peer reviews performed for the Davis-Besse PRA and the potential impact of the review findings on the SAMA evaluation. In the ER (FENOC 2010) and in response to an NRC staff RAI (FENOC 2011), FENOC describes a B&W owner's group peer review performed from 1999 through 2000 on internal events and LERF and a "gap self assessment" performed by a team of industry peers and internal staff using the 2005 American Society of Mechanical Engineers (ASME) PRA standard (ASME 2005). The owner's group peer review identified no Level A (important and necessary to address before the next regular PRA update) and 18 Level B (important and necessary to address, but disposition may be deferred until the next PRA update) facts and observations (F&Os). FENOC clarifies that 13 of these open findings were closed prior to implementation of the mitigating systems performance index (MSPI) document, four were closed in the SAMA analysis model, and the remaining F&O is essentially addressed by the SAMA evaluation. This last finding recommended additional sensitivity studies be performed to study the sensitivity of results to modeling PRA assumptions.

The SAMA evaluation includes an importance analysis of basic and initiating events as well as a Level 3 parameter sensitivity analysis, and, in response to an NRC staff RAI, FENOC provided the results of an uncertainty analysis (further discussed in Section F.6.1). Therefore, further insights gained from an additional sensitivity analysis would not be expected to yield significant new insights. FENOC explained in the ER and in an RAI response that the gap self-assessment covered Level 1 and LERF elements excluding internal flooding and high

winds, and that it focused on identifying gaps to meeting Capability Category II of the ASME PRA standard (ASME 2005). There were four Level A findings and 23 Level B findings from this gap self-assessment. FENOC summarized these findings, and the model changes made to address the findings in Section E.3.1.1.2 of the ER (FENOC 2010), and stated in the RAI response that all of the Level A and B findings are addressed in the SAMA analysis model.

In response to an NRC staff RAI (FENOC 2011), FENOC describes the quality control process used at Davis-Besse for the development and maintenance of the PRA. An operating manual related to the PRA Program and a business practice document related to PRA model management both identify requirements for maintaining and updating the PRA models and applications in accordance with regulatory guide (RG) 1.200, "An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities" (NRC 2007) and ensure that the PRA models are current with the changes to the plant. These control documents cover updates; identifying, tracking, and disposition of plant changes; personnel qualification; self-assessment; PRA software and computer control including software quality assurance; and PRA records and documentation. The NRC staff considers FENOC's quality control process to be of sufficient quality to support the SAMA evaluation.

The NRC staff asked FENOC to identify any changes to the plant, including physical and procedural modifications, since the July 2009 SAMA analysis model that could have a significant impact on the results of the SAMA analysis (NRC 2011a). In response to the RAI, FENOC stated that while there have been some plant changes since the SAMA analysis model, no changes have been identified that would have a significant impact on the SAMA evaluation (FENOC 2011). Furthermore, FENOC states that plant procedures for managing the PRA model specify that plant changes are to be evaluated to determine if they would cause a change of greater than 10 percent CDF, or greater than 20 percent LERF; and there have been no changes that meet these criteria.

Given that the Davis-Besse internal events PRA model has been peer-reviewed and the peer review findings were all addressed, and that FENOC has satisfactorily addressed NRC staff questions regarding the PRA, the NRC staff concludes that the internal events Level 1 PRA model is of sufficient quality to support the SAMA evaluation.

As indicated above, the current Davis-Besse PRA does not include external events. In the absence of such an analysis, FENOC used the Davis-Besse IPEEE to identify the highest risk accident sequences and the potential means of reducing the risk posed by those sequences, as discussed below and in Section F.3.2.

FENOC submitted the Davis-Besse IPEEE in February 1996 (Centerior Energy 1996) in response to Supplement 4 of GL 88-20 (NRC 1991). This submittal included a seismic margins analysis, an internal fire PRA, and an evaluation of high winds, external flooding, and other hazards. While no fundamental weaknesses or vulnerabilities to severe accident risk in regard to the external events were identified, a limited set of plant improvements based on an external events finding was identified and is discussed below. In a letter dated February 8, 2001, the NRC staff concluded that the submittal met the intent of Supplement 4 to GL 88-20, and the applicant's IPEEE process is capable of identifying the most likely severe accidents and severe accident vulnerabilities (NRC 2001).

The seismic portion of the IPEEE consisted of a reduced-scope seismic evaluation using the EPRI methodology (EPRI 1991) for seismic margins assessment (SMA), with enhancements specified in NUREG-1407 (NRC 1991), in conjunction with the Seismic Qualification User's Group (SQUG) methodology (SQUG 1992). This method is qualitative and does not provide numerical estimates of the CDF contributions from seismic initiators (EPRI 1991). FENOC indicates in the ER that the SMA has not been updated since the IPEEE. Although the size of

an earthquake is usually reported in terms of Richter magnitude, ground-shaking forces are most commonly reported in units of acceleration as a fraction of the force (acceleration) of gravity (g). For the IPEEE seismic assessment, Davis-Besse was categorized as a 0.3 g focused-scope plant per NUREG-1407; however, the applicant performed a 0.15 g reduced scope SMA based on a perceived lower seismic risk at Davis-Besse. The applicant judged seismic risk to be lower at Davis-Besse based on its review of revised Lawrence Livermore National Laboratory (LLNL) seismic hazard curves (NRC 1994a), its review of information notice (IN) 94-32, "Revised Seismic Hazard Estimates" (NRC 1994b), and its commitment to address the outliers identified by the walkdowns for the Unresolved Safety Issue (USI) A-46 Program. The SMA determined that the lowest high confidence in low probability of failure (HCLPF) value for the components evaluated was 0.26 g. In the letter dated February 8, 2001, the staff concluded that the aspects of seismic events were adequately addressed, based upon the seismic screening review performed by Brookhaven National Laboratory, staff's screening review, and the licensee's responses to additional information (NRC 2001).

The NRC staff asked about whether plant improvements had been made to the five structures and components, four masonry walls, and borated water storage tank (BWST) roof determined to have an HCLPF value of less than 0.3 g in the IPEEE (NRC 2011a). In response to the RAI, FENOC stated that plant improvements had been performed for the four components involving masonry walls and that no modifications have been made to the BWST roof. Updated analyses were performed to ensure allowable stresses and design-basis requirements for masonry structures were met (FENOC 2011). In a followup clarification to the RAI responses, FENOC further explained that a SAMA candidate already identified and evaluated in the ER meets the intent of improving the seismic capacity of the BWST roof. This is further discussed in Section F.3.2.

The Davis-Besse IPEEE seismic evaluation identified one unresolved outlier remaining from implementation of the USI A-46 Program. The one unresolved outlier was the identification of two flammable compressed gas bottles with inadequate seismic mounting. This is further discussed in Section F.3.2. The USI A-46 SER for Davis-Besse indicates that the licensee completed the resolution of all outliers (NRC 2000).

To provide additional insight into the appropriate seismic CDF to use for the SAMA evaluation, the NRC staff used NRC information notice (IN) 2010-18, generic issue 199, "Implications of Updated Probabilistic Seismic Hazard Estimates in Central and Eastern United States on existing Plants," which informs applicants that updated seismic data and models show increased seismic hazard estimates for some plants. The NRC report cited in the IN estimates the seismic CDF for Davis-Besse to be between  $6.7 \times 10^{-7}$  and  $6.7 \times 10^{-6}$  per year, using 2008 U.S. Geological Survey (USGS) seismic hazard curves. Since FENOC did not provide a seismic CDF contribution in the ER, the NRC staff used a seismic CDF of  $6.7 \times 10^{-6}$  per year to assess the appropriateness of the external event multiplier used in the SAMA evaluation. The multiplier is further discussed later in this section.

The Davis-Besse IPEEE fire analysis employed a combination of the EPRI fire-induced vulnerability evaluation (FIVE) methodology (EPRI 1993) and PRA analysis. Since the FIVE methodology allowed only a few of the Davis-Besse fire compartments to be screened, modification of the FIVE process was employed to include more detailed analysis of affected circuits, improved fire initiation frequency quantification, inclusion of fire effects evaluations, and crediting fire prevention and suppression. These enhancements were primarily based on guidance from the EPRI Fire PRA Implementation Guide (EPRI 1995). In the first phase, initial qualitative and quantitative screening was used to identify potentially risk significant fire compartments. Safe shutdown equipment was identified, and the routing of the associated supporting electrical cables was determined and qualitatively evaluated to ascertain if there

were any plant locations that could be screened out due to the absence of safe shutdown equipment or cables. Fire barriers were evaluated to ensure that any screened out compartments could not cause a fire in an adjacent compartment. The results of the fire compartment interaction analysis were used in the detailed fire analyses of each compartment.

The second phase considered equipment failures beyond those caused by the fire. Using the PRA, plant areas with a fire-induced CDF below  $1.0 \times 10^{-6}$  per year were screened from further evaluation. The third phase involved detailed fire analysis of the unscreened compartments using guidance from the Fire PRA Implementation Guide (EPRI 1995), detailed evaluation of the potential for fire damage due to specific fires within an area, and detailed evaluation of the function of specific safe shutdown equipment cables. In this phase, fire frequencies were adjusted to remove some of the conservatism in the frequencies for specific fire initiation sources. This included applying severity factors for certain fixed sources of ignition and crediting early suppression of welding-related fires based on historical fire events data, crediting early suppression of other transient fires based on the presence of an automatic fire detection system in the fire compartment, crediting restrictions on the quantity of transient combustibles and the use of approved storage containers for transient combustibles, crediting the frequency of inspections to verify compliance with the requirements for control of transient combustibles, and eliminating conduits and cable trays that were determined to not be credibly damaged by a fire based on its distance from the ignition source. Based on these results, the fire-induced equipment failure list was modified and more compartments were screened.

FENOC stated that the fire PRA has not been updated since the IPEEE. In Section 3.1.2.1 of the ER, FENOC provides the fire CDF for the four areas having a CDF greater than the screening criteria of  $1.0 \times 10^{-6}$  per year. In response to an NRC staff RAI, FENOC acknowledges that IPEEE Table 4.2.3.2 (Centerior Energy 1996) provides the CDF for 15 fire compartments that were screened out prior to detailed analysis. The NRC IPEEE SER presents the total CDF of these screened out fire compartments to be  $3.8 \times 10^{-6}$  per year. This CDF, and those for each of the four fire zones have a CDF greater than  $1.0 \times 10^{-6}$  per year, are presented in Table F-4. The total fire CDF, determined from summing the values in Table F-4, is  $2.9 \times 10^{-5}$  per year.

