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NUREG-2111, Vol. 3

Final Environmental Impact Statement for Combined Licenses (COLs) for William States Lee III Nuclear Station Units 1 and 2

U.S. Nuclear Regulatory Commission
Office of New Reactors
Washington, DC 20555-0001

Regulatory Division
Special Projects Branch
Charleston District
U.S. Army Corps of Engineers
Charleston, SC 29403-5107

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Abstract

This environmental impact statement (EIS) has been prepared in response to an application submitted to the U.S. Nuclear Regulatory Commission (NRC) by Duke Energy Carolinas, LLC (Duke) for two combined construction permits and operating licenses (combined licenses or COLs). The proposed actions requested in Duke's application are (1) NRC issuance of COLs for two nuclear power reactors at the William States Lee III Nuclear Station (Lee Nuclear Station) site in Cherokee County, South Carolina, and (2) U.S. Army Corps of Engineers (USACE) permit action on a Department of the Army individual permit application to perform certain construction activities on the site. The USACE is participating with the NRC in preparing this EIS as a cooperating agency and participates collaboratively on the review team.

This EIS includes the review team's analysis that considers and weighs the environmental impacts of building and operating two new nuclear units at the proposed Lee Nuclear Station site and at alternative sites, and mitigation measures available for reducing or avoiding adverse impacts. The EIS also addresses Federally listed species, cultural resources, and plant cooling-system design alternatives.

The EIS includes the evaluation of the proposed project's impacts on waters of the United States pursuant to Section 404 of the Clean Water Act. The USACE will conduct a public interest review in accordance with the guidelines promulgated by the U.S. Environmental Protection Agency under authority of Section 404(b) of the Clean Water Act. The public interest review, which will be addressed in the USACE's permit decision document, will include an alternatives analysis to determine the least environmentally damaging practicable alternative.

After considering the environmental aspects of the proposed NRC action, the NRC staff's recommendation to the Commission is that the COLs be issued as requested.[(a)] This recommendation is based on (1) the application, including Revision 1 of the environmental report (ER) and the supplement to the ER, submitted by Duke; (2) consultation with Federal, State, Tribal, and local agencies; (3) the staff's independent review; (4) the staff's consideration of comments related to the environmental review that were received during the two public scoping processes and the draft EIS comment period; and (5) the assessments summarized in this EIS, including the potential mitigation measures identified in the ER and this EIS. The USACE will issue its Record of Decision based, in part, on this EIS.

(a) As directed by the Commission in CLI-12-16, the NRC will not issue the COLs prior to completion of the ongoing rulemaking to update the Waste Confidence Decision and Rule (see Section 6.1.6 of this EIS).

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Executive Summary

This environmental impact statement (EIS) presents the results of an U.S. Nuclear Regulatory Commission (NRC) environmental review of an application for combined construction permits and operating licenses (combined licenses or COLs) for two new nuclear reactor units at a proposed site in Cherokee County, South Carolina. The U.S. Army Corps of Engineers (USACE) participated in the preparation of the EIS as a cooperating agency and as a member of the review team, which consisted of the NRC staff, its contractor staff, and the USACE staff.

Background

On December 12, 2007, Duke Energy Carolinas, LLC (Duke), submitted an application to the NRC for COLs for William States Lee III Nuclear Station (Lee Nuclear Station) Units 1 and 2 in Cherokee County, South Carolina. The application was revised (Revision 1) by a letter dated March 30, 2009, and a supplement to the environmental report (ER) was submitted on September 24, 2009, describing Duke's plans to construct and operate an additional offsite reservoir (known as Make-Up Pond C) as a source of supplemental cooling water for the proposed station.

Upon docketing of Duke's initial application, the NRC review team began the environmental review process as described in 10 CFR Part 51 by publishing in the *Federal Register* on March 20, 2008, a Notice of Intent to prepare an EIS and conduct scoping. With the submittal of the September 2009 supplement to the ER, a second Notice of Intent to conduct a supplemental scoping process was published in the *Federal Register* on May 24, 2010. As part of the environmental review, the review team:

- considered comments received during the 60-day scoping process beginning March 20, 2008, and conducted related public scoping meetings on May 1, 2008 in Gaffney, South Carolina.
- considered comments received during a supplemental scoping period specific to Make-Up Pond C from May 24, 2010 through July 2, 2010, and conducted a related public scoping meeting on June 17, 2010, also in Gaffney, South Carolina.
- conducted site audits from April 28, 2008 through May 2, 2008 and from August 9, 2010 through August 13, 2010.
- conducted public meetings on the draft EIS on January 19, 2011 in Gaffney, South Carolina. The review team also considered comments received during the 75-day comment period for the draft EIS beginning on December 12, 2011.

- reviewed Duke's ER and Supplemental ER and developed requests for additional information (RAIs) using guidance from NUREG-1555, "Standard Review Plans for Environmental Reviews for Nuclear Power Plants."
- consulted with American Indian Tribes and Federal and State agencies such as U.S. Fish and Wildlife Service, Advisory Council on Historic Preservation, National Marine Fisheries Service, Federal Energy Regulatory Commission, South Carolina Department of Natural Resources, South Carolina Department of Health and Environmental Control, and South Carolina Archives and History Center.

Proposed Action

The proposed actions related to the Lee Nuclear Station Units 1 and 2 application are (1) NRC issuance of COLs for construction and operation of two new nuclear plants at the Lee Nuclear Station site and (2) USACE issuance of a permit pursuant to Section 404 of the Federal Water Pollution Control Act (Clean Water Act) as amended to perform certain construction activities on the site.

Purpose and Need for Action

The purpose of the proposed action—issuance of the COLs—is to construct and operate two new nuclear units to provide for additional baseload electric generating capacity in 2024 and 2026 within Duke's service territories. The objective of Duke's requested USACE action is to obtain a Department of the Army individual permit to perform regulated dredge-and-fill activities that would affect wetlands and other waters of the United States.

Public Involvement

A 60-day scoping period was held from March 20, 2008 through May 20, 2008. A supplemental scoping period specific to Make-Up Pond C was held from May 24, 2010 through July 2, 2010. On June 17, 2010, the NRC held supplemental public scoping meetings in Gaffney, South Carolina. The review team received many oral comments during the public meetings and a total of 35 e-mails and 14 letters from both scoping periods on topics such as surface-water hydrology, ecology, socioeconomics, uranium fuel cycle, energy alternatives, and benefit-cost balance.

Additionally, on January 19, 2012, during the 75-day comment period on the draft EIS, the review team held public meetings in Gaffney, South Carolina. Approximately 250 people attended the public meetings and many provided oral comments.

Affected Environment

As proposed, the Lee Nuclear Station would be constructed in Cherokee County, South Carolina, on the same site as the former Duke Power Company Cherokee Nuclear Station. The site is 8 mi southeast of Gaffney, South Carolina and 25 mi northeast of Spartanburg, South Carolina. The area around the site is shown in Figure ES-1.

Cooling water for the units would be obtained from the Broad River. Makeup water from the Broad River would be provided to the plant via Make-Up Pond A. During periods of low flow when withdrawals from the Broad River are limited, makeup water would be provided from Make-Up Ponds B and C to Make-Up Pond A. Make-Up Ponds A and B already exist on the Lee Nuclear Station site. Make-Up Pond C would be built on the London Creek watershed to the northeast of the site. Construction of Make-Up Pond C would disturb approximately 1100 ac with permanent or temporary loss and alteration from flooding and clearing.

The Lee Nuclear Station would use mechanical draft cooling towers to transfer waste heat to the atmosphere. A portion of the water obtained from the Broad River would be returned to the environment via a discharge structure located in the Broad River on the upstream side of Ninety-Nine Islands Dam. The remaining portion of the water would be released to the atmosphere via evaporative cooling.

Evaluation of Environmental Impacts

When evaluating the environmental impacts associated with nuclear power plant construction and operations, the NRC's authority is limited to construction activities related to radiological health and safety or common defense and security; that is, NRC-authorized activities are related to safety-related structures, systems, or components, and may include pile driving; subsurface preparation; placement of backfill, concrete, or permanent retaining walls within an excavation; installation of foundations; or in-place assembly, erection, fabrication, or testing. In this EIS, the NRC review team evaluates the potential environmental impacts of the construction and operation of two new nuclear units for the following resource areas:

- land use
- air quality
- aquatic ecology
- terrestrial ecology
- surface and groundwater
- waste (radiological and nonradiological)
- human health (radiological and nonradiological)
- socioeconomics
- environmental justice
- cultural resources

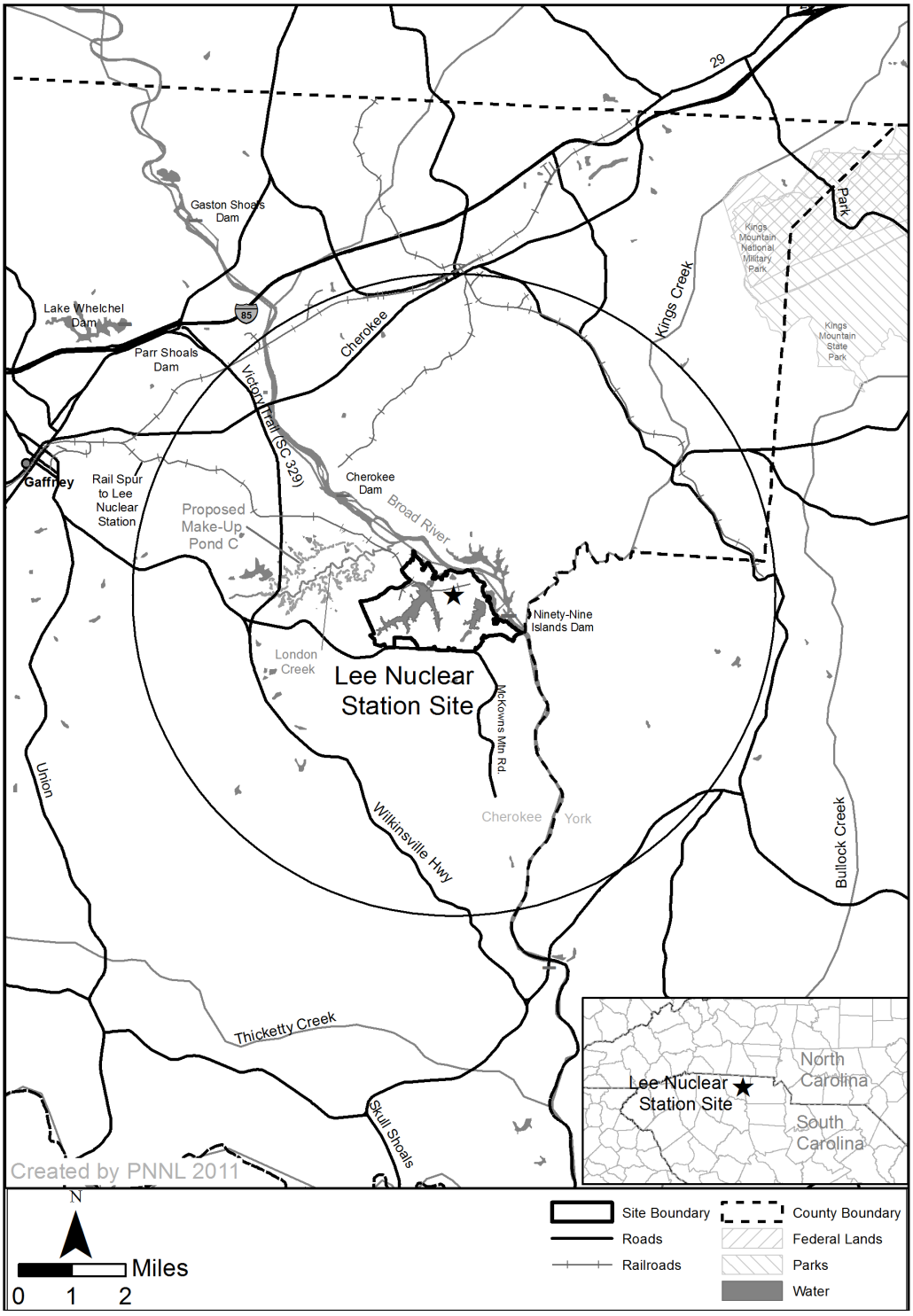

Figure ES-1. Lee Nuclear Station Site

It also evaluates impacts associated with accidents, the fuel cycle, decommissioning, and transportation of radioactive materials.

The impacts are designated as SMALL, MODERATE, or LARGE. The incremental impacts related to the construction and operations activities requiring NRC authorization are described and characterized, as are the cumulative impacts resulting from the proposed action when the effects are added to, or interact with, other past, present, and reasonably foreseeable future effects on the same resources.

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.

The review team found that the cumulative environmental impacts on most aspects of water use and quality, most socioeconomic areas (adverse only), environmental justice, nonradiological and radiological health, severe accidents, fuel cycle, decommissioning, and transportation would be SMALL. The cumulative impacts for physical impacts and infrastructure and community services would be SMALL to MODERATE.

The review team found that the cumulative environmental impacts on land use, surface-water use, terrestrial and wetland ecosystems, aquatic ecosystems, air quality, and historic and cultural resources would be MODERATE. The impacts from NRC-authorized activities would be SMALL for all of the above-listed resource areas. The incremental impacts associated with the development of transmission lines and Make-Up Pond C would be the principal contributors to the MODERATE cumulative land-use impacts. Potential future water-supply issues in the Broad River Basin would be the primary driver for the MODERATE impact for surface-water use. Cumulative terrestrial and wetland ecosystem impacts would be MODERATE because of the loss of habitat from development of transmission-line corridors. The development of Make-Up Pond C would have cumulative aquatic ecosystem impacts on London Creek and its tributaries. The MODERATE cumulative impact on air quality would result from the existing concentration of greenhouse gases in the atmosphere. The review team found cumulative impacts from Make-Up Pond C development and transmission-line corridor development would contribute to the MODERATE impact for historic and cultural resources.

The review team found no LARGE, adverse cumulative impacts.

Table ES-1 provides a summary of the cumulative impacts for the proposed site.

Table ES-1. Cumulative Impacts on Environmental Resources, Including the Impacts of Proposed Lee Nuclear Station

Resource Category	Impact Level
Land use	MODERATE
Water-related	
Surface-water use	MODERATE
Groundwater use	SMALL
Surface-water quality	SMALL
Groundwater quality	SMALL
Ecology	
Terrestrial ecosystems	MODERATE
Aquatic ecosystems	MODERATE
Socioeconomic	
Physical impacts	SMALL to MODERATE
Demography	SMALL
Economic impacts on the community	SMALL to LARGE (beneficial)
Infrastructure and community services	SMALL to MODERATE
Aesthetics and recreation	SMALL
Environmental justice	SMALL
Historic and cultural resources	MODERATE
Air quality	MODERATE
Nonradiological health	SMALL
Radiological health	SMALL
Severe accidents	SMALL
Fuel cycle, transportation, and decommissioning	SMALL

Alternatives

The review team considered the environmental impacts associated with alternatives to issuing COLs for Lee Nuclear Station. These alternatives included a no-action alternative (i.e., not issuing the COLs), and alternative energy sources, siting locations, or system designs.

The **no-action alternative** would result in the COLs not being granted or the USACE not issuing its permit. Upon such a denial, construction and operation of the two units at the Lee Nuclear Station site would not occur and the predicted environmental impacts would not take place. If no other facility would be built or strategy implemented to take its place, the benefits of the additional electrical capacity and electricity generation to be provided would also not occur and the need for baseload power would not be met.

Based on the review team's review of **energy alternatives**, the review team concluded that, from an environmental perspective, none of the viable alternatives is clearly environmentally preferable to building a new baseload nuclear power generation plant at the Lee Nuclear Station site. The review team eliminated several energy sources (i.e., wind, solar, and biomass) from full consideration because they are not currently capable of meeting the need of this project. None of the viable baseload alternatives (natural gas, coal, or a combination of alternatives) was environmentally preferable to the proposed nuclear units.

After comparing the cumulative effects of the proposed site against those of the **alternative sites**, the review team concluded that none of the alternative sites would be environmentally preferable to the proposed site for building and operating a new nuclear power plant. The three alternatives sites selected were the following:

- Perkins site (previously considered for the Perkins Nuclear Station), Davie County, North Carolina (Figure ES-2),
- Keowee site (adjacent to Oconee Nuclear Station), Oconee County, South Carolina (Figure ES-3),
- Middleton Shoals site, Anderson County, South Carolina (Figure ES-4).

Table ES-2 provides a summary of the cumulative impacts for the alternative sites. The review team concluded that all of the sites were generally comparable, and it would be difficult to state that one site is preferable to another from an environmental perspective. In such a case, the proposed site prevails because none of the alternatives is clearly environmentally preferable.

The review team considered various **alternative systems designs**, including seven alternative heat-dissipation systems and multiple alternative intake, discharge, and water-supply systems. The review team identified no alternatives that were environmentally preferable to the proposed Lee Nuclear Station plant systems design.

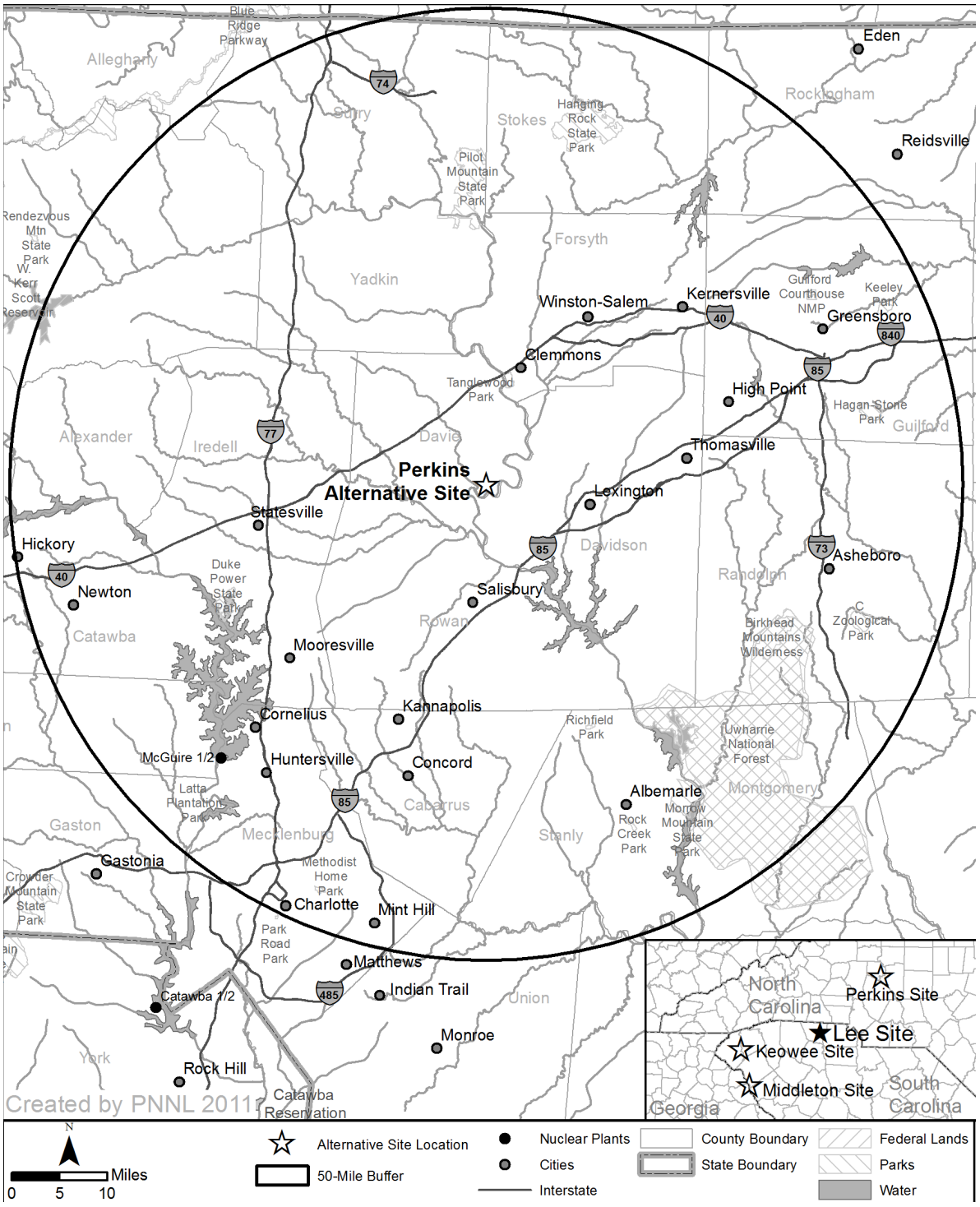

Figure ES-2. Perkins Site

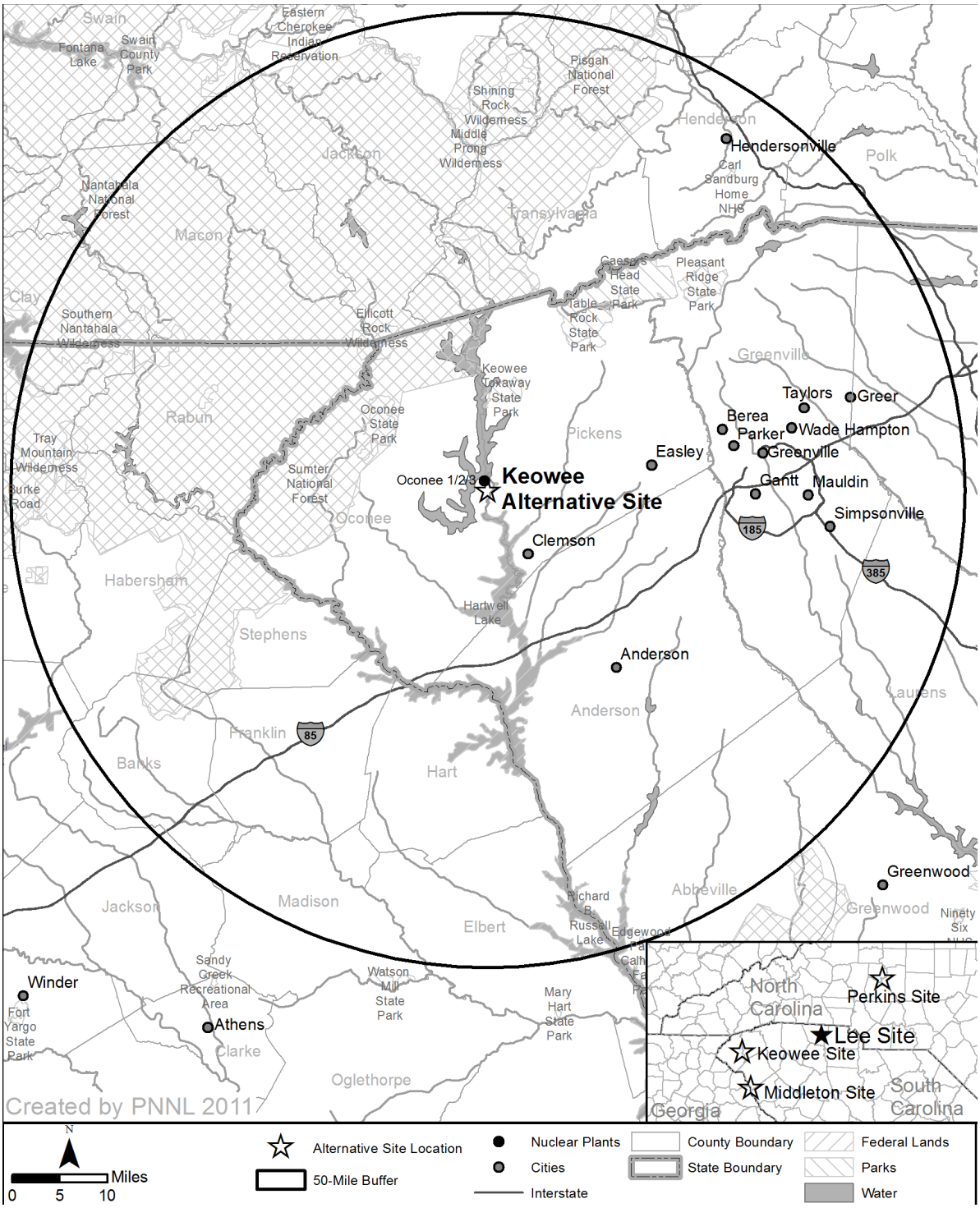

Figure ES-3. Keowee Site

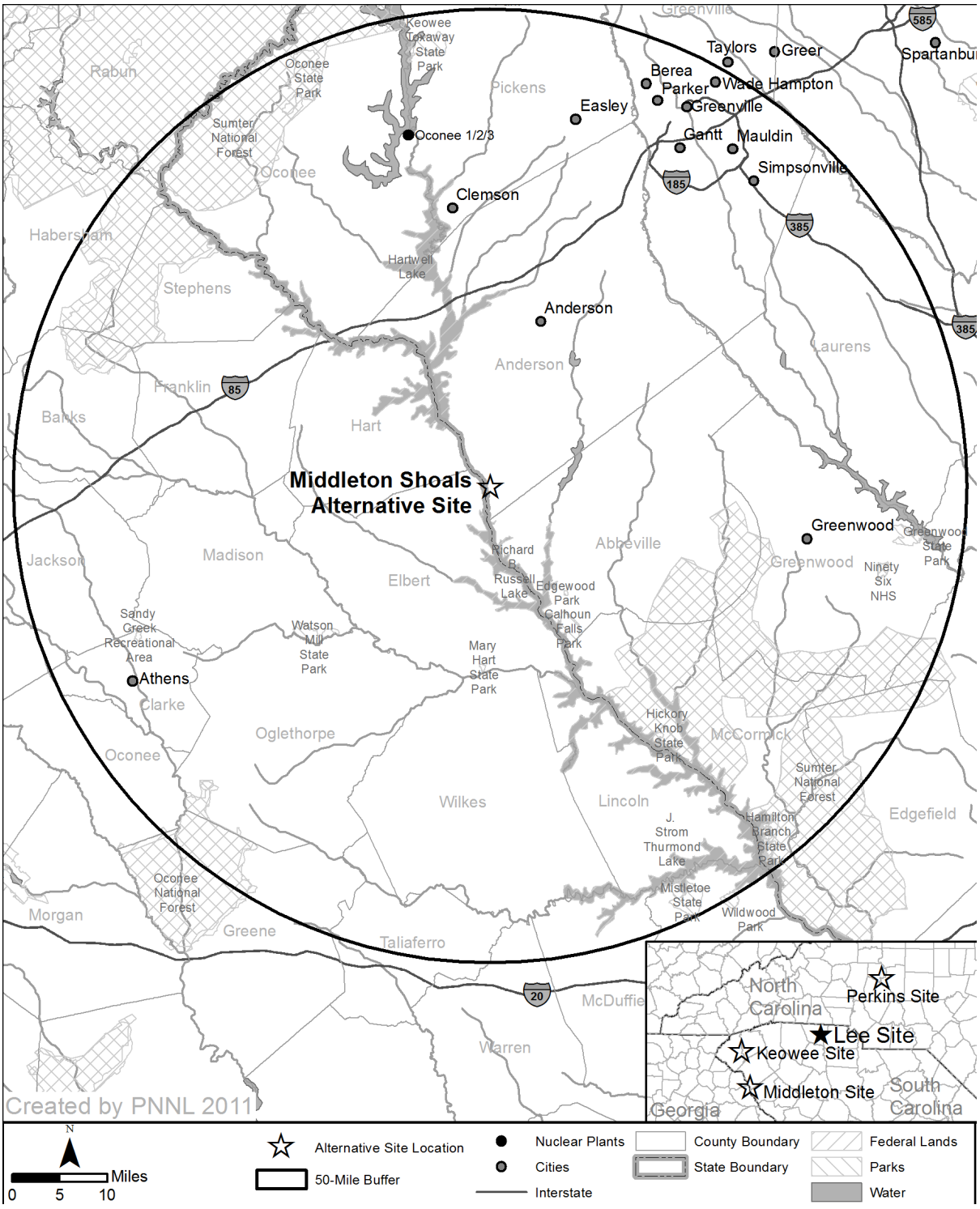

Figure ES-4. Middleton Shoals Site

Benefits and Costs

The review team compiled and compared the pertinent analytical conclusions reached in the EIS. It gathered all of the expected impacts from building and operating the proposed Lee Nuclear Station and aggregated them into two final categories: (1) the expected environmental costs and (2) the expected benefits to be derived from approval of the proposed action. Although the analysis in Section 10.6 is conceptually similar to a purely economic benefit-cost analysis, which determines the net present dollar value of a given project, the intent of the section is to identify potential societal benefits of the proposed activities and compare them to the potential internal (i.e., private) and external (i.e., societal) costs of the proposed activities. In general, the purpose is to inform the COL process by gathering and reviewing information that demonstrates the likelihood that the benefits of the proposed activities outweigh the aggregate costs.

On the basis of the assessments in this EIS, the building and operation of the proposed Lee Nuclear Station, with mitigation measures identified by the review team, would accrue benefits that most likely would outweigh the economic, environmental, and social costs. For the NRC-proposed action (i.e., NRC-authorized construction and operation), the accrued benefits would also outweigh the costs of preconstruction, construction, and operation of the proposed Lee Nuclear Station.

Recommendation

The NRC's recommendation to the Commission related to the environmental aspects of the proposed action is that the COLs should be issued as proposed.

This recommendation is based on the following:

- the application, including the ER and its revisions, submitted by Duke
- consultation with Federal, State, Tribal, and local agencies
- consideration of public comments received during scoping and on the draft EIS
- the review team's independent review and assessment detailed in this EIS.

In making its recommendation, the review team determined that none of the alternative sites is environmentally preferable (and, therefore, also not obviously superior) to the Lee Nuclear Station site. The review team also determined that none of the energy or cooling-system alternatives assessed is environmentally preferable to the proposed action.

The NRC's determination is independent of the USACE's determination of whether the Lee Nuclear Station site is the least environmentally damaging practicable alternative pursuant to Clean Water Act Section 404(b) (1) Guidelines. The USACE will conclude its analysis of both offsite and onsite alternatives in its Record of Decision.

Table ES-2 provides a summary of the EIS-derived cumulative impacts for the proposed site in comparison with the no-action alternative, alternative sites, and energy alternatives.

Table ES-2. Comparison of Environmental Impacts

Resource Areas	Proposed Site[a]	Alternative Sites[b]				Energy Alternatives[c]		
	Lee	Perkins	Keowee	Middleton Shoals	Coal	Natural Gas	Combination
Land Use	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	SMALL to MODERATE	SMALL to MODERATE
Surface Water	MODERATE	MODERATE	MODERATE	MODERATE	SMALL	SMALL	SMALL
Groundwater	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL
Aquatic Ecosystems	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE
Terrestrial Ecosystems	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE
Air Quality	SMALL to MODERATE	SMALL to MODERATE	SMALL to MODERATE	SMALL to MODERATE	MODERATE	SMALL to MODERATE	SMALL to MODERATE
Socioeconomics	MODERATE (adverse) to LARGE (beneficial)	MODERATE (adverse) to LARGE (beneficial)	MODERATE (adverse) to LARGE (beneficial)	MODERATE (adverse) to LARGE (beneficial)	MODERATE (adverse) to LARGE (beneficial)	MODERATE (adverse) to MODERATE (beneficial)	MODERATE (adverse) to MODERATE (beneficial)
Environmental Justice	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL
Cultural Resources	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE
Human Health	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL
Waste Management	SMALL	SMALL	SMALL	SMALL	MODERATE	SMALL	SMALL

(a) Cumulative impact determinations taken from Table 7-4 in the EIS.
(b) Cumulative impact determinations taken from Table 9-18 in the EIS.
(c) Impacts taken from Table 9-4 in the EIS. These conclusions for energy alternatives should be compared to NRC-authorized activities reflected in Chapters 4, 5, 6.1, and 6.2.

Abbreviations/Acronyms

7Q10	lowest flow for 7 consecutive days expected to occur once per decade
AADT	annual average daily traffic
ac	acre(s)
ac-ft	acre feet
ACS	American Community Survey
AD	Anno Domini
ADAMS	Agencywide Documents Access and Management System
ALARA	as low as reasonably achievable
AP1000	Advanced Passive 1000 pressurized water reactor
APE	Area of Potential Effect
AQCR	Air Quality Control Region
ARRA	American Recovery and Reinvestment Act of 2009
BACT	Best Available Control Technologies
BC	before Christ
BEA	Bureau of Economic Analysis
BEIR	Biological Effects of Ionizing Radiation
BGEPA	Bald and Golden Eagle Protection Act
BLS	Bureau of Labor Statistics
BMP	best management practice
BOD	biochemical oxygen demand
Bq	becquerel(s)
Btu	British thermal unit(s)
°C	degree(s) Celsius
CAES	compressed air-energy storage
CAIR	Clean Air Interstate Rule
CDC	U.S. Centers for Disease Control and Prevention
CDF	core damage frequency
CESQG	conditionally exempt small quantity generator
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
cfs	cubic foot/feet per second
Ci	curie(s)
cm	centimeter(s)
CMC	criterion maximum concentration
CO	carbon monoxide
CO_2	carbon dioxide

COL	combined construction permit and operating license
CORMIX	Cornell Mixing Zone Expert System
CPCN	Certificate of Environmental Compatibility and Public Convenience and Necessity
CSAPR	Cross-State Air Pollution Rule
CWA	Clean Water Act (aka Federal Water Pollution Control Act)
CWS	circulating-water system
d	day(s)
DA	Department of the Army
dB	decibel(s)
dBA	decibel(s) on the A-weighted scale
DBA	design basis accident
DBH	diameter breast high
DCD	Design Control Document
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
D/Q	deposition factor(s); annual normalized total surface concentration rate(s)
DSM	demand-side management
DTA	Devine Tarbell & Associates
Duke	Duke Energy Carolinas, LLC
Duke Energy	Duke Energy Corporation
EAB	exclusion area boundary
EE	energy efficiency
EECBG	Energy Efficiency and Conservation Block Grant
EIA	Energy Information Administration
EIS	environmental impact statement
ELF	extremely low frequency
EMF	electromagnetic field
EPA	U.S. Environmental Protection Agency
EPRI	Electric Power Research Institute
EPT	Ephemeroptera-Plecoptera-Trichoptera (Index)
ER	environmental report
ESP	Early Site Permit
ESRP	Environmental Standard Review Plan
°F	degree(s) Fahrenheit
FAA	Federal Aviation Administration
FES	Final Environmental Statement
FEIS	Final Environmental Impact Statement

FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FP&S	Facilities Planning & Siting
fps	foot (feet) per second
FR	*Federal Register*
FSAR	Final Safety Analysis Report
FSER	Final Safety Evaluation Report
ft	foot/feet
ft^2	square foot/feet
ft^3	cubic foot/feet
FWS	U.S. Fish and Wildlife Service
µg	microgram(s)
g	gram(s)
gal	gallon(s)
GC	gas centrifuge
GCRP	U.S. Global Change Research Program
GD	gaseous diffusion
GDNR	Georgia Department of Natural Resources
GEIS	Generic Environmental Impact Statement
GHG	greenhouse gas
GIS	geographic information system
gpd	gallon(s) per day
gpm	gallon(s) per minute
GWh	gigawatt-hours
HAP	hazardous air pollutant
HDPE	high-density polyethylene
HLW	high-level waste
hr	hour(s)
Hz	hertz
HZI	hydraulic zone of influence
I	U.S. Interstate
IAEA	International Atomic Energy Agency
ICRP	International Commission on Radiological Protection
IGCC	integrated gasification combined cycle
in.	inch(es)
INEEL	Idaho National Engineering and Environmental Laboratory
IRP	Integrated Resource Plan
IRWST	in-containment refueling water storage tank

ISFSI	independent spent fuel storage installation
kg	kilogram(s)
km	kilometer(s)
km^2	square kilometer(s)
km/hr	kilometer(s) per hour
kV	kilovolt(s)
kW	kilowatt(s)
kW(e)	kilowatt(s) electric
kWh	kilowatt-hour(s)
L	liter(s)
LEDPA	least environmentally damaging practicable alternative
LFG	landfill-based gas
LLC	Limited Liability Company
LLW	low-level waste
LOS	level of service
LPZ	low-population zone
LWA	Limited Work Authorization
LWR	light water reactor
m	meter(s)
m^2	square meter(s)
m^3	cubic meter(s)
m^3/s	cubic meter(s) per second
MACCS2	Melcor Accident Consequence Code System Version 1.12
mg	milligram(s)
MEI	maximally exposed individual
Mgd	million gallon(s) per day
mGy	milligray(s)
mi	mile(s)
mi^2	square mile(s)
mL	milliliter(s)
mm	millimeter(s)
MMS	U.S. Department of Interior Minerals Management Service
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MOX	mixed oxides
mpg	mile(s) per gallon
mph	mile(s) per hour
mrad	millirad

mrem	millirem
MSDS	material safety data sheets
MSL	mean sea level
mSv	millisievert(s)
MSW	municipal solid waste
MT	metric ton(nes)
MTU	metric ton(nes) uranium
MW	megawatt(s)
MW(e)	megawatt(s) electric
MWh	megawatt-hour(s)
MW(t)	megawatt(s) thermal
MWd	megawatt-day(s)
MWd/MTU	megawatt-days per metric ton of uranium
NA	not applicable
NAAQS	National Ambient Air Quality Standard
NAGPRA	Native American Graves Protection and Repatriation Act
NC	North Carolina
NCDENR	North Carolina Department of Environment and Natural Resources
NCI	National Cancer Institute
NCRP	National Council on Radiation Protection and Measurements
NCUC	North Carolina Utility Commission
NCWRC	North Carolina Wildlife Resources Commission
NEI	Nuclear Energy Institute
NEPA	National Environmental Policy Act of 1969, as amended
NERC	North American Electric Reliability Corporation
NESC	National Electrical Safety Code
NGCC	natural gas combined cycle
NGVD	National Geodetic Vertical Datum
NHPA	National Historic Preservation Act
NIEHS	National Institute of Environmental Health Sciences
NMFS	National Marine Fisheries Service
NO_2	nitrogen dioxide
NOAA	National Oceanic and Atmospheric Administration
NO_x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NRC	U.S. Nuclear Regulatory Commission
NREL	National Renewable Energy Laboratory
NRHP	National Register of Historic Places
NSPS	new source performance standard
NSR	new source review

NUREG	U.S. Nuclear Regulatory Commission technical document
NVC	National Vegetation Classification
NWI	National Wetlands Inventory
NWS	National Weather Service
OCS	outer continental shelf
ODCM	Offsite Dose Calculation Manual
OECD	Organization for Economic Cooperation and Development
OSHA	Occupational Safety and Health Administration
pH	measure of acidity or basicity in solution
PIRF	public interest review factor
PM	particulate matter
PM_{10}	particulate matter with an aerodynamic diameter of 10 microns or less
$PM_{2.5}$	particulate matter with an aerodynamic diameter 2.5 microns or less
PNNL	Pacific Northwest National Laboratory
pp.	pages
ppb	part(s) per billion
ppm	part(s) per million
PRA	probabilistic risk assessment
PSCSC	Public Service Commission of South Carolina
PSD	Prevention of Significant Deterioration (Permit)
PUC	public utility commission
PURC	Public Utility Review Committee
PURPA	Public Utility Regulatory Policies Act of 1978
PV	photovoltaic
PWR	pressurized water reactor
PWS	potable water service
rad	radiation absorbed dose
RAI	Request(s) for Additional Information
RCRA	Resource Conservation and Recovery Act of 1976, as amended
REC	renewable energy credit(s)
rem	roentgen equivalent man
REMP	radiological environmental monitoring program
REPS	renewable energy portfolio standard(s)
RFP	request for proposal
RIMS II	Regional Input-Output Modeling System
RM	river mile
ROI	region of interest

ROW	right-of-way
RRS	(SERC's) Reliability Review Subcommittee
RWS	raw water service
Ryr	reactor year
µS/cm	microsievert(s) per centimeter
s or sec	second(s)
SACTI	Seasonal/Annual Cooling Tower Impact (prediction code)
SAMA	severe accident mitigation alternative
SAMDA	severe accident mitigation design alternative
SC	South Carolina
SCBCB	South Carolina Budget and Control Board
SCDAH	South Carolina Department of Archives and History
SCDHEC	South Carolina Department of Health and Environmental Control
SCDNR	South Carolina Department of Natural Resources
SCDOT	South Carolina Department of Transportation
SCDSS	South Carolina Department of Social Services
SCE&G	South Carolina Electric and Gas
SCIAA	South Carolina Institute of Archaeology and Anthropology
SCR	selective catalytic reduction
SDS	sanitary drainage system
SER	Safety Evaluation Report
SERC	Southeastern Electric Reliability Council
SHA	seismic hazard analysis
SHPO	State Historic Preservation Office (or Officer)
SMCL	secondary maximum concentration limits
SO_2	sulfur dioxide
SO_x	oxides of sulfur
SPCCP	Spill prevention, control, and countermeasure plan
SRS	Savannah River Site
Sv	sievert(s)
SWPPP	stormwater pollution prevention plan
SWS	service-water system
T	ton(s)
T&E	threatened and endangered
TDS	total dissolved solids
TEDE	total effective dose equivalent
THPO	Tribal Historic Preservation Officer
TRAGIS	Transportation Routing Analysis Geographic Information System

TSC	technical support center
UF_6	uranium hexafluoride
UMTRI	University of Michigan Transportation Research Institute
UO_2	uranium dioxide
USACE	U.S. Army Corps of Engineers
USC	United States Code
USCB	U.S. Census Bureau
USDA	U.S. Department of Agriculture
USFS	U.S. Forest Service
USGS	U.S. Geological Survey
US	U.S. (State Highway)
VACAR	Virginia-Carolinas (subregion)
VCSNS	Virgil C. Summer Nuclear Station
VEGP	Vogtle Electric Generating Plant
VOC	volatile organic compound
WCD	waste confidence decision
Westinghouse	Westinghouse Electric Company, LLC
WWS	wastewater service
χ/Q	atmospheric dispersion factor(s); annual average normalized air concentration value(s)
yd	yard(s)
yd^3	cubic yard(s)
yr	year(s)
yr^{-1}	per year

Appendix E

Draft Environmental Impact Statement Comments and Responses

Appendix E

Draft Environmental Impact Statement Comments and Responses

As part of the U.S. Nuclear Regulatory Commission (NRC) review of the William States Lee III Nuclear Station (Lee Nuclear Station) application for combined construction permits and operating licenses (COLs) for proposed Units 1 and 2 at the Lee Nuclear Station site, located in Cherokee County, South Carolina, the NRC and the U.S. Army Corps of Engineers (USACE) (together referred to as the "review team") solicited comments from the public on the draft environmental impact statement (EIS). The draft EIS was issued on December 13, 2011. A 75-day comment period began on December 23, 2011, when the U.S. Environmental Protection Agency (EPA) issued a *Federal Register* Notice of Availability (76 FR 80367) of the draft EIS to allow members of the public to comment on the results of the environmental review.

As part of the process to solicit public comments on the draft EIS, the review team

- placed a copy of the draft EIS at the Cherokee County Public Library in Gaffney, South Carolina
- made the draft EIS available in the NRC's Public Document Room in Rockville, Maryland, (NRC 2011a)
- placed a copy of the draft EIS on the NRC website at www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr2111/
- provided a copy of the draft EIS to the Lee Nuclear Station environmental review mailing list and any member of the public who requested one
- sent copies of the draft EIS to certain Federal, State, Tribal, and local agencies
- published a notice of availability of the draft EIS in the *Federal Register* on December 21, 2011 (76 FR 79228)
- filed the draft EIS with the EPA
- held two public meetings on Thursday, January 19, 2012 in Gaffney, South Carolina.

Approximately 250 people attended the public meetings in Gaffney and numerous participants provided oral comments. A certified court reporter recorded these oral comments and prepared written transcripts of the meeting. The transcripts (NRC 2012a) of the public meetings were published on February 13, 2012 as part of the public meeting summary (NRC 2012b). In

addition to the comments received at the public meeting, the NRC received letters and e-mail messages with comments concerning the proposed Lee Nuclear Station.

The comment letters, e-mail messages, and transcripts of the public meeting are available in the NRC's Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible at http://www.nrc.gov/reading-rm.html. Persons who do not have access to ADAMS or who encounter problems in accessing the documents located in ADAMS should contact the NRC's Public Document Room reference staff at 1-800-397-4209 or 301-415-4737. The ADAMS accession numbers for the letters, e-mail messages, and transcripts are provided in Table E-1.

E.1 Disposition of Comments

Each set of comments from a given commenter was given a unique correspondence identifier, allowing each set of comments from a commenter to be traced back to the transcript, letter, or e-mail in which the comments were submitted. After the comment period concluded, the review team considered and dispositioned all comments received. To identify each individual comment, the team reviewed the transcripts of the public meetings and each piece of correspondence received related to the draft EIS. As part of the review, the review team identified statements that it believed were related to the proposed action and recorded the statements as comments. Each comment was assigned to a specific subject area, and similar comments were grouped together. Finally, responses were prepared for each comment or group of comments.

Some comments addressed topics and issues that are not part of the environmental review for this proposed action. These comments included questions about NRC's safety review, general statements of support or opposition to nuclear power, and comments on the NRC regulatory process in general. These comments are included, but detailed responses are not provided because the comments address issues not directly related to the environmental effects of this proposed action and are, thus, outside the scope of the National Environmental Policy Act of 1969, as amended (NEPA) review of this proposed action. If appropriate, these comments were forwarded to the appropriate organization within the NRC for consideration. Many comments, however, specifically addressed the scope of the environmental review, analyses, and issues contained in the draft EIS. Examples include comments about potential impacts, proposed mitigation, the agency review process, and the public comment period. Detailed responses to each of these comments are provided in this appendix. When the comments resulted in a change in the text of the draft EIS, the corresponding response refers the reader to the appropriate section of the EIS where the change was made. Throughout the final EIS, with the exception of this new Appendix E, revisions (other than editorial) to the text from the draft EIS are indicated by vertical lines (change bars) in the margin beside the text.

Table E-1 provides a list of commenters identified by name, affiliation (if given), comment number, and the source of the comment.

Table E-1. Individuals Providing Comments During the Comment Period

Commenter	Affiliation (if stated)	Comment Source and ADAMS Accession #	Correspondence ID
Anonymous		Letter (ML12068A408)	0137
Anonymous		Letter (ML12072A084)	0112
Anonymous		Email (ML12037A005)	0076
Acs, Deborah		Letter (ML12048A668)	0107
Adams, Rod		Meeting Transcript (ML120260611)	0012-12
Adams, Rod		Meeting Transcript (ML120260614)	0013-12
Allison, Patricia		Letter (ML12033A158)	0085
Andrews, Josephine		Letter (ML12060A278)	0112
Apunte, Daya	INviro Design and Consulting, LLC	Email (ML12068A011)	0131
Arnold, Debbie		Email (ML12025A130)	0003
Atanasoff, Mike		Email (ML12038A023)	0078
Baker, Kasey		Meeting Transcript (ML120260614)	0013-6
Beach, William		Meeting Transcript (ML120260614)	0013-34
Beattie, Kathryn E.		Letter (ML12060A280)	0112
Bertram, Beth		Email (ML12025A217)	0044
Bisesi, Philip		Letter (ML12039A144)	0103
Bisesi, Philip		Meeting Transcript (ML120260614)	0013-31
Bliss, Rachel		Letter (ML12039A145)	0104
Bliss, Rachel		Meeting Transcript (ML120260614)	0013-13
Boever, Virginia		Letter (ML12151A384)	0112
Boger, Paul	Greater York Chamber of Commerce	Meeting Transcript (ML120260611)	0012-14
Boots, Debby		Email (ML12025A231)	0052
Boyle, Ella		Letter (ML12060A279)	0112
Brackett, Cheri		Email (ML12025A175)	0023
Broadhead, Susan		Letter (ML12033A156)	0083
Broadhead, Susan		Letter (ML12039A139)	0098
Broadhead, Susan		Meeting Transcript (ML120260614)	0013-33

Table E-1. (contd)

Commenter	Affiliation (if stated)	Comment Source and ADAMS Accession #	Correspondence ID
Brockington, Mary Sue and William B.		Letter (ML12083A063)	0144
Brogan Prindle, Cathleen		Letter (ML12048A664)	0112
Bromm, Bob		Meeting Transcript (ML120260614)	0013-18
Burnett, Linda		Letter (ML12058A4001)	0115
Burt, Rick		Email (ML12025A204)	0038
Buscarino, John	Active Students for a Healthy Environment	Meeting Transcript (ML120260614)	0013-23
Cahill, Joanne		Email (ML12068A012)	0132
Caldwell, Mark	U.S. Fish and Wildlife Service	Letter (ML120760114)	0141
Christopher, Lucy D.		Letter (ML1206A2331)	0133
Clere, Daniel		Email (ML12067A014)	0125
Collins, Richard		Email (ML12025A203)	0037
Conard, Sky	Green River Watershed Alliance	Email (ML12067A018)	0127
Conard, Sky	Green River Watershed Alliance	Letter (ML12039A135)	0094
Conard, Sky	Green River Watershed Alliance	Meeting Transcript (ML120260611)	0012-4
Connolly, Mary Ellen		Meeting Transcript (ML120260611)	0012-10
Cook, Jim	Cherokee County Development Board	Meeting Transcript (ML120260611)	0012-17
Cox, Judith		Email (ML12025A138)	0010
Craig, Anne		Letter (ML12039A136)	0095
Craig, Anne		Letter (ML12039A136)	0105
Craig, Anne		Meeting Transcript (ML120260614)	0013-20
Craig, Tom		Email (ML12032A004)	0060
Cranford, Kelley		Meeting Transcript (ML120260614)	0013-36
Cremer, Claudine		Meeting Transcript (ML120260614)	0013-5
Crissey, Brian		Email (ML12067A002)	0117
Crissey, Brian		Meeting Transcript (ML120260611)	0012-8
Cunningham, Kristine		Email (ML12025A131)	0004
da Silva, Arjuna		Email (ML12032A008)	0063

Table E-1. (contd)

Commenter	Affiliation (if stated)	Comment Source and ADAMS Accession #	Correspondence ID
Dailey, Debbie		Letter (ML12072A078)	0139
Dailey, Debbie		Meeting Transcript (ML120260614)	0013-19
Davis, John		Letter (ML12058A396)	0112
DeLap, E.A.		Email (ML12030A006)	0057
Dixon, Mary		Email (ML12025A178)	0025
Dobrasko, Rebekah	South Carolina Dept. of Archives and History	Letter (ML12048A671)	0109
Doebber, Ian		Email (ML12025A179)	0026
Doebber, Rachel		Email (ML12025A181)	0026
Doebber, Rachel		Email (ML12025A181)	0028
Doebber, Tom		Email (ML12025A148)	0019
Drouin, Michaeljon		Letter (ML12033A160)	0087
Fallon, Chris	Duke Energy	Letter (ML12067A037)	0134
Fallon, Chris	Duke Energy	Meeting Transcript (ML120260614)	0013-4
Farris, Mark	Economic Development Board of York County	Meeting Transcript (ML120260611)	0012-16
Fisk, Bill		Letter (ML12048A670)	0108
Fisk, Bill		Meeting Transcript (ML120260614)	0013-27
Flaherty, David		Email (ML12025A133)	0006
Flores, S.		Letter (ML12062A070)	0112
G., Edith A.		Letter (ML12072A079)	0140
Gaddy, Ron		Email (ML12026A401)	0054
Gamble, Dan	INviro Design and Consulting, LLC	Email (ML12067A022)	0129
Gamble, Dan	INviro Design and Consulting, LLC	Letter (ML12039A142)	0101
Gamble, Dan	INviro Design and Consulting, LLC	Letter (ML12068A407)	0136
Gamble, Dan	INviro Design and Consulting, LLC	Meeting Transcript (ML120260614)	0013-10
Gardner, David		Email (ML12025A201)	0035
Gardner, Janet		Email (ML12025A198)	0033
Gardner, Janet	Weluvgems	Email (ML12025A200)	0034
Genetti, Phyllis		Letter (ML12048A669)	0110
Gilbert, Grace		Email (ML12037A006)	0077
Gilman, Steve	Physicians for Social Responsibility	Meeting Transcript (ML120260611)	0012-6
Glaser, Christine		Email (ML12025A187)	0031

Table E-1. (contd)

Commenter	Affiliation (if stated)	Comment Source and ADAMS Accession #	Correspondence ID
Gossett, Lewis	South Carolina Manufacturers Alliance	Meeting Transcript (ML120260611)	0012-9
Greenberg, Lori		Letter (ML12039A140)	0099
Greenburg, Lori		Meeting Transcript (ML120260614)	0013-29
Gregg, Ben	South Carolina Wildlife Federation	Letter (ML12068A364)	0135
Guy, Peggy		Meeting Transcript (ML120260614)	0013-15
Hamahan, Clare		Letter (ML12146A266)	0112
Hammett, Jan		Meeting Transcript (ML120260614)	0013-35
Hayes, MD, J. David		Email (ML12067A013)	0124
Hearne, Ray		Letter (ML12048A666)	0106
Hearne, Ray		Meeting Transcript (ML120260614)	0013-24
Hicks, Katie	Clean Water for North Carolina	Letter (ML12039A131)	0090
Hicks, Katie	Clean Water for North Carolina	Meeting Transcript (ML120260611)	0012-7
Holt, Cathy		Email (ML12032A005)	0061
Holt, Cathy		Meeting Transcript (ML120260614)	0013-32
Howarth, Irma		Letter (ML12039A133)	0092
Howarth, Irma		Meeting Transcript (ML120260611)	0012-19
Howarth, Robert F.	Western N. Carolina Physicians for Social Responsibility	Letter (ML12039A134)	0093
Howarth, Robert F.	Western N. Carolina Physicians for Social Responsibility	Meeting Transcript (ML120260611)	0012-13
Howell, Martha N.	Blue Ridge Community College	Email (ML12025A145)	0016
Jamil, Dhiaa	Duke Energy	Meeting Transcript (ML120260611)	0012-2
Justice, Cynthia and Michael		Email (ML12067A011)	0122
Karpen, Leah R.		Letter (ML12023A052)	0082
Keil, A. Eugene		Letter (ML12151A382)	0112
Kelly, Kitty		Email (ML12025A136)	0008
Klein, Art and Michelle		Email (ML12025A150)	0020
Knudten, Cori		Letter (ML12052A209)	0111

Table E-1. (contd)

Commenter	Affiliation (if stated)	Comment Source and ADAMS Accession #	Correspondence ID
Larsen Clark, Brita		Meeting Transcript (ML120260611)	0012-15
Larson, Jean		Letter (ML12039A138)	0097
Larson, Jean		Meeting Transcript (ML120260614)	0013-22
Lauden, Loy		Email (ML12025A222)	0047
Lemoing, Melissa		Letter (ML12033A157)	0084
Leverette, Will		Letter (ML12072A083)	0112
Lewis, Brenda K.		Email (ML12025A132)	0005
Lovinsohn, Ruth		FAX (ML12044A128)	0088
Lovinsohn, Ruth		Letter (ML12058A397)	0114
Macko, Karl		Letter (ML12151A383)	0145
Mayfield, Julie	Western North Carolina Alliance and Green River Watershed Alliance	Email (ML12067A020)	0128
McAfee, Patricia B.		Letter (ML12083A061)	0143
McFadden, Cindy	Cherokee2020	Letter (ML12039A132)	0091
McMahon, John		Email (ML12025A207)	0041
McWherter, Lisa		Meeting Transcript (ML120260614)	0013-30
Mewborne, Janice		Email (ML12025A218)	0045
Miller, John C.		Email (ML12025A142)	0011
Morgan, Tom and Barbara		Email (ML12025A146)	0017
Moss, Representative Dennis	South Carolina House of Representatives, District 29	Letter (ML12039A137)	0096
Moss, Representative Dennis	South Carolina House of Representatives, District 29	Meeting Transcript (ML120260614)	0013-1
Moss, Representative Steve	South Carolina House of Representatives, District 30	Meeting Transcript (ML120260614)	0013-2
Mueller, Heinz	U.S. Environmental Protection Agency, Region 4	Letter (ML120790121)	0142
Nord, Felice		Email (ML12025A180)	0027
Norris, Steve		Meeting Transcript (ML120260614)	0013-21
Oehler, Susan		Email (ML12025A229)	0051
Paterson, Wallace		Email (ML12025A208)	0042

Table E-1. (contd)

Commenter	Affiliation (if stated)	Comment Source and ADAMS Accession #	Correspondence ID
Patrie, MD, MPH, Lewis E.	Western North Carolina Physicians for Social Responsibility	Email (ML12030A145)	0058
Peterson, Harry		Letter (ML12072A081)	0112
Peterson, Martha J.		Letter (ML12072A082)	0112
Raleigh, Carolyn		Email (ML12030A146)	0059
Rawl, Otis	South Carolina Chamber of Commerce	Meeting Transcript (ML120260611)	0012-5
Reeser, Rachel		Email (ML12025A216)	0043
Reichenbach, Adam		Meeting Transcript (ML120260614)	0013-17
Rhyne, Faith Rachel		Email (ML12030A005)	0056
Richards, Kitty Katherine		Meeting Transcript (ML120260614)	0013-28
Richardson, Don		Letter (ML12039A141)	0100
Richardson, Don		Meeting Transcript (ML120260614)	0013-14
Richardson, Ed		Email (ML12025A202)	0036
Rinsler, MD, Steve		Email (ML12025A151)	0021
Rittenberg, David		Letter (ML12048A662)	0112
Rose, Katherine		Email (ML12046A154)	0113
Rustin, K.		Letter (ML12072A080)	0112
Ruthye100, You Tube Service		Email (ML12025A224)	0049
Ruthye100, You Tube with Text		Email (ML12025A228)	0050
Rylander, Kimchi	Earthaven Ecovillage	Letter (ML12033A159)	0086
Sadler, Timothy		Meeting Transcript (ML120260614)	0013-25
Schmid, Erich K.		Email (ML12026A398)	0053
Schmitt, Brynn		Email (ML12046A151)	0079
Schmitt, Brynn		Letter (ML12072A077)	0138
Schmitt, Daniel		Letter (ML12067A095)	0116
Schneyer, Julie		Email (ML12030A004)	0055
Schott Cummins, Gretchen	Henderson Community College	Email (ML12025A144)	0015
Scott, Cathy		Email (ML12025A182)	0029
Severin, Patricia		Letter (ML12023A051)	0081
Shell, Karrie-Jo	U.S. Environmental Protection Agency, Region 4	Email (ML113610360)	0080

Table E-1. (contd)

Commenter	Affiliation (if stated)	Comment Source and ADAMS Accession #	Correspondence ID
Siler, Jill		Email (ML12025A206)	0040
Skeele, Michele and Skip		Email (ML12025A223)	0048
Sloan, Judie		Meeting Transcript (ML120260614)	0013-26
Sloss, Barbara		Email (ML12025A174)	0022
Smith, Coleman		Meeting Transcript (ML120260614)	0013-11
Smith, Joy		Email (ML12032A007)	0062
Smy, Gayle and Allison		Email (ML12025A129)	0002
Sorensen, Laura		Meeting Transcript (ML120260614)	0013-7
Sorensen, Ole		Letter (ML12039A143)	0102
Sorensen, Ole		Meeting Transcript (ML120260614)	0013-8
Southworth, Win		Email (ML12025A219)	0046
Spencer, Tim	Cherokee County Council	Meeting Transcript (ML120260614)	0013-3
Stanley, Joyce A.	U.S. Department of the Interior, Office of Environmental Policy & Compliance - Region 4	Letter (ML12068A363)	0141
Stoll, Irene		Email (ML12020A2711)	0001
Swing, Carol		Email (ML12025A183)	0030
Thomas Orengo, Cheryl		Email (ML12067A012)	0123
Thomas, Ellen		Letter (ML12039A130)	0089
Thomas, Ruth	Environmentalists, Inc.	Email (ML12067A008)	0119
Thomas, Ruth	Environmentalists, Inc.	Meeting Transcript (ML120260611)	0012-3
Tinnaro, Heather		Email (ML12025A134)	0007
Tinnaro, Heather		Meeting Transcript (ML120260614)	0013-9
Vejdani, Vivianne	SC Department of Natural Resources	Letter (ML12067A016)	0126
Vestal, Majorie		Email (ML)	0018
Vestal, Majorie		Email (ML12025A147)	0018
vonSeideneck-Houser, Rebecca		Email (ML12025A137)	0009

Table E-1. (contd)

Commenter	Affiliation (if stated)	Comment Source and ADAMS Accession #	Correspondence ID
Wallace, Kristine		Email (ML12067A010)	0121
Watters, Gillian		Email (ML12025A193)	0032
Whitefield, Anne		Email (ML12025A177)	0024
Whiteside, Cassie		Email (ML12025A205)	0039
Williams, David		Email (ML12067A007)	0118
Wilson, Dawn		Email (ML12067A009)	0120
Wilson, Rev. Mason and Barbara S.		Email (ML12025A143)	0014
Youngblood, Rob	York County Chamber of Commerce	Meeting Transcript (ML120260611)	0012-18
Zdenek, Dr. Joe		Meeting Transcript (ML120260614)	0013-16
Zeller, Lou	Blue Ridge Environmental Defense League	Email (ML12067A025)	0130
Zeller, Lou	Blue Ridge Environmental Defense League	Meeting Transcript (ML120260611)	0012-11

Table E-2 provides a list of commenters for each comment category. Within the comment category the commenters are identified by name and the specific comment identification number for that category is provided.