**Table F-4. Davis-Besse Fire Zones and Their Contribution to Fire Core Damage Frequency**

Fire Zone	Fire Zone Description	CDF (per year)
Q.01	High voltage switchgear Room B	$8.2 \times 10^{-6}$
S.01	High voltage switchgear Room A	$6.5 \times 10^{-6}$
X.01	Low voltage switchgear room	$5.9 \times 10^{-6}$
FF.01	Control room cabinets	$4.3 \times 10^{-6}$
Other <sup>(a)</sup>		$3.8 \times 10^{-6}$
<b>Total Fire CDF (all fire zones)</b>		<b><math>2.9 \times 10^{-5}</math></b>

<sup>(a)</sup> From the IPEEE SER (NRC 2001).

The NRC staff inquired about additional measures that FENOC had already taken to reduce fire risk since the IPEEE for the four dominant fire areas identified in ER Section E.3.1.2.1 (NRC 2011a). FENOC provided a description of a software tool implemented after issuance of the IPEEE for managing fire risk. This tool tracks inoperable or degraded fire protection features and manages combustible loads and travel paths. This software is maintained by the

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site fire marshal and controlled by a set of operational procedures. FENOC also provided a SAMA evaluation of these four dominate fire areas, which is discussed further in Section F.3.2.

Considering the above discussion, and the actions taken by FENOC to reduce fire risk since the IPEEE, NRC staff concludes that the fire CDF of  $2.9 \times 10^{-5}$  per year is reasonable for the SAMA analysis.

The Davis-Besse IPEEE analysis of HFO events (high winds, tornadoes, external floods, and other external events) followed the screening and evaluation approaches specified in Supplement 4 to GL 88-20 (NRC 1991) and did not identify any sequences or vulnerabilities that exceeded the  $1.0 \times 10^{-6}$  per year criterion (FENOC 2001). Based on this result, the applicant concluded that these other external hazards would be negligible contributors to overall core damage and did not consider any plant-specific SAMAs for these events. However, the applicant did note that the updated safety analysis report and the control room habitability study did not accurately reflect the current chemicals stored onsite. This is discussed further in Section F.3.2.

Based on the aforementioned results, including the NRC staff assessment of the Davis-Besse seismic CDF, the external events CDF is approximately 3.6 times the internal events CDF (based on a seismic CDF of  $6.7 \times 10^{-6}$  per year, a fire CDF of  $2.9 \times 10^{-5}$  per year, and an internal events CDF of  $9.8 \times 10^{-6}$  per year). The NRC staff requested FENOC increase the internal events benefits from a factor of 3 to 3.6 to account for the seismic hazard and for the CDF associated with screened fire compartments (NRC 2011a). In response to the RAI, FENOC chose to provide a revised SAMA evaluation using an external events multiplier of 4.6 resulting in a total multiplier of 5.6 ( $(2.9 \times 10^{-5} + 6.7 \times 10^{-6} + 1.0 \times 10^{-5}) / (1.0 \times 10^{-5} + 1)$ ) to account for external events, which assumes a seismic CDF of  $6.7 \times 10^{-6}$  per year, a fire CDF of  $2.9 \times 10^{-5}$  per year, and an HFO CDF of  $1.0 \times 10^{-5}$  per year (FENOC 2011). This is discussed further in Section F.6.2.

The NRC staff reviewed the general process used by FENOC to translate the results of the Level 1 PRA into containment releases, as well as the results of the Level 2 analysis, as described in the ER and in response to NRC staff RAIs (FENOC 2010, 2011). The Level 2 model is completely revised from the model used in the IPE and reflects the Davis-Besse plant as designed and operated as of September 2009. In response to NRC RAIs, FENOC explains that one of the most significant changes in the Level 2 model was the increase in level detail reflected in the PDSs and the manner in which their frequency is calculated. To better define the status of containment systems to support CET quantification, 14 PDSs were added. Another important change was developing a probability distribution for containment failure as a function of internal pressure. The Level 1 core damage sequences are grouped into core damage bins according to similarities in their impact on containment response. The core damage bins, together with the states of containment systems, comprise the nearly 500 PDSs that provide the interface between the Level 1 analysis and Level 2 CET analysis.

Each PDS is analyzed through the Level 2 CET to evaluate the phenomenological progression of the sequence. The current Level 2 model uses a single CET containing both phenomenological and systemic events. In response to an NRC staff RAI, FENOC clarified that the Davis-Besse CET was developed from a B&W owner's group generic CET and refined to address phenomena that could impact reactor cooling system integrity, containment response, and release from containment. The CET end states are assigned to one of nine general and 34 specific release categories based on characteristics that determine the timing and magnitude of the release, whether or not the containment remains intact, and isotopic composition of the release material (FENOC 2010). The frequency of each release category was obtained by summing the frequency of the individual accident progression CET endpoints binned into the release category.



Source term release fractions were developed for each of the 34 release categories based on the results of plant-specific calculations using the MAAP Version 4.0.6. A separate MAAP calculation was performed for each of the 34 release categories. The 2012 SAMA supplement provided updated MAAP results to correct an error in the ER MAAP results (FENOC 2012a). The release categories and their release characteristics and frequencies are presented in Table E.3-13 of the 2012 SAMA supplement (FENOC 2012a) and Table E.3-20 of Appendix E to the ER (FENOC 2010) as corrected in the 2012 SAMA supplement (FENOC 2012a). The updated baseline dose risk and offsite economic risk from the 2012 SAMA supplement were used in the SAMA evaluation (FENOC 2012a).

The total Level 2 release frequency, based on the sum of CET sequences, is  $1.0 \times 10^{-5}$  per year, which is 2 percent higher than the Level 1 internal events CDF of  $9.8 \times 10^{-6}$  per year. This is due to the additional systems included in the Level 2 PRA models and to the presence of minimal cutsets that do not represent viable event sequences. The NRC staff considers that use of the release frequency, rather than the Level 1 CDF, will have a negligible impact as it is very small in comparison to the external events multiplier. The NRC staff asked FENOC to identify the release categories that comprise the LERF and to confirm that these contribute to the LERF importance analysis listing presented in Table E.3-4 (NRC 2011a). In response to the RAI, FENOC identified the release categories comprising LERF and provided a new LERF importance listing based on a re-review and identification of a few minor discrepancies. ER Table E.5-3 was revised to correct the identified discrepancies. This is discussed further in Section F.3.2.

The NRC staff's review of the Level 2 IPE concluded that it addressed the most important severe accident phenomena normally associated with large, dry containments, and it identified no significant problems or errors (NRC 1996). The revisions to the Level 2 model since the IPE, to update the methodology and to address peer review recommendations, are described in Section E.3.2.2 of the ER and in response to NRC staff RAIs (FENOC 2011). The Level 2 PRA model was included in the B&W owner's group peer review mentioned previously. All peer review findings have been addressed and are considered closed. The NRC staff asked FENOC about the implementation status of suggested plant improvements made in the IPE "back-end" analysis and asked FENOC to identify and evaluate SAMA candidates for those that have not been implemented (NRC 2011a). In response to the RAI, FENOC states that each of the suggested improvements has been implemented (FENOC 2011). This is discussed further in Section F.3.2.

Based on the following information, the NRC staff concludes that the Level 2 PRA provides an acceptable basis for evaluating the benefits associated with various SAMAs:

- the NRC staff's review of the Level 2 methodology,
- the fact that FENOC adequately addressed NRC staff RAIs,
- the fact that the Level 2 PRA model was reviewed as part the 1999 owner's group peer review of the LERF analysis, and
- the 2008 gap self-assessment.

In response to NRC staff RAIs, FENOC explains that the reactor core radionuclide inventory used in the consequence analysis corresponds to the end-of-cycle values for Davis-Besse operating at 2,827 MWt, which incorporates a 2 percent uncertainty in core power. In Section 3.1.2 of the ER, it is stated that the operating license and technical specifications were amended in 2008 to allow an increase in rated thermal power from 2,772 MWt to 2,817 MWt.

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The reactor core radionuclide inventory assumes a 2 percent uncertainty margin; therefore, it bounds the uprated power level. The core radionuclide inventory is provided in Table E.3-17 of Appendix E of the ER (FENOC 2010). The ER noted that the description of plant facilities and operations and associated impact evaluations in this ER, therefore, assume operation at 2,827 MWt.

The NRC staff reviewed the process used by FENOC to extend the containment performance (Level 2) portion of the PRA to an assessment of offsite consequences (Level 3). This included consideration of the source terms used to characterize fission product releases for the applicable containment release categories and the major input assumptions used in the offsite consequence analyses. Version 1.12 of the MACCS2 code was used to estimate offsite consequences. Plant-specific input to the code includes the source terms for each release category and the reactor core radionuclide inventory (both discussed above), site-specific meteorological data, projected population distribution within a 50-mi (80-km) radius for the year 2040, emergency evacuation planning, and economic parameters including agricultural production. This information is provided in Section 3.0 of Attachment E to the ER (FENOC 2010), as corrected in the 2012 SAMA supplement for four errors in the MACCS2 input data (FENOC 2012a).

Releases were modeled as occurring at four different elevations, specific to each of the MAAP cases. These heights were ground level, 2.13 meters (m), 18.44 m, or 45.42 m. Building wake effects were modeled assuming a building width of 44 m and height of 73 m. The release energy varied from 265 watts (ambient) to 97 megawatts (MW). These are documented in Table E.3-13 of the ER by release category (FENOC 2010). In response to an NRC staff RAI, FENOC identified the heat release for each release category for sensitivity case A1 (FENOC 2012a). A sensitivity study, Case A1, was performed on the methodology used to calculate the release energy, which resulted in a higher release energy for each release category. In the sensitivity study, the energy of release was obtained from MAAP by multiplying the mass flow rate times the enthalpy of the release gas. The results showed a decrease in population dose risk of 3.3 percent and in offsite economic cost risk of 5.3 percent (FENOC 2012a). This result is expected since a higher energy release will both increase the radioactive decay period of the plume and increase the extent of dispersion of the plume. Since a higher energy release results in decreased population dose and offsite economic cost risk, the NRC staff concludes that the release parameters used are acceptable for the purposes of the SAMA evaluation.

FENOC used site-specific meteorological data for the year 2006 as input to the MACCS2 code. Meteorological data included wind speed, wind direction, delta-temperature, and precipitation for each hour of the year. Wind speed and direction are collected from various levels at a 100-m primary tower and a nearby 10-m backup tower. The 100-m tower also measures differential temperatures at several levels to determine atmospheric stability. The development of the meteorological data is discussed in Sections 2.10 and E.3.4 of the ER (FENOC 2010). Data from 2006 through 2008 were considered, but the 2006 data were chosen because they were the most complete data set. Data from year 2008 were considered unusable as they contained too many missing long sequences of unusable data. A sensitivity study, Case M1, was performed using year 2007 data. The results showed a decrease in population dose risk of 0.5 percent and an increase in offsite economic cost risk of 1.1 percent (FENOC 2012a). The NRC staff notes that these results are consistent with previous SAMA analyses that have shown little sensitivity to year-to-year differences in meteorological data.