Table E-2. Comment Categories

Comment Category	Commenter (Comment ID)
Accidents-Severe	• Broadhead, Susan (0013-33-1) • Crissey, Brian (0012-8-2) • Fisk, Bill (0108-2) • Rose, Katherine (0113-7) • Schmitt, Brynn (0079-3) (0079-4) • Schmitt, Daniel (0116-4) • Sorensen, Laura (0013-7-2)
Alternatives-Energy	• Anonymous (0112-11) • Anonymous (0076-7) • Acs, Deborah (0107-1) • Adams, Rod (0012-12-2) (0012-12-5) (0012-12-6) (0013-12-2) (0013-12-4) (0013-12-6) • Allison, Patricia (0085-4) • Andrews, Josephine (0112-11) • Arnold, Debbie (0003-3)

Table E-2. (contd)

Comment Category	Commenter (Comment ID)
	• Atanasoff, Mike (0078-3) • Beattie, Kathryn E. (0112-11) • Bertram, Beth (0044-3) • Bisesi, Philip (0013-31-2) • Bliss, Rachel (0013-13-2) (0104-3) • Boever, Virginia (0112-11) • Boots, Debby (0052-4) • Boyle, Ella (0112-11) • Broadhead, Susan (0083-4) (0083-6) (0098-4) • Brogan Prindle, Cathleen (0112-11) • Bromm, Bob (0013-18-3) • Burnett, Linda (0115-4) • Burt, Rick (0038-1) • Buscarino, John (0013-23-3) (0013-23-5) (0013-23-6) • Cahill, Joanne (0132-4) • Clere, Daniel (0125-2) • Connolly, Mary Ellen (0012-10-4) • Craig, Anne (0013-20-5) (0095-6) (0105-1) • Cranford, Kelley (0013-36-1) • Cremer, Claudine (0013-5-3) • Crissey, Brian (0012-8-1) (0012-8-3) (0117-8) (0117-11) • Cunningham, Kristine (0004-11) • da Silva, Arjuna (0063-3) (0063-8) • Davis, John (0112-11) • Dixon, Mary (0025-3) • Fallon, Chris (0134-69) (0134-70) • Farris, Mark (0012-16-2) • Fisk, Bill (0108-1) • Flaherty, David (0006-2) • Flores, S. (0112-11) • Gaddy, Ron (0054-2) (0054-4) • Gamble, Dan (0013-10-1) (0129-1) (0129-4) (0129-5) (0129-6) • Gardner, David (0035-2) • Gardner, Janet (0033-3) (0034-2) • Genetti, Phyllis (0110-2) • Gilbert, Grace (0077-4) • Greenberg, Lori (0099-2) • Greenburg, Lori (0013-29-2) • Hamahan, Clare (0112-11) • Hayes, MD, J. David (0124-4) (0124-6) • Hearne, Ray (0106-2) • Hicks, Katie (0012-7-8) • Holt, Cathy (0013-32-2) (0061-4)

Table E-2. (contd)

Comment Category	Commenter (Comment ID)
	• Howarth, Irma (0092-6) • Howarth, Robert F. (0012-13-5) (0093-6) • Keil, A. Eugene (0112-11) • Knudten, Cori (0111-5) • Larson, Jean (0013-22-1) (0097-1) • Lauden, Loy (0047-6) • Lemoing, Melissa (0084-5) • Leverette, Will (0112-11) • Lewis, Brenda K. (0005-2) • Lovinsohn, Ruth (0114-12) • McAfee, Patricia B. (0143-3) • Nord, Felice (0027-5) • Norris, Steve (0013-21-1) • Patrie, MD, MPH, Lewis E. (0058-2) (0058-6) • Peterson, Harry (0112-11) • Peterson, Martha J. (0112-11) • Raleigh, Carolyn (0059-2) • Rawl, Otis (0012-5-3) • Reeser, Rachel (0043-1) • Reichenbach, Adam (0013-17-4) • Rhyne, Faith Rachel (0056-3) (0056-5) • Richards, Kitty Katherine (0013-28-1) • Rinsler, MD, Steve (0021-3) (0021-4) • Rittenberg, David (0112-11) • Rose, Katherine (0113-5) • Rustin, K. (0112-11) • Rylander, Kimchi (0086-4) • Sadler, Timothy (0013-25-1) • Schmitt, Daniel (0116-6) • Scott, Cathy (0029-2) • Severin, Patricia (0081-2) • Skeele, Michele and Skip (0048-9) • Sloss, Barbara (0022-4) • Smith, Joy (0062-3) • Southworth, Win (0046-1) • Stoll, Irene (0001-5) • Swing, Carol (0030-7) • Thomas Orengo, Cheryl (0123-3) • Thomas, Ellen (0089-4) • Thomas, Ruth (0119-13) • Tinnaro, Heather (0007-2) (0013-9-2) • Wallace, Kristine (0121-6) • Whitefield, Anne (0024-3)

Table E-2. (contd)

Comment Category	Commenter (Comment ID)
	• Whiteside, Cassie (0039-1) • Wilson, Dawn (0120-3)
Alternatives-Sites	• Fallon, Chris (0134-4) (0134-71) (0134-78) (0134-84) (0134-85) • Kelly, Kitty (0008-1)
Alternatives-System Design	• Mueller, Heinz (0142-4) (0142-13) • Vejdani, Vivianne (0126-29)
Benefit-Cost Balance	• Anonymous (0112-10) • Anonymous (0076-6) • Adams, Rod (0012-12-3) • Andrews, Josephine (0112-10) • Beattie, Kathryn E. (0112-10) • Boever, Virginia (0112-10) • Boyle, Ella (0112-10) • Broadhead, Susan (0083-5) (0083-8) (0098-7) • Brogan Prindle, Cathleen (0112-10) • Cahill, Joanne (0132-5) • Christopher, Lucy D. (0133-4) • Crissey, Brian (0012-8-4) (0012-8-6) (0012-8-7) (0117-5) (0117-6) (0117-10) • Cunningham, Kristine (0004-10) • da Silva, Arjuna (0063-7) • Davis, John (0112-10) • Doebber, Ian (0026-4) • Doebber, Rachel (0026-4) • Doebber, Tom (0019-5) • Fallon, Chris (0013-4-3) (0134-87) • Flores, S. (0112-10) • G., Edith A. (0140-2) • Gardner, David (0035-1) • Gossett, Lewis (0012-9-3) • Hamahan, Clare (0112-10) • Howarth, Robert F. (0012-13-1) (0012-13-3) (0012-13-4) (0093-1) (0093-3) (0093-4) (0093-5) • Justice, Cynthia and Michael (0122-4) • Karpen, Leah R. (0082-3) • Keil, A. Eugene (0112-10) • Klein, Art and Michelle (0020-5) • Lauden, Loy (0047-3) • Leverette, Will (0112-10) • Lewis, Brenda K. (0005-3) • McMahon, John (0041-6) • Morgan, Tom and Barbara (0017-7) • Oehler, Susan (0051-4)

Table E-2. (contd)

Comment Category	Commenter (Comment ID)
	• Patrie, MD, MPH, Lewis E. (0058-1) • Peterson, Harry (0112-10) • Peterson, Martha J. (0112-10) • Rhyne, Faith Rachel (0056-2) • Richardson, Don (0100-5) • Rinsler, MD, Steve (0021-5) • Rittenberg, David (0112-10) • Rustin, K. (0112-10) • Schmitt, Daniel (0116-5) • Schneyer, Julie (0055-3) • Skeele, Michele and Skip (0048-6) • Sloan, Judie (0013-26-1) • Sloss, Barbara (0022-2) • Smith, Coleman (0013-11-7) • Smy, Gayle and Allison (0002-4) • Southworth, Win (0046-3) • Stoll, Irene (0001-4) • Swing, Carol (0030-6) • Thomas, Ruth (0119-1) (0119-12) (0119-19) (0119-20) • Whitefield, Anne (0024-1) (0024-6)
Cumulative Impacts	• Mueller, Heinz (0142-25)
Ecology-Aquatic	• Caldwell, Mark (0141-1) (0141-4) (0141-5) (0141-7) (0141-8) (0141-9) • Conard, Sky (0012-4-2) (0094-2) • Craig, Anne (0013-20-3) (0095-4) • Fallon, Chris (0134-8) (0134-9) (0134-10) (0134-43) (0134-44) (0134-45) (0134-52) (0134-53) (0134-62) (0134-63) (0134-64) (0134-73) • Gregg, Ben (0135-4) • Hicks, Katie (0012-7-6) (0012-7-11) • Larsen Clark, Brita (0012-15-3) • Lovinsohn, Ruth (0114-5) • Morgan, Tom and Barbara (0017-6) • Mueller, Heinz (0142-11) (0142-16) • Skeele, Michele and Skip (0048-5) • Stanley, Joyce A. (0141-1) (0141-4) (0141-5) (0141-7) (0141-8) (0141-9) • Thomas, Ruth (0119-5) • Vejdani, Vivianne (0126-12) (0126-13) (0126-14) (0126-15) (0126-31) (0126-34) • Zeller, Lou (0130-3)
Ecology-Terrestrial	• Caldwell, Mark (0141-2) • Fallon, Chris (0134-1) (0134-7) (0134-28) (0134-29) (0134-30) (0134-31) (0134-32) (0134-33) (0134-34) (0134-35) (0134-36) (0134-37) (0134-38) (0134-39) (0134-40) (0134-41) (0134-42) (0134-58) (0134-59) (0134-60) (0134-61) (0134-81) (0134-82)

Table E-2. (contd)

Comment Category	Commenter (Comment ID)
	• Gregg, Ben (0135-3) (0135-5) • Lauden, Loy (0047-5) • Mueller, Heinz (0142-10) (0142-12) (0142-14) (0142-24) • Stanley, Joyce A. (0141-2) • Thomas, Ruth (0119-4) (0119-6) • Vejdani, Vivianne (0126-1) (0126-4) (0126-5) (0126-6) (0126-7) (0126-8) (0126-9) (0126-10) (0126-11) (0126-16) (0126-17) (0126-19) (0126-21) (0126-22) (0126-25) (0126-28) (0126-30) (0126-32) (0126-33)
Editorial Comments	• Fallon, Chris (0134-48) (0134-56) (0134-57)
Environmental Justice	• Fallon, Chris (0134-54) • Hicks, Katie (0012-7-5) (0012-7-7) • Mueller, Heinz (0142-22)
Health-Nonradiological	• Fallon, Chris (0134-83) • Mueller, Heinz (0142-20)
Health-Radiological	• Anonymous (0112-2) (0112-6) • Acs, Deborah (0107-2) • Andrews, Josephine (0112-2) (0112-6) • Beattie, Kathryn E. (0112-2) (0112-6) • Bisesi, Philip (0013-31-1) • Boever, Virginia (0112-2) (0112-6) • Boyle, Ella (0112-2) (0112-6) • Broadhead, Susan (0013-33-2) (0083-2) (0083-3) (0098-2) (0098-3) • Brockington, Mary Sue and William B. (0144-2) • Brogan Prindle, Cathleen (0112-2) (0112-6) • Bromm, Bob (0013-18-1) • Christopher, Lucy D. (0133-8) • Craig, Tom (0060-1) • Cunningham, Kristine (0004-5) • Davis, John (0112-2) (0112-6) • Dixon, Mary (0025-2) • Drouin, Michaeljon (0087-1) • Fallon, Chris (0134-65) • Flores, S. (0112-2) (0112-6) • Glaser, Christine (0031-1) • Greenberg, Lori (0099-1) • Greenburg, Lori (0013-29-1) • Hamahan, Clare (0112-2) (0112-6) • Holt, Cathy (0061-3) • Howarth, Irma (0012-19-1) (0092-2) • Howarth, Robert F. (0093-2) • Karpen, Leah R. (0082-1) • Keil, A. Eugene (0112-2) (0112-6) • Knudten, Cori (0111-3)

Table E-2. (contd)

Comment Category	Commenter (Comment ID)
	• Larsen Clark, Brita (0012-15-1) • Leverette, Will (0112-2) (0112-6) • Lovinsohn, Ruth (0114-7) (0114-10) • McMahon, John (0041-2) (0041-4) • Morgan, Tom and Barbara (0017-1) (0017-2) • Mueller, Heinz (0142-6) (0142-8) • Patrie, MD, MPH, Lewis E. (0058-4) • Peterson, Harry (0112-2) (0112-6) • Peterson, Martha J. (0112-2) (0112-6) • Richardson, Don (0013-14-2) (0100-1) • Rittenberg, David (0112-2) (0112-6) • Rustin, K. (0112-2) (0112-6) • Skeele, Michele and Skip (0048-1) (0048-2) • Thomas, Ruth (0119-17) (0119-23) • Vestal, Majorie (0018-2) (0018-4) • Zdenek, Dr. Joe (0013-16-3) • Zeller, Lou (0012-11-1) (0012-11-3) (0130-8) (0130-10)
Historic and Cultural Resources	• Dobrasko, Rebekah (0109-1) • Fallon, Chris (0134-46) (0134-47) (0134-55) (0134-77) (0134-88) • Mueller, Heinz (0142-26) (0142-32)
Hydrology-Groundwater	• Fallon, Chris (0134-6)
Hydrology-Surface Water	• Anonymous (0112-4) (0112-7) • Allison, Patricia (0085-3) • Andrews, Josephine (0112-4) (0112-7) • Beattie, Kathryn E. (0112-4) (0112-7) • Bliss, Rachel (0013-13-3) (0104-5) • Boever, Virginia (0112-4) (0112-7) • Boyle, Ella (0112-4) (0112-7) • Broadhead, Susan (0083-7) (0098-5) (0098-6) • Brogan Prindle, Cathleen (0112-4) (0112-7) • Buscarino, John (0013-23-4) • Cahill, Joanne (0132-6) • Caldwell, Mark (0141-3) (0141-6) • Christopher, Lucy D. (0133-3) • Conard, Sky (0012-4-3) (0012-4-4) (0012-4-5) (0094-1) (0094-3) (0127-1) • Connolly, Mary Ellen (0012-10-1) • Craig, Anne (0013-20-2) (0013-20-4) (0095-3) (0095-5) • Cremer, Claudine (0013-5-4) (0013-5-5) • Cunningham, Kristine (0004-3) (0004-7) • Davis, John (0112-4) (0112-7) • Doebber, Ian (0026-3) • Doebber, Rachel (0026-3)

Table E-2. (contd)

Comment Category	Commenter (Comment ID)
	• Doebber, Tom (0019-4) • Fallon, Chris (0134-26) (0134-27) (0134-51) (0134-72) • Flores, S. (0112-4) (0112-7) • Gamble, Dan (0129-2) • Gregg, Ben (0135-1) (0135-2) (0135-6) • Hamahan, Clare (0112-4) (0112-7) • Hayes, MD, J. David (0124-2) • Hicks, Katie (0012-7-2) (0012-7-4) (0012-7-9) (0012-7-10) (0012-7-12) • Howarth, Robert F. (0093-7) • Justice, Cynthia and Michael (0122-5) • Karpen, Leah R. (0082-2) • Keil, A. Eugene (0112-4) (0112-7) • Klein, Art and Michelle (0020-4) • Larsen Clark, Brita (0012-15-4) • Larson, Jean (0097-2) • Lauden, Loy (0047-2) • Lemoing, Melissa (0084-4) • Leverette, Will (0112-4) (0112-7) • Lovinsohn, Ruth (0114-6) • Mayfield, Julie (0128-1) (0128-2) (0128-3) (0128-4) (0128-5) • McWherter, Lisa (0013-30-2) (0013-30-3) • Morgan, Tom and Barbara (0017-3) (0017-5) • Mueller, Heinz (0142-15) (0142-17) (0142-30) • Peterson, Harry (0112-4) (0112-7) • Peterson, Martha J. (0112-4) (0112-7) • Raleigh, Carolyn (0059-3) • Reeser, Rachel (0043-3) • Rittenberg, David (0112-4) (0112-7) • Rustin, K. (0112-4) (0112-7) • Rylander, Kimchi (0086-2) • Shell, Karrie-Jo (0080-1) • Skeele, Michele and Skip (0048-4) • Sloss, Barbara (0022-3) • Smith, Coleman (0013-11-5) • Southworth, Win (0046-2) • Stanley, Joyce A. (0141-3) (0141-6) • Stoll, Irene (0001-3) • Swing, Carol (0030-2) • Thomas, Ruth (0119-26) (0119-27) • Vejdani, Vivianne (0126-3) (0126-23) (0126-26) (0126-27) • Whitefield, Anne (0024-4) • Whiteside, Cassie (0039-3) • Zeller, Lou (0130-4) (0130-5) (0130-6) (0130-12)

Table E-2. (contd)

Comment Category	Commenter (Comment ID)
Land Use-Site and Vicinity	• Fallon, Chris (0134-5) (0134-23) (0134-24) (0134-25) (0134-49) (0134-50) (0134-79) (0134-80) (0134-86) • Sorensen, Laura (0013-7-3) • Vejdani, Vivianne (0126-2) (0126-20) (0126-24)
Meteorology and Air Quality	• Allison, Patricia (0085-2) • Fallon, Chris (0134-66) • Howarth, Robert F. (0012-13-2) • McWherter, Lisa (0013-30-1) • Moss, Representative Dennis (0013-1-4) • Mueller, Heinz (0142-18) (0142-19) (0142-28) (0142-29) (0142-31) • Thomas, Ruth (0119-22) • Wallace, Kristine (0121-3) • Zeller, Lou (0130-2)
Need for Power	• Boger, Paul (0012-14-2) • Boots, Debby (0052-2) • Fallon, Chris (0013-4-1) (0134-3) (0134-67) (0134-68) • Farris, Mark (0012-16-3) • Gossett, Lewis (0012-9-1) (0012-9-2) (0012-9-4) • Jamil, Dhiaa (0012-2-1) • Moss, Representative Dennis (0013-1-2) • Rawl, Otis (0012-5-2)
Nonradiological Waste	• Mueller, Heinz (0142-27)
Opposition-Licensing Action	• Anonymous (0112-3) • Anonymous (0076-1) • Allison, Patricia (0085-1) • Andrews, Josephine (0112-3) • Arnold, Debbie (0003-1) (0003-4) • Beattie, Kathryn E. (0112-3) • Bliss, Rachel (0104-2) (0104-6) • Boever, Virginia (0112-3) • Boots, Debby (0052-1) (0052-3) • Boyle, Ella (0112-3) • Brackett, Cheri (0023-1) • Broadhead, Susan (0013-33-3) (0083-1) (0083-10) (0098-1) • Brogan Prindle, Cathleen (0112-3) • Burnett, Linda (0115-1) (0115-3) • Cahill, Joanne (0132-1) (0132-7) • Christopher, Lucy D. (0133-1) • Clere, Daniel (0125-1) (0125-3) • Craig, Anne (0105-2) • Craig, Tom (0060-2) • Cranford, Kelley (0013-36-2)

Table E-2. (contd)

Comment Category	Commenter (Comment ID)
	• Cunningham, Kristine (0004-2) • da Silva, Arjuna (0063-1) • Dailey, Debbie (0139-1) (0139-4) • Davis, John (0112-3) • Dixon, Mary (0025-1) (0025-4) • Doebber, Tom (0019-1) (0019-7) • Fisk, Bill (0108-3) • Flaherty, David (0006-1) • Flores, S. (0112-3) • G., Edith A. (0140-1) (0140-4) • Gardner, Janet (0033-1) • Gilbert, Grace (0077-3) (0077-5) • Greenberg, Lori (0099-4) • Hamahan, Clare (0112-3) • Hayes, MD, J. David (0124-1) (0124-7) • Howell, Martha N. (0016-1) (0016-2) • Justice, Cynthia and Michael (0122-1) • Keil, A. Eugene (0112-3) • Klein, Art and Michelle (0020-1) (0020-7) • Lemoing, Melissa (0084-1) • Leverette, Will (0112-3) • Lovinsohn, Ruth (0088-1) (0114-1) • Macko, Karl (0145-1) • McAfee, Patricia B. (0143-1) • McMahon, John (0041-1) • Mewborne, Janice (0045-1) • Miller, John C. (0011-1) • Morgan, Tom and Barbara (0017-11) • Nord, Felice (0027-1) • Oehler, Susan (0051-1) • Peterson, Harry (0112-3) • Peterson, Martha J. (0112-3) • Raleigh, Carolyn (0059-1) • Rhyne, Faith Rachel (0056-1) • Rinsler, MD, Steve (0021-1) • Rittenberg, David (0112-3) • Rose, Katherine (0113-1) • Rustin, K. (0112-3) • Ruthye100, You Tube Service (0049-1) • Schmitt, Brynn (0079-1) • Schmitt, Daniel (0116-1) • Schneyer, Julie (0055-1) • Schott Cummins, Gretchen (0015-1)

Table E-2. (contd)

Comment Category	Commenter (Comment ID)
	• Severin, Patricia (0081-1) • Siler, Jill (0040-1) • Smith, Joy (0062-1) • Smy, Gayle and Allison (0002-1) (0002-3) (0002-5) • Southworth, Win (0046-5) • Stoll, Irene (0001-1) • Swing, Carol (0030-1) • Thomas Orengo, Cheryl (0123-1) (0123-2) • Thomas, Ellen (0089-1) • Thomas, Ruth (0119-25) • Tinnaro, Heather (0007-3) • Vestal, Majorie (0018-1) • vonSeideneck-Houser, Rebecca (0009-1) • Williams, David (0118-1) • Wilson, Dawn (0120-1) • Wilson, Rev. Mason and Barbara S. (0014-1) • Zdenek, Dr. Joe (0013-16-1)
Opposition-Licensing Process	• Nord, Felice (0027-2) • Smith, Coleman (0013-11-1) • Thomas, Ellen (0089-3) • Wallace, Kristine (0121-5)
Opposition-Nuclear Power	• Anonymous (0112-1) • Anonymous (0076-2) • Acs, Deborah (0107-4) • Andrews, Josephine (0112-1) • Arnold, Debbie (0003-2) • Atanasoff, Mike (0078-1) (0078-2) • Beattie, Kathryn E. (0112-1) • Bertram, Beth (0044-1) • Bliss, Rachel (0104-4) (0104-7) • Boever, Virginia (0112-1) • Boyle, Ella (0112-1) • Brogan Prindle, Cathleen (0112-1) • Burt, Rick (0038-2) • Buscarino, John (0013-23-1) • Christopher, Lucy D. (0133-2) • Collins, Richard (0037-1) (0037-3) • Craig, Anne (0013-20-1) (0095-1) (0095-2) (0105-3) • Crissey, Brian (0117-2) • Cunningham, Kristine (0004-1) • da Silva, Arjuna (0063-2) (0063-4) (0063-5) • Davis, John (0112-1) • DeLap, E.A. (0057-1)

Table E-2. (contd)

Comment Category	Commenter (Comment ID)
	• Doebber, Ian (0026-1) • Doebber, Rachel (0026-1) • Doebber, Tom (0019-2) • Flores, S. (0112-1) • Gardner, Janet (0033-2) (0034-1) • Genetti, Phyllis (0110-1) (0110-3) • Greenberg, Lori (0099-3) • Hamahan, Clare (0112-1) • Hammett, Jan (0013-35-2) • Hicks, Katie (0012-7-1) • Holt, Cathy (0061-1) (0061-2) • Howarth, Irma (0012-19-4) (0012-19-5) • Keil, A. Eugene (0112-1) • Klein, Art and Michelle (0020-2) • Knudten, Cori (0111-2) • Lauden, Loy (0047-1) • Leverette, Will (0112-1) • Lewis, Brenda K. (0005-1) • Lovinsohn, Ruth (0114-2) (0114-4) • Nord, Felice (0027-3) (0027-4) • Norris, Steve (0013-21-2) • Oehler, Susan (0051-2) • Peterson, Harry (0112-1) • Peterson, Martha J. (0112-1) • Reeser, Rachel (0043-2) • Rhyne, Faith Rachel (0056-6) • Richardson, Don (0013-14-1) (0013-14-4) • Rittenberg, David (0112-1) • Rose, Katherine (0113-3) • Rustin, K. (0112-1) • Schmitt, Brynn (0079-5) • Schmitt, Daniel (0116-2) • Schneyer, Julie (0055-2) • Scott, Cathy (0029-1) • Skeele, Michele and Skip (0048-11) • Smith, Coleman (0013-11-2) (0013-11-3) (0013-11-8) • Smith, Joy (0062-2) • Smy, Gayle and Allison (0002-2) • Sorensen, Laura (0013-7-5) • Sorensen, Ole (0013-8-1) • Stoll, Irene (0001-2) • Swing, Carol (0030-3) • Thomas, Ellen (0089-2)

Table E-2. (contd)

Comment Category	Commenter (Comment ID)
	• Thomas, Ruth (0012-3-3) • Tinnaro, Heather (0007-1) • Wallace, Kristine (0121-1) • Watters, Gillian (0032-1) • Whiteside, Cassie (0039-2) • Wilson, Rev. Mason and Barbara S. (0014-3) • Zdenek, Dr. Joe (0013-16-2) • Zeller, Lou (0012-11-4)
Outside Scope-Emergency Preparedness	• Sorensen, Laura (0013-7-1) • Thomas, Ruth (0119-11) (0119-16) • Vestal, Majorie (0018-3)
Outside Scope-Miscellaneous	• Crissey, Brian (0117-7) (0117-9) • Gamble, Dan (0129-3) • Skeele, Michele and Skip (0048-7) • Thomas, Ruth (0119-10) • Zeller, Lou (0130-9) (0130-11)
Outside Scope-NRC Oversight	• Anonymous (0076-3) (0076-5) • Connolly, Mary Ellen (0012-10-5) • Knudten, Cori (0111-4) • Lovinsohn, Ruth (0088-2) (0114-13) • Thomas, Ruth (0119-14)
Outside Scope-Safety	• Anonymous (0112-9) • Andrews, Josephine (0112-9) • Beattie, Kathryn E. (0112-9) • Bliss, Rachel (0013-13-1) (0013-13-6) (0104-1) (0104-8) (0104-9) • Boever, Virginia (0112-9) • Boyle, Ella (0112-9) • Brogan Prindle, Cathleen (0112-9) • Cahill, Joanne (0132-2) (0132-3) • Christopher, Lucy D. (0133-6) • Connolly, Mary Ellen (0012-10-2) (0012-10-7) • Cremer, Claudine (0013-5-1) (0013-5-2) • Crissey, Brian (0012-8-5) • Cunningham, Kristine (0004-9) • Dailey, Debbie (0013-19-1) (0139-3) • Davis, John (0112-9) • Doebber, Ian (0026-5) • Doebber, Rachel (0026-5) • Doebber, Tom (0019-6) • Fisk, Bill (0013-27-1) • Flores, S. (0112-9) • G., Edith A. (0140-3)

Table E-2. (contd)

Comment Category	Commenter (Comment ID)
	• Guy, Peggy (0013-15-1) • Hamahan, Clare (0112-9) • Hearne, Ray (0013-24-1) (0106-1) • Howarth, Irma (0092-5) • Justice, Cynthia and Michael (0122-2) (0122-6) • Keil, A. Eugene (0112-9) • Klein, Art and Michelle (0020-6) • Knudten, Cori (0111-1) • Lemoing, Melissa (0084-3) • Leverette, Will (0112-9) • Lovinsohn, Ruth (0114-11) • McAfee, Patricia B. (0143-2) • Morgan, Tom and Barbara (0017-4) (0017-10) • Mueller, Heinz (0142-7) • Peterson, Harry (0112-9) • Peterson, Martha J. (0112-9) • Richardson, Don (0013-14-3) (0100-2) (0100-3) (0100-4) • Rinsler, MD, Steve (0021-7) (0021-8) • Rittenberg, David (0112-9) • Rose, Katherine (0113-2) (0113-6) • Rustin, K. (0112-9) • Ruthye100, You Tube Service (0049-2) • Skeele, Michele and Skip (0048-3) • Sloan, Judie (0013-26-2) • Sorensen, Laura (0013-7-4) • Southworth, Win (0046-4) • Swing, Carol (0030-4) (0030-5) • Thomas, Ruth (0119-2) (0119-3) (0119-21) • Zeller, Lou (0012-11-2) (0130-1) (0130-7)
Outside Scope-Security and Terrorism	• Dailey, Debbie (0013-19-2) • Doebber, Ian (0026-2) • Doebber, Rachel (0026-2) • Doebber, Tom (0019-3) • Hayes, MD, J. David (0124-5) • Klein, Art and Michelle (0020-3) • Thomas, Ruth (0119-15) (0119-24) • Whitefield, Anne (0024-5)
Process-ESP-COL	• Mueller, Heinz (0142-3) (0142-9) • Thomas, Ruth (0119-18)
Process-NEPA	• Brockington, Mary Sue and William B. (0144-1) • Mayfield, Julie (0128-6) • Rinsler, MD, Steve (0021-6)

Table E-2. (contd)

Comment Category	Commenter (Comment ID)
Site Layout and Design	• Fallon, Chris (0134-2) (0134-12) (0134-13) (0134-14) (0134-15) (0134-16) (0134-17) (0134-18) (0134-19) (0134-20) (0134-21) (0134-22)
Socioeconomics	• Beach, William (0013-34-1) • Boger, Paul (0012-14-1) (0012-14-3) • Bromm, Bob (0013-18-2) • Buscarino, John (0013-23-2) • Conard, Sky (0012-4-1) • Cook, Jim (0012-17-1) • Crissey, Brian (0117-1) • Fallon, Chris (0013-4-2) (0134-11) (0134-74) (0134-75) (0134-76) • Farris, Mark (0012-16-1) • Gaddy, Ron (0054-3) • Gossett, Lewis (0012-9-6) • Hammett, Jan (0013-35-1) • Jamil, Dhiaa (0012-2-2) • Lovinsohn, Ruth (0114-8) • Moss, Representative Dennis (0013-1-3) • Moss, Representative Steve (0013-2-3) • Mueller, Heinz (0142-21) (0142-23) • Patrie, MD, MPH, Lewis E. (0058-3) • Rawl, Otis (0012-5-4) (0012-5-5) • Reichenbach, Adam (0013-17-2) • Richardson, Don (0100-6) • Vejdani, Vivianne (0126-18) • Youngblood, Rob (0012-18-2)
Support-Licensing Action	• Cook, Jim (0012-17-2) • Cox, Judith (0010-1) • Fallon, Chris (0013-4-4) • Farris, Mark (0012-16-4) • Gossett, Lewis (0012-9-5) • Jamil, Dhiaa (0012-2-3) (0012-2-4) • McFadden, Cindy (0091-1) • Moss, Representative Steve (0013-2-1) (0013-2-2) (0013-2-5) • Rawl, Otis (0012-5-1) (0012-5-6) • Reichenbach, Adam (0013-17-1) (0013-17-3) • Richardson, Ed (0036-1) • Spencer, Tim (0013-3-1) • Youngblood, Rob (0012-18-1) (0012-18-3)
Support-Nuclear Power	• Adams, Rod (0012-12-7) (0013-12-1) (0013-12-3) (0013-12-5) • Baker, Kasey (0013-6-1) • Gaddy, Ron (0054-1) (0054-5) • Moss, Representative Dennis (0013-1-1) (0013-1-5) • Paterson, Wallace (0042-1)

Table E-2. (contd)

Comment Category	Commenter (Comment ID)
Transportation	• Howarth, Irma (0012-19-2) (0092-3) • Thomas, Ruth (0119-9)
Uranium Fuel Cycle	• Anonymous (0112-5) (0112-8) (0137-1) • Anonymous (0076-4) • Acs, Deborah (0107-3) • Adams, Rod (0012-12-1) (0012-12-4) • Allison, Patricia (0085-5) • Andrews, Josephine (0112-5) (0112-8) • Apunte, Daya (0131-1) • Beattie, Kathryn E. (0112-5) (0112-8) • Bertram, Beth (0044-2) • Bliss, Rachel (0013-13-4) (0013-13-5) (0104-10) (0104-11) • Boever, Virginia (0112-5) (0112-8) • Boyle, Ella (0112-5) (0112-8) • Broadhead, Susan (0083-9) (0098-8) • Brogan Prindle, Cathleen (0112-5) (0112-8) • Burnett, Linda (0115-2) • Christopher, Lucy D. (0133-5) (0133-7) • Collins, Richard (0037-2) • Connolly, Mary Ellen (0012-10-3) (0012-10-6) • Crissey, Brian (0117-3) (0117-4) • Cunningham, Kristine (0004-4) (0004-8) • da Silva, Arjuna (0063-6) • Dailey, Debbie (0013-19-3) (0139-2) • Davis, John (0112-5) (0112-8) • Doebber, Ian (0026-6) (0026-7) • Doebber, Rachel (0026-6) (0026-7) • Doebber, Tom (0019-8) (0019-9) • Flores, S. (0112-5) (0112-8) • Gilbert, Grace (0077-1) (0077-2) • Gilman, Steve (0012-6-1) • Hamahan, Clare (0112-5) (0112-8) • Hayes, MD, J. David (0124-3) • Hicks, Katie (0012-7-3) • Holt, Cathy (0013-32-1) • Howarth, Irma (0012-19-3) (0092-1) (0092-4) • Justice, Cynthia and Michael (0122-3) • Karpen, Leah R. (0082-4) (0082-5) • Keil, A. Eugene (0112-5) (0112-8) • Klein, Art and Michelle (0020-8) (0020-9) • Larsen Clark, Brita (0012-15-2) • Lauden, Loy (0047-4) • Lemoing, Melissa (0084-2)

Table E-2. (contd)

Comment Category	Commenter (Comment ID)
	• Leverette, Will (0112-5) (0112-8) • Lovinsohn, Ruth (0114-3) (0114-9) • McMahon, John (0041-3) (0041-5) • Morgan, Tom and Barbara (0017-8) (0017-9) • Mueller, Heinz (0142-1) (0142-2) (0142-5) • Oehler, Susan (0051-3) • Patrie, MD, MPH, Lewis E. (0058-5) • Peterson, Harry (0112-5) (0112-8) • Peterson, Martha J. (0112-5) (0112-8) • Raleigh, Carolyn (0059-4) • Reeser, Rachel (0043-4) • Rhyne, Faith Rachel (0056-4) • Rinsler, MD, Steve (0021-2) • Rittenberg, David (0112-5) (0112-8) • Rose, Katherine (0113-4) • Rustin, K. (0112-5) (0112-8) • Rylander, Kimchi (0086-1) (0086-3) • Schmitt, Brynn (0079-2) • Schmitt, Daniel (0116-3) • Skeele, Michele and Skip (0048-8) (0048-10) • Sloan, Judie (0013-26-3) • Sloss, Barbara (0022-1) • Smith, Coleman (0013-11-4) (0013-11-6) • Southworth, Win (0046-6) (0046-7) • Thomas, Ruth (0012-3-1) (0012-3-2) (0119-7) (0119-8) • Tinnaro, Heather (0013-9-1) • Wallace, Kristine (0121-2) (0121-4) • Whitefield, Anne (0024-2) • Whiteside, Cassie (0039-4) • Wilson, Dawn (0120-2) • Wilson, Rev. Mason and Barbara S. (0014-2)

E.2 Comments and Responses

Table E-3 is a list of the comment categories included in this appendix in the order in which they appear. The balance of this document presents the comments and responses organized by topic category. References appear in Section E.3 at the end of the appendix.

Table E-3. Comment Categories in Order of Presentation

E.2.1 Comments Concerning the COL Process

Comment: The problem that Duke Energy proceeds with pre-construction activities such as clearing land, cutting trees, evicting residents, digging ponds, while the plant is still only under consideration. These activities should stop. (**0119-18** [Thomas, Ruth])

Response: *This comment addresses preconstruction activities at the Lee Nuclear Station site. Activities that do not fall within the NRC's definition of construction in Title 10 of the* Code of Federal Regulations *(CFR) 50.10(a) and 51.4, such as clearing and grading, excavating, building transmission lines, erecting support buildings, and building supplemental cooling-water reservoirs, are considered "preconstruction" activities that do not require NRC authorization. Most of these activities are regulated by other local, State, Tribal, or Federal agencies and require permits from them to proceed (e.g., a permit from the USACE is required for preconstruction activities that could affect waters of the United States). Based on its regulations, the NRC considers preconstruction activities in environmental reviews in the context of cumulative impacts. These impacts are evaluated in Chapters 4 and 7 of the EIS. No change was made to the EIS as a result of this comment.*

Comment: *Transmission lines*

The project calls for four new transmission lines (two 230-kV and two 525-kV lines) to be constructed to accommodate the new power generating capacity (page 5-63). We note that the NRC considers transmission lines to be "preconstruction" activities, and that preconstruction activities are considered in the context of cumulative impacts. EPA is concerned about the impacts of transmission lines and supporting infrastructure for the project and, in accordance with NEPA, considers these activities as part of the project, and not a separate action.