Missing data were estimated using data substitution methods (FENOC 2011). The 100-m tower measures differential temperatures at several levels to determine atmospheric stability. Mixing heights, which are presented in Table E.3-12 of the ER, were specified for a.m. and p.m. hours

and are based on Environmental Protection Agency (EPA) data (EPA 1972). A sensitivity study, Case A2, was performed assuming more extreme values of the meteorological boundary parameters (e.g., stability class, rainfall, wind speed). This resulted in no change in the population dose risk or offsite economic cost risk (FENOC 2012a). The NRC staff concludes that the use of the 2006 meteorological data in the SAMA analysis is reasonable.

The population distribution the applicant used as input to the MACCS2 analysis was estimated for the year 2040 using year 2000 census data as accessed by SECPOP2000 (NRC 2003). In response to an NRC staff RAI, FENOC identified that known code errors in SECPOP2000 did not apply as only the SECPOP2000 population data were used (FENOC 2011). All other site file parameters were developed independently. The year 2040 is 3 years beyond the renewed license year 2037. The baseline population was determined for each of 160 sectors, consisting of the 16 directions for each of 10 concentric distance rings with outer radii at 1, 2, 3, 4, 5, 10, 20, 30, 40 and 50 mi surrounding the site. County population growth estimates were applied to year 2000 census data to develop year 2040 population distribution.

In response to an NRC staff RAI, FENOC revised the Level 3 PRA to include that portion of the Canadian population located within the 50-mi radius SAMA analysis region (FENOC 2011). SECPOP2000 contains only United States population data, and the Canadian population was not included in the Level 3 assessment. The year 2000 population from SECPOP2000 and Table 2.6-1 of the ER, which contains the population for Ontario, Canada from the 2001 Canadian census, were used to revise the total population within the 50-mi radius of Davis-Besse. The revised population was escalated to year 2040, resulting in a total population of 2,903,790.

In a clarification to a response to an NRC staff RAI, FENOC confirmed that transient population was included in the revised population (between 0 and 30 mi) (NRC 2011b). The transient population segment includes seasonal residents, transient population, and boating population. The seasonal population group comprises those people who reside in the area during warmer months, principally May through October. The transient population group comprises those people who enter the area for a specific purpose (e.g., recreation) and who leave on the same day or stay overnight at motels and hotels. The distribution of the population is given for the 10-mi radius from the Davis-Besse plant site and for the 50-mi radius from the Davis-Besse site in the revised Table E.3-11 of the RAI responses (FENOC 2011). The SAMA analysis was revised to use the revised population estimate, and relevant revised sections of the ER were provided in the RAI response. The revisions included the addition of the Canadian population, revised cost-benefit results, and revised base case and sensitivity case comparisons discussed in this section and in Section F.6. The population dose reported in Table F-2 also incorporates the results of the revised population estimate. A sensitivity case, Case S1, was performed using a population escalation to year 2060 and a second sensitivity case, Case S2, for a less conservative population escalation to year 2040 (1.5 percent per decade). A base population escalation of 4.7 percent per decade was used in the SAMA analysis, which is the rate of increase in the population of Ohio between 1990 and 2000 based on census records. The escalation to year 2060 showed an increase in population dose risk of 9.4 percent and in offsite economic cost risk of 9.2 percent (FENOC 2012a). The 1.5 percent escalation showed a decrease in population dose risk of 11.3 percent and in offsite economic cost risk of 10.9 percent (FENOC 2012a). The NRC staff considers the methods and assumptions for estimating population reasonable and acceptable for purposes of the SAMA evaluation.

FENOC performed sensitivity analyses to determine the impact on population dose risk and offsite economic cost risk for changes to release energy, meteorology, warning delay time, evacuation speed, sheltering, population and water shed assumptions as shown in Table F-5.

**Table F-5. Impact on Population Dose Risk and Offsite Economic Cost Risk for Selected Sensitivity Cases**

Sensitivity Case	Population Dose Risk (person-rem/year)			Offsite economic Cost Risk (dollars/year × 1000)		
	Baseline Result	Sensitivity Result	% Difference	Baseline Result	Sensitivity Result	% Difference
Case A1—Simpler release energy methodology	2.12	2.05	-3.3	3.59	2.40	-5.3
Case A2—More extreme values of meteorological boundary parameters	2.12	2.12	0	3.59	3.59	0
Case A3—Increase warning delay time to 20 minutes	2.12	2.12	0	3.59	3.59	0
Case E1—Increase evacuation speed to 1.0 mps	2.12	2.11	-0.5	3.59	3.59	0
Case E2—Change sheltering shielding to brick housing	2.12	1.62	-23.6	3.59	2.16	-39.8
Case E3—4.7% per decade escalation in population and proportional decrease in evacuation speed	2.12	2.12	0	3.59	3.59	0
Case M1—Use year 2007 meteorological data	2.12	2.11	-0.5	3.59	3.63	+1.1
Case S1—Population escalation to year 2060	2.12	2.32	+9.4	3.59	3.92	+9.2
Case S2—Population escalation of 1.5% per decade	2.12	1.88	-11.3	3.59	3.20	-10.9
Case S3—Watershed index of 1.0 for all sectors	2.12	2.18	+2.8	3.59	3.59	0

The emergency evacuation model was modeled as a single evacuation zone extending out 10 mi (16 km) from the plant. FENOC assumed that 95 percent of the population would evacuate. This assumption is conservative relative to the NUREG-1150 study (NRC 1990), which assumed evacuation of 99.5 percent of the population within the emergency planning zone (EPZ). The evacuated population was assumed to move at an average speed of approximately 0.58 meters per second (mps) (1.3 miles per hour (mph)) with a delayed start time of 4 hours and 55 minutes after declaration of a general emergency. The evacuation speed was derived from the projected time to evacuate the entire EPZ under the most conservative (long-time) conditions for “Summer, Midday, Weekend” (FENOC 2010). In response to an NRC staff RAI, FENOC identified that the evacuation analysis did not clearly identify a reference year for the EPZ population, and it was assumed to be year 2000 (FENOC 2011). No correction of the EPZ evacuation speed was made for the year 2040 population. In further response to the RAI, FENOC performed a sensitivity study, Case E3, using a 4.7 percent per decade escalation of the year 2000 EPZ population to year 2040 and assumed the evacuation speed decreased proportional to the population increase, or to 0.52 mps (1.2 mph). This resulted in no change in population dose risk and no change in offsite economic cost risk (FENOC 2011). A sensitivity study, Case E1, was performed in which the

evacuation speed was increased to 1.0 mps (2.2 mph). This resulted in a 0.9 percent decrease in the total offsite population dose risk and no change in the offsite economic cost risk (FENOC 2011). An additional sensitivity study, Case A3, was performed for the warning delay time. The base case assumed about 300 seconds (5 minutes). The sensitivity case increased the warning time to 20 minutes. This resulted in no change in population dose risk and no change in offsite economic cost risk (FENOC 2012a). One additional sensitivity case was performed for shielding factors. The base case assumed wood housing, and the sensitivity case, Case E2, assumed brick. The sensitivity results showed a decrease in population dose risk of 23.6 percent and in offsite economic cost risk of 39.8 percent (FENOC 2012a). The NRC staff concludes that the evacuation assumptions and analysis are reasonable and acceptable for the purposes of the SAMA evaluation.

Site-specific agriculture and economic data were provided from 2007 National Census of Agriculture (USDA 2009a, 2009b) data for each of the 10 counties surrounding Davis-Besse to a distance of 50 mi (80 km). This included the fraction of land devoted to farming, annual farm sales, the fraction of farm sales resulting from dairy production, and the value of both farmland and non-farmland. Non-farm wealth was derived from 2005 and 2006 property tax valuations (MDT 2007; ODT 2008). A sensitivity case, Case S3, was performed using a water shed index of 1.0 (maximum runoff consequences) for all sectors. The results showed an increase in population dose risk of 2.8 percent and no change to offsite economic cost risk (FENOC 2011).

Area-wide farm wealth was determined from 2005 and 2006 property tax valuations (MDT 2007; ODT 2008) and county statistics for farmland, buildings, and machinery, with only the fraction of each county within 50 mi of Davis-Besse considered. The daily cost of compensation for evacuees and short-term relocatees used the year 2000 census economic data for each state (USCB 2000; USGSA 2000). In addition, parameters describing the cost of population and business relocation, farm and non-farmland decontamination, and decontamination labor used MACCS2 default values (NRC 1998a). An escalation factor of 1.95 based on the consumer price index was applied to these parameters to account for cost escalation from 1986 (the year the input was first specified) to 2009 (FENOC 2012b).

The NRC staff concludes that the methodology used by FENOC to estimate the offsite consequences for Davis-Besse provides an acceptable basis from which to proceed with an assessment of risk reduction potential for candidate SAMAs. Accordingly, the NRC staff based its assessment of offsite risk on the CDF and offsite doses reported by FENOC.

### **F.3 Potential Plant Improvements**

The process for identifying potential plant improvements, an evaluation of that process, and the improvements evaluated in detail by FENOC are discussed in this section.

#### **F.3.1 Process for Identifying Potential Plant Improvements**

FENOC's process for identifying potential plant improvements (SAMAs) consisted of the following elements:

- review of the dominant cutsets and most significant basic events from the current, plant-specific PRA,
- review of potential plant improvements identified in the Davis-Besse IPE and IPEEE,

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- review of SAMA candidates identified for LRAs for selected pressurized-water reactor (PWR) plants, and
- review of other industry documentation discussing potential plant improvements.

Based on this process, an initial set of 168 candidate SAMAs, referred to as Phase I SAMAs, was identified. In Phase I of the evaluation, FENOC performed a qualitative screening of the initial list of SAMAs and eliminated SAMAs from further consideration using the following criteria:

- The SAMA has design difference or has already been implemented at Davis-Besse.
- The SAMA is not applicable to Davis-Besse.
- The SAMA has estimated implementation costs that would exceed the dollar value associated with eliminating all severe accident risk at Davis-Besse.
- The SAMA is related to a non-risk significant system and, therefore, has a very low benefit.
- The SAMA is similar in nature and could be combined with another SAMA candidate.

Based on this screening, 153 SAMAs were eliminated, leaving 15 for further evaluation. The remaining SAMAs, referred to as Phase II SAMAs, are listed in Table E.7-1 of the ER (FENOC 2010). In Phase II, a detailed evaluation was performed for each of the 15 remaining SAMA candidates, as discussed in Sections F.4 and F.6 below. To account for the potential impact of external events, the estimated benefits based on internal events were multiplied by a factor of 5.6, as previously discussed.

In response to NRC staff RAIs, FENOC re-evaluated all SAMAs screened in Phase I as “Very Low Benefit” using a recalculated maximum benefit based on an increased multiplier of 5.6 to account for the impact of external events. Based on this reevaluation, no additional SAMAs screened in Phase I were retained for the detailed Phase II evaluation.

### F.3.2 Review of FENOC’s Process

FENOC’s efforts to identify potential SAMAs focused primarily on areas associated with internal initiating events but also included explicit consideration of potential SAMAs for fire and seismic events. The initial list of SAMAs generally addressed the accident sequences considered to be important to CDF from functional, initiating event, and risk reduction worth (RRW) perspectives at Davis-Besse.

FENOC’s SAMA identification process began with a review of the list of potential PWR enhancements in Table 14 of Nuclear Energy Institute (NEI) 05-01 (NEI 2005). Review of this generic SAMA list resulted in all of the SAMAs from this table being identified as Phase I SAMAs, for a total of 154 Phase I SAMAs.

FENOC provided a tabular listing of the Level 1 PRA basic events sorted according to their RRW and the top 100 cutsets (FENOC 2010). SAMAs impacting these cutsets and basic events would have the greatest potential for reducing risk. For the basic events listing, FENOC used an RRW cutoff of 1.005, which corresponds to about a 0.5 percent change in CDF given 100-percent reliability of the SAMA. The NRC staff requested FENOC to identify the SAMA candidates that address each of the basic events having an RRW equating to a benefit greater than the minimum cost of a procedure change (NRC 2011a). In response to the RAI, FENOC

provided a review of all Level 1 basic events having an RRW greater than or equal to 1.03, which corresponds to about a 3 percent change in CDF given 100-percent reliability of the SAMA (FENOC 2011). This equates to a benefit of approximately \$10,000 for internal events, which is the estimated minimum cost of a procedure change. Based on the review of evaluations from other plants, the \$10,000 estimated minimum cost for a procedure change is conservative.

Of the over 40 basic events reviewed, SAMA candidates were identified for all but 12 of the basic events. These remaining basic events were found to be: (1) events that had no physical meaning (such as a flag event or a plant configuration probability event); (2) events for which no feasible SAMA was identified; (3) events that could only be addressed by a hardware modification and had a maximum benefit less than the minimum cost of \$100,000 for a hardware change; or, (4) events that are being addressed by the installation of new steam generators in 2013.

In addition, as a result of the reevaluation of the Level 1 basic importance list in the RAI response, FENOC identified new SAMA candidate OT-09R, "present the highest worth PRA human actions to the Davis-Besse operator training." This SAMA candidate was, however, subsequently found by FENOC to already be implemented at Davis-Besse. Davis-Besse provides PRA information such as risk significant initiating events, high worth operator actions and high worth equipment. This information is provided to various departments and is presented on posters throughout the plant. In response to other NRC staff RAIs, FENOC explained that the following eight SAMA candidates were identified from plant-specific risk insights during the review of the cutsets and Level 1 basic events importance list: CB-20, install relief valves in the CCW system; CB-21, install pressure measurements between the two DHR suction valves in the line from the RCS hot leg; CC-19, provide automatic switchover of HPI and LPI suction from the BWST to containment sump for LOCAs; CC-21, reduce the BWST level at which switchover to containment recirculation is initiated; CP-19, install a redundant containment fan system; CW-24, replace the standby CCW pump with a pump diverse from the other two CCW pumps; CW-25, provide the ability to cool makeup pumps using fire water in the event of loss of CCW; and FW-16, perform surveillances on manual valves used for backup AFW pump suction (FENOC 2011).

The NRC staff asked FENOC to specifically address the potential for SAMAs for the following basic events in the importance listing: WHAF3ISE, failure to isolate flood in room 328 before CCW pumps are affected; SHAF2ISE, failure to isolate flood before service water pumps are affected; F3AM, maximum flood in CCW pump room from service water (initiating event) and F7L, large circulating water flood in turbine building (initiating event) (NRC 2011a). In response to the RAI, FENOC explained that no SAMAs were identified for the first three events because they did not have an RRW benefit value equal to or greater than the cost of a procedural change (FENOC 2011). However, Phase I SAMA candidate FL-01, "improve inspection of rubber expansion joints on the main condenser," was identified to address basic event F7L. FENOC determined, after further evaluation of this SAMA, that it was already implemented at Davis-Besse and, as a result, the screening disposition for FL-01 was reclassified in the Phase I screening from having a very low benefit to already implemented.

The NRC staff asked FENOC to evaluate a SAMA for basic events QMBAFP11 and QMBAFP12, which involve maintenance outages of the auxiliary feedwater (AFW) trains, which would make improvements to AFW maintenance practices or hardware (NRC 2011a). In response to the RAI, FENOC explained that AFW maintenance unavailability data used in the PRA is based on Maintenance Rule data and is consistent with the generic industry unavailability data reported in NUREG/CR-6928 (FENOC 2011). FENOC further explained that improvements to maintenance practices at Davis-Besse are proposed and evaluated as an

element of normal business practices to maintain the AFW train unavailability at its lowest achievable value. Based on the unavailability of the AFW being consistent with the industry unavailability data, and because of the high cost of making improvements to safety-related hardware, FENOC concluded that a SAMA to improve the availability of the AFW pumps is not expected to be cost-beneficial. Based on this information, the NRC staff agrees that a SAMA to improve the availability of the AFW pumps is unlikely to be cost-beneficial.

The NRC staff noted that there are a significant number of operator errors and non-recovery actions that appear in the CDF and LERF importance listings and top 100 cutsets listing, yet no weakness in training or procedures was identified. In light of this, the NRC staff asked FENOC to explain the process used to make the determination that no opportunities exist to improve training or procedures and to discuss whether opportunities exist for reducing risk by providing automatic functions to risk significant operator actions (NRC 2011a). In response to the RAI, FENOC explains that, based on its analysis of human failure events using the EPRI HRA calculator, no specific vulnerabilities in procedures, training, staff, assumptions, performance shaping factors, or timing were found (FENOC 2011). FENOC further explains, however, that two additional SAMA candidates were evaluated to address risk-significant operations—AC/DC-28R, “automatically start and load the SBO DG on Bus D2 upon loss of power to the bus,” and OT-08R, “automatically start and load the SBO DG on Bus D2 upon loss of power to the bus in combination with automatically starting the motor-driven feedwater pump (MDFP).” These are discussed further in Section F.6.2. In a clarification to the RAI response, FENOC concludes that the opportunities to automate operator actions has been fully considered because, in addition to these two additional SAMA candidates, three new SAMA candidates related to automating operator actions were evaluated in response to other NRC staff RAIs (SAMAs CC-22R, CW-26R, and FW-17R defined in Table F-6 and discussed in Section F.6.2). Five SAMA candidates were identified and evaluated in the ER to evaluate automating operator actions (SAMAs AC/DC-14, AC/DC-25, AC/DC-26, AC/DC-17, and CC-19), and other additional Phase I SAMA candidates to automate operator actions were identified but screened from the Phase II evaluation. Additionally, all basic events having an RRW equal to or greater than the cost of a procedure change were reviewed for SAMA candidates (NRC 2011b). The NRC staff concludes that the opportunity for SAMA candidates to automate operator actions has been adequately explored, and it is unlikely that there are additional cost-beneficial SAMA candidates to automate operator actions.

FENOC also provided and reviewed the LERF-based RRW events down to a RRW of 1.005 (FENOC 2010). In response to an NRC staff RAI, FENOC provided a review of all Level 2 basic events having an RRW greater than or equal to 1.03 as was done for the Level 1 basic events (FENOC 2011). FENOC explained that the RRW for the Level 2 basic events was calculated based on LERF rather than CDF and that the estimated benefit for each basic event was derived by taking the RRW for LERF and applying the maximum benefit used for the CDF event, which is conservative. Of the over 20 basic events reviewed, SAMA candidates were identified for about half of the basic events. The remaining basic events were found to be: (1) events that had no physical meaning (such as a flag event or a plant configuration probability event); (2) events for which no feasible SAMA was identified; (3) events that could only be addressed by a hardware modification and had a maximum benefit less than the minimum cost of \$100,000 for a hardware change; or, (4) that are being addressed by the installation of new steam generators in 2013. No new SAMA candidates were identified from this review.

FENOC reviewed the SAMA candidates from prior SAMA analyses for nine PWR sites. FENOC’s review did not identify any additional SAMA candidates applicable to Davis-Besse that were not already identified from the importance analysis review described above.



For some of the SAMAs listed in the ER, the information provided did not sufficiently describe the proposed modification. Therefore, the NRC staff asked the applicant to provide more detailed descriptions of the modifications for several of the SAMA candidates (NRC 2011a). In response to the RAI, FENOC provided the requested information on the modifications for SAMAs: AC/DC-01, provide additional DC battery capacity; CC-19, install a redundant containment fan system; AC/DC-25, provide a dedicated DC power system (battery/battery charger) for TDAFW control; and CW-24, replace the standby CCW pump with a pump diverse from the other two CCW pumps (FENOC 2011).

FENOC considered both the potential plant improvements and risk insights described in the IPE and IPEEE in the identification of plant-specific candidate SAMAs for internal and external events. Although the IPE did not identify any vulnerabilities, seven “front-end” (Level I PRA) and four “back-end” (Level II PRA) plant improvements were identified in Part 6, Sections 3.1 and 3.2, respectively, of the IPE report. FENOC identified five additional SAMA candidates to address the five “front-end” plant improvements from the IPE—AC/DC-25, AC/DC-26, AC/DC-27, HV-06 (Provide procedural guidance for establishing an alternate means of room ventilation to the service water pump room), and CC-20 (Modify hardware and procedures to allow using the makeup pumps for high pressure recirculation from the containment sump).

The NRC staff requested information regarding the status of the four suggested “back-end” improvements from the IPE (NRC 2011a). In response to the RAI, FENOC clarified that the four suggested improvements (i.e., reduce the BWST level during switchover to sump recirculation, improve operator actions for inadequate core cooling, re-examine the emergency plan evacuation criteria, and monitor carbon monoxide levels in containment) have been implemented.

The NRC staff requested information regarding lower cost alternatives to some of the SAMAs evaluated (NRC 2011a), including those listed below:

- (a) automate RCP trip on high motor bearing cooling temperature,
- (b) use the decay heat removal (DHR) system as an alternate suction source for high-pressure injection (HPI),
- (c) automate HPI injection on low pressurizer level (in loss of secondary side heat removal cases where the reactor coolant system (RCS) pressure remains high while the RCS level drops),
- (d) automate refill of the BWST,
- (e) automate start of AFW pump in the event the automated emergency feedwater (EFW) system is unavailable, and
- (f) purchase or manufacture of a “gagging device” that could be used to close a stuck-open steam generator safety valve for an SGTR event prior to core damage.

In response to the RAIs, FENOC addressed the suggested lower cost alternatives and determined that they were already implemented at Davis-Besse (b), not feasible (c), or not cost-beneficial (a, d, e, and f)(FENOC 2011). This is discussed further in Section F.6.2.