Recommendations: The FEIS should clarify whether there are plans to issue a Limited Work Authorization (LWA) for these lines pursuant to the NRC's LWA process. (**0142-9** [Mueller, Heinz])

Response: *The commenter is correct in that building of service facilities, such as paved roads, parking lots, railroad spurs, exterior utility and lighting systems, potable-water systems, sanitary waste-treatment facilities, and transmission lines are preconstruction activities that do not require permits from the NRC. Therefore transmission lines and supporting infrastructure can be constructed at any time—before, during, or after the issuance of any NRC permit or license. These activities would not require a Limited Work Authorization (LWA) from the NRC. LWAs are only needed for activities that affect specific safety-related structures, systems, and components that are relied upon to remain functional during and following specific events that the facility is designed to handle. Transmission lines are not considered to be safety-related structures. However, preconstruction activities may require permits from other Federal and State agencies (e.g., permits from the USACE if wetlands are affected or if dredging is needed under Section 404 of the Clean Water Act [CWA], and from the South Carolina Department of*

Health and Environmental Control [SCDHEC] for Section 401 Water Quality Certification and National Pollutant Discharge Elimination System [NPDES] permits, also required under the CWA). The NRC and the USACE signed a memorandum of understanding (MOU) in which the agencies agreed that the USACE will be a cooperating agency. The USACE will require issuance of a final EIS prior to making any permit decision allowing preconstruction activities that impact wetlands. Therefore, prior to preconstruction activities, the NRC has encouraged Duke to consult with the appropriate State and Federal regulatory bodies that have authority over preconstruction activities. No change was made to the EIS as a result of this comment.

Comment: We appreciate the inclusion of mitigation strategies for environmental impact categories and socioeconomic, EJ, and cultural resource impacts in the DEIS (Table 4-6). Table 4-6 lists specific measures and controls to avoid and minimize construction impacts, and we also note that there is also a specific requirement for a compensatory mitigation plan that complies with Section 404(b)(1) Guidelines. EPA reviewed the Joint Public Notice (JPN) and submitted comments regarding the compensatory mitigation and permit action under separate cover on March 6, 2012 (see enclosed letter to USACE). We recommend that clear commitments be provided regarding mitigation measures and public outreach methods mentioned for all media issues in the DEIS and Environmental Report (ER) in the decision documents.
(**0142-3** [Mueller, Heinz])

Response: *Table 4-6 of the EIS lists mitigation measures by resource area. Other Federal and State agencies have the regulatory mechanisms to require clear mitigation commitments with respect to certain environmental matters, but the NRC lacks such statutory authority when mitigation is unrelated to radiological health and safety matters. Implementation of potential mitigation measures listed in the EIS will be at the discretion of Duke, unless required to satisfy a particular permit. The USACE will ensure that mitigation, including compensatory mitigation, required for any Department of the Army permit, if issued, meets its program requirements. A summary of Duke's mitigation plan, as provided by the USACE, is included in Section 4.3.1.7 of the EIS. With regard to public outreach, both the NRC and the USACE have conducted public meetings and issued public notices regarding the proposed action and Duke's permit applications, and upon issuance of the final EIS, public notices will again be issued. Duke's mitigation work in the Turkey Creek tract and in the Sumter National Forest may involve some level of public outreach; however, such outreach will be at the discretion of Duke, unless otherwise required by the USACE or the U.S. Forest Service. No change was made to the EIS as a result of this comment.*

E.2.2 Comments Concerning the NEPA Process

Comment: Adequate public review should include meetings in locations convenient to the putative users AND ANY OTHERS AFFECTED BY the operation of the proposed power plant. Notice of such public meetings should be widely publicized in clear, nontechnical

language via multiple mass-media sources to enable attendance and input by all putative users of the proposed power plant. Such notice should be published long enough before the day of the meetings to maximize the attendance by interested individuals. Input for the meetings should be sought be recognized experts in environment hazards due to nuclear fuel and radiation WITHOUT ties to the nuclear power industry or the company proposing the power plant. (**0021-6** [Rinsler, MD, Steve])

Comment: I live on Victory Trail Road in Gaffney not far from the proposed Nuclear Plant. I was just today made aware at approx 3 oclock in the afternoon that there had been meetings concerning the plant being opened. No one has ever consulted anyone in my household, told us of any meetings concerning this matter and now I find that Duke Power officials have said that there have been no objections in meetings we were not informed of! Why were the residents of Victory Trail, Darby Rd, Edward Rd, Old Barn Road, Grace Road, Jimmy Road and Whites Road not informed of meetings. I am writing on behalf of the many people who do not know who to object to is the only reason they have not been heard. (**0144-1** [Brockington, Mary Sue and William B.])

Response: *The comments address concerns regarding the NRC's notice of the Lee Nuclear Station project and subsequent public meetings and public participation. In particular, the second comment expresses opposition against the proposed action on behalf of the commenter and residents in the immediate vicinity of the Lee Nuclear Station site. Unfortunately the commenter was not part of the four public meetings or two scoping periods that were conducted for the Lee Nuclear Station environmental review since 2007. However, the commenter's opposition is noted and is now part of the environmental review's administrative record.*

It is the policy of the NRC to involve the public in the Commission's decision-making process; therefore, although not required by NEPA, the NRC elects to conduct open public meetings in association with its environmental review process. Meetings are generally held in a location accessible by the largest population that will experience the most direct environmental impact as a result of the proposed action. In the case of the proposed Lee Nuclear Station, this population is located in the area of Gaffney, South Carolina. The NRC has held four public meetings in Gaffney, South Carolina, regarding the proposed Lee Nuclear Station: August 2007, May 2008, June 2010, and January 2012. There were two public scoping periods: an initial scoping period for 60 days from May through June, 2008 and a supplemental scoping period from May through July, 2010. Prior to all four of the NRC's public meetings, press releases and meeting notices were issued, and advertisements were placed in local South Carolina and North Carolina newspapers. For the most recent public meeting in January 2012, the NRC chose to publish newspaper advertisements only in South Carolina. This was because numerous North Carolina residents had registered ahead of time to speak at the public meetings and the NRC was aware of notifications regarding the meetings posted by North Carolina activist groups. The NRC placed advertisements in the Abbeville Press & Banner, the Anderson Independent-Mail,

the Belton News-Chronicle, the Blacksburg Times, the Boiling Spring Sentry, the Chesnee Tribune, the Clemson Daily Messenger, the Clinton Chronicle, the Cowpens/Spartanburg County News, the Easley Progress, the Gaffney Ledger, the Greenville LINK, the Greenville News, the Greenwood Index-Journal, the Greer Citizen, the Inman Times, the Landrum News Leader, the Laurens County Advertiser, the Lyman Middle Tyger Times, the Pickens County Courier, the Pickens Sentinel, the Powdersville Post, the Seneca Daily Journal, the Simpsonville Tribune-Times, the Spartanburg Herald-Journal, the Travelers Rest Monitor, the Union Daily Times, the Walhalla Keowee Courier, the Westminster News, the Williamston Journal, and the Woodruff News. The advertisements and press releases were written in plain language explaining the time, date, and location of the meetings, and how to register for the meetings and submit comments on the environmental review and the EIS. The advertisements also listed the environmental project manager, Ms. Sarah Lopas, as the point of contact for the Lee Nuclear Station environmental review.

The purpose of the NRC's public meetings is to allow members of the public to express their concerns and opinions regarding the proposed plant and ask questions of NRC staff, and for NRC staff to discuss basic information regarding the COL application review process and potential environmental impacts of the proposed plant. Comments received via e-mail, letter, or fax receive the same consideration as comments received in person at the public meetings. Appendix D contains information regarding the two scoping meetings and in-scope comments received during those scoping periods; this appendix contains all comments received on the draft EIS. These are procedural comments and no change to the EIS was made as a result.

Comment: For the above-stated reasons [related to the operational and cumulative surface water impacts], the DEIS is inadequate, does not comply with NEPA, and cannot serve as the basis for the issuance of the proposed combined licenses. (**0128-6** [Mayfield, Julie])

Response: *The review team disagreed with this comment. In Chapter 2 of the EIS, existing conditions at the Lee Nuclear Station site are described. Water use for Lee Nuclear Station and impacts to surface water are discussed in Chapter 5. Cumulative impacts to surface water are discussed in Chapter 7. No change was made to the EIS as a result of this comment.*

E.2.3 Comments Concerning Site Layout and Design

Comment: As design changes are submitted to the NRC for updating the Final Safety Analysis Report (FSAR), Duke Energy also plans to provide the NRC supplemental updates to the Environmental Report (ER) to reflect conforming changes. These supplemental updates will be provided during March 2012 and April 2012.
(**0134-2** [Fallon, Chris])

Response: *Duke provided additional information regarding proposed design changes to the NRC in letters dated March 29, 2012 and April 30, 2012 (Duke 2012a-d). Chapter 3 of the EIS (Site Layout and Plant Design) was revised to incorporate the proposed design changes.*

Comment: Figure 3-1, Page 3-2; Section 3-1, Page 3-3; Figure 3-2, Page 3-4: Cooling Tower arrangement has been updated (three towers to two towers per unit, removal of the 20 ft earth berms, tower dimensions and general location in relation to the plant and associated plant facilities). Per Comment #3 above, Duke Energy plans to provide a supplemental response in March 2012 to reflect these changes.
(**0134-12** [Fallon, Chris])

Response: *EIS Figures 3-1, 3-2, and 3-4 were updated to show the revised cooling tower number, arrangement, dimensions, and associated layout changes.*

Comment: Section 3.2.2, Page 3-5, Line 33: Make Up Ponds A and B and Hold-Up Pond A are classified as waters of the US. Appropriately permitted temporary and/or permanent holding ponds will be designed, constructed and operated as needed before release of storm water into any of the listed ponds.
(**0134-13** [Fallon, Chris])

Response: **With respect to documenting the site layout and design,** *sections 3.2.2.1, 3.3.1.1, and 3.4.4.1 of the EIS were revised to reflect that temporary or permanent holding ponds would be designed, constructed, and operated as needed to manage stormwater, and that discharges to waters of the United States would be appropriately permitted.*

Comment: Section 3.2.2.2, Pages 3-8 through 3-21: Recent engineering and general layout updates are reflected in the noted permit applications submitted as outlined in Comments #1 and #2 above. Examples of updated information found in these applications:

- Intake structures - structure size including pump bays, fish protection screen calculations and screen size
- Blowdown and wastewater discharge - change in discharge diffuser elevation at Ninety-Nine Islands Dam and dredging details

(**0134-14** [Fallon, Chris])

Response: *Section 3.2.2, Cooling System (description) was revised to incorporate the proposed design changes, using various permit applications and supplemental environmental report (ER) information provided by Duke.*

Comment: Section 3.2.2.4, Page 3-23, Line 14: Duke intends to operate the concrete batch plant through initial operation of Unit 1 to support completion of construction of Unit 2. (**0134-15** [Fallon, Chris])

Response: *Sections 3.2.2.4 of the EIS was revised to describe the timing of concrete batch plant operation.*

Comment: Section 3.2.2.4, Page 3-24: Concrete Batch Plant: The concrete batch plant has been relocated to facilitate material handling and improve overall accessibility. Per Comment #3 above, Duke Energy plans to provide a supplemental response in March 2012 to reflect this change. (**0134-16** [Fallon, Chris])

Response: *Figure 3-4 of the EIS was revised to reflect the relocation of the concrete batch plant; no revision to Section 3.2.2.4 was necessary.*

Comment: Section 3.2.3, Page 3-24, Lines 24-25: The containment building is the tallest structure on site but is actually 229' 5" above grade. (Reference DCD Figure 3.7.2-12, sheet 8 of 12). Per Comment #3 above, Duke Energy plans to provide a supplemental response in April 2012 to provide an update to the view shed analysis. (**0134-17** [Fallon, Chris])

Response: *Section 3.2.3 and Table 3-10 of the EIS were revised to appropriately state the tallest structure height.*

Comment: Section 3.2.3, Page 3-25, Line 28: High Density Polyethylene (HDPE) pipelines, rather than concrete pipelines, are planned to convey raw water from the Broad River to various plant structures and to convey wastewater from the various plant water systems to the discharge structure. (**0134-18** [Fallon, Chris])

Response: *Section 3.2.3 of the EIS was revised to indicate that high-density polyethylene pipelines would be used to convey raw water and wastewater.*

Comment: Section 3.3.1.14, Page 3-32, Line 21: Many of the parking areas will be paved; however, some parking areas will be gravel. The graveled parking areas will be graded, drained appropriately and surfaced with compacted stone. (**0134-19** [Fallon, Chris])

Response: *Section 3.3.1 of the EIS was revised to add that some parking areas would be graveled.*

Comment: Section 3.4.2.1, Pages 3-36 to 3-38: Water balance details and the Make-Up Pond A intake pump arrangement have been updated. Per Comment #3 above, Duke Energy plans to provide a supplemental response in April 2012 to reflect these changes. (**0134-20** [Fallon, Chris])

Response: *Sections 3.2.2.2 and 3.4.2.1 of the EIS were revised to incorporate changes to the Make-Up Pond A intake pump arrangement.*

Comment: Section 3.4.4.1, Page 3-47, Line 4: Details for liquid waste management have been updated. Per Comment #3 above, Duke Energy plans to provide a supplemental response in March 2012 to reflect these changes. (**0134-21** [Fallon, Chris])

Response: *Section 3.4.4.1 of the EIS was revised to incorporate updates to liquid nonradioactive waste management.*

Comment: Section 3.4.4.1, Page 3-47, Line 10: Hold-Up Pond A should be included as a recipient of storm water runoff.
(**0134-22** [Fallon, Chris])

Response: *Section 3.4.4.1 of the EIS was revised to add Hold-Up Pond A as a recipient of stormwater runoff.*

E.2.4 Comments Concerning Land Use

Comment: Section 2.2.3.1, Page 2-11, Line 21: For clarification, the NRC should insert "a portion of" following "Broad River," or alternatively delete reference to state scenic waterway. The entire Broad River is not a state scenic waterway. The portion from Ninety-Nine Islands Dam to the confluence of the Pacolet River is considered a state scenic waterway. (**0134-5** [Fallon, Chris])

Response: *Section 2.2.3.1 of the EIS was updated to clarify that only a portion of the Broad River is a state scenic waterway.*

Comment: Section 4.1.2, Page 4-6, Line 15: Change "London Crossing" to "London Creek". (**0134-25** [Fallon, Chris])

Response: *The subject paragraph was deleted as part of the process of updating the text in Section 4.1.2. There is no use of "London Crossing" anywhere in the section.*

Comment: Section 5.1.1, Page 5-2, Line 38: Change "Sections 4.5 and 5.5" to "Sections 5.4 and 5.5." (**0134-49** [Fallon, Chris])

Response: *The correct section is 5.4, and Section 5.1.1 has been revised to reflect this.*

Comment: Section 5.1.2, Page 5-3, Line 18: Change Section 4.1.2 to 4.1.3. Transmission Line Corridors are discussed in 4.1.3. (**0134-50** [Fallon, Chris])

Response: *Section 5.1.2 was updated to reflect the correct section number.*

Comment: Section 4.1.2, Page 4-5, Line 32: The DEIS indicates that approximately 86 privately owned housing units will be demolished or removed from the Make-Up Pond C site. This work has already occurred.
(**0134-24** [Fallon, Chris])

Response: *The EIS was updated to reflect that all 86 residences have since been demolished or removed.*

Comment: Section 9.3.5.1, Page 9-159, Table 9-15: The table identifies the area of the Ancillary facilities as 450 ac. The Duke Energy response to RAI 127 and 131 provides the area of the ancillary facilities as 560 ac. (**0134-79** [Fallon, Chris])

Response: *Section 9.3.5.1 was changed to reflect 560 ac of ancillary facilities, as shown in Duke's response to the NRC staff's request for additional information (RAI) 127 (Duke 2010a).*

Comment: Section 9.3.5.1, Page 9-160, Lines 1-3: The DEIS states: "As described above, building the proposed facilities, new transmission-line corridors, inundation for a supplemental water reservoir, and building the water intake and railroad spur to support the new units have the potential to affect as much as 4600 ac of land." When using the correct area for the ancillary facilities contained in the Duke Energy response to RAI 127 and 131 (560 ac), the total area is 4710 ac. (**0134-80** [Fallon, Chris])

Response: *Section 9.3.5.1 has been updated to reflect the change from 4600 ac to 4710 ac.*

Comment: Lake Cherokee Construction of Make-Up Pond C would directly impact approximately 4.4 acres of land titled to DNR at Lake Cherokee. Make-Up Pond C would inundate forest land on the DNR site and directly affect the Lake Cherokee Dam. Lake Cherokee is public property titled to the State of South Carolina through its agency, DNR. Lake Cherokee provides recreational fishing opportunities to the public constituting the highest and best use of the property. DNR likely would oppose any attempt by Duke Energy to acquire Lake Cherokee and alter the use of these lands by way of condemnation. DNR can consider making some part of its land at Lake Cherokee available for use and/or modification. The DNR Board has adopted a policy for responding to requests for exclusive use of DNR owned land. A copy of DNR Board Policy 400.01 is attached. In the event DNR staff and Duke Energy reach an agreement on use of DNR land, the agreement would have to be approved by the DNR Board and the South Carolina Budget and Control Board. Sections 1-11-65, 10-1-130, and 10-1-135, SC Code Ann, govern this issue.

Based upon DNR Policy 400.01, the statutes cited above, and past action on requests to use DNR owned land, DNR is willing to negotiate an agreement to allow Duke Energy to use and/or modify some part of the Lake Cherokee tract. Among the considerations in any negotiation will be the following:

1. DNR must be fully compensated for the loss of use of any land,

2. The physical integrity of Lake Cherokee and its supporting infrastructure must not be compromised,

3. The future use of Lake Cherokee as a public recreational site must not be adversely effected, and

4. The most likely means of authorizing use of DNR land would be by way of a grant of an easement.
(**0126-20** [Vejdani, Vivianne])

Response: *This comment is directed to Duke, and the NRC does not have the authority to require such considerations. Land-use impacts from building and operating the proposed Lee Nuclear Station are discussed in Sections 4.1 and 5.1 and recreational impacts are discussed in Sections 4.4 and 5.4. No changes were made to the EIS as a result of this comment.*

Comment: Before U.S. -- before the Lee plant's even built, we're going to displace 86 people from their homes, flood 620 acres, remove wildlife habitats and trees. The entire site actually engulfs when you add it up 1900 acres on the west side of the Broad River. I call this a disruptive invasion and disregard for natural habitat. (**0013-7-3** [Sorensen, Laura])

Response: *This comment expresses concern regarding the land-use conversion of parts of the Lee Nuclear Station site and the Make-Up Pond C site. Land-use impacts from building and operating Lee Nuclear Station are discussed in Sections 4.1 and 5.1, and ecological impacts are discussed in Sections 4.3 and 5.3. Housing impacts, including the 86 housing structures already demolished or removed on the Make-Up Pond C site, are discussed in Section 4.4. No changes to the EIS were made as a result of this comment.*

Comment: The DEIS indicates the Licensee is uncertain regarding other uses of the Make-Up Pond C site. DNR appreciates the sensitive nature of operation and protection of a nuclear generation station. However, London Creek constitutes Waters of the United States and any impacts to it for purposes of a reservoir the size of the one being proposed should include an examination of compatible public use opportunities. These compatible public use opportunities might include fishing and boating opportunities and other compatible appreciative uses along the northern boundary. DNR recommends continued discussion with the Licensee regarding potential, compatible public use opportunities on a portion of the proposed Make Up Pond C. (**0126-2** [Vejdani, Vivianne])

Comment: 5.1.1 The Site and Vicinity
See comments in section 2.2.2. The Make-Up Pond C Site. (**0126-24** [Vejdani, Vivianne])

Response: *The NRC regulates the nuclear industry to protect public health and safety under the Atomic Energy Act of 1954 and the Energy Reorganization Act of 1974, and does not have the authority to require the public-use conditions recommended in the above comment. Land-use impacts, including those on the Make-Up Pond C site, from building and operating Lee Nuclear Station are discussed in Sections 4.1 and 5.1 of the EIS. No changes were made to the EIS as a result of these comments.*

Comment: Section 4.1.2, Page 4-5, Line 27: The basis for the 309 acres listed could not be located in the references Duke 2010c and 2010n.
(**0134-23** [Fallon, Chris])

Response: *All of the land use acreage data in Section 4.1.2 has been updated to reflect the latest proposed project design data submitted to the NRC by the Applicant.*

Comment: Table 10-1, Page 10-5: The Table states: "Permanent use of approximately 149 ac. on the site, as much as 1900 ac for Make-Up Pond C ..." Environmental Report Table 10.1-1 indicates 1100 ac. would be used for Pond C. The DEIS Section 4.1.2 indicates 1470 ac. would be used for Pond C. Duke cannot determine the source of the 1900 ac statement. A reference or explanation of the acreage number would be helpful as it differs from both the ER and other DEIS sections. (**0134-86** [Fallon, Chris])

Response: *All of the land use acreage data in Section 10.6 has been updated to reflect the latest proposed project design data submitted to the NRC by the Applicant.*

E.2.5 Comments Concerning Surface Water Hydrology

Comment: The impact of the nuclear plant will have on the water sources in terms of use and waste is not justifiable. (**0001-3** [Stoll, Irene])

Comment: [We're opposed to the construction of all new nuclear reactors for many reasons:] massive water use... (**0012-7-2** [Hicks, Katie])

Comment: Whereas Duke's nukes will require massive water withdrawals, water loss through evaporation, and degradation of the small, drought-prone Broad River. (**0013-11-5** [Smith, Coleman])

Comment: In conclusion let me state that nuclear power is expensive and dangerous. In this case it is also too much of a burden on the Broad River, which already is under stress. (**0013-13-3** [Bliss, Rachel])

Comment: My position [opposition] is based on... The dependence of this project on the Broad River which we cannot expect to support this Project for the long term, based on past drought circumstance in this area. (**0047-2** [Lauden, Loy])

Comment: There are many other decisive reasons to stop the proposed plant, including the excessive water usage, the thermal pollution of the Broad River... (**0083-7** [Broadhead, Susan])

Comment: [Other Nuclear factors of concern:] Water use and contamination - huge cooling demand [on the Broad River] from existing sources. (**0093-7** [Howarth, Robert F.])

Comment: There are many other decisive reasons to stop the proposed plant, including the excessive water usage... (**0098-5** [Broadhead, Susan])

Comment: [There are many other decisive reasons to stop this plant, including] ...the thermal pollution of the Broad River... (**0098-6** [Broadhead, Susan])

Response: *These comments express opposition to licensing Lee Nuclear Station Units 1 and 2 because of perceived impacts on water resources, especially the Broad River. Section 5.2 of the EIS discusses the impacts on water resources from operation of the proposed Lee Nuclear Station Units 1 and 2. No changes to the EIS were made as a result of these comments.*

Comment: Building the W.S. Lee Nuclear Plant will: Stress the Broad River & it's habitat by using 47 million gallons of water a day and returning "thermal pollution" back into the river. (**0004-3** [Cunningham, Kristine])

Comment: [Building the W.S. Lee Nuclear Plant will:] ...compromise the Broad River, Catawba River, Pacolet River, the French Broad River, and Lake Lure. (**0004-7** [Cunningham, Kristine])

Comment: The flow of the river has already been greatly stressed due to permits already given to many industries and municipalities along its journey from the mountains to the sea. The oxygen content of the water is already greatly reduced and will be further degraded by the emission of hot or warm water by this facility. The Broad River, as its name suggests, is a broad but not a deep river. In times of drought, which we have had in recent years, and low rainfall, as we continue to endure with no end in sight, you can often see rocks from the river bottom protruding above the water level. Anyone could probably walk across the river from rock to rock in the dry summer months. York County has been for years in a heated and expensive battle with North Carolina over water rights to the Catawba River on the eastern boundary of York County. It is only a matter of time that we will have to go to the Broad on the western boundary of our county as a water supply. If there is no water or if the water is severely degraded, where will our water supply come from? There is a hydroelectric plant in Lockhart just south of the proposed site. This plant will be impacted by the loss of water supply to their generators. (**0012-10-1** [Connolly, Mary Ellen])

Comment: The proposed reactor's water withdrawals and degradation of the Broad River are another concern that would place further strain on an already strained river basin. In addition to the roughly 47 million gallons of water per day the plant would withdraw, we've calculated that

the Broad would lose roughly 5-1/2 billion gallons of water each year due to forced evaporation of heated water downstream of the plant. (**0012-7-10** [Hicks, Katie])

Comment: ...and massive withdrawals and toxic discharges are also a potential threat to drinking water supplies downstream. The draft EIS indicates that the City of Union's drinking water intake is just 21 miles downstream of the proposed discharge. (**0012-7-12** [Hicks, Katie])

Comment: Use of the Broad River to cool this reactor does great environment harm to a wide region in SC and NC. (**0019-4** [Doebber, Tom], **0020-4** [Klein, Art and Michelle], **0026-3** [Doebber, Ian] [Doebber, Rachel])

Comment: Precious water resources are needed in order to cool nuclear reactors. (**0022-3** [Sloss, Barbara])

Comment: Nuclear power plants have adverse effect on public water resources. (**0024-4** [Whitefield, Anne])

Comment: To use 47 millions gallons of water a day to produce energy at a time when our water resources are dwindling does not seem wise. (**0039-3** [Whiteside, Cassie], **0043-3** [Reeser, Rachel])

Comment: How can one legitimize using over 40 million gallons of water per day to operate such a plant; all it takes is a significant drought to make such usage most problematical indeed. (**0046-2** [Southworth, Win])

Comment: Lee Nuclear Plant would use 47 million gallons of water per day with 75% loss through evaporation. The NRC has called the Broad River "small" and climate change in the region has been causing droughts for the last decade or more. Shut down could happen due to lack of water for cooling, a very dangerous occurrence. The Broad River currently supports a hydropower station, the Cliffside coal plant only 16 miles up river and Summer nuclear plant (1 reactor, 2 more proposed) downstream near Columbia, SC. (**0048-4** [Skeele, Michele and Skip])

Comment: Nuclear power plants use gargantuan amounts of water to cool the reactors. Fresh, clean water is a basic human right and is better reserved and protected for people to drink, cook, and bathe; not for unsafe, expensive, finite energy production. (**0059-3** [Raleigh, Carolyn])

Comment: Water problem: The plant would use 47 million gallons of water a day with 75% loss through evaporation. Eventually the river would become overused and drought could occur. (**0082-2** [Karpen, Leah R.])

Comment: The Broad River is not strong enough to support this station, especially in view of coming drought. (**0085-3** [Allison, Patricia])

Comment: As an avid gardener, I am acutely aware of water. We have frequently had droughts in recent years and another is projected for this area in 2012. Does it make sense to build a nuclear plant here that will need large amounts of water for cooling? Droughts occur most frequently in the summer, when most electricity is used. Nuclear plants in the South had to close down in 2011 because they could not be cooled. (**0097-2** [Larson, Jean])

Comment: ...in this case it [nuclear power] is also too much of a burden on the Broad River which already is under stress. (**0104-5** [Bliss, Rachel])

Comment: Building the W.S. Lee Nuclear Plant will: 1. Stress the Broad River & it's habitat by using 47 million gallons of water a day and returning "thermal pollution" back into the river. (**0112-4** [Andrews, Josephine] [Anonymous] [Beattie, Kathryn E.] [Boever, Virginia] [Boyle, Ella] [Brogan Prindle, Cathleen] [Davis, John] [Flores, S.] [Hamahan, Clare] [Keil, A. Eugene] [Leverette, Will] [Peterson, Harry] [Peterson, Martha J.] [Rittenberg, David] [Rustin, K.])

Comment: [Building the W.S. Lee Nuclear Plant will:] compromise the Broad River, Catawba River, Pacolet River, the French Broad River, and Lake Lure. (**0112-7** [Andrews, Josephine] [Anonymous] [Beattie, Kathryn E.] [Boever, Virginia] [Boyle, Ella] [Brogan Prindle, Cathleen] [Davis, John] [Flores, S.] [Hamahan, Clare] [Keil, A. Eugene] [Leverette, Will] [Peterson, Harry] [Peterson, Martha J.] [Rittenberg, David] [Rustin, K.])

Comment: [If Lee Nuclear Station is built:] Local Agriculture would suffer. (**0114-6** [Lovinsohn, Ruth])

Comment: During droughts, the shallow Broad River may not have enough water to both serve the nuclear power plant and the community that relies on this water both upstream and downstream.
(**0119-27** [Thomas, Ruth])

Comment: Water will be needed for cooling and the most likely source would be western North Carolina. We already have limited sources for water and a political battle over maintaining it. (**0122-5** [Justice, Cynthia and Michael])

Comment: The water usage issue alone should prevent construction. (**0124-2** [Hayes, MD, J. David])

Comment: 47 million gallons of water per day is estimated to be taken from the Broad River to operate the plants. This is a time when all governments in all nations are beginning to recognize water as a scarce resource. Returning less than 1/2 of the water to the Broad River in a warmed, possibly polluted state, is unacceptable. (**0132-6** [Cahill, Joanne])

Comment: The BROAD RIVER itself has been deemed INADEQUTE by the NRC to support the proposed LEE plant which would use 47 million gallons of water per day, with 75% loss

through evaporation, causing possible droughts. Shut down could happen due to a lack of water for cooling; a horribly dangerous occurrence. Furthermore, the Broad already supports the Cliffside coal plant, a hydropower station, and Summer nuclear plant downstream in Columbia, SC. (**0133-3** [Christopher, Lucy D.])

Response: *The review team evaluated the impacts of building and operating the proposed Lee Nuclear Station Units 1 and 2 on local and regional water resources. Impacts related to construction are presented in Section 4.2; impacts related to operation are presented in Section 5.2. The cumulative impacts of Lee Nuclear Station Units 1 and 2 construction and operation, in the context of other past, present, and reasonably foreseeable future demands on Broad River water resources (including coal and other nuclear plants), are presented in Section 7.2. Ecological impacts are presented in Sections 4.3, 5.3, and 7.3. The review team's assessment of plant water use (withdrawal and consumptive use) considered both current and future conditions, including changes in water demands to serve the needs of future population, and changes in the water supply. Lee Nuclear Station Units 1 and 2 would use closed-cycle cooling, which substantially reduces the amount of water withdrawn from the source waterbody. Duke does not plan to consumptively use water from the Broad River when river flow is below 483 cfs, but would withdraw water from one of its supplemental reservoirs instead. Duke's proposed water-withdrawal plan is described in Section 3.4 of the EIS; ultimately, withdrawals from the Broad River would be regulated by a withdrawal permit issued by the SCDHEC and the flow requirements imposed by the Federal Energy Regulatory Commission (FERC) on the Ninety-Nine Islands Hydroelectric Project (FERC 2011). The review team's impact assessment also considered impacts on water quality; liquid discharges to the Broad River would be limited by NPDES Permit No. SC 0049140 issued by the SCDHEC on July 17, 2013, to Duke for the Lee Nuclear Station (SCDHEC 2013). No changes were made to the EIS as a result of these comments.*

Comment: The Lee Nuclear Site Thermal and Chemical Plume: The plume, mixing zone, boundaries and magnitude were established by Duke's consultant based on 18 cfs discharge. The plume, boundaries and magnitude should be established during the maximum discharges of 64 cfs to minimize the adversely impact on fish community. The frequency of such high discharge should be calculated as well. SCWF recommends more biological and chemical monitoring both before start-up and after commencement of operations so appropriate changes can be instituted. (**0135-6** [Gregg, Ben])

Response: *Duke states that the maximum discharge rate of 64 cfs would occur when water is cycled through the cooling towers fewer times to manage high total solids in the source water. High total solids would typically occur with flood flows in the Broad River, and would not be expected in water from the makeup ponds used when river flow is low. Duke expects atypical (much higher or lower than 18 cfs) discharge rates to occur less than 5 percent of the time (Duke 2011a). Constituent discharge limits, mixing zone limits, and monitoring and reporting*

requirements were established by the SCDHEC in NPDES Permit No. SC0049140, issued on July 17, 2013, to Duke for the Lee Nuclear Station (SCDHEC 2013). The EPA and the State of South Carolina have the authority to require nonradiological monitoring in the waters of the United States; the NRC's authority to impose monitoring requirements in waters of the United States is limited to radiological monitoring. No changes were made to the EIS as a result of this comment.

Comment: 5.2.3.1 Surface-Water Quality
Solutes from the Broad River, such as heavy metals, and chemical contaminants will be concentrated as they pass through the closed cycle cooling system before their eventual discharge into the Ninety-Nine Islands Reservoir. The Review Team concluded: the concentrations of the solutes would be diluted by the streamflow within a short distance below the dam, and any localized increase would be undetectable relative to background by the time the water reaches the City of Union, South Carolina public water supply intake 21 mi downstream of the discharge.

DNR notes that South Carolina R. 61-68, Water Classifications and Standards allows for the establishment of a mixing zone, under certain circumstances, where chemical and thermal effluent "mixes" with surface water and becomes assimilated, and where water quality criteria can be exceeded (the Licensee has requested such a mixing zone in their NPDES permit application.) R. 61-68(c)(10) stipulates that the size of the mixing zone shall be minimized. DHEC typically interprets this such that the dimensions of the mixing zone, for chronic toxicity, shall be no more than 2 times the width of the river in length and 1/2 the width of the river in width, and for acute toxicity, no more than 1/3 the width of the river in length and 1/10 the width of the river in width. DNR has requested consultation with DHEC throughout the NPDES permitting process regarding appropriate biological and chemical compliance monitoring. DNR requests courtesy notification of water quality excursions, should they occur. (**0126-26** [Vejdani, Vivianne])

Comment: In addition, we are concerned with the levels of copper and zinc proposed in the liquid effluent that exceed the SCDHEC criterion maximum concentration for these metals, and violate South Carolina Water Classifications and Standards Regulation 61-68, established maximum concentrations for freshwater. (**0141-6** [Caldwell, Mark] [Stanley, Joyce A.])

Response: *These comments concern water-quality impacts of liquid effluent discharges to the Broad River. Duke must obtain an NPDES permit from the SCDHEC prior to discharging liquid effluent to a surface waterbody. As noted by the South Carolina Department of Natural Resources (SCNDR) on page 10 of its draft EIS comment letter to the NRC dated March 6, 2012 (SCDNR 2012a), Duke's NPDES permit application requests a mixing zone that is minimized per Regulation 61-68(c)(10) (Duke 2011a, 2011b). The mixing zone limits, along with constituent discharge limits monitoring requirements, and reporting requirements were*

established by the SCDHEC in NPDES Permit No. SC 0049140, issued on July 17, 2013, to Duke for the Lee Nuclear Station (SCDHEC 2013). No changes were made to the EIS as a result of these comments.

Comment: *Water Quality*

The DEIS concludes that the impacts on surface-water quality from construction and preconstruction of the proposed Lee Nuclear Station Units 1 and 2 would be small (page 4-16).

Recommendations: We recommend that the FEIS identify the specific measures to ensure that construction contractors follow their construction standard specification and special provisions. The FEIS should clarify the effects of the project on stormwater volumes related to the amount of impervious surfaces to be constructed. Alternative minimization strategies such as pervious concrete or porous pavement should be considered to help offset impacts, in areas where those approaches are feasible and can meet safety requirements. Alternative paving materials have additional environmental benefits besides groundwater recharge, including reduced stormwater runoff and reduced pollution. (**0142-17** [Mueller, Heinz])

Response: *The measures and controls to limit adverse impacts during construction and preconstruction are described in Section 4.11 of the EIS. These include erosion control and stormwater-management measures such as limiting ground disturbance, performing ground-disturbing activities in accordance with the SCDHEC stormwater permit requirements, using cofferdams and settling basins to protect waterbodies, and generally using best management practices (BMPs) to minimize erosion and sedimentation.* The South Carolina Storm Water Management BMP Field Manual *(SCDHEC 2005) includes a section on the use of porous surfacing. No changes were made to the EIS as a result of this comment.*

Comment: ...and if it [the Broad River] gets hot enough, the water can't be used for cooling anymore. Several years ago when there was a real heat wave in Europe, they had to close down some of their nuclear power plants because the water wasn't cool enough to cool the reactors. (**0012-15-4** [Larsen Clark, Brita])

Comment: Lee nuclear plant would use 47 million gallons of water per day with 75 percent loss through evaporation. Two large cooling lakes with steam and cool two reactors that would produce as much heat as 1,200 atomic bombs. Is this rational in the age of climate change? If the area experiences a drought where will the water come from to cool the reactors? (**0013-20-2** [Craig, Anne])

Comment: but certainly in the event of a catastrophic accident [there seems to be a very inadequate water supply] to deal with handling the situation that might result if there were a serious problem with the plant. (**0013-5-5** [Cremer, Claudine])

Comment: The Broad River is too small to accommodate the amount of water needed to run the plant safely. With all the recent drought problems in the Southeast, it is not using commonsense to add a new plant that will require continuous, massive use of water. (**0030-2** [Swing, Carol])

Comment: The following problems are among those we have identified: 1) The problem of continuously needing excessive amounts of water to cool the nuclear reactors' extremely high temperatures, to avoid a partial or complete meltdown, or explosions, or release of highly radioactive gases, particulates, and liquids. (**0119-26** [Thomas, Ruth])

Comment: People in this region will be adversely impacted if a facility is built that is vulnerable to reduced capacity and or increased chance of a major reactor accident due to heat impacts. (**0130-5** [Zeller, Lou])

Response: *These comments express concern that the water in the Broad River might not be available in sufficient quantity or at appropriate temperature to cool or safely shut down the reactors. The environmental review assesses the impacts of the operating units on local and regional water resources, as presented in Sections 4.2, 5.2, and 7.2 of the EIS. In addition, the impacts of heat lost to the air and water are discussed in Sections 5.3 and 5.7. The NRC's parallel safety review addresses the effects of the external environment on the operating units. The AP1000 design does not require a water source to safely shut down the units. Issues related to water temperature or supply with respect to safe plant operation or shutdown are presented in the Final Safety Evaluation Report (FSER). The environmental and safety review documents for Lee Nuclear Station Units 1 and 2 are available from the NRC at http://www.nrc.gov/reactors/new-reactors/col/lee/documents.html#nrcDocuments. No changes were made to the EIS as a result of these comments.*

Comment: ....she shared with me that the demand of this plant would require, I think she said, 47 million gallons a day. And I just got confirmation that you think it's about 50 million gallons a day. And I simply -- being that I'm trying to protect the water quality and quantity, I -- that number -- it just didn't mean anything to me. It's like, I don't know, is that a lot, is that not a lot, what do the people need, what are the -- what is the demand for the public in this entire Broad River watershed so that I can compare what demand this nuclear plant will require. And especially in light of global warming, whether you believe that or not, there's certainly, you know, climate changes and droughts in 2002, 2007, 2008. And they're getting longer. And we've had no snow. And, you know, so I think this is a very real pattern that we're seeing here. So I'm very concerned about supply and demand. And so, anyway, I decided -- I work with the DENR up in North Carolina, with Department of Water Resources and also the Department of Water Quality. And then I figure, Well, this is in South Carolina, and part of the Broad River watershed is down in South Carolina so I know DHEC manages all that, so maybe they would have some numbers for me. But I didn't get any luck with talking to the -- with the DHEC people to get some real numbers on what is the demand of the people in this watershed, in this Broad River basin,

except from North Carolina. I talked to Steve Reed, a section manager for the Broad River basin of the Division of Water Resources in North Carolina. And he gave me -- he had to hustle to get some statistics. And he came up with this, he and his team. He said that -- and just keep that 50 million gallons a day in your head to compare it to so we can compare apples to apples in using that unit of measurement, millions of gallons a day demand -- he said that in just the water supply system's use, which is all the water piped -- okay -- on all the water systems just through pipes through the Broad River basin and all of North Carolina and including Gaffney, South Carolina was -- the requirement was 51 million gallons a day that was used by human beings from piped in systems -- water systems. That amount -- if you're saying, Well, is that the total use of the entire basin, no, you've got people on wells and you have ground water. So we're not even including that. I'm just simply telling you that the water in the pipes that are being supplied to this basin, 51 million gallons are used, which is exactly what this plant will probably need. (**0012-4-4** [Conard, Sky])

Comment: The Broad River additionally also supports currently a hydro power station, the huge Cliffside coal plant 16 miles upriver, and the Summer nuclear plant. (**0013-20-4, 0095-5** [Craig, Anne])

Comment: It [the Broad River] currently supports a hydropower station, the huge Cliffside coal plant only 16 miles upriver and Summer nuclear (1 reactor, 2 more proposed) downstream near Columbia, SC (**0017-5** [Morgan, Tom and Barbara])

Response: *The review team's evaluation of the cumulative impact of past, current, and planned consumptive use of water in the Broad River basin is discussed in Section 7.2 of the EIS, which considers other existing and proposed facilities in the region. No changes to the EIS were made as a result of these comments.*

Comment: And then I'm concerned about this so-called filling Pond C. It is a 638-acre lake that is 116 feet deep. It is a reservoir which is going to be created. They're going to dig a hole in the earth to fill it with water from the Broad River. I have no idea how many cubic square feet of water that is. I don't know what that would contain. But it would be -- this obviously translates to a huge, inordinate demand of water from the Broad River, water that is essential and sustains the region's people and all living things. (**0012-4-5** [Conard, Sky])

Comment: The draft EIS does not adequately show that Make-up Pond C's capacity will suffice to maintain plant operation and protect water quality and flow in all possible drought scenarios, so we believe its negative impacts outweigh its benefits. (**0012-7-4** [Hicks, Katie])

Comment: The question was brought up earlier about how long the water supply would last. I just did some simple back of the envelope calculations based on the draft EIS and they indicated that if withdrawals from Pond C are made necessary by drought that that pond's supply would last, more or less, about 90 days. Since climate science predicts that many parts

of the world will experience longer and deeper droughts than ever in the coming years, Duke Energy's drought contingency plans are insufficient considering both the high level of uncertainty regarding the length of future droughts in the Broad River basin. (**0012-7-9** [Hicks, Katie])

Comment: We have had droughts that have shut down nuclear plants -- perhaps this year -- certainly in the past. And from listening to the testimony this evening it seems that the water issue is probably the greatest concern with these plants. There seems to be a very inadequate water supply to deal, not only with the daily operation... (**0013-5-4** [Cremer, Claudine])

Response: *Duke's water-withdrawal and management plan with respect to Broad River and makeup pond use is presented in Section 3.4.2 of the EIS. Water withdrawals from the Broad River, including water needed to fill Make-Up Pond C, would be regulated by the withdrawal permit issued by the SCDHEC and by the flow requirements imposed by the FERC on the Ninety-Nine Islands Hydroelectric Project. As proposed, Make-Up Ponds B and C could supply water for more than 120 days (4 months). A commenter correctly notes uncertainty associated with prediction of future droughts. The review team considered the design of Lee Nuclear Station Units 1 and 2 as a source of baseload power, the supplemental cooling water provided by Make-Up Pond C, and Duke's proposed water-withdrawal plan to be reasonable under most scenarios, including future regional growth and climate change during a 40-year operating period. There is a small chance that Lee Nuclear Station would have to cease electrical generation if cooling water supply was limited by a severe drought. However, based on the review team's analysis, it was determined that this would occur so infrequently that the project would still be appropriately considered as a source of baseload generation. In addition, based on the design of the AP1000, a water source is not required to safely shut down the units. No changes were made to the EIS as a result of these comments.*

Comment: I'm concerned about that Duke Energy would be poised to further drain our water resources by purchasing neighborhood established or future water supply systems such as the Broad River Water Authority, the Inman Campobello Water District and the proposed Polk County South Water Department where I'm in, the surface waters in my back yard, which are Lake Adger and its supplier, the Green River which drains then into the Broad River -- so this is all part of the same system. (**0012-4-3** [Conard, Sky])

Comment: [This flawed project would:] be poised to further drain our water resources by purchasing neighboring established or future water supply systems such as the Broad River Water Authority, the Inman-Campobello Water District, and the proposed Polk County South Water Department. (**0094-3** [Conard, Sky])

Comment: Our primary concerns are the potential impacts of the plant to the Broad River watershed. Although the proposed plant is downstream of North Carolina, the long-term commitment of significant water resources to this proposed downstream use necessarily

reduces the opportunities for future upstream uses of that same water supply. This is of particular concern as Western North Carolina continues to grow as a region and will need additional water supplies to support its expanding population and growing economy and to maintain the ecological integrity of the Broad River basin in North Carolina. Indeed, the State of North Carolina has recently identified the need for a new public water supply source in the Green River watershed in Polk County, which was the catalyst for the creation of GRWA. Another concern is that if there prove to be insufficient local water supplies for the operation of the proposed plant going forward, Duke Energy might look to upstream water suppliers to secure additional water, thus limiting even more the public supply and opportunities for growth and development upstream of the plant and risking ecological harm to the Broad River watershed. In short, we believe that the Lee nuclear plant cannot be built and operated without causing unacceptable adverse impacts to the human environment. (**0128-1** [Mayfield, Julie])

Response: *The review team considered the impacts of Lee Nuclear Station Units 1 and 2, as proposed, on the local and regional water resources. The review team's evaluation of the cumulative impacts in Section 7.2 of the EIS considers other existing and proposed facilities in the region. However, Duke proposed to obtain water directly from the Broad River to operate Lee Nuclear Station Units 1 and 2; it did not propose to obtain water from other sources in the watershed. Therefore, the potential impact of purchasing water from other supply systems was not within the scope of the environmental review. No changes were made to the EIS as a result of these comments.*

Comment: The water consumption to be used, they promise to use something like 5 percent of the annual flow based off of the historic flow. And, unfortunately, with the effects of climate change, I don't know if we're ever going to see the historic flow again. I don't think it's safe to base our numbers off the rainfall we used to be seeing. (**0013-23-4** [Buscarino, John])

Comment: I also -- like someone else mentioned I have a concern about going back 85 years to look at the water flow and do your analysis based on 85 years rather than looking at more recent years. You've got more power plants on the river now; you've got more industry. There's more water draw, besides the fact that global warming is affecting evaporation and rainfall. (**0013-30-3** [McWherter, Lisa])

Comment: Broad River as water source: Lee Nuclear Plant would use 47 million gallons of water per day with 75% loss through evaporation. Two large cooling lakes, (one is a 3 day back-up) would steam and cool 2 reactors that produce as much heat as 1200 atomic bombs. Even the NRC calls the Broad River "small" and climate changes suggest possible droughts. (**0017-3** [Morgan, Tom and Barbara])

Comment: In these times of unprecedented climate change, we should also refrain from taxing the Broad River further, as well as all the people & life downstream. (**0084-4** [Lemoing, Melissa])

Comment: Our unstable climate is going to play havoc with the plants needs for water. (**0086-2** [Rylander, Kimchi])

Comment: Duke Energy's own environmental report includes a longitudinal analysis of flow-rates in the Broad River, which shows that there are potential problems with water supply:

During the 1998-2002 drought, operations would have been curtailed for 42 days during June-September 2002, which was the worst year of the drought. Part of this outage would have coincided with the summer peak power demand.

This reveals that based on historical data there are water supply uncertainties. The NRC fails to fully address the host of issues associated with the problem of rising temperatures. No mention is made of the potential for current and future climatological conditions to depart from the past. The agency was advised of this problem years ago by a knowledgeable critic:

"...when you're developing an ER upon which the EIS will be based...it would be good science, to be looking at the new projections for changes in coastline, increased storms, changes in water levels, changes in flood patterns. I don't see it happening and I think this Agency needs to get moving on forcing the licensees to confront these new realities."
(**0130-4** [Zeller, Lou])

Response: *In Section 7.2.1.1 of the EIS (cumulative surface-water-use impacts), the review team considered potential climate changes that could affect both water resources available for cooling and the impacts of Lee Nuclear Station Units 1 and 2 operations on water resources available to other users. This analysis concluded that with a decrease in streamflow of 10 percent over the license period, cumulative impacts would be moderate, but that the incremental impact associated with Lee Nuclear Station Units 1 and 2 would not be a significant contributor to the cumulative impact. No changes were made to the EIS as a result of these comments.*

Comment: Section 4.2.2.2, Page 4-13, Line 21: Discharging into a "collection tank" prior to ultimately discharging into Hold-Up Pond A has not yet been determined. Request that "collection tank" be deleted. The dewatering activity will be conducted after concurrence is obtained from SCDHEC. (**0134-26** [Fallon, Chris])

Comment: Section 5.2, Page 5-5, Line 7: Change the reference from (Duke 2008a) to (Duke 2011a).
(**0134-51** [Fallon, Chris])

Response: *The reference was updated in Section 5.2 of the EIS.*

Comment: Section 9.3.3.2, Page 9-57, Lines 21-23: The DEIS states: "Duke proposes that three cooling-water reservoirs with a total capacity of 34,000 ac-ft would provide supplemental water during very low flow conditions when adequate water from the river may not be available (Duke 2009b)." The Duke Energy response to RAI 127/131 (Duke 2010g) updated the reservoir size to 33,000 ac-ft.
(**0134-72** [Fallon, Chris])

Response: *Section 9.3.3.2 of the EIS was revised to include more recent information from Duke.*

Comment: 2.3.1.1. Surface Water Hydrology Impoundments

This section provides a discussion of the seasonal required minimum flows and drought contingency flow for the Ninety-Nine Islands Hydroelectric Project (Ninety-Nine Islands Project). The Review Team indicates that they are awaiting clarification from the FERC whether each of the seasonal minimum flows or only the drought contingency flow is the appropriate criteria to curtail withdrawals. For the Review Team's reference, Article 402 of the FERC license for the Ninety-Nine Islands Project, as amended on November 15, 20 11, is as follows:

> Article 402. Within 60 days from the date the Commission approves the gaging plan required in Article 403, except when *inflow* is less than the required minimum flow for a specific month, the licensee shall release from the Ninety-Nine Islands Project into the Broad River a *continuous* minimum flow of 966 cubic feet per second (cfs) (January through April), 725 cfs (May, June, and December), and 483 cfs (July through November) as measured below the project for the protection of fish resources below the project in the Broad River. During the December through June period, when *inflow* is less than the above required minimum flows, a *continuous* flow of 483 cfs shall be released as a drought contingency flow. If *inflow* is less than 483 cfs during any period, the licensee shall shut down all units when the pond elevation drops to the seasonal maximum drawdown limit required by Article 401 and shall operate one unit at its minimum hydraulic output for that portion of every hour which is necessary to discharge the approximate accumulated inflow. Alternatively, during low flow periods, the licensee may elect to open the trash gate or, otherwise spill water to release inflow. These minimum flow requirements may be temporarily modified if required by operational emergencies beyond the control of the licensee, and for short periods upon agreement between the licensee, the South Carolina Department of Natural Resources, and the U.S. Fish and Wildlife Service. If the flow is so modified, the licensee shall notify the Commission as soon as possible, but no later than 10 days after each such incident (emphasis added).

There should be no misunderstanding regarding the provision of seasonal minimum flows, triggers for releasing the lowest minimum flow and reservoir fluctuation limits for the Ninety-Nine Islands Project. Article 402 clearly states that the continuous seasonal minimum flow, or a

drought contingency flow, when inflow is less than the seasonal minimum flow, are appropriate criteria for curtailment of withdrawals from the Broad River. DNR guards against any interpretation that reductions in releases down to or below 483 cfs could be based on reservoir levels rather than inflow. Reductions based on reservoir levels are not consistent with Article 402 of the FERC license, which stipulates that seasonal minimum releases and drought contingency releases are based on inflow. DNR will oppose any proposal to modify seasonal flows for the Ninety-Nine Islands Project. (**0126-3** [Vejdani, Vivianne])

Comment: Broad River minimum flow requirements: Article 402 of the FERC license for the Ninety-Nine Island Hydroelectric Project defines the seasonal minimum flow requirements as three tiers of seasonal flow. SCWF recommends the applicant use those tiers as a seasonal minimum flow during all times and not the lowest of the three tiers as suggested by the applicant. Withdrawals from Broad River to fill pond C should be curtailed like all other uses and withdrawals from Broad River during flows less than the seasonal minimum flows. Pond C should be refilled only during periods of higher than normal flows in Broad river. (**0135-1** [Gregg, Ben])

Response: *Withdrawals from the Broad River to operate Lee Nuclear Station Units 1 and 2 would be regulated by the withdrawal permit issued by the SCDHEC, and by the flow requirements imposed by the FERC on the Ninety-Nine Islands Hydroelectric Project. These comments express the opinion of wildlife resource management agencies that the seasonal minimum flow requirements of the present FERC license be retained as criteria for curtailing withdrawals (including pond refill withdrawals) from the Broad River, rather than the drought contingency minimum flow requirement. Such restrictions on withdrawals are within the purview of the SCDHEC pursuant to the South Carolina Surface Water Withdrawal, Permitting, and Reporting Regulation 61-119. No changes were made to the EIS as a result of these comments.*

Comment: Please incorporate the following comment. Page 3-35, line 14: Please add the following language: "Note that the operational conditions in Duke's water management plan are less stringent than requirements cited at 40 CFR Section 125.84(a) through (e) in EPA's Cooling Water Intake Structure rule for New Facilities. EPA's approval of an NPDES permit containing any conditions less stringent than those allowed in the rule at Section 125.84 is contingent upon a demonstration that the requested alternative requirements comply with 40 CFR Section 125.85." (**0080-1** [Shell, Karrie-Jo])

Comment: EPA's Proportional Flow Limitation

The Clean Water Act requires Duke to comply with either a withdrawal limitation of 5% of the mean annual flow or to propose an alternative requirement. Duke has proposed an alternative, but we do not believe there is adequate justification for varying from the Clean Water Act's requirements. Duke's calculations demonstrate that the presumed normal withdrawal of 78 cfs

for 95% of the time would not exceed that 5% limitation when it is calculated using the required 10 year historical data (DEIS at 3-35-6). The DEIS does not address, however, how higher withdrawals from the Broad River, such as those used when the plant is at maximum use (134 cfs) or to refill the Make-Up Ponds, would also comply with this 5% flow rule. The DEIS says that these higher withdrawal amounts for refilling the ponds will not cause the river to run less than483 cfs, but it does not state whether or how these higher withdrawals would also comply with the 5% flow rule (DEIS at 3-36).

We also understand EPA will be making a determination of the appropriate flow history to be used as the basis for calculating the 5% (DEIS at 5-6). As weather patterns are changing rapidly and droughts have become more common, we support using the most conservative numbers in this calculation.
(**0128-2** [Mayfield, Julie])

Comment: *Recommendations*: In Section 3.4.2.1, Water Withdrawals and Transfers (page 3-35,line 14), please add the following language:

"Note that the operational conditions in Duke's water management plan are less stringent than requirements cited at 40 CFR Section 125.84(a) through (e) in EPA's Cooling Water Intake Structure rule for New Facilities. EPA's approval of an NPDES permit containing any conditions less stringent than those allowed in the rule at Section 125.84 is contingent upon a demonstration that the requested alternative requirements comply with 40 CFR Section 125.85."

(**0142-15** [Mueller, Heinz])

Comment: In addition, updated information regarding water management plans... should be included in the FEIS. (**0142-30** [Mueller, Heinz])

Response: *The purpose of the EIS is to disclose the impacts of the project as proposed; therefore, the EIS quotes Duke's proposed water-management plan (from its NPDES permit application [Duke 2011b]) and bases its impact assessment on that proposed plan. However, the recommended language supplied in the EPA's comment on the draft EIS was added to Section 3.4.2.1, immediately following Duke's proposed water-management plan. The review team notes that Duke's proposed water-management plan would result in far less impacts than the direct application of the requirements cited at 40 CFR Section 125.84(a) through (e) in EPA's Regulations Addressing Cooling Water Intake Structures for New Facilities (65 FR 65256) (limiting water withdrawals to 5 percent of the mean annual flow of the river). The EPA rule does not consider the normal seasonal variability of flows and therefore does not preclude water withdrawals within periods of extremely low flow. Duke is proposing an alternative requirement in which water withdrawals would typically be less than 5 percent of the mean annual flow, but which occasionally could exceed 5 percent during storage refill operations. Whenever Broad River flow is at or below 483 cfs, Duke would only withdraw non-*

consumptive cooling water from the river (about 1 percent of the mean annual flow); they would not withdraw water for consumptive use and they would not refill the makeup ponds. The EPA's approval of an NPDES permit containing alternative requirements as proposed by Duke as allowed in the rule at 40 CFR 125.84 is contingent upon a demonstration that the requested alternative requirements comply with 40 CFR 125.85. As indicated above, the EPA's recommended language was added in Section 3.4.2.1 of the EIS. On July 17, 2013, the SCDHEC issued NPDES Permit No. SC 0049140 to Duke for the Lee Nuclear Station (SCDHEC 2013) as authorized by the EPA.

Comment: The Review Team indicated that it is unclear whether a minimum release from Make-Up Pond C downstream from the dam will be instituted or required. The provision of a seasonally-adjusted minimum flow is DNR policy and is embraced by the South Carolina Surface Water Withdrawal, Permitting, Use, and Reporting Act (SC Code33 Ann. 49-4). DNR recommends that the Section 404 permit/Section 401 state water quality certification be conditioned to require a seasonal minimum flow release that is protective of downstream aquatic resources. The minimum flow should commence with the filling of Pond C to avoid and minimize adverse impacts to fish and the macrobenthic community downstream of the dam to the confluence of London Creek with the Broad River.
(**0126-23** [Vejdani, Vivianne])

Response: *This comment refers to permitting actions of agencies other than the NRC. The EIS is being completed in advance of several of these other permitting actions. If during subsequent permitting with the SCDHEC and the USACE, changes are identified that* could represent new and significant circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts or if the NRC staff determines that supplementation would further the purposes of NEPA*, the NRC would consider whether a supplement to the EIS would be appropriate. No changes were made to the EIS as a result of this comment.*

Comment: [The NRC fails to fully analyze the following potential impacts of elevated water temperatures in the Broad River and its water shed:]

* The evaluation of increasingly warmed water on tech specs for reactor cooling

* The evaluation of the impact of warmer ambient water temperatures on total withdrawal, consumption and evaporation

* The impact of warmed water on condenser cooling * nuclear power reactors around the world have gone to low-power or off-line due to elevated cooling water temperatures and the loss of efficiency in power production due to loss of effective condensation of steam used to generate power

* The impact on other facilities

* The need to provide cool water to the two William States Lee reactors could impact operations at other facilities up-stream from the facility, as well as the issue of whether heat generated at the Lee site would impact operations at facilities down-stream

* The impact of pollution in water at warmer temps on the ecology of the site and also down-stream

* Most chemical reactions are facilitated by elevated temperatures; a full analysis of the impact of reactor heat in hotter water on the other pollutants in the water from any source must be considered, including implications for the food chain

* The impact of reactors going off-line during heat wave on customers

* Specifically, the loss of power during a heat-wave should be factored in terms of impact on customers

* The impact of reactors going off-line on regional grid stability

* The potential for extended drought locally and in the region to exacerbate all of the issues identified above.
(**0130-12** [Zeller, Lou])

Response: *The proposed plant relies on closed-cycle cooling using cooling towers, and will not be noticeably affected by the source waterbody temperature because they rely on evaporation (latent heat exchange) over sensible heat exchange. Once-through-cooling systems are very sensitive to the temperature (sensible heat) of incoming water but cooling-tower systems are not. Therefore, there are no impacts caused by changes in source water temperature. The impacts on aquatic resources from operation of the proposed Units 1 and 2 are addressed in Section 5.3.2 of the EIS. No changes were made to the EIS based on this comment.*

Comment: And one of the things that was mentioned was related to water consumption -- water removal. And it's normally capped at 5 percent of the mean annual flow of the river. Yet, when the ponds -- when the Pond A -- or B or C are depleted then water is pulled from the river to refill the ponds at the same time that it's being pulled from the river for consumption by the power plant. And the problem is that those ponds are only going to be depleted in a drought year already. And then on top of that you're going to be refilling them past the time -- past the spring when there's spawning and breeding. You're going to refilling those ponds in July through February. July and August are already going to be the hard-hit months for that river anyway on

a drought year. So you're going to be pulling more water above the normal 5 percent cap -- you're going to be pulling more water during months when the water level tends to be low -- July and August and September -- and that's going to be happening in a drought year. So I have a big concern about that. (**0013-30-2** [McWherter, Lisa])

Response: *This comment refers to an EPA rule limiting water withdrawals to 5 percent of the mean annual flow of the river. Duke's proposed water-withdrawal plan is presented in Section 3.4 of the EIS. Duke is proposing an alternative requirement in which water withdrawals would typically be less than 5 percent of the mean annual flow, but which occasionally could exceed 5 percent during pond refill operations. Water removal (withdrawal) from the Broad River for operation of the new units and for refilling the makeup ponds would be regulated by the withdrawal permit issued by the SCDHEC as well as by required minimum flows imposed by the FERC on the Ninety-Nine Islands Hydroelectric Project. Duke does propose to refill the makeup ponds in the July through February timeframe, but would do so within the minimum flow requirements of the FERC license and the SCDHEC withdrawal permit. Whenever Broad River flow is at or below 483 cfs, Duke would only withdraw non-consumptive cooling water from the river (about 1 percent of the mean annual flow) and would provide water for evaporative losses from the makeup ponds. They would not withdraw water for consumptive use and they would not refill the makeup ponds when Broad River flow is at or below 483 cfs. To minimize entrainment of aquatic organisms, Duke would not withdraw water to fill the makeup ponds in the March through June timeframe. No changes were made to the EIS as a result of this comment.*

Comment: Consumptive water loss associated with the operation of Units 1 and 2 has been estimated as a minimum of 54.8 cubic feet per second (cfs) and a maximum 64.8 cfs. The South Carolina Department of Health and Environmental Control (SCDHEC) use the 7Q10 flow to determine potential impacts of consumptive water use. The consumptive 7Q10 flow at the Project is 464 cfs. The evaporative use of the proposed units compared to the 7Q10 flow of 464 cfs is 7.2 percent. However, flows in the Broad River have historically been as low as approximately 220 cfs. If anticipated consumptive loss from Units 2 and 3 is subtracted from average daily flow during periods of flow as low as 220 cfs, the percent loss of Broad River flow increases to 28 percent. It is unclear what the instantaneous impacts to aquatic resources would be during low flow and drought periods from consumptive water loss.

In addition, evaporative losses would occur from each of the Make-Up Ponds. Duke estimates that during the month of July the evaporative loss from Make-Up Pond C would be 4.24 acre feet (ac-ft) per day. All ponds combined the evaporative losses during the month of July would be 5.71ac-ft per day or 177ac-ft for the entire month. (**0141-3** [Caldwell, Mark] [Stanley, Joyce A.])

Response: *In its water-management plan, Duke states that Lee Nuclear Station Units 1 and 2 would not consumptively use any water from the Broad River when Broad River flow is less than*

483 cfs, which is the minimum flow requirement of the Ninety-Nine Islands Hydroelectric Project FERC license. Duke's proposed water-management plan calls for using supplemental storage reservoirs to ensure a reliable supply of water for Units 1 and 2 while limiting adverse impacts to aquatic resources that could occur from consumptive use of the Broad River during periods of particularly low flow. The review team's assessment of water-use impacts during operation is presented in Section 5.2.2.1. The review team evaluated Duke's water budget calculations and performed an independent confirmatory water budget in its assessment. Both Duke and the review team included direct evaporative losses from cooling towers (55 cfs) and indirect evaporative losses from ponds (1.4 cfs in December to 5.7 cfs in July) in their water-use estimates. Neither Duke nor the review team took credit for the refill of the ponds that occurs via precipitation or condensation, which was a conservative approach. No changes were made to the EIS as a result of this comment.

Comment: I requested from Steve Reid, Section Manager for the Broad River Basin of the Division of Water Resources in North Carolina Department of Environmental Natural Resources (DENR) to provide some statistics for comparison. As of 2010, the total of just the water supply systems' use piped through the Broad River Basin in all of North Carolina and including Gaffney, South Carolina, was 51 million gallons a day. I have read that the Lee Nuclear Plant demands will equal or exceed this total in order to operate. Filling the "Pond C" (a 638 acre, 116 feet deep created reservoir) would require even more water. Obviously this translates to a huge, inordinate demand of water from the Broad River, which is NOT broad, water that is essential and sustains the region's people and all living things. The Clean Water Act of 1972 and the Constitution of every state says the people own the fisheries and waterways. Based on the Public Trust Doctrine*, everybody has the right to use the waterways, but nobody can use them in a way that diminishes their use and enjoyment by others. The proposed Lee Nuclear Plant will effectively diminish the public use and resource rights of the Broad River. Is this powerful entity, Duke Energy, actually privatizing our public asset of water? This is a violation of environmental laws. (**0094-1** [Conard, Sky])

Comment: When I testified at the public meeting in Gaffney on January 19, 2012, I offered figures for only North Carolina. Subsequently I obtained from SC Water Supply Planning Division, as well as from the NC Department of Environmental Natural Resources / Department of Water Resources, the current statistics of total public water system use in the Broad River Basin for the years 2010-2011, 178.3 million gallons per day. This does not include agricultural or industrial use. The reason I sought these figures was because no CURRENT figures were to be found in the Draft EIS. The EIS is required because the action of the proposal (building of the Lee plant), if implemented, will significantly affect the quality of the human environment. It is also needed to determine if the proposal is without unacceptable adverse impacts on the human environment. Also, consultation and coordination with federal, state, and local agencies are to be included as input to the preparation of this environmental review. GRWA questions, how can decisions regarding the impact level of the Lee plant's operation on the human environment be

accurate, when it apparently does not even consider the public's current utilization of the water resources, nor consult appropriate state agencies for these numbers? I think there was unfair and inadequate public representation and consideration in this proposal, and therefore inaccurate assessments of impact levels in the EIS. How can the NRC / Duke Energy review team be sure that the impacts are "small" or "moderate" when they aren't considering the current human needs and utilization of the water to begin with? Therefore, I think the proposal to build the plant is contrary to the public's interest, and represents a conflict regarding resource use. (**0127-1** [Conard, Sky])

Comment: Current and Future Water Use

Section 2.3.2.1 of the DEIS purports to establish a baseline of current surface water uses in the Broad River Basin and concludes that the net consumptive use for the Broad River basin (withdrawal less return) for 2006 was estimated as 241 cfs DEIS at 2-31.Section 7.2.1.1 of the DEIS purports to estimate the increase in consumptive usage in the basin, saying the use across various sectors will increase to412.9 cfs by 2070. Nowhere in the DEIS, however, are these figures or the methodology or data used to reach them made clear. Without specific figures, assumptions, calculations, and methodology, it is not possible to determine how sound or reasonable these numbers are. If the NRC review team is going solely on these numbers in making its recommendation, the information behind these numbers must be included in the DEIS for full public review and comment.