Based on this information, the NRC staff concludes that the set of SAMAs evaluated in the ER, together with those identified in response to NRC staff RAIs, addresses the major contributors to internal event CDF.

The Davis-Besse IPEEE seismic evaluation identified one unresolved outlier remaining from implementation of the USI A-46 Program. The one unresolved outlier was the identification of two flammable compressed gas bottles in the auxiliary building with inadequate seismic

mounting. An action to address the seismic-fire interaction issues associated with these flammable compressed gas bottles was identified and implemented by the applicant (NRC 2001). The USI A-46 SER for Davis-Besse indicates that the license had completed the resolution of all outliers (NRC 2000).

As discussed in Section F.2.2, the NRC staff requested information regarding any plant improvements for identified structures and components with an HCLPF value of less than 0.3 g (i.e., BWST roof, Masonry Wall No. 2367, Masonry Wall No. 3407, Masonry Wall No. 4786, and Masonry Wall No. 6107). The NRC staff asked the applicant to identify and evaluate SAMAs to improve the seismic capacity of these components and structures (NRC 2011a). In response to the RAI, FENOC explains that seismic improvements have been made to two of the masonry walls and that the Davis-Besse masonry wall analysis has been updated to ensure that the other two masonry walls met allowable stresses and design basis requirements (FENOC 2011). In a clarification to the RAI response, FENOC further explains that SAMA CC-10, which considers providing an in-containment reactor water storage tank, meets the intent of improving the seismic capacity of the BWST by providing a tank independent of the BWST (NRC 2011b).

The IPEEE did not identify opportunities for improvements related to fire events (FENOC 1996). FENOC also did not identify any other plant vulnerabilities in the IPEEE that would impact the PRA CDF (FENOC 2010).

The NRC staff asked FENOC to review each of the four dominant fire areas discussed in Section F.2.2 to identify potential SAMA candidates to reduce fire risk and to provide an assessment of identified SAMA candidates (NRC 2011a). FENOC responded that the main contributors to fire risk in all four areas are the MDFP, AFW system, and pilot-operated relief valve (PORV) (FENOC 2011). Loss of all feedwater or the inability to perform feed and bleed cooling are the primary contributors to CDF. FENOC's search for SAMA candidates, therefore, focused on these two fire-induced failure scenarios and determined that existing Phase I SAMAs (CC-16, FW-02, FW-08, FW-09, FW-10, and FW-11) already adequately address these contributors to CDF.

The NRC staff identified three SAMA candidates (CB-02, CP-21, and OT-07) that were screened on very low benefit based on low contribution to LERF. In light of the fact that the release categories comprising LERF were not identified in the ER, the NRC staff asked FENOC to justify screening out these SAMA candidates (NRC 2011a). In response to the RAI, FENOC explains two of these SAMAs (CB-02 and CP-21) do not contribute to LERF and, therefore, are appropriately screened (FENOC 2011). FENOC also clarified that the screening basis in the ER for SAMA OT-07 was incorrect and that this SAMA was screened on the basis of its contribution to both CDF and LERF.

The NRC staff noted that several Phase I SAMAs were screened by being subsumed into other SAMAs and asked FENOC to either confirm that cost to implement these SAMAs is lower than those into which the SAMA was subsumed or provide a revised basis for the Phase I screening (NRC 2011a). In response to the RAI, FENOC explained that four such SAMAs (i.e., AC/DC-06, AC/DC-09, AC/DC-20, and CC-08) have an equivalent or higher implementation cost than the SAMAs into which they were subsumed (FENOC 2011). FENOC also provided a cost-benefit evaluation of these SAMAs. This is discussed further in Section F.6.2. FENOC further explained that the fifth subsumed SAMA (i.e., CB-07) was subsumed into SAMA CB-08, which was screened as already implemented at Davis-Besse. FENOC also determined that SAMA CB-08 was already implemented and rescreened this SAMA on that basis.

The NRC staff noted that Phase I SAMA CB-18, "direct steam generator flooding after an SGTR, prior to core damage," was screened because it could impact efforts to mitigate SGTR,

but it points out that this SAMA has been shown to be cost-beneficial in other SAMA analyses and asked FENOC to evaluate this SAMA (NRC 2011a). FENOC explained that in the Davis-Besse PRA model the SGTR sequences are grouped into core damage bins in which either feedwater is unavailable to the steam generators and, therefore, flooding the steam generators is not possible or feedwater is available and scrubbing is already expected to occur so that flooding the steam generators provides no additional scrubbing benefit (FENOC 2011). Based on this, FENOC concludes that further evaluation of SAMA CB-18 is not warranted. Based on the once-through steam generator design used at Davis-Besse, the NRC staff agrees with this conclusion.

FENOC did not identify any additional SAMA candidates in the 2012 SAMA supplement (FENOC 2012a)

The NRC staff notes that the set of SAMAs submitted is not all-inclusive, since additional, possibly even less expensive, design alternatives can always be postulated. However, the NRC staff concludes that the benefits of any additional modifications are unlikely to exceed the benefits of the modifications evaluated and that the alternative improvements would not likely cost less than the least expensive alternatives evaluated, when the subsidiary costs associated with maintenance, procedures, and training are considered.

The NRC staff concludes that FENOC used a systematic and comprehensive process for identifying potential plant improvements for Davis-Besse, and the set of SAMAs evaluated in the ER, together with those evaluated in response to NRC staff inquiries, is reasonably comprehensive and, therefore, acceptable. This search included reviewing insights from the plant-specific risk studies and reviewing plant improvements considered in previous SAMA analyses. While explicit treatment of external events in the SAMA identification process was limited, it is recognized that the prior implementation of plant modifications for fire risks, the absence of external event vulnerabilities (as documented in the IPEEE), and the use of an external events multiplier reasonably justifies examining primarily the internal events risk results for this purpose.

#### **F.4 Risk Reduction Potential of Plant Improvements**

FENOC evaluated the risk-reduction potential of the 15 SAMAs retained for the Phase II evaluation in the ER. The SAMA evaluations were generally performed in a bounding fashion in that the SAMA was assumed to eliminate all of the risk associated with the proposed enhancement. FENOC also provided the risk-reduction potential of six additional SAMAs (i.e., AC/DC-28R, OT-08R, CW-26R, CC-22R, FW-17R, and CB-22R) identified in response to RAIs using the same bounding approach. This bounding approach overestimates the benefit and is conservative.

FENOC used model re-quantification to determine the potential benefits. The CDF, population dose, and offsite economic cost reductions were estimated using the Davis-Besse SAMA analysis model. The changes made to the model to quantify the impact of SAMAs are detailed in Table E.7-1 of Attachment E to the ER (FENOC 2010). The changes made to the model to determine the risk reduction for the six SAMAs identified in response to NRC staff RAIs are provided in a clarification to the RAI responses (NRC 2011b). Table F-6 lists the assumptions considered to estimate the risk reduction for each of the evaluated SAMAs, the estimated risk reduction in terms of percent reduction in CDF and population dose, and the estimated total benefit (present value) of the averted risk. The estimated benefits reported in Table F-6 reflect the combined benefit in both internal and external events. The determination of the benefits for the various SAMAs is further discussed in Section F.6.

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The NRC staff requested FENOC to clarify why the population dose risk reduction in Table E.7-2 of the ER is either 10 percent or 0 percent and to explain how population dose risk was calculated (NRC 2011a). In response to the RAI, FENOC clarified that binary appearance of the reported population dose risk reduction is due to the round-off used in spreadsheet calculations (FENOC 2011). It was further explained that the population dose for each SAMA candidate is determined using the population dose determined by MACCS2 for each release category, the release category frequency from the PRA, and the sum of the population dose risk times the frequency for all release categories. The percent change is determined by comparison of the population dose risk for each SAMA candidate compared with the base case. In addition, FENOC regenerated the population dose risk reduction for all SAMAs evaluated, including the new SAMAs evaluated in response to NRC RAIs, to a higher number of significant digits to illustrate the distinction between the population dose risk values for each SAMA candidate. The regenerated population dose risk reduction for each SAMA candidate includes the revised Level 3 PRA analysis to include the Canadian population, as discussed in Section F.2.2. The revised population dose risk values having more significant figures are provided in Table F-6.

**Table F–6. SAMA Cost-Benefit Screening Analysis for Davis-Besse<sup>(a)</sup>**

SAMA	Modeling Assumptions	% Risk Reduction		Total benefit (\$) <sup>(c)</sup>		Cost (\$)
		CDF	Population Dose <sup>(c)</sup>	Using 7% Discount Rate	Using 3% Discount Rate	
AC/DC-01—Provide additional DC battery capacity	Reduce the offsite power non-recovery probabilities to reflect an increase in battery life to 7 hours from 1 hour	6	2	100K	150K	1.75M
AC/DC-03—Add a portable, diesel-driven battery charger to existing DC system	Eliminate loss of DC power from station batteries due to loss of DC battery chargers	22	12	400K	600K	330K
AC/DC-14—Install a gas turbine generator	Eliminate failure of the SBO DG and associated operator actions	10	16	240K	360K	2.0M
AC/DC-19—Use fire water system as a backup source for diesel cooling	Eliminate failure of the EDGs due to loss of CCW system	2	2	39K	60K	700K
AC/DC-21—Develop procedures to repair or replace failed 4 kV breakers	Eliminate failure of the 4 kV breakers	3	<1	48K	72K	100K
AC/DC-25—Provide a dedicated DC power system (battery/battery charger) for turbine-driven auxiliary feedwater (TDAFW) control	Eliminate failure of the TDAFW system due to loss of DC power	15	3	240K	370K	2.0M
AC/DC-26—Provide an alternator/generator that would be driven by each TDAFW pump to provide DC control power	Eliminate failure of the TDAFW system due to loss of DC power	15	3	240K	370K	2.0M
AC/DC-27—Increase the size of the SBO fuel oil tank	Eliminate failure of the operators to refuel the oil tank	0	0	0	0	550K
CB-21—Install pressure measurements between the two DHR suction valves in the line from the RCS hot leg	Eliminate latent failure of the upstream DHR suction valve (i.e., eliminate failures of the inboard isolation valve DH12 prior to demand) <sup>(d)</sup>	0	6	30K	46K	550K
CC-01—Install an independent active or passive HPI system	Eliminate failure of one HPI train	0	1	3.4K	5.3K	6.5M