(**0128-3** [Mayfield, Julie])

Comment: Impacts Analysis

As stated above, without sufficient information to determine if the current and projected consumptive uses in the Basin are correct, it is impossible to determine if the review team’s assessment of the cumulative impacts of the plant on surface water in the basin are accurate. And although the review team does consider the effects of climate change on surface water flows, again, insufficient justification is included about these calculations to determine if they are reasonable or accurate. Therefore, the cumulative impacts assessment is inadequate and must be supplemented with additional information. (**0128-4** [Mayfield, Julie])

Comment: The DEIS also contains no information on the potential indirect impacts of the proposed plant's operation on surface water, and is, therefore, also inadequate. (**0128-5** [Mayfield, Julie])

Comment: Water

Since the purpose of the Draft EIS is to evaluate environmental issues and not financial data, let us regress to the topic of water. The NRC is in a unique position to conserve water, our most

precious resource, by denying Duke Energy the chance to build this new nuclear station. Water is valued by the general public more highly than petroleum, electricity, or even food. Any design of power plant that so blatantly wastes our limited water resources is unacceptable. During the 40 year operating life of the William States Lee Nuclear Station, it would evaporate 600 Billion gallons of fresh water.

The proposed nuclear power plant may as well be fueled by clean drinking water - evaporating up to 43 million gallons per day, consuming more than 3/4 of a gallon for each kWh produced. Such consumption is irresponsible, environmentally unsound, and a threat to the health and well being of the downstream population. This is three times more fresh water than the entire populations of South Carolina (4.7 million) and North Carolina (9.65 million) combined will drink each day. If a 250kW Chevy V8 (335 horsepower) were fueled by water instead of gasoline, running wide open at 10 mpg, it would only consume 0.048 gallons per kWh, less than one tenth of what this proposed plant would burn. At the current cost of bottled water, the proposed 2.2 gigawatt facility would evaporate somewhere between 50 million dollars (sold in gallon jugs) and 400 million dollars (sold in small, fancy packages) worth of drinking water each day! (**0129-2** [Gamble, Dan])

Comment: Further, local residents would be affected if the Broad River and other water resources in the area are substantially reduced or compromised by the operation of Duke's WS Lee. NRC's EIS analysis is insufficient and therefore will not mitigate such impacts. (**0130-6** [Zeller, Lou])

Response: *The review team conducted its environmental review and prepared the EIS in accordance with the requirements of the NEPA and 10 CFR Parts 51 and 52. One of the primary functions of the EIS is to clearly articulate and disclose the tradeoffs between power and water. The proposed plant would create a new source of baseload electrical power generation. In the process of generating the electricity, water would be consumptively used and would no longer be available for any downstream use. A continuous supply of water is required while the plant is producing electrical power. Therefore, for this plant to satisfy a baseload power need, the water supply must be reliable. To ensure the plant has a reliable supply of water while eliminating adverse impacts that could occur from withdrawing water from the Broad River during periods of particularly low flow, Duke proposed using existing onsite storage capacity and adding an additional storage reservoir (Make-Up Pond C). By using water from these storage reservoirs, the timing of Broad River water withdrawals would occur outside periods of particularly low flow, and would thereby substantially mitigate impacts to downstream users. Initial filling of Make-Up Pond C would be completed prior to operation of Lee Nuclear Station Units 1 and 2. As noted previously, withdrawals from the Broad River would be regulated by a withdrawal permit issued by the SCDHEC and limited by the flow requirements imposed by the FERC on the Ninety-Nine Islands Hydroelectric Project. To put the proposed Units 1 and 2 evaporative losses in perspective, the 43 million gallons per day mentioned in the*

comment above is 3.6 percent of the 1200 million gallons per day (1858 cfs) mean annual flow of the Broad River below Ninety-Nine Islands Dam for the period 2000-2010. In its cumulative impacts assessment, the review team considered the changes in streamflow in the Broad River that are likely to occur over the life of the plant. Changes in flow are expected to result from changes in water use and climate change. Based on consultation with the SCDHEC, the review team was advised to rely on the analysis of water supply needs in the Broad River Water Supply Study *(Duke Energy 2007). The review team's consideration of climate change impacts to streamflow relied on the U.S. Global Change Research Program's national assessment,* Global Climate Change Impacts in the United States *(GCRP 2009). The review team reported values based on a presumed 10 percent decline in annual flow over the license period of the station. The review team acknowledges substantial uncertainty in all climate forecasts and provides this assessment for context for the reader. No changes were made to the EIS as a result of these comments.*

Comment: Flood Impacts in London Creek: During major flood events in London Creek and Cherokee Lake, the peak flow will be significantly faster and higher in magnitude because of the lake water body in London Creek. The flood impact on Broad River may not be very significant because the size difference of the drainage area between London Creek and Broad River. However, the flood impact of London Creek will be very significant on property and personnel in the drainage area between Broad River and the proposed dam on London Creek. Flood zone volume should be considered in the design of London Creek dam to catch and store the flood volume and release it downstream in non-flood magnitudes. Releases from Ninety-Nine Island Hydroelectric Project should be synchronized with the flood from London Creek to minimize its impact on Broad River. (**0135-2** [Gregg, Ben])

Response: *Once built, Make-Up Pond C would represent a significant portion of the London Creek drainage. Any extreme precipitation event would be attenuated by the large area of the impoundment. The safety implications for flooding due to Make-Up Pond C would be considered in the NRC's separate safety review of the project and described in Section 2.4 of the FSER. No changes were made to the EIS based on this comment.*

Comment: Low Flow Operations DNR notes a discrepancy between the DEIS and the § 404 Application on the size of the thermocline needed for Make-Up Pond C. The DEIS indicates that the Licensee determined, based on examples from similar reservoirs in the region, that a thermocline of 20 ft would be needed as a zone of aquatic refuge. However, the § 404 Application indicates that there are "design constraints" to constructing the dam at the elevation needed to provide a 20-ft thermocline (653 ft msl). According to the § 404 Application, subsequent analysis showed that an upper volume of 17 ft would be sufficient to preserve the natural stratification and turnover pattern. DNR requests clarification on the size of the thermocline needed for aquatic refuge. (**0126-27** [Vejdani, Vivianne])

Response: *The review team reviewed Duke's calculations regarding the supplemental water needed and the size of Make-Up Pond C. The description of Make-Up Pond C size and drawdown in the EIS (Sections 3.2.2.2 and 3.4.2.1), and analysis of potential impacts on water and aquatic resources (Sections 5.2 and 5.3.2), are based on the proposed design with a Make-Up Pond C dam crest elevation of 650 ft MSL. Sections 3.2.2.2 and 5.3.2.1 of the EIS were revised to incorporate Duke's CWA 316(b) compliance demonstration, which showed that natural stratification would be maintained by preserving the upper 17 ft of the pond.*

E.2.6 Comments Concerning Groundwater Hydrology

Comment: Section 2.3.1.2, Page 2-26, Lines 16-17: DEIS States: "It is these wells that could affect or be affected by building and operating the proposed Lee Nuclear Station". Consider removing the sentence, as discussion of impacts belongs in Chapter 4 and 5. This statement could be misconstrued as indicating that these wells will be affected. (**0134-6** [Fallon, Chris])

Response: *This section of the EIS describes resources that "could affect or be affected" by building and operating the proposed Lee Nuclear Station, but does not describe potential impacts. No change was made to the EIS as a result of this comment.*

Comment: Section 4.2.2.2, Page 4-13, Lines 27: Change "northwest" to "northeast". (**0134-27** [Fallon, Chris])

Response: *Section 4.2.2.2 of the EIS was revised to reflect these comments.*

E.2.7 Comments Concerning Terrestrial Ecology

Comment: 4.3.1.1 Terrestrial Resources -Site and Vicinity, Wetlands and Streams: See comments in section 2.4.1.2. Terrestrial Resources-Make-Up Pond C Site. (**0126-19** [Vejdani, Vivianne])

Comment: 4.3.1.2 Terrestrial Resources -The Make-Up Pond C Site See comments in Section 2.4.1.2 Terrestrial Resources-Make-Up Pond. (**0126-32** [Vejdani, Vivianne])

Comment: 4.1.2 The Make-Up Pond C Site: See comments in section 2.4.1.2 Terrestrial Resources-Make-Up Pond C Site. (**0126-33** [Vejdani, Vivianne])

Comment: Significant Natural Areas
The presence of the many rare plant communities described in this section attest to the integrity of the London Creek site. (**0126-4** [Vejdani, Vivianne])

Comment: Noteworthy Natural Community Types and Rare Plant Species

The presence of noteworthy community types, such as mountain coves and bluffs, and rare plant species further points to the resource value and relative integrity of the London Creek site. (**0126-5** [Vejdani, Vivianne])

Comment: Wildlife

As observed by DNR during its December 2009 site assessment and as revealed in the surveys conducted by the Licensee's agents, the London Creek site is a relatively undisturbed Piedmont bottomland hardwood system comprised of quality micro habitats hosting a number of rare and sensitive species. Many of these habitat types are becoming increasingly rare in the upstate and are under increasing pressure from development. The proposed Make-up Pond C would remove a significant amount of bottomland hardwood habitat and the transitional areas adjacent to it. Riparian corridors such as that along London Creek are important for connectivity at the landscape scale and serve as migration corridors for wildlife and neotropical migrating birds. (**0126-6** [Vejdani, Vivianne])

Response: *These comments support the description of and potential impacts to bottomland hardwood forest in the London Creek watershed, its microhabitats, its general use by wildlife, and its use as a travel corridor by neotropical migrant birds. Additional information on the habitats associated with London Creek and the use of those habitats by birds and other wildlife has been added to Sections 2.4.1.2 and 4.3.1.2.*

Comment: My position [opposition] is based on... The PROXIMITY to my home, which happens to be in one of the most Biologically diverse areas of the world, which could be potentially be destroyed by this project. (**0047-5** [Lauden, Loy])

Response: *Potential impacts to terrestrial habitat diversity and species diversity in the vicinity of the Lee Nuclear Station site are addressed in Section 4.3.1 of the EIS. No changes were made to the EIS as a result of this comment.*

Comment: The problem of the proposed nuclear power plant requiring the destruction of a sizeable area of woodlands and natural resources. (**0119-4** [Thomas, Ruth])

Response: *Potential impacts to forest habitat and associated wildlife resources in the vicinity of the Lee Nuclear Station site are addressed in Section 4.3.1 of the EIS. No changes were made to the EIS as a result of this comment.*

Comment: [The following problems are among those we have identified:] The disruption of bird migrations, as mentioned in the EIS.
(**0119-6** [Thomas, Ruth])

Response: *Potential impacts to wildlife travel corridors in the vicinity of the Lee Nuclear Station site and their use by migratory birds are addressed in Section 4.3.1 of the EIS. No changes were made to the EIS as a result of this comment.*

Comment: Waters of the United States and Upland Habitats

The DEIS indicates that the Licensee has consulted with the USACE Charleston District in the development of a compensatory mitigation plan in conformance with the 2002 Standard Operating Procedure for Compensatory Mitigation (SOP). The 2002 SOP has been superseded by the Guidelines for Preparing a Compensatory Mitigation Plan, October 2010 revision (2010 Guidelines). All compensatory mitigation should be developed in conformance with the 2010 Guidelines. (**0126-22** [Vejdani, Vivianne])

Response: *Section 4.3.1.7 of the EIS (Section 4.3.1.6 in the draft EIS) was revised to state that the Licensee has consulted with the USACE to develop a compensatory mitigation plan in conformance with the requirements of the USACE Charleston, South Carolina District* Guidelines for Preparing a Compensatory Mitigation Plan *(USACE 2010) and* Compensatory Mitigation for Losses of Aquatic Resources*;* Final Rule *(73 FR 19594, 40 CFR Part 230 and 33 CFR Part 332).*

Comment: 2.4.1.5 Important Terrestrial Species and Habitats

A number of state listed plant and animal species occur within the footprint of Make-Up Pond C and the transmission line and railroad corridors. Impacts to individuals and/or habitat of conservation priority species should be avoided to the greatest extent practicable. Where appropriate, the Licensee should consult with DNR on potential relocation of conservation priority plant species populations that may be impacted by construction. (**0126-11** [Vejdani, Vivianne])

Response: *This comment supports the discussion of mitigation of impacts to State-ranked plant species presented in Section 4.3.1 of the EIS, which includes consultation with the SCDNR regarding the potential relocation of those species. No changes were made to the EIS as a result of this comment.*

Comment: 4.1.3.1 Transmission Line Corridors
See comments in section 2.4.1.3 Transmission Line Corridors. (**0126-17** [Vejdani, Vivianne])

Comment: 4.3.1.3 Terrestrial Resources - Transmission-Line Corridors
See comments in section 2.4.1.3 Transmission Line Corridors.
(**0126-21** [Vejdani, Vivianne])

Comment: 5.1.2 Transmission-Line Corridors and Off-site Areas

See comments in section 2.4.1.3. Transmission Line Corridors.
(**0126-25** [Vejdani, Vivianne])

Comment: 2.4.1.3 Transmission Line Corridors
The Licensee proposes to build 4 new transmission lines along Routes K and 0 to their respective tie-in locations on the existing 230-kV Pacolet Tie-Catawba line, located approximately 7 mi south of the site and the existing S2S-kV Oconee-Newport line, located approximately 15 mi south of the site. Clearing impacts from the construction of the transmission line corridors will permanently remove wildlife habitat. Bottomland hardwood habitats support an array of wildlife species due to the abundance of fruiting and flowering plants and an abundance of natural cover for animals. Mast-producing hardwood tree species such as oaks and hickories provide an abundant and reliable food source, tree cavities characteristic of mature hardwood trees provide preferred nest and den sites, and snags and downed woody debris provide food sources and cover for a variety of wildlife including invertebrates, reptiles, amphibians, birds and mammals. Bottomland hardwood forests also provide travel corridors for mammals and nesting, migration and winter habitat for birds. Many birds use bottomland hardwood forests as nesting, foraging, migration and winter habitat. These birds include resident birds as well as Neotropical and Nearctic migrants. Resident and migratory waterfowl also utilize flooded bottomland hardwood habitats as nesting, brood-rearing, foraging or roosting areas.

Upland hardwood forests and mixed pine-hardwood forests support many of the same species as bottomland hardwood forests, with the exception of those species which are wetland obligates. Species of highest conservation priority in South Carolina which inhabit or utilize upland hardwood forest or bottomland hardwood forest include: Eastern wood pewee (*Contopus virens*), Kentucky warbler (*Oporornis formosus*), black-throated green warbler (*Setophaga virens*), little blue heron (*Egretta caerulea*), yellow-crowned night heron (*Nyctanassa violacea*), rusty blackbird (*Euphagus carolinus*), Swainson's warbler (*Limnothlypis swainsonii*), swallow-tailed kite (*Elanoides forficatus*), wood thrush (*Hylocichla mustelina*), worm-eating warbler (Helmitheros vermivorum), black bear (*ursus americanus*), and northern yellow bat (*Lasiurus intermedius*). (**0126-9** [Vejdani, Vivianne])

Response: *Section 2.4.1.3 was revised to emphasize wildlife assemblages that likely occur in the habitats where the new transmission-line corridors will be built. The information in the "wildlife" subsection of Section 2.4.1.3 was moved to Section 4.3.1.3 as it is a better reflection of wildlife species that likely would occupy new transmission-line corridors after they have been built. Information on wildlife assemblages in the existing habitats where the transmission-line corridors would be constructed was inserted into the "wildlife" subsection of Section 2.4.1.3.*

Comment: Grassland birds are among the most steeply declining of all bird populations in North America due to loss and degradation of grassland and shrub-scrub habitats. Transmission corridors can provide significant habitat for grassland birds, as well as raptors and small mammals, by functioning as linear grassland/shrublands. Excellent wildlife habitat, as well as safe and efficient power delivery, can be provided by managing these areas as a combination of native grasses, forbs, and small shrubs through direct seeding or natural regeneration. Any direct seeding of corridors should utilize only native plant materials. Sod-forming grasses like Bermuda grass and fescue and aggressive non-native forbs provide poor wildlife habitat along the right-of-way and can potentially escape to adjacent woodlands or fields resulting in additional habitat degradation. DNR recommends that where possible lands within transmission line corridors should be managed for the benefit of wildlife.
(**0126-10** [Vejdani, Vivianne])

Response: *These recommendations from the SCDNR are directed to the applicant, therefore no changes were made to the EIS as a result of this comment.*

Comment: Amphibian and Reptiles
The diverse amphibian assemblage documented at the London Creek site is an indication of the relatively high environmental integrity of this site. Amphibians, as a group, represent tangible linkages between aquatic, wetland and terrestrial habitats and are dependent upon some type of aquatic habitat for all or a part of their lifecycle. Therefore, the diversity of aquatic habitat such as that located at the London Creek site (e.g., stream channel, small tributaries, seepage wetlands, isolated wetlands, floodplain, rocky outcrops and bluffs) is important in maintaining high amphibian diversity.
(**0126-7** [Vejdani, Vivianne])

Response: *This comment supports statements made in Section 2.4.1 of the EIS regarding the link between diverse amphibian populations and diverse aquatic and adjoining terrestrial habitats in the London Creek watershed, and in Section 4.3.1 of the EIS regarding the environmental integrity of the London Creek site. No changes were made to the EIS as a result of this comment.*

Comment: Salamanders and Newts
DNR notes that the mud salamander (*Pseudotriton montanus*), four-toed salamander (*Hemidactylium scutatum*) and three-lined salamander (*Eurycea guttolineata*) are salamander species as-of-yet not documented at the site, posing a particular challenge to survey as they are highly fossorial, have specific habitat requirements and may be present on the surface only during breeding. These species are more likely to be documented through a longer duration surveyor through use of a survey methodology such as drift fence arrays with pitfall traps. Salamanders are highly sensitive to changes in water quality and canopy structure, soil moisture regimes and oxygen content in water; changes in anyone or a combination of these parameters may result in significant habitat degradation, rendering it unsuitable for many

salamander species. This does not appear to be the case at London Creek, as the herpetological survey documented that 8 of the 11 potential salamander species (72%) that could potentially occur have been documented onsite. It is DNR's opinion that the salamander assemblage at London Creek is indicative of a healthy and functional system. (**0126-8** [Vejdani, Vivianne])

Response: *This comment supports statements made in Section 2.4.1 of the EIS regarding the diversity of amphibian populations in the London Creek watershed, and in Section 4.3.1 of the EIS regarding the environmental integrity of the London Creek site. Section 2.4.1 of the EIS was revised to indicate that although the mud salamander (*Pseudotriton montanus*), four-toed salamander (*Hemidactylium scutatum*), and three-lined salamander (*Eurycea guttolineata*) have yet to be documented at the London Creek site, they are likely to occur at the London Creek site based on habitat integrity and the difficulty detecting these species due to their fossorial behavior.*

Comment: As indicated in the DEIS, in November 2011 Duke Energy submitted an application to the Charleston District of the U.S. Army Corps of Engineers (USACE) to request authorization for the placement of dredged or fill material in waters of the U.S. under Section 404 of the Clean Water Act. This permit application provides updated wetland, open water, and stream impact acreages and linear feet for the William States Lee III Nuclear Station project. In the future, as the 404 permitting process continues, Duke Energy will provide the NRC written correspondence made to the USACE during the EIS process. (**0134-1** [Fallon, Chris])

Response: *Sections 4.3.1 and 4.3.2 of the EIS were updated to reflect the most recent 404 permitting process correspondence between Duke and the USACE.*

Comment: Section 2.4.1.1, Page 2-39, Line 24: The NRC uses reference (USACE 2007a) to describe jurisdictional or non-jurisdictional wetlands in the DEIS. This reference has been superseded by a more recent jurisdictional determination, the results of which are summarized in the August 23, 2011 email from Richard Darden to Sarah Lopas (DEIS reference USACE 2011). (**0134-7** [Fallon, Chris])

Response: *Sections 2.4.1, 2.4.2, 4.3.1, 4.3.2, 5.3.1, and 9.5.2 of the EIS were updated to reflect the most recent information on jurisdictional wetlands from the USACE (USACE 2013).*

Comment: Section 4.3.1.2, Pages 4-35, Line 1: The use of "state rank" used throughout the document needs to be defined carefully and in greater detail and also needs to be clarified in comparison with federal and state legal status listings (threatened, endangered, etc.). "State ranks" are not referred to as "listings". Also, "state ranks" should preferably be used in all cases in combination with global conservation status ranks (G5- demonstrably secure globally) to provide a more complete understanding of important species and habitat considerations. "Listings" include the federal and state legal status for plants and wildlife (e.g., FE-federal

endangered, SE-state endangered and SC-state species of concern). In addition, references to conservation priority species under the South Carolina Comprehensive Wildlife Conservation Strategy (SCDNR 2005) also need to be clearly defined early on in the document, and differentiated from listed species and conservation status rankings. Finally, the state listing status of "species of state concern (SC)" is not used anywhere in the document, perhaps because this entry is not included in the currently available on-line list of species tracked by SCDNR's state natural heritage program (SCDNR 2010a): however, this designation is still used in some materials listed on the SCDNR website. [Also, in] Section 7.3.1.4, Page 7-25, Lines 32-35: As previously discussed (Comment #35), "State ranks" and other designations need to be clearly defined to avoid confusion.
(**0134-34** [Fallon, Chris])

Response: *Global rankings were added in Sections 2.4.1, 2.4.2, and 4.3.1. The terminology "species of concern" is not used in the EIS because it is not an official designation for South Carolina (SCDNR 2011) and it was not used by SCDNR in the source documents referenced in the EIS. Nevertheless, for clarity, the introductory portion of Section 2.4 was revised to include more-detailed and comparative definitions of State and global ranking, State and Federal listing, State conservation priority, and Atlantic Coast Joint Venture priority.*

Comment: Section 4.3.1.3, Page 4-38, Line 33: The main transmission lines leaving Lee Nuclear Station are two 230 kV and 525 kV lines. On line 33 one is listed as a 520 kV line. This needs to be changed to a 525 kV line. (**0134-37** [Fallon, Chris])

Response: *Section 4.3.1.3 of the EIS was revised to reflect the appropriate voltage of the 525-kV switchyard on the Lee Nuclear Station site.*

Comment: Section 4.3.1.6, Pages 4-48, Line 15: This reference is out of date. The reference should be the 2010 Guidelines for Preparing a Compensatory Mitigation Plan (USACE October 2007). (**0134-39** [Fallon, Chris])

Response: *Section 4.3.1.7, formerly Section 4.3.1.6, of the EIS was revised to include the 2010 Guidelines for Preparing a Compensatory Mitigation Plan (USACE 2010).*

Comment: Section 4.3.1.6, Page 4-48, Lines 33, 34: Hydrologic Unit Codes (HUCs) for Upper and Lower Broad River should be included as well. (**0134-40** [Fallon, Chris])

Response: *Section 4.3.1.7, formerly Section 4.3.1.6, of the EIS was updated to reflect the latest information regarding proposed wetland and stream mitigation.*

Comment: Section 4.3.1.7, Page 4-50, Line 4: At the end of the sentence that references the USACE 404 requirements for the permitting process associated with the discharge of dredge or

fill material, add "without a permit from the US Army Corps of Engineers." This clarifies that the discharge of dredge or fill is allowed with a 404 permit. (**0134-42** [Fallon, Chris])

Response: *Section 4.3.1.8, formerly Section 4.3.1.7, of the EIS was revised to state, "Duke stated that it would work with the USACE to determine appropriate mitigation through the permitting process of Section 404 of the CWA (33 U.S.C. 1344), which prohibits the discharge of dredged or fill material into waters of the United States without a Department of the Army permit."*

Comment: Section 7.3, Page 7-21, Line 13: Duke Energy notes that a cumulative effects discussion on wetlands and streams in the context of the Clean Water Act Section 404(b)(1) Guidelines was included in the Section 404 permit application submitted to the U.S. Army Corps of Engineers on November 15, 2011. Additionally, the compensatory mitigation provided as part of the 404 permitting process accounts for cumulative impacts using a Cumulative Impact Factor to calculate the mitigation credit need. The stream mitigation also includes the preservation, enhancement, and/or restoration of substantial forested stream buffers, which relates to the lowland hardwood/riparian forest considerations expressed in Chapters 7 and in Chapter 4. (**0134-58** [Fallon, Chris])

Response: *Section 7.3.1. of the EIS states that Duke is developing, through consultation with the USACE, a compensatory mitigation plan addressing wetland and stream impacts that conforms with USACE guidelines. Additional information is provided in Section 4.3.1.7 (formerly Section 4.3.1.6) of the EIS.*

Comment: Section 7.3.1.1, Page 7-22, Line 30: Change "several State parks" to "several state and national parks". The Kings Mountain National Military Park includes large natural areas and is roughly 4,000 acres in size, including large tracts of contiguous forest and small streams. This national park directly abuts Kings Mountain State Park. Both parks are also nearly contiguous with Crowders Mountain State Park, with stands of hardwood forest connecting all 3 parks. (**0134-59** [Fallon, Chris])

Comment: Section 7.3.1.1, Page 7-23, Lines 19-20: Change "...State parks" to "state and national parks". (**0134-61** [Fallon, Chris])

Response: *Section 7.3.1.1 of the EIS was revised to include Kings Mountain National Military Park, Kings Mountain State Park, and Crowders Mountain State Park.*

Comment: Section 7.3.1.1, Page 7-23, Lines 9-10: The 530 acres of impact refers to permanent and temporary impacts to mixed hardwoods and mixed hardwood/pine forests within the Make-Up Pond C study area not lowland mixed hardwood forest and mixed hardwood/pine forest. Lowland mixed hardwood forest is one of four subtypes within the mixed hardwoods community. The separate subtypes were not mapped separately from the mixed hardwoods as

they could not be distinguished on aerial photographs. The mixed hardwood forest contained other subtypes such as recently cut-over mixed hardwoods and upper and mid-slope mixed hardwood. (**0134-60** [Fallon, Chris])

Response: *Section 7.3.1.1 of the EIS was revised to state that site preparation and development at the Make-Up Pond C site would disturb approximately 545 ac of mixed hardwood forest and mixed hardwood-pine forest, instead of lowland mixed hardwood forest and mixed hardwood-pine forest. The impact acreage was updated to reflect the latest design data received from Duke (Duke 2013).*

Comment: Section 9.3.5.3, Page 9-167, Lines 24-25: The DEIS states: "Wetlands do not occur within this area at the Middleton Shoals site (Duke 2009c)." Duke 2009b revised Duke 2009c to show that 1.2 ac of wetlands are estimated to occur onsite. (**0134-81** [Fallon, Chris])

Response: *Section 9.3.5.3 of the EIS was revised to include an estimated 1.2 ac of wetlands on the Middleton Shoals site based on Duke (2009a).*

Comment: Section 9.3.5.3, Page 9-168, Line 32: The reference "(Duke 2010)" should be "(Duke 2010g)". (**0134-82** [Fallon, Chris])

Response: *The requested change was made to Section 9.3.5.3 of the EIS.*

Comment: Land Clearing: It appears a total of 22 miles of bottomland hardwood will be cleared to build four new transmission lines. Bottomland hardwood habitats support a large array of wildlife species. Clearing the land will permanently remove wildlife habitats producing an abundance of food sources, flowering plants, and natural cover for animals including invertebrates, reptiles, amphibians, birds and resident and migratory waterfowl. The SC Wildlife Federation recommends that the applicant work closely with SC DNR to ensure these corridors are managed to maximize wildlife habitat by using native grasses, small shrubs, and native plant materials. (**0135-5** [Gregg, Ben])

Response: *These statements from the South Carolina Wildlife Federation are directed to the applicant and the SCDNR; therefore, no changes were made to the EIS.*

Comment: Additional concerns include impacts to approximately 1,200 total acres of terrestrial and wetland habitats. (**0141-2** [Caldwell, Mark] [Stanley, Joyce A.])

Response: *Construction and operation impacts to terrestrial and wetland habitats are discussed in Sections 4.3.1 and 5.3.1 of the EIS, respectively. No changes were made to the EIS as a result of this comment.*

Comment: *Recommendations*: EPA recommends that the FEIS contain updated information including the wetland mitigation plan and the status of the permitting process. (**0142-12** [Mueller, Heinz])

Response: *EIS Section 4.3.1.6, now Section 4.3.1.7, was revised to reflect the most recent information available on the status of the CWA Section 404 permitting process and the Compensatory Mitigation Plan.*

Comment: Measures to minimize impacts should be documented and committed to in the decision documents. We recommend that the following measures be considered to further minimize impacts to wetlands during construction:

Perform construction in wetlands during frozen ground conditions, if feasible;

Minimize width of temporary access roads;

Use easily-removed materials for construction of temporary access roads (e.g., swamp/timber mats) in lieu of materials that sink (e.g., stone, rip-rap, wood chips);

Use swamp/timber mats or other alternative matting to distribute the weight of the construction equipment. This will minimize soil rutting and compaction;

Use vehicles and construction equipment with wider-tired or rubberized tracks or use of low ground pressure equipment to further minimize impacts during construction access and staging;

Use long-reach excavators, where appropriate, to avoid driving, traversing, or staging in wetlands; and

Place mats under construction equipment to contain any spills.