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SAMA	Modeling Assumptions	% Risk Reduction		Total benefit (\$) <sup>(c)</sup>		Cost (\$)
		CDF	Population Dose <sup>(c)</sup>	Using 7% Discount Rate	Using 3% Discount Rate	
CC-04—Add a diverse low-pressure injection (LPI) system	Eliminate failure of one LPI train	0	0	0	0	5.5M
CC-05—Provide capability for alternate LPI via diesel-driven fire pump	Eliminate failure of one LPI train and eliminate failure of LPI due to loss of AC/DC power	0	0	0	0	6.5M
CC-19—Provide automatic switchover of HPI and LPI suction from the BWST to containment sump for LOCAs	Eliminate operator failures to switchover HPI and LPI suction to the containment sump	1	0	15K	23K	1.5M
HV-01—Provide a redundant train or means of ventilation	Eliminate failure of the low voltage switchgear room ventilation	0	<1	1.4K	2.1K	50K
HV-03—Stage backup fans in switchgear rooms	Eliminate failure of the low voltage switchgear room ventilation	0	<1	1.4K	2.1K	400K
AC/DC-28R <sup>(b)</sup> —Automatic start and load SBO DG on Bus D2 on loss of power to that bus	Eliminate operator failure to start the SBO DG	17	4	280K	420K	1.6M
CB-22R <sup>(b)</sup> —Purchase or manufacture of a “gagging device” that could be used to close a stuck-open steam generator safety valve for an SGTR event prior to core damage	Eliminate failure of main steam safety valve to close	3	12	110K	170K	4.6M
CC-22R <sup>(b)</sup> —Automatic refill of the BWST	Eliminate operator failure to refill the BWST	0	0	0	0	2.2M
CW-26R <sup>(b)</sup> —Automatic RCP trip on high motor bearing cooling temperature	Eliminate operator failure to trip the RCPs on loss of seal cooling and injection	23	3	365K	550K	1.5M
FW-17R <sup>(b)</sup> —Automatic start of AFW pump in the event the automated emergency system is unavailable	Eliminate operator failure to start the MDFP	25	6	410K	620K	2.8M

SAMA	Modeling Assumptions	% Risk Reduction		Total benefit (\$) <sup>(c)</sup>		Cost (\$)
		CDF	Population Dose <sup>(c)</sup>	Using 7% Discount Rate	Using 3% Discount Rate	
OT-08R <sup>(b)</sup> —Automatic start and load SBO DG on Bus D2 on loss of power to that bus in combination with automatically starting the MDFP	Eliminate operator failure to start the MDFP and SBO DG	43	9	700K	1.1M	4.4M

<sup>(a)</sup> SAMAs in bold are potentially cost-beneficial.

<sup>(b)</sup> SAMA description and evaluation provided in response to NRC staff RAIs 5.d and 7a–f (FENOC 2011). SAMA modeling assumptions provided in a clarification to the RAI responses (NRC 2011b).

<sup>(c)</sup> Estimated population doses and benefits reflect revised values provided in response to NRC staff RAIs 3.c, 4.b, and 6.e and to correct five errors identified in the 2012 SAMA supplement (FENOC 2011, 2012a).

<sup>(d)</sup> Modeling assumption clarified in response to NRC staff RAI 6.h (FENOC 2011).

The NRC staff noted that the risk reduction reported for SAMA AC/DC-14, “install a gas turbine generator,” which assumes failure of the SBO DG is eliminated, does not appear to credit the situation where all emergency diesel generators (EDGs) are unavailable, and it asked FENOC to provide an assessment of this apparent omission (NRC 2011a). FENOC responded that, in the PRA model, the SBO DG is modeled as a backup to either EDG 1 or EDG 2 or both when they are unavailable (FENOC 2011). FENOC also explained that the analysis of this SAMA conservatively eliminated failure of the SBO DG ensuring that one train of emergency power was always available.

The NRC staff has reviewed FENOC’s bases for calculating the risk reduction for the various plant improvements and concludes that the rationale and assumptions for estimating risk reduction are reasonable and generally conservative (i.e., the estimated risk reduction is higher than what would actually be realized). Accordingly, the NRC staff based its estimates of averted risk for the various SAMAs on FENOC’s risk reduction estimates.

## F.5 Cost Impacts of Candidate Plant Improvements

FENOC developed plant-specific costs of implementing the original 15 Phase II candidate SAMAs as well as 6 additional SAMAs identified in response to NRC staff RAIs. The NRC staff asked FENOC to describe the level of detail used to develop the cost estimates and to clarify whether the cost estimates accounted for inflation, contingency costs associated with unforeseen implementation obstacles, replacement power during extended outages, and maintenance and surveillance costs during plant operation (NRC 2011a). In response to the RAI, FENOC clarified that the cost estimates conservatively did not include inflation, contingency costs associated with unforeseen implementation obstacles, or the cost of replacement power during extended outages required to implement the modifications (FENOC 2011). FENOC also clarified that the cost estimates considered the cost of equipment, fuel, space requirements, and the extent of the modifications and were developed by an expert panel that was composed of experienced staff drawn from engineering, operations, procurement, and project management. It was further explained that some implementation costs were assigned standard values based on plant experience or estimated man-hour requirements and that the following is true:

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- minimal procedure changes would be between \$10,000 and \$50,000,
- procedural changes with engineering support would be between \$50,000 and \$200,000,
- procedural changes with engineering support and testing or training would be between \$200,000 and \$300,000, and
- minimal physical plant changes would start at \$100,000.

Support activities included costs associated with procurement, installation, long-term maintenance, surveillance, calibration, and initial and on-going training.

The NRC staff reviewed the bases for the applicant's cost estimates (presented in Section E.7.2 of Attachment E to the ER). For certain improvements, the NRC staff also compared the cost estimates to estimates developed elsewhere for similar improvements, including estimates developed as part of other applicants' analyses of SAMAs for operating reactors. Specifically, the NRC staff requested justification for the estimated cost of \$1.5 million for implementation of SAMA CC-19, "provide automatic switch over of HPI and LPI suction from the BWST to containment sump for LOCAs." This amount seems high for what is described as a capability that already exists at Davis-Besse but has been deactivated and is also higher than that estimated by other applicants (NRC 2011a). FENOC explained that the expert panel made the following assumptions in developing the cost estimate for this SAMA candidate (FENOC 2011):

- reconnection and reactivation of automatic switchover equipment that is already in place,
- re-performing the Appendix R analyses since the associated valves were de-powered to meet Appendix R criteria (approximately \$500,000),
- modifications to safety-related equipment and the associated calculation support (approximately \$500,000),
- procedure changes and initial testing and training (approximately \$300,000), and
- ongoing testing, surveillances, maintenance, and training (approximately \$200,000).

Based on the need for the Appendix R analysis, the NRC staff finds FENOC's justification for the cost estimate for SAMA CC-19 reasonable.

The NRC staff requested justification for the estimated cost of \$2 million for implementation of SAMA AC/DC-25, "provide a dedicated DC power system (battery/battery charger) for the TDAFW control valve and NNI-X for steam generator level indication." This amount seems high for a system dedicated to just the TDAFW control valves and in light of the lower estimated costs for similar SAMA candidates AC/DC-01 and AC/DC-03 (NRC 2011a). In response to the RAI, FENOC explained that the expert panel made the following assumptions in developing the cost estimate for this SAMA candidate (FENOC 2011):

- a dedicated set of batteries and battery charger with a longer battery lifetime than the existing safety-related DC system and automatic steam generator level control,
- safety-related space for the batteries (approximately \$400,000),
- modifications to safety-related equipment with seismic evaluation and associated calculation support (approximately \$500,000),



- procedure changes and initial testing and training (approximately \$300,000), and
- procurement and installation of batteries and other components and equipment (approximately \$700,000).

Based on the estimated cost for additional safety-related space for the batteries, the NRC staff finds FENOC's justification for the cost estimate for SAMA AC/DC-25 reasonable.

The NRC staff requested justification for the estimated cost of \$7.5 million for implementation of SAMA CW-24, "replace the standby CCW pump with a pump diverse from the other two CCW pumps." This amount seems high for a pump replacement (NRC 2011a). FENOC explained that the expert panel made the following assumptions in developing the cost for this SAMA candidate (FENOC 2011):

- additional safety-related space is needed to provide separation from the existing CCW pumps (approximately \$2 million),
- design, procurement, and installation of the pump and associated components and equipment (approximately \$4 million),
- modifications to safety-related equipment with seismic evaluation and associated calculation support (approximately \$1 million), and
- procedure changes and initial testing and training (approximately \$500,000).

Based on the estimated cost for additional safety-related space for the pump, the NRC staff finds FENOC's justification for the cost estimate for SAMA CW-24 reasonable.

The NRC staff requested justification for the estimated cost of \$1.75 million for SAMA AC/DC-01, "provide additional DC battery capacity" (NRC 2011a). In response to the RAI, FENOC explained that the expert panel made the following assumptions in developing the cost for this SAMA candidate (FENOC 2011):

- safety-related space for the batteries (approximately \$500,000),
- major modifications to equipment (approximately \$200,000),
- procedure changes and initial testing and training (approximately \$300,000), and
- procurement and installation of batteries and other components and equipment (approximately \$600,000).

Based on the estimated cost for additional safety-related space for the batteries, the NRC staff finds FENOC's justification for the cost estimate for SAMA AC/DC-01 reasonable.

The NRC staff reviewed the costs provided in the ER, and in response to NRC staff RAIs, and found them to be reasonable and generally consistent with estimates provided in support of other plants' analyses. The NRC staff concludes that the cost estimates provided by FENOC are sufficient and appropriate for use in the SAMA evaluation.

## **F.6 Cost-Benefit Comparison**

FENOC's cost-benefit analysis and the NRC staff's review are described in the following sections.

### F.6.1 FENOC's Evaluation

The methodology used by FENOC was based primarily on NRC's guidance for performing cost-benefit analysis (i.e., NUREG/BR-0184, *Regulatory Analysis Technical Evaluation Handbook* (NRC 1997a)). The guidance involves determining the net value for each SAMA according to the following formula:

$$\text{Net Value} = (\text{APE} + \text{AOC} + \text{AOE} + \text{AOSC}) - \text{COE}$$

where the following is true:

- APE = present value of averted public exposure (\$)
- AOC = present value of averted offsite property damage costs (\$)
- AOE = present value of averted occupational exposure costs (\$)
- AOSC = present value of averted onsite costs (\$)
- COE = cost of enhancement (\$)

If the net value of a SAMA is negative, the cost of implementing the SAMA is larger than the benefit associated with the SAMA and it is not considered cost-beneficial. FENOC's derivation of each of the associated costs is summarized below.

NUREG/BR-0058 has been revised to reflect the agency's policy on discount rates. Revision 4 of NUREG/BR-0058 states that two sets of estimates should be developed, one at 3 percent and one at 7 percent (NRC 2004). FENOC provided a base set of results using the 7 percent discount rate and a sensitivity study using the 3 percent discount rate (FENOC 2010, 2012a).

Averted Public Exposure Costs. The APE costs were calculated using the following formula:

$$\text{APE} = \text{Annual reduction in public exposure } (\Delta \text{person-rem/year}) \\ \times \text{monetary equivalent of unit dose } (\$2,000 \text{ per person-rem}) \\ \times \text{present value conversion factor } (12.27 \text{ based on a 28-year period with a } \\ 7\text{-percent discount rate})$$

As stated in NUREG/BR-0184 (NRC 1997a), the monetary value of the public health risk after discounting does not represent the expected reduction in public health risk due to a single accident. Rather, it is the present value of a stream of potential losses extending over the remaining lifetime (in this case, the renewal period) of the facility. FENOC based its calculations on a 28-year period, which is the summation of the 20-year license renewal period and the 8-year period remaining in the current plant license, which is conservative. For the purposes of initial screening, which assumes elimination of all severe accidents caused by internal events, FENOC calculated, in response to an NRC staff RAI, an APE of approximately \$52,000 for the 20-year license renewal period and the 8 years of remaining life in the current plant license (FENOC 2012a).

Averted Offsite Property Damage Costs. The AOCs were calculated using the following formula:

$$\text{AOC} = \text{Annual CDF reduction} \\ \times \text{offsite economic costs associated with a severe accident (on a } \\ \text{per-event basis)} \\ \times \text{present value conversion factor}$$

This term represents the sum of the frequency-weighted offsite economic costs for each release category, as obtained for the Level 3 risk analysis. For the purposes of initial screening, which assumes elimination of all severe accidents caused by internal events, FENOC calculated, in response to an NRC staff RAI, an annual offsite economic cost of about \$3,590 based on the Level 3 risk analysis (FENOC 2012a). This results in a discounted value of approximately \$44,000 for the 20-year license renewal period and the 8 years of remaining life in the current plant license (FENOC 2012a).

Averted Occupational Exposure Costs. The AOE costs were calculated using the following formula:

$$\begin{aligned} \text{AOE} = & \text{Annual CDF reduction} \\ & \times \text{occupational exposure per core damage event} \\ & \times \text{monetary equivalent of unit dose} \\ & \times \text{present value conversion factor} \end{aligned}$$

FENOC derived the values for AOE from information provided in Section 5.7.3 of the *Regulatory Analysis Handbook* (NRC 1997a). Best estimate values provided for immediate occupational dose (3,300 person-rem) and long-term occupational dose (20,000 person-rem over a 10-year cleanup period) were used. The present value of these doses was calculated using the equations provided in the handbook in conjunction with a monetary equivalent of unit dose of \$2,000 per person-rem, a real discount rate of 7 percent, and a time period of 28 years to represent the license renewal period and the remaining plant life in the current license. For the purposes of initial screening, which assumes elimination of all severe accidents caused by internal events, FENOC calculated an AOE of approximately \$4,300 for the 20-year license renewal period and the 8 years of remaining life in the current plant license (FENOC 2010).

Averted Onsite Costs. AOSCs include averted cleanup and decontamination costs (ACCs) and averted power replacement costs. Repair and refurbishment costs are considered for recoverable accidents only and not for severe accidents. FENOC derived the values for AOSC based on information provided in Section 5.7.6 of NUREG/BR-0184, the *Regulatory Analysis Handbook* (NRC 1997a).

FENOC divided this cost element into two parts—the onsite cleanup and decontamination cost, also commonly referred to as ACCs, and the replacement power cost (RPC).

ACCs were calculated using the following formula:

$$\begin{aligned} \text{ACC} = & \text{Annual CDF reduction} \\ & \times \text{present value of cleanup costs per core damage event} \\ & \times \text{present value conversion factor} \end{aligned}$$

The total cost of cleanup and decontamination subsequent to a severe accident is estimated in NUREG/BR-0184 to be  $\$1.5 \times 10^9$  (undiscounted). This value was converted to present costs over a 10-year cleanup period and integrated over the term of the proposed license extension and remaining plant life. For the purposes of initial screening, which assumes elimination of all severe accidents caused by internal events, FENOC calculated an ACC of approximately \$132,400 for the 20-year license renewal period and the 8 years of remaining life in the current plant license.

Long-term RPCs were calculated using the following formula:

$$\begin{aligned} \text{RPC} = & \text{Annual CDF reduction} \\ & \times \text{present value of replacement power for a single event} \\ & \times \text{factor to account for remaining service years for which replacement} \\ & \quad \text{power is required} \\ & \times \text{reactor power scaling factor} \end{aligned}$$

FENOC based its calculations on the 910 megawatt-electric (MWe) reference plant in NUREG/BR-0184 (NRC 1997a) and did not scale down to the 908 MWe rating for Davis-Besse. Therefore, FENOC did not apply a power scaling factor to determine the RPCs, which are conservative. For the purposes of initial screening, which assumes elimination of all severe accidents caused by internal events, FENOC calculated an RPC of approximately \$133,900 and

an AOSC of approximately \$266,300 for the 20-year license renewal period and the 8 years of remaining life in the current plant license.

Using the above equations, FENOC estimated the total present dollar value equivalent associated with eliminating severe accidents from internal events at Davis-Besse to be about \$367,000 (FENOC 2012a). As discussed in Section F.2.2, in response to an NRC staff RAI, FENOC used a multiplier of 5.6 to account for external events, which increases the value to \$2.05 million and represents the dollar value associated with eliminating all internal and external event severe accident risk at Davis-Besse, also referred to as the modified maximum averted cost risk (MMACR).

FENOC's Results. If the implementation costs for a candidate SAMA exceeded the calculated benefit, the SAMA was considered not to be cost-beneficial. In the revised baseline analysis contained in the responses to an NRC staff RAI (FENOC 2011) and in the 2012 SAMA supplement (FENOC 2012a), using a 7 percent discount rate, FENOC identified one potentially cost-beneficial SAMA. Based on the results of the revised sensitivity analysis using a 3 percent discount rate, FENOC did not identify any additional potentially cost-beneficial SAMAs. FENOC also provided a revised uncertainty analysis using the multiplier of 7.0 to account for external events benefits, which resulted in no additional potentially cost-beneficial SAMAs.

The potentially cost-beneficial SAMA for Davis-Besse is SAMA AC/DC-03, "add a portable, diesel-driven battery charger to existing DC system." This potentially cost-beneficial SAMA, and FENOC's plans for further evaluation of this SAMA, is discussed in more detail in Section F.6.2.

### **F.6.2 Review of FENOC's Cost-Benefit Evaluation**

The cost-benefit analysis performed by FENOC was based primarily on NUREG/BR-0184 (NRC 1997a) and discount rate guidelines in NUREG/BR-0058 (NRC 2004), and it was executed consistent with this guidance.

SAMAs identified primarily on the basis of the internal events analysis could also provide benefits in certain external events. FENOC accounted for the potential risk reduction benefits associated with external events by applying a multiplier to the estimated benefits for internal events. In the analysis reported in the ER, FENOC multiplied the estimated benefits for internal events by a factor of 4.0 incorporating an external events multiplier of 3.0 to account for external events (based on the assumption that fire, seismic and other external events each contribute a benefit equivalent to that from internal events). As discussed in Section F.2.2, the NRC staff noted in an RAI that the external events multiplier should be 3.6 (based on a fire CDF of  $2.9 \times 10^{-5}$  per year, a seismic CDF of  $6.7 \times 10^{-6}$  per year, a negligible contribution from HFO events, and an internal events CDF of  $9.8 \times 10^{-6}$  per year). The NRC staff asked FENOC to assess the impact on the SAMA evaluation of using the higher multiplier (NRC 2011a). In response to the RAI, FENOC provided a revised baseline evaluation by applying an external events multiplier of 4.6 resulting in a total multiplier of 5.6 (based on a fire CDF of  $2.9 \times 10^{-5}$  per year, a seismic CDF of  $6.7 \times 10^{-6}$  per year, an HFO CDF of  $1.0 \times 10^{-5}$  per year, and an internal events CDF of  $1.0 \times 10^{-5}$  per year) to the estimated SAMA benefits in internal events to account for potential SAMA benefits in both internal and external events (FENOC 2011). The results of this revised evaluation, incorporating the revised SAMA analysis provided in the 2012 SAMA supplement, are provided in Table F-6 (FENOC 2012a). As a result of the revised baseline analysis (using a multiplier of 5.6 and a 7 percent discount rate), FENOC found one SAMA (SAMA AC/DC-03) to be potentially cost-beneficial.

The NRC staff asked FENOC to provide an assessment of the uncertainty distribution for CDF and an assessment of the impact on the SAMA analysis of using the 95th percentile CDF

(NRC 2011a). In response to the RAI, FENOC presented the results of an uncertainty analysis of the internal events CDF for Davis-Besse, which indicates that the 95th percentile value is a factor of 1.45 greater than the mean CDF for Davis-Besse (FENOC 2011). FENOC reexamined both the Phase I and Phase II SAMAs to determine if any would be potentially cost-beneficial if the revised baseline benefits were increased by an additional factor of 1.45 (in addition to the multiplier of 5.6 to account for external events). No additional SAMAs became cost-beneficial as a result of this analysis or the revised analysis provided in the 2012 SAMA supplement (FENOC 2012a).

FENOC provided the cost-benefit results of additional sensitivity analyses in the ER, including the following:

- assuming the cost of repair and refurbishment of damaged plant equipment is 20 percent of the baseline RPC (FENOC 2011),
- using 3 percent and 10 percent discount rates,
- using 14,000 person-rem for short term dose and 30,000 person-rem for long term doses,
- using an onsite cleanup and decontamination cost of \$2.0 billion,
- escalating the annual RPC to 2009 dollars by an average annual inflation rate of 2.3 percent (FENOC 2011),
- using a multiplier of 8.0 to account for external events,
- using a higher population evacuation speed of 1.0 mps (NRC 2011b), and
- In addition, FENOC provided in the ER the results of sensitivity analyses of variations in MACCS2 input parameters (as discussed in Section F.2.2).

Revised results for all of these sensitivity cases are provided in Table E.8-1 of the 2012 SAMA supplement to account for the revised external events multiplier discussed above, to account for the correction to the population estimate discussed in Section F.2.2, and to correct the five errors in the ER SAMA analysis discussed in Section F.2.2 (FENOC 2012a). No additional SAMAs became cost-beneficial as a result of these analyses. It is noted that the sensitivity case using a 3 percent discount rate results in the most bounding cost-benefit results for all SAMAs, all sensitivity analyses, and the uncertainty analysis. The results for the 3 percent discount rate sensitivity case are provided in Table F-6.

The NRC staff noted that the higher evacuation speed sensitivity case resulted in a lower population dose, as would be expected, but the net benefit increased by about \$2,000 for each SAMA, which would be expected to decrease. The NRC staff asked FENOC to explain this anomalous result (NRC 2011a). In response to an NRC staff RAI, FENOC clarified that this anomalous behavior was due to the difference in the number of significant digits used in the Level 3 PRA analysis and in the cost-benefit evaluation (FENOC 2011). Revised results were provided for this sensitivity case in which a consistent use of significant figures was applied between the Level 3 PRA and cost-benefit analyses, the revised external events multiplier was used, the revised population estimates discussed in Section F.2.2 were used, the scenario was changed to be a reduction in the baseline evacuation speed of 9.6 percent, and the five errors in the ER SAMA analysis discussed in Section F.2.2 were corrected. The revised results for this sensitivity case are provided in Table E.8-1 of the 2012 SAMA supplement (FENOC 2012a). No additional SAMAs became cost-beneficial as a result of this analysis. In addition, the results for this sensitivity case continued to be bounded by the 3 percent discount rate sensitivity case.