(**0142-14** [Mueller, Heinz])

Response: *As discussed in Sections 4.3.1, 4.3.2, and 4.11 of the EIS, Duke has stated that site preparation and development activities would be conducted in accordance with Federal and State regulations and permit requirements, adoption of a Stormwater Pollution Prevention Plan and a Spill Prevention, Control, and Countermeasure Plan, and use of BMPs. These specific measures to minimize impacts to wetlands during site-preparation and development activities are directed to the applicant; therefore, no changes have been made to the EIS.*

Comment: Section 4.3.1.4, Page 4-43, Lines 32-33: Mountain lions no longer inhabit the Carolinas (Webster 2009). No suitable habitat for red-cockaded woodpecker occurs in the study area. The cited reference does not pertain to this species. (**0134-38** [Fallon, Chris])

Response: *The mountain lion and red-cockaded woodpecker were removed from EIS Sections 2.4.1.5 (cited incorrectly in the comment as Section 4.3.1.4) and 4.3.1.5, now Sections 2.4.1.6 and 4.3.1.6, respectively, and Table 2-9.*

Comment: Section 4.3.1.2, Page 4-34, Lines 27-34: The five referenced ecological community types originate from the national vegetation classification system, which very specifically defines ecological units using detailed information on landforms, soils, hydrology, and floristics. A comparison could be made between the plot data in Gaddy 2009 and descriptions of these communities made in NatureServe Explorer 2010. A specific example is floodplain canebrake which is defined as "large expanses of giant cane on floodplains without overstory trees (no trees present), probably maintained by fire". Though there are locations in the study area that include giant cane in the understory, these areas include an overstory of hardwood trees and are not fire maintained. (**0134-32** [Fallon, Chris])

Response: *The SCDNR documented the existence of five noteworthy natural community types in the London Creek study area during the agency's field visits. These five community types were not discussed in the Gaddy (2009) study. Thus, the locations of the five community types are likely different from the locations of the Gaddy (2009) study plots, and therefore would not be comparable. NatureServe Explorer (2010) notes the following regarding the classification of the floodplain canebrake ecological association, "Historical accounts refer to both 'pure' stands of cane without an overstory of trees (cane shrublands) and areas with variable overstory closure (woodlands or forests) but with a dense understory dominated by cane as 'canebrakes.' As currently described [NatureServe Explorer 2010], this association refers only to the former, cane shrublands. " However, the summary description of the association states that, "Stands occur on alluvial and loess soils and are often associated with bottomland hardwood forest vegetation. This association is successional and is thought to be maintained by periodic fires. It may have originated following abandonment of aboriginal agricultural fields or other natural and anthropogenic disturbances such as blow-downs and catastrophic floods." It is unclear from the NatureServe Explorer (2010) excerpts whether the floodplain canebrake that occurs in the bottomlands of London Creek is part of the floodplain canebrake ecological association. Section 2.4.1.2, where the natural community types are described, was revised to note this ambiguity and other such inconsistencies regarding the other four noteworthy natural community types.*

Comment: Section 4.3.1.2, Pages 4-34, Line 30: Reference SCDNR 2011a appears to be incorrect here and in several other locations in text. Refer to references section of DEIS. This citation corresponds to a reference for black bears in SC. This reference should likely be SCDNR 2011b. Additionally [in Section 7.3.1.4, Page 7-25, Lines 32-35], the SCDNR 2011a reference is incorrect. The reference should be SCDNR 2011c. (**0134-33** [Fallon, Chris])

Response: *The reference for black bears has been revised to SCDNR (2005) in the EIS. The SCDNR references in Sections 4.3.1.2, 4.3.2.3, and 7.3.1.4 of the EIS were also revised as necessary.*

Comment: The secondary and cumulative impact potential of the proposed Lee Nuclear Station is significant and the zone of influence would extend beyond the direct footprint of the impact zone. The loss of approximately 1,500 acres of forest for the development of the Lee Nuclear Station would result in the loss of quality Piedmont plant communities that are becoming increasingly rare, such as seepage swamp, floodplain canebrake, Piedmont acidic mesic mixed hardwood forest and Piedmont beech/heath bluff'. Also located within the footprint of Make-Up Pond C were 5 conservation priority plant species: drooping sedge (*Carex prasina*), southern enchanter's nightshade (*Circaea lutetiana* ssp. Canadensis), southern adder's-tongue fern (*Ophioglossum vulgatum*), Canada moonseed (*Menispermum canadense*), and single-flowered cancer root (*Orobanche uniflora*). Lee Nuclear Station operations may also impact sensitive and/or rare aquatic species. Nine state conservation priority fish species have been documented within the Ninety-Nine Islands Reservoir (see section 2.4.2.1 Aquatic Resources - Site and Vicinity). Nearly 7 miles of London Creek and associated riparian forest would be permanently lost, and there would be permanent conversion of terrestrial and aquatic habitat to a shrub, scrub community for the construction of 31 miles of new transmission line corridor. As noted by the Review Team, the construction of the Lee Nuclear Station would result in forest fragmentation, loss of connectivity for migrating wildlife and degradation and/or loss of aquatic and forested habitat, with a concomitant loss of plant and animal species dependent upon these habitats. Due to the magnitude of impacts associated with Make-Up Pond C and transmission line corridors, the Review Team has classified the impact to terrestrial and aquatic resources as MODERATE. However, the Review Team concludes even individual impacts classified as SMALL can be important if they contribute to or accelerate the overall resource decline. A thorough accounting of all impacts, including direct, secondary and cumulative impacts should be undertaken by the Licensee. In keeping with the Memorandum of Agreement between the Environmental Protection Agency and the USACE on The Determination of Mitigation Under the Clean Water Act Section 404(b)(1) Guidelines, the Licensee must provide compensatory mitigation commensurate with the quality impacted. DNR will endeavor to work with the Licensee and natural resource land regulatory agencies to assist the Licensee in identifying appropriate mitigation opportunities that adequately replace lost functions of London Creek and its watershed due to construction of the proposed Lee Nuclear Station. (**0126-28** [Vejdani, Vivianne])

Response: *These statements are directed to the applicant. EIS Section 4.3.1.6, now Section 4.3.1.7, has been revised to reflect the most recent information available on compensatory mitigation to replace the lost functions of London Creek and its riparian corridor on a watershed scale.*

Comment: Section 4.3.1.1, Page 4-22, Lines 15: Change "northeast" to "southeast". (**0134-29** [Fallon, Chris])

Response: *The referenced line states that the intake structure would be located southeast of the alluvial wetland, not northeast. However, a comparison of Figures 2-5 and 6-9 in Volume I of the* William S. Lee III Nuclear Station Joint Application for Activities Affecting Waters of the United States *(Duke 2011c) makes it clear that the intake structure would be located northeast of the alluvial wetland. Section 4.3.1 of the EIS was updated to reflect the location of the intake structure.*

Comment: Section 4.3.1.1, Page 4-19, Line 13: Dates require update - 2012 to 2014 and 2014 to 2016. This change was previously noted in a letter dated March 31, 2010 from Bryan Dolan to the NRC Document Control Desk (ML100920024). (**0134-28** [Fallon, Chris])

Response: *EIS Section 4.3.1 was updated to reflect the most recent schedule for site-preparation activities provided by Duke.*

Comment: Section 4.3.1.2, Page 4-30, Line 26-37: The basis for the statements in the DEIS regarding lowland mixed hardwoods along London Creek is not clear. No data, measurements, or figures are presented for the comparisons made in the DEIS regarding the width and contiguity of lowland mixed hardwoods along London Creek versus other creeks in the area. In Chapter 2 of the DEIS, there is no related presentation or discussion of the width or contiguity of lowland mixed hardwood forest in the study area. Some of this discussion in Chapter 4 also conflicts with information presented in Chapter 2 of the DEIS (see page 2-65 for instance, which may be overstated in the opposite direction).

Information in Chapters 2 and 4 of the ER Supplement indicate that lowland mixed hardwood forest along London Creek would be considered relatively common, in moderate to good condition, and comparable to lowland mixed hardwood forests occurring along other creeks throughout the region. Some creeks may have narrower or less contiguous stands of lowland mixed hardwood forests and others may exceed London Creek in these characteristics, but London Creek would not stand out as substantially better compared to other locations. (**0134-30** [Fallon, Chris])

Response: *The habitat information provided in EIS Section 2.4.1.2 relative to the bird study of London Creek watershed refers to bottomland hardwood forest (subset of lowland hardwood forest which also comprises hardwood forest on lower slopes and in riparian and seepage areas) providing the highest quality avian habitat and species diversity among the habitats under study, although it is fragmented and of limited size. This was not a comparison of the London Creek bottomland hardwood forest with that of streams of similar size in the area. Section 2.4.1.2 of the EIS was revised to clarify this point. The generic condition of lowland (including bottomland) hardwood forest being fragmented and of limited size is typical among*

streams in the Piedmont of South Carolina. The issue is the condition of the London Creek lowland hardwood forest relative to that of other streams of similar size in the area. The evaluation in Section 4.3.1.2 of the EIS that discusses impacts to lowland hardwood forest was qualitative, based on visual interpretation of vegetation maps. To clarify, Section 4.3.1.2 of the EIS was revised to include a simple quantitative assessment of the vegetation types/land-cover classes within the corridor of London Creek and the six other streams (Doolittle Creek, Cherokee Creek, Bells Branch, Nells Branch, Kings Creek, and Abingdon Creek). Acreages of the vegetation types/land-cover classes within the corridor of each stream were compared to elucidate the percent cover and contiguity of lowland hardwood forest among these streams.

Comment: Section 4.3.1.2, Pages 4-33, Lines 35-36: Some of the areas described as Significant Natural Areas (SNA) in the DEIS do not contain rare plants or rare plant communities. Some of the SNAs are described as being dominated by relatively common to abundant species. Plant species that are relatively common to abundant and are "secure" from a conservation perspective, but that are slightly outside their usual ranges, are perhaps interesting, but are not particularly significant (e.g., mountain laurel). Individual mature trees do not constitute significant resources. It is doubtful that old-growth trees exist on the site, and old-growth forest stands definitely do not occur near London Creek. Some of the SNAs also describe wetlands that are included elsewhere in the DEIS. (**0134-31** [Fallon, Chris])

Response: *The descriptions of the significant natural areas (SNAs) and the bases for their identification as significant were provided by Duke's independent botanical consultant and summarily incorporated in the EIS. An SNA may consist of one or a combination of the following: a rare plant community; rare plant species; and mature to old-growth trees. The term "significant natural area" as used in the EIS has no regulatory basis, but is a matter of professional judgment. For example, mountain laurel (*Kalmia latifolia*) is a common shrub species in Piedmont hardwood forests; however, it is unusual that it completely dominates the hardwood tree component of the community as it does in the Laurel Ravine SNA in the London Creek study area. In addition, mature to old-growth trees in the London Creek bottomland hardwood forest have attained great age without significant disturbance. A community containing such trees, particularly multiple species, such as the West Bluff SNA, may be considered rare in a landscape otherwise dominated by monocultures of trees of much lesser stature due to frequent timber harvest. A defensible rationale likewise exists for the other eight SNAs in the London Creek study area. No changes were made to the EIS based on this comment.*

Comment: Section 4.3.1.2, Page 4-35, Lines 7-14: The statements in this summary paragraph regarding the diversity and integrity of the habitat types in question and the importance, rarity, or scarcity of these resources is questionable. The presence of similar significant natural areas, natural community types, and rare plant species in other locations outside Make-Up Pond C, including on the Lee site, and in the transmission corridor crossing Abingdon Creek, indicate these resources are likely common in the region. All but one of the rare plant species included in

the significant natural areas and in subsequent sections of this chapter, were recently recorded at Kings Mountain National Military Park (White and Govus 2005), as were many other species of greater rarity or imperilment that were not recorded in the Make-Up Pond C study area. This also indicates that the significance of these resources in the Make-Up Pond C area may be somewhat overstated. (**0134-35** [Fallon, Chris])

Response: *Ten SNAs, four noteworthy ecological associations, five State-ranked plant species, and five uncommon plant species were observed in the Make-Up Pond C study area, whereas only one State-ranked plant species was observed on the Lee Nuclear Station site and along Abingdon Creek near where it would be crossed by the transmission lines (about 5 mi southwest of the Lee Nuclear Station site). The Make-Up Pond C study area, Lee Nuclear Station site, and the transmission-line corridors are similar in size, but there are differences in land and water features that make them not completely comparable. However, a far greater number of rare vegetation elements were observed in the Make-Up Pond C study area than were observed in the other two areas. These rare plant species and communities may be present elsewhere in the region; however, it is extraordinary that they would occur concentrated in one area unless that area had relatively high habitat integrity. For example, Kings Mountain National Military Park, located 10 mi northeast of the Lee Nuclear Station site and approximately twice the size of the Make-Up Pond C study area, has been disturbed by silviculture and agriculture but has been recovering from human disturbance for at least 50 years since creation of the park, and is buffered on all sides by Kings Mountain State Park. The fact that all but one of the State-ranked plant species observed in the Make-Up Pond C study area has also been recently observed at Kings Mountain National Military Park (White and Govus 2005) supports the relative integrity of the London Creek bottomland hardwood forest. Sections 2.4.1 and 4.3.1 of the EIS were revised, where appropriate, to include information from the Kings Mountain National Military Park vegetation assessment (White and Govus 2005).*

Comment: Section 4.3.1.6, Page 4-49, Lines 29-33: This paragraph references the on-site mitigation measures planned using BMPs. Make-Up Pond C and State roads should also be mentioned, in addition to the Lee Nuclear Station site, the transmission line and railroad corridors. (**0134-41** [Fallon, Chris])

Response: *The paragraph in EIS Section 4.3.1.6, now Section 4.3.1.7, was revised to include the Make-Up Pond C study area and the offsite road-improvement areas. In addition, a new subsection "Offsite Road Improvements" was inserted into EIS Section 4.3.1 that covers impacts to State roads and identifies the BMP practices that will be followed (Duke 2011c).*

Comment: Wetlands
The site preparation and development of the proposed Lee Nuclear Station and associated facilities would potentially impact wetlands and streams regarded as Aquatic Resources of National Importance (ARNI). Page 7-24 notes that approximately 5.5 acres of wetlands are involved. The wetlands impacts include 0.21 acres at Lee Nuclear Station site; 3.66 acres at

Make-up Pond C; and 1.57 acres of wetland impacts resulting from transmission lines, pipelines and the railroad spur. A majority of the impacts to Waters of the United States associated with the project are due to "Drought Contingency Pond C" (Pond C). This pond proposes to permanently impact 65,056 linear feet of stream and 4.07 acres of wetlands. (**0142-10** [Mueller, Heinz])

Response: *Sections 4.3.1, 4.3.2, 5.3.1, 5.3.2, 7.3.1, and 7.3.2 were revised to include the most recent information on wetland and stream impacts from the 404(b)(1) analysis included in Section 9.5 of the EIS.*

Comment: Endangered and Threatened Species
The DEIS summarizes the NRC's coordination with the U.S. Fish and Wildlife Service (FWS), noting the presence of three listed and one candidate species in Cherokee, Union, and York Counties, which encompass the Lee Nuclear Station site, the Make-Up Pond C site, the two proposed transmission-line corridors, and the railroad-spur corridor (page 4-43). There are no areas designated by the FWS as critical habitat for Federally listed threatened and endangered species in the area of the proposed Lee Nuclear Station and supporting infrastructure (page 5-21).

Recommendations: EPA defers to the FWS and the State wildlife agencies on these issues and recommends that the FEIS should provide updated information regarding the consultation process with the FWS. (**0142-24** [Mueller, Heinz])

Response: *As discussed in Section 4.3.1 of the EIS, the U.S. Fish and Wildlife Service (FWS) concurred, in a letter dated June 13, 2012, with the NRC review team's determination that the proposed Lee Nuclear Station Units 1 and 2 project (all elements) is not likely to adversely affect Federally protected species nor result in adverse modification to designated or proposed critical habitat, thus completing informal consultation between the FWS and NRC (FWS 2012). Consultation correspondence between the review team and FWS is listed in Appendix F.*

Comment: CHAPTER 2 -AFFECTED ENVIRONMENT 2.2.2. The Make-Up Pond C Site
The Licensee proposes a 300-ft buffer around Make-Up Pond C, 50 ft of which is proposed to be cleared, grubbed, grassed and maintained to prevent debris from washing into the reservoir. DNR concurs with the proposed 300-ft buffer but does not support maintaining a grassed 50-ft shoreline buffer. If a natural shoreline buffer is maintained, Make-Up Pond C likely would naturalize and support a greater variety of aquatic life and wildlife. Riparian zones perform numerous ecological functions including providing food, cover, and nesting sites for a variety of wildlife species as well as detritus and woody debris which are an important source of energy and cover for aquatic life. Canopy cover helps to maintain water quality by reducing surface water temperatures and evaporative loss. Riparian zones function as biofilters and remove nutrients and other pollutants from storm-water runoff before it enters rivers, lakes and streams. Maintenance of the 50-ft buffer likely will contribute to lowered water quality. DNR recommends

the Licensee explore alternatives for preventing debris from entering intake structures in order to protect water quality, maximize wildlife habitat and reduce evaporative losses. (**0126-1** [Vejdani, Vivianne])

Comment: 4.1.2 The Make-Up Pond C Site: See comments in section 2.2.2 The Make-Up Pond C Site. (**0126-16** [Vejdani, Vivianne])

Comment: 4.3.1.2 Terrestrial Resources -The Make-Up Pond C Site See comments in sections 2.2.2. The Make-Up Pond C Site. (**0126-30** [Vejdani, Vivianne])

Comment: The Drought Contingency Pond C Buffer Zone: While SC Wildlife Federation applauds the proposed 300 feet buffer zone around the pond, we recommend DNR work closely with the applicant to enhance the 300 feet buffer and its functionality to provide excellent food, cover and nesting sites for the local wildlife species. (**0135-3** [Gregg, Ben])

Response: *These comments are specific recommendations directed to the applicant by the SCDNR and the South Carolina Wildlife Federation. Plans for leaving a 300-ft buffer along the Make-Up Pond C shoreline are addressed in Section 4.3.1.2 of the EIS. Upon further evaluation of a maintained 50-ft buffer, the applicant has proposed "to allow a natural shoreline buffer and install a log boom in order to protect blockage of the [Make-Up] Pond C spillway" (Duke 2012e). Sections 3.3.1.8 and 5.3.1.1 of the EIS were modified as a result of the applicant's proposal.*

Comment: No discussion of mitigation of terrestrial habitats (outside of wetland and streams) is included in the referenced section of the DEIS, and Duke Energy has not had such discussions with SCDNR. The reference to a preliminary approach to compensatory mitigation of rare, unique, or otherwise valuable terrestrial habitats appears to misconstrue the Duke Energy response to RAIs 209 and 213 (Accession No. ML102850208). This response indicates that in discussions with SCDNR concerning compensatory mitigation for wetlands and streams, Duke Energy has reviewed impacted habitats at Make-Up Pond C. Compensatory mitigation plans for wetlands and streams may involve tracts of land that benefit communities discussed in the DEIS; however, this benefit is not part of compensatory mitigation for those communities. The response to RAIs 209 and 213 is not included as a reference in the DEIS. Note that in section 4.3.1.6, the cited reference, Duke 2010o, does not appear to discuss mitigation for wetlands, streams, or terrestrial systems. The citation should be to ML102850208. (**0134-36** [Fallon, Chris])

Response: *EIS Section 4.3.1.6, now Section 4.3.1.7, was revised to reflect the most recent information available on compensatory mitigation to replace the lost functions of London Creek and its riparian corridor on a watershed scale. Section 4.3.1.7 was clarified to state there would be no mitigation for upland habitats, but that some upland habitats may benefit by their inclusion as buffer areas in mitigation tracts for wetlands and streams. The revision included reference to RAIs 209 and 213 (Duke 2010b).*

E.2.8 Comments Concerning Aquatic Ecology

Comment: The other issue I want to bring up is my concerns about the Broad River and the cumulative effects of the thermal contamination. I didn't get an answer to my question about how many power plants are along the Broad River, but there are several, and then there's other industries and things that are dumping heat into the river. I don't think there's any way that this cannot affect the ecosystem of the river... (**0012-15-3** [Larsen Clark, Brita])

Comment: Discharges of hot water, heavy metals and possibly traces of radiation could place stress on the aquatic community... (**0012-7-11** [Hicks, Katie])

Comment: After use the water that is used is returned to the river as thermal pollution, which stresses fish, other animals living in the area, and the surrounding environment. (**0013-20-3** [Craig, Anne])

Comment: After use, water is returned to the river as thermal pollution which stresses fish, other animals living in the area and the surrounding environment. (**0095-4** [Craig, Anne])

Response: *The Lee Nuclear Plant will use closed-cycle cooling, which substantially reduces the thermal discharge to the receiving waters. Detectable impacts to aquatic resources from the thermal discharge are not expected. Thermal impacts to the aquatic environment from operating the Lee Nuclear Station are addressed in Section 5.3.2 of the EIS. No changes to the EIS were made as a result of these comments.*

Comment: After use, water is returned to the river as "thermal pollution" (warm water) which stresses fish, other animals living in the area and negatively impacts the surrounding environment. The SC Dept of Natural Resources list the Carolina Fantail Darter fish that lives in the Broad River as "critically imperiled" in South Carolina & warns of "high conservation priority." (**0017-6** [Morgan, Tom and Barbara])

Comment: After use, water is returned to the river as "thermal pollution"(warm water) which stresses fish, other animals living in the area and negatively impacts the surrounding environment. The SC Dept of Natural Resources list the Carolina Fantail Darter fish that lives in the Broad River as "critically imperiled" in South Carolina & warns of "high conservation priority". I don't believe we can continue to rely on the Broad River and its natural populations to support even more cooling capacity! (**0048-5** [Skeele, Michele and Skip])

Comment: [If Lee Nuclear Station is built:] Broad River & the Carolina Fantail Darter fish would be threatened. (**0114-5** [Lovinsohn, Ruth])

Response: *Section 5.3.2.3 of the EIS addresses operational impacts, including those from thermal discharge, on the Carolina Fantail Darter* (Etheostoma brevispinum)*. No changes were made to the EIS as a result of these comments.*

Comment: The pond's creation would also result in complete loss of rare and valuable Piedmont riparian habitat along London Creek. (**0012-7-6** [Hicks, Katie])

Comment: London Creek [Section 2.4.2.1 Aquatic Resources - Site and Vicinity]
If permitted, Make-Up Pond C, at 632 acres, would be the largest reservoir permitted in the state of South Carolina since Lake Russell. The proposed flooding of more than 6 miles of stream will require mitigation for unavoidable impacts to Waters of the United States. In order to adequately mitigate all identified impacts, the Licensee will be required to develop a comprehensive mitigation plan. For impacts to the amount of wetlands and stream that will be involved to develop Make-Up Pond C, such a mitigation plan should encompass more than simple wetland and stream impact restoration and compensation. DNR requests continued discussion with the Licensee and resource agencies regarding appropriate compensatory mitigation to replace the lost functions of London Creek and its riparian corridor on a watershed scale. (**0126-14** [Vejdani, Vivianne])

Comment: 4.1.2 The Make-Up Pond C Site: See comments in section 2.4.2.1 Aquatic Resources -Site and Vicinity. (**0126-34** [Vejdani, Vivianne])

Response: *The loss of riparian habitat along London Creek is described in Sections 4.3.1 and 4.3.2 of the EIS. Unavoidable impacts to wetlands and streams would be mitigated through compensatory mitigation. Duke has consulted with the USACE to develop a compensatory mitigation plan in conformance with the requirements of USACE Charleston, South Carolina District* Guidelines for Preparing a Compensatory Mitigation Plan *(USACE 2010) and* Compensatory Mitigation for Losses of Aquatic Resources; Final Rule *(73 FR 19594, 40 CFR Part 230 and 33 CFR Part 332). A summary of Duke's compensatory mitigation plan is included in Section 4.3.1.7 (formerly Section 4.3.1.6) of the EIS.*

Comment: So I spoke to South Carolina naturalist Pat McMillan, who's on TV, who states that the endangered plant species called the rocky shoals spider lily will be negatively impacted. And why? Because of the water flow fluctuations and the water quantities available in the Broad River downstream. Also endangered is the Carolina fantail darter fish. (**0012-4-2** [Conard, Sky])

Comment: The region's citizens and our governing agencies who do water supply planning need to strongly reject this flawed proposal that would 1) severely diminish the public basin's water supply, 2) forever alter this watershed's course and its ecosystem. (I spoke to South Carolina naturalist Pat McMillan who states that the endangered plant species called Rocky Shoals Spider Lily will be negatively impacted because of water flow fluctuation and water quantities. Also endangered is the Carolina Fantail Darter fish.) (**0094-2** [Conard, Sky])

Response: *The rocky shoals spider lily* (Hymenocallis coronaria) *is State-ranked S2, imperiled in South Carolina. Based on field surveys, this species is not known to occur in the vicinity of the proposed Lee Nuclear Station site. The nearest known occurrence of this species in the Broad River is at Lockhart Dam (SCDNR 2012b), approximately 22 mi downstream of the Lee Nuclear Station discharge structure to be located on the upstream side of Ninety-Nine Islands Dam. The FERC minimum flow requirements for the Broad River at the Ninety-Nine Islands Dam will not be altered as a result of the Lee Nuclear Station; therefore, operations at the Lee Nuclear Station would not affect the rocky shoals spider lily. Operational impacts to the State-ranked Carolina Fantail Darter* (Etheostoma brevispinum) *are described in Section 5.3.2.3 of the EIS. No changes were made to the EIS as a result of these comments.*

Comment: [The following problems are among those we have identified:] The need to re-dredge reservoirs for backup cooling water such as Ponds A and B, plus newly digging 640-acre Pond C. (**0119-5** [Thomas, Ruth])

Response: *Localized dredging within Make-Up Ponds A and B is required to improve water movement and is discussed in Sections 3.3.1.6 and 3.3.1.7 of the EIS, respectively. Dredging impacts to aquatic resources within Make-Up Ponds A and B are discussed in Section 4.3.2 of the EIS. As described in Section 3.3.1.8 of the EIS, creation of Make-Up Pond C requires clearing land, excavation activities, and building a dam and other water-retaining structures to impound London Creek; no dredging is required. No changes to the EIS were made as a result of this comment.*

Comment: 2.4.2.1 Aquatic Resources -Site and Vicinity
Broad River and Ninety-Nine Islands Reservoir

This section of the DEIS discusses the provision for fish passage facilities at 7 hydroelectric projects on the Broad River under the Santee River Basin Accord for Diadromous Fish Protection, Restoration, and Enhancement of 2008. The Ninety-Nine Islands Project is fourth in line for the installation of fish passage facilities if efforts to pass anadromous fish species such as American shad and blueback herring (*Alosa aestivalis*) are successful. DNR recommends confirmation that the proposed intake and diffuser structures would not conflict with the footprint of a fish passage facility at the Ninety-Nine Islands Dam, should one be constructed in the future. (**0126-12** [Vejdani, Vivianne])

Comment: 4.3.1.2 Terrestrial Resources -The Make-Up Pond C Site See comments in Section 2.4.2.1 Aquatic Resources -Site and Vicinity. (**0126-31** [Vejdani, Vivianne])

Response: *This recommendation from the SCDNR is directed to Duke; however, Article 405 of the FERC license for the Ninety-Nine Islands Project (FERC No. 2331-002), issued June 17, 1996, reserves the FERC's authority "to require the licensee to construct, operate, and maintain, or provide for the construction, operation, and maintenance of, such fishways as may be*

prescribed by the Secretary of Interior" (PNNL 2011). No changes were made to the EIS as a result of these comments.

Comment: Section 2.4.2.1, Page 2-96, Figure 2-18: Add Station number 465 to figure just below Cherokee Falls Dam; Table 2-10: Change Station number 459 to 458 in header row of table. (**0134-8** [Fallon, Chris])

Response: *Station 465 has been added to Figure 2-18 just below Cherokee Falls Dam. Station 459, a macroinvertebrate sampling location in the impoundment on west side of main channel (near proposed cooling-water discharge), has also been added to Figure 2-18 and is the correct station number in the header row of Table 2-10. Station 458 remains on Figure 2-18 because it identifies a fishery sampling location. Stations 465 and 459 were also added to the text in EIS Section 2.4.2.1.*

Comment: Section 2.4.2.3, Page 2-112, Line 16: This sentence refers to the number collected by electro-fishing, but 262 quillbacks were collected by gillnetting in Ninety-Nine Islands Reservoir in 2006, as referenced in Fishery Resources Associated with the Lee Nuclear Station Site; Cherokee County, South Carolina (Barwick et.al., 2006). This reference was provided to the NRC in response to RAI 53, dated September 17, 2008. (See also, Section 4.3.2.3, Page 4-62, Line 15) (**0134-10** [Fallon, Chris])

Response: *Commenter is correct. Appropriate revisions were made to Sections 2.4.2.3 and 4.3.2.3 of the EIS.*

Comment: Section 4.3.2.3, Pages 4-61, Line 26: The Carolina Heelsplitter account was included within the account of the Carolina Fantail Darter and this appears to be an error. Both, however, are ranked as S1 although the Carolina Heelsplitter has not been documented in the project area. (**0134-44** [Fallon, Chris])

Response: *Commenter is correct. The Carolina heelsplitter* (Lasmigona decorata) *descriptive information has been removed from the Carolina Fantail Darter description in Section 4.3.2.3 of the EIS.*

Comment: Section 4.3.2.5, Page 4-63, Lines 26-27: Not all aquatic resources would be lost. Some resources would remain, including those species that could adapt to lentic environments or migrate to upstream reaches of the tributaries that are not impounded. Additionally, certain aquatic functions of London Creek would remain such as flood attenuation and water quality treatment. (**0134-45** [Fallon, Chris])

Response: *Commenter is correct. With the possible exception of a segment approximately 0.6 mi in length between the Make-Up Pond C dam and the confluence with the Broad River, the main stem of London Creek would be inundated and the resulting Make-Up Pond C*

impoundment would replace a lotic (flowing water) system with a lentic (still water) system. Some aquatic functions would remain, in particular, flood attenuation and water quality and some aquatic species (e.g., sunfish) could adapt to the lentic environment. In addition, some of the upper reaches of tributaries to London Creek not impounded would retain their lotic characteristics; however, they would become isolated from other lotic habitat. Section 4.3.2.5 (now Section 4.3.2.4) of the EIS was revised to address this comment.

Comment: Section 2.4.2.3, Pages 2-108 through 2-112: The NRC should conduct a global correction for the reference (Jenkins and Burkhead 1993). The correct year of publication is 1994. (**0134-9** [Fallon, Chris])

Response: *The NRC staff acknowledges that although the book was published in 1994, the editor of the book states the correct date for referencing is actually 1993. No changes were made to the EIS as a result of this comment.*

Comment: Section 5.3.2.3., Page 5-36, Lines 34 to Page 5-37, Lines 1-2: The DEIS indicates that consumptive water use is 5%. This percentage should actually be 3% based upon the NPDES Permit Application. (**0134-53** [Fallon, Chris])

Response: *The commenter is correct. The text was revised to state the consumptive water use is 3% of the mean annual flow.*

Comment: Section 7.3.2, Page 7-32, Lines 12-13: As stated in Section 5.3.1.1 of the DEIS and 5.2.1.6 of the ER, periodic dredging around the intakes will be required. Dredging is not anticipated to be performed annually. (**0134-63** [Fallon, Chris])

Response: *Section 7.3.2 of the EIS was revised to state that periodic dredging would be required at the Broad River intake structure.*

Comment: Section 7.3.2, Page 7-34, Lines 36-37: Change, "...Duke has committed to use water stored in Make-Up Ponds B and C as cooling water for the reactors to maintain the necessary water flows in the Broad River" to state, "...Duke has committed to use water stored in Make-Up Ponds B and C as cooling water for the condensers to maintain the necessary water flows in the Broad River" for clarification. (**0134-64** [Fallon, Chris])

Response: *Section 7.3.2 of the EIS was modified to incorporate the recommended clarification. The sentence now states "…Duke has committed to use water stored in Make-Up Ponds B and C as cooling water for the condensers to maintain the necessary water flows in the Broad River (Duke 2009b)."*

Comment: Section 7.3.2, Page 7-27, Lines 35-38, and 7-28, Lines 1-5: It is important to note that although the transmission lines will span these stream systems and limited clearing of

canopy trees will be performed for conductor clearances, no Clean Water Act Section 404 impacts will occur to the jurisdictional resources (refer to the Section 404 permit application submitted November 2011). (**0134-62** [Fallon, Chris])

Response: *Volume I of the* William S. Lee III Nuclear Station Joint Application for Activities Affecting Waters of the United States *(Duke 2011c) states, "No impacts to tributaries will occur within the offsite transmission line permit area components, as the transmission lines will span these jurisdictional features and transmission structures will be located within the uplands. Hand cutting of canopy trees will occur within tributary buffers." Sections 4.3.1, 4.3.2, and 7.3.2 of the EIS were modified as a result of this comment.*

Comment: Section 5.3.2.3, Page 5-36, Line 20: Define "state-ranked species". See prior Comment #35 under Chapter 4.0. (**0134-52** [Fallon, Chris])

Response: *State ranking (in addition to the Federal listing) provides the only common basis for comparison of numbers of important animal and plant species between the proposed Lee Nuclear Station site, located in South Carolina; the Keowee and Middleton Shoals alternative sites, also located in South Carolina; and the Perkins alternative site, located in North Carolina. The staff considered, as part of its evaluation, species ranked as critically imperiled (S1), imperiled (S2), or vulnerable (S3) by the State of South Carolina, some of which have also been assigned a State-protection status of threatened or endangered. The term "State species of concern" was not used in the EIS because it is not an official designation for South Carolina (SCDNR 2011) and was not used by the SCDNR in the source documents referenced in the EIS. For clarity, the introductory portion of Section 2.4 was revised to include more detailed definitions.*

Comment: Section 4.3.2.1, Page 4-56, Lines 6-7: Eastern floater is not a species of high conservation priority according to the cited reference. This species is not mentioned in the cited reference (SCDNR 2005). This species has a conservation status ranking of G5/SNR (globally secure, state not ranked). Reference citation appears in the wrong location within the sentence. (**0134-43** [Fallon, Chris])

Response: *The commenter is correct; the Eastern floater* (Pyganodon cataracta) *is not a priority species for the South Carolina State Comprehensive Wildlife Conservation Strategy (SCDNR 2005). References to the Eastern floater as a priority species were deleted from Table 2-14; Section 4.3.2.1, and Section 4.3.2.3 of the EIS.*

Comment: Section 9.3.3.4, Page 9-74, Lines 27-30: The DEIS states: "Operation of new facilities at the Perkins Site would require three new supplemental cooling-water reservoirs (totaling 1500 ac with approximately 33,000 ac-ft of storage)... (Duke 2009c)." This cooling water reservoir storage volume was provided in the response to RAIs 127 and 131. Therefore, the reference should be Duke 2010g. (**0134-73** [Fallon, Chris])

Response: *The commenter is partially correct. In Section 9.3.3.4 of the EIS, the reference for the acreage of the cooling-water reservoir should be the response to RAIs 127 and 131, whereas the reference for the storage volume of the cooling-water reservoir should be the response to RAI 206. Section 9.3.3.4 of the EIS was updated with the correct references. In addition, Sections 9.3.4.4 and 9.3.5.4 were updated with the correct reference for the cooling-water reservoir storage volume.*

Comment: Lake Cherokee: Lake Cherokee is public property owned by the State of South Carolina, and DNR maintains the use of that lake to provide recreational fishing opportunities to the public. SC Wildlife Federation recommends that the public recreational opportunities in and around the lake not be adversely affected, especially during major flood events. The applicant should work very closely with SC DNR to ensure there will be no adverse effect on the public use of the Lake Cherokee resource. (**0135-4** [Gregg, Ben])

Response: *These recommendations by the South Carolina Wildlife Federation are directed to Duke, therefore no changes were made to the EIS.*

Comment: Measures to limit bioentrainment and other impacts to aquatic species from surface water withdrawals and discharges should be referenced in the FEIS, and should continue to be addressed as the project progresses, in compliance with the NPDES Permit.
(**0142-16** [Mueller, Heinz])

Response: *Measures to limit bioentrainment and other impacts to aquatic species from surface water withdrawals and discharges are discussed in Section 5.3.2.1 of the EIS. The EPA and its delegated States, not the NRC, regulate entrainment and impingement as well as the effects of surface water discharges under the CWA through NPDES permits. The NRC discloses such impacts in the EISs it prepares under NEPA, but does not regulate the impacts. The EPA has delegated the authority for administering the NPDES program in South Carolina to the SCDHEC. On July 17, 2013, the SCDHEC issued NPDES Permit No. SC0049140 to Duke for the Lee Nuclear Station (SCDHEC 2013). This permit includes requirements for both biological monitoring and velocity monitoring at the cooling water intake structure. In addition, Duke shall not operate the drought contingency section of the river intake during the months of March, April, May, or June.*

Comment: Chronic and Cumulative Impacts
The applicant has proposed damming of the London Creek watershed to create Make-Up Pond C. The proposed intention of this pond is to provide additional water to both Make-Up Ponds A and B during low flow conditions and prolonged drought. The proposed work would impound 6 miles of London Creek to create a 620-acre reservoir.