As indicated in Section F.3.2, the NRC staff asked the applicant to discuss opportunities for reducing risk by providing automatic functions to risk significant operator actions (NRC 2011a). In response to the RAI, FENOC identified and evaluated the following additional SAMA candidates that address risk-significant operations (FENOC 2011):

- AC/DC-28R, “automatically start and load the SBO diesel generator (DG) on Bus D2 upon loss of power to the bus”—The cost-benefit evaluation of this SAMA candidate is provided in Table F-6 and was determined to not be cost-beneficial in either the revised baseline evaluation or the revised uncertainty and sensitivity analyses.
- OT-08R, “automatically start and load the SBO DG on Bus D2 upon loss of power to the bus in combination with automatically starting the motor-driven feedwater pump (MDFP)”—The cost-benefit evaluation of this SAMA candidate is provided in Table F-6 and was determined to not be cost-beneficial in either the revised baseline evaluation or the revised uncertainty and sensitivity analyses.

As indicated in Section F.3.2, the NRC staff asked the applicant to evaluate potentially lower cost alternatives to the SAMAs considered in the ER (NRC 2011a), as summarized below:

- Automate RCP trip on high motor bearing cooling temperature—In response to the RAI, FENOC provided a cost-benefit evaluation of this SAMA candidate, referred to as SAMA CW-26R (FENOC 2012a). The evaluation of this SAMA is provided in Table F-6 and was determined to not be cost-beneficial in either the revised baseline evaluation or the revised uncertainty and sensitivity analyses.
- Use the DHR system as an alternate suction source for HPI—In response to the RAI, FENOC explained that the Davis-Besse PRA already credits use of the DHR system as a suction source for HPI and that this is effectively already implemented (FENOC 2011). The NRC staff concludes that this alternative has been adequately addressed.
- Automate HPI injection on low pressurizer level (in loss of secondary side heat removal cases where the RCS pressure remains high while the RCS level drops)—In response to the RAI, FENOC explained that this proposed alternative is not viable for implementation at Davis-Besse because of design and system configuration differences between the Davis-Besse plant and other B&W plants (FENOC 2011). Specifically, this proposed improvement is applicable to B&W plants in which the HPI system is also the makeup system, and HPI cooling must be established earlier enough to prevent uncovering of the core due to RCS inventory depletion. For the Davis-Besse design, the HPI system is separate from the makeup system, and the HPI system is not capable of injecting water into the RCS until a specific pressure threshold is reached. In addition, makeup and HPI cooling can be delayed at Davis-Besse because Davis-Besse has two makeup pumps. The NRC staff concludes that this alternative has been adequately addressed.
- Automate refill of the BWST—In response to the RAI, FENOC provided a cost-benefit evaluation of this SAMA candidate, referred to as SAMA CC-22R (FENOC 2012a). The evaluation of this SAMA is provided in Table F-6 and was determined to not be cost-beneficial in either the revised baseline evaluation or the revised uncertainty and sensitivity analyses.

- Automate start of AFW pump in the event the automated EFW system is unavailable—In response to the RAI, FENOC provided a cost-benefit evaluation of this SAMA candidate, referred to as SAMA FW-17R (FENOC 2012a). The evaluation of this SAMA is provided in Table F-6 and was determined to not be cost-beneficial in either the revised baseline evaluation or the revised uncertainty and sensitivity analyses.
- Purchase or manufacture of a “gagging device” that could be used to close a stuck-open steam generator safety valve for an SGTR event prior to core damage. In response to the RAI, FENOC provided a cost-benefit evaluation of this SAMA candidate, referred to as SAMA CB-22R (FENOC 2012a). The evaluation of this SAMA is provided in Table F-6 and was determined to not be cost-beneficial in either the revised baseline evaluation or the revised uncertainty and sensitivity analyses.

As indicated in Section F.3.2, in response to an NRC staff RAI, FENOC provided a revised baseline evaluation for four Phase I SAMAs that were screened by being subsumed into other SAMAs (FENOC 2012a). The four subsumed SAMAs are AC/DC-06, AC/DC-09, AC/DC-20, and CC-08, which FENOC estimated to have implementation costs of \$1.75 million, \$2.8 million, \$700,000, and \$1.5 million, respectively. FENOC estimated the baseline benefit of these SAMAs to be the same as the SAMAs into which they were subsumed, namely SAMAs AC/DC-01, AC/DC-14, AC/DC-19, and CC-19, respectively. The revised benefits for these SAMAs are provided in Table F-6, and, in each case, the implementation cost of the subsumed SAMA is much greater than the estimated benefit. FENOC consequently determined the subsumed SAMAs to not be cost-beneficial.

FENOC states in Section E.9 of the ER that the one SAMA (SAMA AC/DC-03) determined to be potentially cost-beneficial in both the baseline analysis and the sensitivity analysis will be considered for implementation through the normal processes for evaluating possible plant modifications.

The NRC staff concludes that, with the exception of the potentially cost-beneficial SAMA discussed above, the costs of the other SAMAs evaluated would be higher than the associated benefits.

## F.7 Conclusions

FENOC initially compiled a list of 168 SAMAs based on a review of the dominant cutsets and most significant basic events from the plant-specific PRA, insights from the plant-specific IPE and IPEEE, Phase II SAMAs from LRAs for other plants, and review of other industry documentation. An initial qualitative screening removed the SAMA candidates:

- The SAMA has design differences or has already been implemented at Davis-Besse.
- The SAMA is not applicable to Davis-Besse.
- The SAMA has estimated implementation costs that would exceed the dollar value associated with eliminating severe accident risk at Davis-Besse.
- The SAMA is related to a non-risk significant system and, therefore, has a very low benefit.
- The SAMA is similar in nature and could be combined with another SAMA candidate.

Based on this screening, 153 SAMAs were eliminated, leaving 15 candidate SAMAs for evaluation as well as 6 additional SAMAs identified in response to NRC staff RAIs.

For the remaining 21 SAMA candidates, more detailed design and cost estimates were developed, as shown in Table F-6. In response to NRC staff RAIs, and in the 2012 SAMA supplement, FENOC provided revised cost-benefit analyses that showed that one of the SAMA candidates was potentially cost-beneficial in the revised baseline analysis (SAMA AC/DC-03). FENOC also performed additional analyses to evaluate the impact of parameter choices and uncertainties on the results of the SAMA assessment. As a result, no additional SAMAs were determined to be potentially cost-beneficial.

The NRC staff reviewed the FENOC analysis and concludes that the methods used and the implementation of those methods were sound. The treatment of SAMA benefits and costs support the general conclusion that the SAMA evaluations performed by FENOC are reasonable and sufficient for the license renewal submittal. Although the treatment of SAMAs for external events was somewhat limited, the likelihood of there being cost-beneficial enhancements in this area was minimized by improvements that have been realized as a result of the IPEEE process and inclusion of a multiplier to account for external events.

The NRC staff concurs with FENOC's identification of areas in which risk can be further reduced in a cost-beneficial manner through the implementation of the identified, potentially cost-beneficial SAMA. Given the potential for cost-beneficial risk reduction, the NRC staff agrees that further evaluation of this SAMA by FENOC is warranted. However, this SAMA does not relate to adequately managing the effects of aging during the period of extended operation. Therefore, it is not required to be implemented as part of license renewal pursuant to Title 10 of the *Code of Federal Regulations*, Part 54 (10 CFR Part 54).

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<b>9. SPONSORING ORGANIZATION - NAME AND ADDRESS (If NRC, type "Same as above", if contractor, provide NRC Division, Office or Region, U. S. Nuclear Regulatory Commission, and mailing address.)</b> Same as above.									
<b>10. SUPPLEMENTARY NOTES</b> Docket No. 50-346									
<b>11. ABSTRACT (200 words or less)</b> This supplemental environmental impact statement (SEIS) has been prepared in response to an application submitted by FirstEnergy Nuclear Operating Company (FENOC) to renew the operating license for the Davis-Besse Nuclear Power Station, Unit No. 1, for an additional 20 years.  This SEIS includes the final analysis that evaluates the environmental impacts of the proposed action and alternatives to the proposed action. Alternatives considered include natural gas combined-cycle (NGCC); combination alternative (wind, solar, NGCC and compressed air energy storage; coal-fired power; and not renewing the license (the no action alternative).  The U.S. Nuclear Regulatory Commission's final recommendation is that the adverse environmental impacts of license renewal for Davis-Besse are not so great that preserving the option of license renewal for energy-planning decision makers would be unreasonable. This recommendation is based on the following: the analysis and findings in NUREG 1437, Volumes 1 and 2, Generic Environmental Impact Statement for License Renewal of Nuclear Plants; the environmental report submitted by FENOC; consultation with Federal, state, Tribal, and local agencies; the NRC's environmental review; and consideration of public comments received during the scoping process and on the draft SEIS.									
<b>12. KEY WORDS/DESCRIPTORS (List words or phrases that will assist researchers in locating the report.)</b> FirstEnergy Nuclear Operating Company FENOC Davis-Besse Nuclear Power Station, Unit No. 1 Davis-Besse Supplemental to the Generic Environmental Impact Statement, SEIS Generic Environmental Impact Statement, GEIS National Environmental Policy Act, NEP A NUREG-1437, Supplement 52	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 100%; text-align: center;"><b>13 AVAILABILITY STATEMENT</b></td> </tr> <tr> <td style="text-align: center;">unlimited</td> </tr> <tr> <td style="width: 100%; text-align: center;"><b>14 SECURITY CLASSIFICATION</b></td> </tr> <tr> <td style="text-align: center;">(This Page) unclassified</td> </tr> <tr> <td style="text-align: center;">(This Report) unclassified</td> </tr> <tr> <td style="width: 100%; text-align: center;"><b>15. NUMBER OF PAGES</b></td> </tr> <tr> <td style="width: 100%; text-align: center;"><b>16. PRICE</b></td> </tr> </table>		<b>13 AVAILABILITY STATEMENT</b>	unlimited	<b>14 SECURITY CLASSIFICATION</b>	(This Page) unclassified	(This Report) unclassified	<b>15. NUMBER OF PAGES</b>	<b>16. PRICE</b>
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Supplement 52  
Final**

**Generic Environmental Impact Statement for License Renewal of Nuclear Plants  
Regarding Davis-Besse Nuclear Power Station**

**April 2015**