London Creek is a headwater Piedmont stream with bedrock, cobble, and coarse substrates, sinuosity, riffle/pool habitat, leaf packs and woody debris. The dominant source of energy for

production in southeastern rivers is the terrestrially derived plant and organic material that is collected, processed, and exported downstream by headwater streams (Minshall et al. 1983, Webster et al. 1995). Detrital resources provide a primary energy source for macro-invertebrate production including aquatic insects, which supplies the food base for upper trophic levels (Freeman 2005). Hydroelectric projects throughout the Broad River basin have disproportionately eliminated and cumulatively affected riffle and shoal habitats, including headwater stream habitats. The creation of Make-Up Pond C would cause irreparable and irretrievable loss of Piedmont stream habitat and the species whose life cycles depend on those habitats.

Surveys conducted in London Creek collected 22 fish species. One species, the greenhead shiner, *Notropis chiorocephalus*, is a South Carolina State Conservation species of "High Priority" and three additional species of "Moderate" priority including the greenfin shiner, *Cyprinella chioristia*, highback chub, and flat bullhead, were collected. These species would not survive the complete inundation of stream habitat to create a large reservoir habitat. This would result in the direct loss of these species, whose populations are already in decline.
(**0141-7** [Caldwell, Mark] [Stanley, Joyce A.])

Response: *The NRC staff appreciates the review and synopsis that the FWS provided in this comment related to information presented in Sections 2.4.2.1 and 4.3.2.1 of the draft EIS. With the possible exception of a segment approximately 0.6 mi in length between the Make-Up Pond C dam and the confluence with the Broad River, the main stem of London Creek and unnamed tributaries would be inundated and the resulting Make-Up Pond C impoundment would replace a lotic system with a lentic system. The NRC staff acknowledges that there would be irreparable and irretrievable loss of Piedmont stream habitat and individuals of the fish species that cannot adapt to the lentic environment. Downstream from the proposed Make-Up Pond C impoundment, Duke has proposed minimum seasonal flow releases to maintain existing water uses and to protect the remaining aquatic community of London Creek* (*Duke 2012f). The discussion of aquatic resource impacts from Make-Up Pond C in Section 4.3.2 has been expanded to reflect this comment.*

Comment: Fish [Section 2.4.2.1 Aquatic Resources - Site and Vicinity]
2000s DNR staff sampled the upper portion of the Ninety-Nine Islands Reservoir and a site 4.5 km below the dam while completing the Broad River Aquatic Resources Inventory (Bettinger, Crane and Bulak, 2003). State conservation priority species collected include seagreen darter (*Etheostoma thalassinum*), piedmont darter (*Percina crassa*), quillback (*Carpiodes cyprinus*), greenfin shiner (Cyprinella chloristia), fieryblack shiner (Cyprinella pyrrhomelas), notchlip redhorse (*Moxostoma collapsum*), V-lip redhorse (*Moxostoma pappillosum*), snail bullhead (*Ameiurus brunneus*) and flat bullhead (*Ameiurus platycephalus*). Important recreational fisheries include largemouth bass (*Micropterus salmoides*) smallmouth bass (*Micropterus dolomieu*) and black crappie (*Pomoxis nigromaculatus*). Although sampling

results indicated that the condition of the largemouth bass population was good, largemouth bass condition near sites of industrial effluent were adversely affected. Carolina darter (*Etheostoma collis*), fantail darter (*Etheostoma flabellare*) and highback chub (*Hybopsis hypsinotus*) are known state conservation priority fish species from the Kings Creek system, which drains into the Broad River below Ninety-Nine Islands Reservoir and therefore could be affected by activities at the Lee Nuclear Station. The Broad River below Ninety-Nine Islands Reservoir also supports an excellent smallmouth bass fishery that is enjoyed by South Carolina anglers as well as anglers from surrounding states. The fishery is augmented with supplemental stockings, but the majority of fish are wild spawned. Smallmouth bass grow rapidly and reach large sizes in the Broad River giving anglers the opportunity to catch trophy fish. (**0126-13** [Vejdani, Vivianne])

Response: *The NRC staff appreciates the review and synopsis that the SCDNR provided in these comments related to the information provided in Section 2.4.2.1 of the draft EIS. A subsequent e-mail from Vivianne Vejdani, SCDNR, to Nancy Kuntzleman, NRC, dated April 5, 2012, clarified that the Carolina Fantail Darter* (Etheostoma brevispinum)*, not the Carolina Darter* (Etheostoma collis)*, was found in the Kings Creek drainage (SCDNR 2012c). No changes to the EIS were made as a result of these comments.*

Comment: The NRC fails to fully analyze the following potential impacts of elevated water temperatures in the Broad River and its water shed: The impact of the reactors thermal discharge (warmed water) on water that is already elevated in temperature, looking at both additive and synergistic impacts on the local and down-river ecosystem. (**0130-3** [Zeller, Lou])

Response: *Thermal impacts to the aquatic environment from operating the Lee Nuclear Station are addressed in Section 5.3.2 of the EIS. The review team's evaluation of the cumulative impacts of past, present, and reasonably foreseeable future thermal discharges in the Broad River basin is discussed in Chapter 7 of the EIS. No changes to the EIS were made as a result of this comment.*

Comment: In review of the DEIS, the Service has several concerns pertaining to adverse impacts to aquatic communities of the Ninety-Nine Islands reservoir, the Broad River downstream of the dam, and the London Creek watershed. These concerns include the direct and cumulative effects from consumptive water loss from Units 1 and 2, evaporative loss from ponds, aquatic effluent discharge from cooling tower blowdown, and the loss of aquatic habitat and species from the damming of London Creek. (**0141-1** [Caldwell, Mark] [Stanley, Joyce A.])

Response: *This comment from the FWS expresses concerns pertaining to adverse impacts to aquatic communities. The effects of construction (damming London Creek), operation (water consumption and effluent discharge), and cumulative impacts on aquatic resources are*

discussed in Chapters 4.3.2, 5.3.2, and 7.3.2 of the EIS, respectively. No changes to the EIS were made as a result of this comment.

Comment: The Broad River sub-basin has been designated within the Santee River Basin Accord as the primary sub-basin, within the Santee River system, for restoration of diadromous fish. The Service is concerned with the potential impacts to restoration activities from the proposed discharge effluent, particularly the recruitment and survivability of diadromous fish larvae and out-migrating juveniles, and the catadromous American eel. A thermal discharge into Ninety-Nine Islands reservoir, and into the Broad River, may compromise ongoing restoration efforts for both anadromous and catadromous fishes, as well as rare freshwater species including the robust redhorse sucker, freshwater mussels, snails, and crayfish. It should be noted that the robust redhorse sucker, which has been stocked in the Broad River by the South Carolina Department of Natural Resources is currently under a Federal 90-day Petition Finding for Listing under the Endangered Species Act.

According to the DEIS, fish surveys were conducted in 2006 in the Ninety-Nine Islands reservoir, its tailrace, and in the Broad River below the darn. In the reservoir, including its backwaters, two of the species collected were South Carolina State Conservation species of "High Priority" including the quillback, *Carpoides cyprinus*, and Carolina fantail darter, *Etheostoma brevispinum*. Additionally, two species of "Moderate" priority, the V-lip redhorse, *Moxostoma pappillosum*, and the Notchlip redhorse, *Moxostoma collapsum*, were also collected. Below the Ninety-Nine Island Dam, surveys collected the Quillback (High Priority). Seven species of "Moderate" priority were collected including the Fieryblack shiner, *Cyprinella pyrrhomelas*, Thicklip chub, *Hybopsis labrosa*, Greenfin shiner, *Notropis chloristius*, V-lip redhorse, flat bullhead, *Ameiurus platycephalus*, highback chub, *Hybopsis hypsinotus*, and the Snail bullhead, *Ameiurus brunneus*. In 2003-2004, the DEIS published that fish surveys conducted below the Ninety-Nine Island Dam collected the Santee chub, *Hybosis zanema*, which is also a species designated as "High Priority."

Freshwater mussel surveys below Ninety-Nine Island Dam collected four species of "Moderate Priority" including the Eastern elliptio, *Elliptio complanata*, Eastern creekshell, *Villosa delumbis*, yellow lance, *Elliptio lanceolata*, and Carolina lance, *Elliptio angustata*. It should be noted that the yellow lance is currently under a Federal 90-day Petition Finding for listing under the Endangered Species Act.

The Service recommends that a more intensive survey for freshwater mussels be conducted downstream of the Ninety-Nine Islands Dam. We also recommend a survey for freshwater snails be conducted along with the mussel survey, because the DEIS does not contain information regarding gastropod surveys in the Broad River, the reservoir, or London Creek and its tributaries. (**0141-4** [Caldwell, Mark] [Stanley, Joyce A.])

Comment: Based on the Service's review of the DEIS, we believe additional information is required to provide a complete analysis of the effects of the proposed project on fish and wildlife resources. We recommend the following:

1) A survey for snails be conducted in London Creek and its tributaries, and downstream of the Ninety-Nine Island Dam in the Broad River.

2) A comprehensive survey for the yellow lance below the dam in the Broad River, and downstream areas affected by the discharge from the hydroelectric project, because the mussel is currently under a 90-Day Petition Finding for listing under the Endangered Species Act. (**0141-8** [Caldwell, Mark] [Stanley, Joyce A.])

Response: *The NRC review team recognizes the efforts made by the Federal- and State-resource agencies and utility companies to restore diadromous fishery resources in the Santee-Cooper River basin with the completion of the Columbia Dam fishway in 2006 and the signing of the Santee River Basin Accord in 2008. If diadromous species [e.g., American Shad (*Alosa sapidissima*) and American Eel (*Anguilla rostrata*), the only diadromous species with a historical presence in the vicinity of the Lee Nuclear Station] eventually become re-established below Ninety-Nine Islands Dam, it is unlikely that the discharge effluent from the Lee Nuclear Station would impede their upstream/downstream migration in the Broad River. The small area of increased temperatures would limit the extent of any impact and would not result in a thermal blockage. Section 5.3.2 of the EIS discusses the potential impacts to aquatic resources, including diadromous fish species, from the Lee Nuclear Station blowdown and wastewater-discharge system. A discussion of potential impacts to species of ecological significance, including South Carolina priority conservation species, was added to Section 5.3.2.3 of the EIS.*

The NRC staff acknowledges the comments provided by the FWS concerning the Federal 90-Day Petition Finding for Listing under the Endangered Species Act and recommendations for more intensive freshwater mussel and snail surveys downstream of Ninety-Nine Islands Dam. The NRC, under NEPA, cannot require monitoring. If any of these species achieve protected status, the NRC staff will consider re-initiating consultation with the FWS if there is potential for impacts to these species due to operations at the Lee Nuclear Station. No changes have been made to the EIS as a result of these comments.

Comment: The Service is especially concerned with the effects of the proposed cooling tower blowdown discharge on the aquatic community and ecosystem of the Ninety-Nine Islands Reservoir and the Broad River downstream of the dam. The blowdown discharge would contain biocides, chemical additives, radioactive waste, and thermal effluent. The chronic and cumulative effect of chemicals and radioactive waste would adversely affect fish and invertebrate spawning and recruitment in the vicinity of the discharge within the reservoir, and downstream of the dam, particularly during periods of low flow. The thermal effluent would affect

fish and invertebrate spawning, and biological systems through stress and/or direct mortality. It would especially affect non-motile or slow moving invertebrates such as freshwater mussels and other aquatic invertebrates. (**0141-5** [Caldwell, Mark] [Stanley, Joyce A.])

Response: *Pursuant to the CWA, the EPA has the authority to require water-quality monitoring for physical and/or chemical parameters in the waters of the United States. In South Carolina, the EPA delegates this authority to the SCDHEC. On July 17, 2013, the SCDHEC issued NPDES Permit No. SC0049140 to Duke for the Lee Nuclear Station (SCDHEC 2013). This permit includes requirements for effluent limitations and monitoring, chronic toxicity testing, implementation of best management practices to control spills of oils and hazardous or toxic substances, and conducting confirmatory sampling of the computational fluid dynamics modeling used to support the thermal and toxicity mixing zone requests.*

Comment: [Based on the Service's review of the DEIS, we believe additional information is required to provide a complete analysis of the proposed project on fish and wildlife resources. We recommend the following:]

3) The applicant should develop and implement a plan to collect the South Carolina State Conservation High and Moderate priority fish species in London Creek and relocate to nearby suitable streams prior to construction of Pond C. (**0141-9** [Caldwell, Mark] [Stanley, Joyce A.])

Response: *This recommendation by the FWS to develop and implement a fish relocation plan for the South Carolina State Conservation High and Moderate Priority fish species is directed to the applicant. The NRC, under NEPA, cannot require fish relocation. No changes were made to the EIS as a result of this comment.*

Comment: EPA reviewed the Joint Public Notice (JPN) and submitted comments regarding the compensatory mitigation and permit action under separate cover to Lt. Colonel Edward P. Chamberlayne, USACE on March 6, 2012 (enclosed). This letter states that "The EPA has significant concerns that the effect of conversion of this stream into an impoundment could result in the elimination of existing uses of the streams in and downstream of the area of the proposed project, including the segments of the streams that could become the tailrace waters of the reservoirs during and after impoundment. The conversion may also require a change in the designated uses that are currently assigned to these streams in South Carolina water quality standards. Prior to the conversion, it must be demonstrated that such a conversion complies with all aspects and requirements of South Carolina's antidegradation policy, as well as any other applicable provision of South Carolina's water quality standards regulation." (**0142-11** [Mueller, Heinz])

Response: *Any changes to current designated water uses resulting from the impoundment of London Creek will require approval of the State. The State (SCDHEC), not the NRC, will address the issue of designated water uses for London Creek and its tributaries. However,*

Duke has stated it will not eliminate existing uses of streams in and downstream of the proposed project after impoundment (Duke 2012f). No changes were made to the EIS as a result of this comment.

Comment: 2.4.2.4. Aquatic Ecology Monitoring
Of particular importance to DNR is the assurance that the aquatic ecology of Ninety-Nine Islands Reservoir and the Broad River downstream of Ninety-Nine Islands Dam will not be adversely impacted by operations at the Lee Nuclear Station, particularly the smallmouth bass fishery, which is more sensitive to potential thermal impacts. DNR has reviewed the Mixing Zone Request prepared by Geosyntec on behalf of the Licensee in support of their National Pollutant Discharge Elimination System (NPDES) permit application, which includes a summary of the model used to characterize the thermal and chemical plume. DNR notes that only the normal operations discharge of 18 cfs was considered in model scenarios. The maximum discharge of 64 cfs was not considered as a model scenario. During the interagency meeting held on February 17, 2012, DNR was assured by the Licensee that maximum discharge events would occur only during high flow periods. DNR requests additional information on the duration and magnitude of maximum blowdown discharge events. We are particularly interested in the extent of the thermal plume below the dam during maximum discharge. DNR urges due diligence by the South Carolina Department of Health and Environmental Control (DHEC) to ensure that the NPDES permit for the Lee Nuclear Station will be conditioned to require appropriate biological and chemical monitoring, to include fish community monitoring, before and after commencement of operations. (**0126-15** [Vejdani, Vivianne])

Response: *Maximum blowdown discharge could occur if the circulating-water-system's cooling-water towers were to operate at two cycles of concentration instead of the normal four cycles. Two-cycle operation would be implemented to control high levels of total suspended solids (TSS) in the Broad River, which would occur after significant rainfall in the watershed (and hence when flows would be higher). Because water withdrawn from the Broad River is stored in Make-Up Pond A before being used by the recirculating cooling-water towers, settling processes in the pond are expected to limit and moderate TSS excursions. Duke anticipates that operating at two cycles of concentration would be a rare occurrence lasting less than 2 days, based on historical TSS data showing that there has been no occurrence of TSS conditions that would have required the cooling towers to operate at two cycles of concentration. The cooling system is also designed to achieve a maximum discharge temperature of 91°F during summer conditions of high ambient river and air temperatures and seasonally low flows (Duke 2011b). If the cooling system were operating at two cycles of concentration, the discharge temperature would likely be less than 91°F and the river flow would be higher than seasonally low flows.*

On July 17, 2013, SCDHEC issued NPDES Permit No. SC0049140 to Duke for the Lee Nuclear Station (SCDHEC 2013). The NPDES permit, effective September 1, 2013, requires Duke to

submit for SCDHEC's approval a plan for confirmatory monitoring (confirm the accuracy of the computational fluid dynamics modeling that was used to support the thermal and toxicity mixing zone requests) within one year of the effective date of the permit. As stated on page 31 of the NPDES permit:

The plan shall address the following elements: temperature monitoring methods, locations, and schedule; summer conditions monitoring to verify >90°F temperature plume does not extend beyond #4 turbine inlet; winter conditions monitoring to verify >5°F temperature increase plume does not extend beyond #4 turbine inlet; and consideration of timing of monitoring so that modeled scenarios (i.e. river temperature, river flow, discharge volume, and discharge temperature) are captured to the extent practical.

Section 5.3.2.1 of the EIS was revised to include address these changes and in response to these comments.

E.2.9 Comments Concerning Socioeconomics

Comment: I would like to take a few minutes to talk about the community impact of having Duke Energy Nuclear Station in your backyard. In York County we have Catawba Nuclear Station. The station's economic impact is great, and I don't believe anyone would argue that the money brought in by having a nuclear station in Cherokee County would benefit the county and the residents of that county. There are four benefits that I'd like to touch on briefly, if I could. One is jobs. Cherokee County, as of November, had 12 percent unemployment. The 4,000 jobs plus that would be available for construction and the 800 jobs for station operation would provide that 12 percent an opportunity to improve their lives and their families' lives. So we would support that effort. Economic impact. While there are those people living in Cherokee County who would acquire one of these construction or operation jobs, those funds would be available within the community to support other community activities. In addition to that economic impact, there would be millions of dollars that Duke would pay in property taxes that would go to improve schools and also cover operating expenses. Those dollars would also be available to the county to use for services for the needs of their community and the people of the community and also to retire debt. (**0012-14-1** [Boger, Paul])

Comment: As a chamber representative, I believe building this nuclear plant would be good for this region. The jobs, tax revenue and potential overall economic impact must be exciting to this community that has a need, as we all do. (**0012-14-3** [Boger, Paul])

Comment: While South Carolina certainly has its problems, we have many advantages for the attraction of business. One of the key advantages is the cost of electricity. Many of our new and expanding companies look for that in terms of their qualifications for bringing those new jobs to our community. Companies who use significant amounts of electricity are attracted, in fact, by the affordable power. We have one of the lowest power rates per kilowatt hour of any region in

the nation. If we are to continue to compete globally, as somebody mentioned earlier, we're going to have to have additional capacity for electrical production, and this new unit will certainly help us maintain that advantage. In the last several years the Charlotte area has become a haven for nuclear engineering. Shaw, Areva, Mitsubishi, Toshiba and Fluor have all announced hundreds of new jobs, new high-paying jobs in the nuclear industry. The positive impact on York County schools has, again, made us one of the best school districts in the state and Charlotte region, and that makes it easier to do my job by creating higher technology companies to the area who seek better educated workers (**0012-16-1** [Farris, Mark])

Comment: What I will tell you that here in Cherokee County we're for this project, we think it will bring jobs. Jobs are important, believe it or not. We have a high unemployment rate, 12 percent right now, and with the construction of the Lee nuclear facility and the concurrent operation, we think it will be good for us job-wise. Economic development, it's my job, much like Mark's, to try to bring business and industry here to Cherokee County, and we know that this facility will help Duke Energy be able to provide those low rates that are vital. You've heard why they're important, why manufacturers want to go different places, and more and more energy costs are driving the train on that. (**0012-17-1** [Cook, Jim])

Comment: As a longtime resident of York County, I'm also here to offer personal testimony, much like Mark Farris did, as to the need and the benefits of a nuclear power station to a community. I respectfully request your thoughtful consideration of the following points. The Lee Nuclear Station will mean jobs. Unemployment rates in our region and in this state remain near record highs and at crisis levels, and jobs are desperately needed. These jobs, many well-paying, will be created in the construction of the Lee Station, and employees with diversified skills will be necessary to operate and maintain the plant. The station will mean economic development. Businesses and industries need reliable and affordable sources of energy. Communities need businesses to provide jobs and tax base. This tax base funds the operation of public schools and other necessary government services, plus the community's quality of life is also influenced by this tax base. This project will not only improve the service and increase the energy capacity of existing businesses in the region, it will also help lure additional businesses and jobs to the area and will provide commerce also for vendor and supplier businesses. Duke Energy, the station's operator, has a good record of providing support to and for local and state economic development efforts. (**0012-18-2** [Youngblood, Rob])

Comment: Additionally, Lee Nuclear will help support economic development in the region with potential for thousands of construction jobs and 800 to 1,000 well- paying, full-time jobs during station operation. It will also create other jobs in the local area to supply the needed goods and services and support of the work force. We have worked on development activities for Lee Nuclear. We've engaged local residents to evaluate ways to address potential traffic issues. (**0012-2-2** [Jamil, Dhiaa])

Comment: The construction of the new nuclear station also has an economic benefit for our state. Two thousand South Carolinians will be employed during the construction process, in addition to an estimated 700 full-time workers, not to mention the spinoff that we'll receive from local businesses that will receive income and support from the jobs created around the facility. South Carolina's research universities are focusing on hydrogen research for the automotive industry, and it relates directly to the nuclear energy and particularly nuclear plants as clean energy for South Carolina and the nation, creating a new segment for our economy. (**0012-5-4** [Rawl, Otis])

Comment: I think we all agree that conservation is the cornerstone of protecting South Carolina's natural resources, but throughout the energy debate we also must realize that businesses are not the enemy. The key is striking a healthy balance, one that protects our national resources without stifling needed economic development that creates jobs and prosperity for our citizens. As we continue to focus on economic development and creating jobs, we must not lose sight of the fact that one of the determining factors for businesses considering locating or expanding in our state is low cost, efficient and reliable energy. The nuclear facility in Cherokee County would bring billions of dollars of investment to our state, create thousands of jobs for our citizens, produce reliable energy for our businesses, and most importantly, do it in a carbon- free emission way. (**0012-5-5** [Rawl, Otis])

Comment: We are very quickly losing our competitive edge in this country with nations in other parts of the world that 20 or so short years ago we didn't think about. I visited China in 1986, and let me tell you, they were not an economic threat to this country at all, any way, shape or form. The Shanghai I visited in 1986 doesn't look anything like what it does today. They're eating our lunch, they are taking our jobs, but maybe, just maybe we're starting to see a few new words creep into our vernacular. The word restoring, the word expansion, the word plan, the word growth. Those are starting to come back and we'll only take advantage of them if we have built the kinds of facilities that Duke Energy is proposing here. It's absolutely important that we understand that these plants will be built. Make no mistake about it, there will be nuclear plants built in this world. They will be built in China and in India and in other places that understand that it's the key to prosperity and the key to bringing the jobs that my members provide. Let me say this as I close. We've let other situations like Fukushima, a silly movie from 30 years ago, and a few other things full of misinformation, and quite frankly, facts that just don't make sense keep us from pursuing a reasonable and responsible way of providing energy. Believe me, folks, if we let our manufacturing base continue to deteriorate, if we don't do what's necessary to encourage it, there are plenty of places in the world that will do it for us, and they will take those jobs and they will continue to take those jobs and they will have the prosperity that we once had. A lot of folks talk about how we are looking at the first generation in this country that might not do better than the previous generation. That's not necessarily going to happen, we don't have to accept that as our fate, but we've got to plant the seeds, we've got to have the ability to provide power to manufacturing facilities so that they can provide the jobs that are absolutely desperately needed in this part of South Carolina. (**0012-9-6** [Gossett, Lewis])

Comment: Whereas, nuclear power plants enhance South Carolina's economic competitive to producing electricity at stable prices, helping to retain existing industry, and to attract new business while also making a substantial economic contribution to the state in the form of significant capital investment, jobs, and tax base. (**0013-1-3** [Moss, Representative Dennis])

Comment: For the Environmental Impact Statement, first I'll talk about the economic development from the plant. There will be lots of well-paying jobs that will be created for the community during operation as well as during construction. On top of this it will be a boost to the economy to support these jobs for food for these people, for houses, for a number of other things they need every day. So the economy will be greatly benefitted in Gaffney due to this. There will be tax benefits to the community because the plant will be contributing to local taxes. And there will be a clean source of baseload energy to help keep energy prices down. Now, there's of lots of work that went into the Environmental Impact Statement. They spent number of hours making sure that it will be running safely. (**0013-17-2** [Reichenbach, Adam])

Comment: The -- we are in a recession right now -- the whole country is, including South Carolina. Our unemployment rate I've heard is around 10 percent here in South Carolina. We need jobs. Yes, someone's saying it's even higher than that. But bottom line is we need jobs. South Carolina's got good people. South Carolina's got a good work ethic. South Carolina has the capability to bring in companies to provide those jobs: BMW just down by Spartanburg, Boeing in Charleston, and many others throughout the country. What is it going to take to bring in more companies like that to bring in more jobs? It's going take energy. It's going to take electricity -- lots of electricity -- electricity that's reliable but operates 24 hours a day, seven days a week. Now, how can we do that? One is with nuclear like the Lee plant. (**0013-18-2** [Bromm, Bob])

Comment: We're pleased with the job growth it's going to bring us, the economic development, the tax base. (**0013-2-3** [Moss, Representative Steve])

Comment: The U.S. nuclear industry, including nuclear stations operated by Duke Energy, plays an important role in job creation and economic growth, generating substantial domestic economic value in electricity sales and revenues, along with jobs and economic development in the communities where the plants are located. (**0013-4-2** [Fallon, Chris])

Comment: A nuclear power plant will bring many desperately needed jobs to the area and a much needed source of clean energy. (**0054-3** [Gaddy, Ron])

Response: *These comments generally express support for the proposed Lee Nuclear Station based on the potential positive socioeconomic impacts such as new jobs, economic impacts, and increased property tax revenues it would be expected to bring to the region, as well as perceived low electricity prices. Socioeconomic impacts of building and operating the proposed Lee Nuclear Station are discussed in Sections 4.4 and 5.4 of the EIS. The NRC is not involved in developing energy policy for the United States, therefore issues related to energy prices and*

general economic global competitiveness are not considered in the EIS. No changes to the EIS were made as a result of these comments.

Comment: I hear you on the demand for jobs. I'm looking for a job myself. But if your demand is for jobs I really think you're looking to the wrong place. A lot of these jobs are not going to be local -- these are going to be contracted out. (**0013-23-2** [Buscarino, John])

Comment: Please do not be lured by the promise of jobs. (**0013-35-1** [Hammett, Jan])

Comment: How can the argument that the construction of new nuclear plants would benefit our economic and underemployment crises, when the alternatives [alternative energies - wind, solar, etc.] identified above would be even more beneficial in these respects? (**0058-3** [Patrie, MD, MPH, Lewis E.])

Comment: And jobs. Dollar for dollar nukes are perhaps the most job-poor industry ever devised. The same money put into renewable energies would hire as much as twenty times more people. (**0100-6** [Richardson, Don])

Comment: The two plants expect to hire some 3,000 construction workers over several years and some 1,000 plant workers on a continuing basis. Jobs are needed in a depressed county, but remember that Hitler created jobs making death camps, too, so it is important to examine whether the jobs contribute to the long-term well being of the greater society. It is well documented that a given investment in energy efficiency and renewable energy sources creates more sustained employment than the same investment in nuclear energy, with a greater impact on the supply-demand balance. If the issues are jobs and need for power, then nuclear is the wrong objective to be pursued. (**0117-1** [Crissey, Brian])

Response: *Socioeconomic impacts, such as labor impacts associated with building and operating the proposed Lee Nuclear Station, are addressed in Sections 4.4 and 5.5 of the EIS. Socioeconomic issues related to alternative energy sources are addressed in Chapter 9. No changes to the EIS were made as a result of these comments.*

Comment: Section 2.5.1.1, Page 2-124, Figure 2-19: This figure shows the populations based on the 2000 census data presented in the ER Rev. 0, and does not reflect the 2007 census data presented in ER Rev. 1, referenced below the figure.
(**0134-11** [Fallon, Chris])

Response: *The figure referenced in this comment has been updated with the latest population data from the U.S. Census Bureau's American Community Survey.*

Comment: Section 9.3.3.5, Page 9-80, Line 8: The DEIS states: "No recreational facilities exist within the site boundary." Perkins State Game Lands are within the boundaries of one of the reservoirs. (**0134-75** [Fallon, Chris])

Response: *Section 9.3.3.5 of the EIS was updated to reflect that a portion of the Perkins State Game Lands is within the boundaries of the Perkins alternative site.*

Comment: Section 9.3.3.5, Page 9-82, Line 20: "Oconee County" should be changed to "Davie County." (**0134-76** [Fallon, Chris])

Response: *Section 9.3.3.5 was updated to reflect the change from Oconee County to Davie County.*

Comment: Section 9.3.3.5, Page 9-78, Lines 12-14: The DEIS states: "Based on the analysis of project impacts presented in Section 4.4.2, of the 4613 peak workers approximately 3151 workers would in-migrate into the region with some workers bringing a family for a total in-migrating population of 4516 people." The total in-migrating population of 3,151 represents the construction workers and does not include operations workers during the peak employment period. The value 3,151 should be changed to 3,191 to include the 40 in-migrating operations workers. The 4516 total in-migrating population includes these 40 in-migrating operations workers and their families. This number also should be corrected later in this section and in each corresponding section for the other two alternative sites. (**0134-74** [Fallon, Chris])

Response: *Sections 9.3.3.5, 9.3.4.5, and 9.3.5.5 were updated to reflect the total in-migrating workforce of 3191.*

Comment: I think the proposed Lee Nuclear Plant will effectively diminish the public use and resource rights of the Broad River. Is this powerful entity, Duke Energy, actually privatizing our public asset of water? I'm asking the question. It seems to me that this is a violation of environmental laws. (**0012-4-1** [Conard, Sky])

Response: *While the NRC does not regulate or manage water resources, it does have the responsibility under NEPA to assess and disclose the impacts of the proposed action on water resources and the public. The review team evaluated the impacts of building and operating the proposed Lee Nuclear Station Units 1 and 2 on local and regional water resources. Impacts on water resources related to construction and operation are presented in Sections 4.2 and 5.2. Recreational impacts were discussed in Sections 4.4 and 5.4. No changes were made to the EIS as a result of this comment.*

Comment: The environmental impact that we will have in Cherokee County outside of this plant, which seems to be well controlled by the Nuclear Regulatory Commission and Duke Power, is probably about 3,300 on average construction people are going to be in this county for a considerable amount of time. And these people are going to have families. So on average there may be three people per family. So that means 9,900 people -- almost 10,000 more people in this county. And it's going to impact on the housing, it's going to impact on government services, especially our schools because we're going to have a lot of young people. Also it's going to have more requirements for water and electricity. They're going to be building

temporary trailer places there in the county, which is going to have an environmental impact from the standpoint of increased traffic on our highways and all that. Well, I'm sure that our government is going to do the best they can to try to alleviate those problems. But one thing the government -- one way they can alleviate which would be much better -- and I don't know if there's any government people from Cherokee County here or from the state -- but what they need to do is to accelerate training programs here in this county. They need to get Spartanburg Tech to get people over to our trade school over here in Gaffney which is going to be training people to operate this plant after it's built. What they need to do is to get them to increase the ability to train construction people. There's a lot of people that are construction in this county that have no employment because they're not building nothing. But they would be much better at doing the job for Duke Power and for us and provide help in making a safer facility if they have good training. And if the county and the state and Duke Power and hopefully with the Nuclear Regulatory Commission providing some assistance and organizing this training and getting it moving to where we have some well-trained people in this county to do the work. (**0013-34-1** [Beach, William])

Response: *Socioeconomic impacts, including impacts to public services, housing, traffic, and education related to building and operating the proposed Lee Nuclear Station are discussed in Sections 4.4 and 5.5. Hiring choices for the construction and operations labor force for the proposed Lee Nuclear Station are outside the scope of the NRC's regulatory authority. The NRC does license nuclear reactor operators; however, it does not provide training or organize education for nuclear industry personnel. No changes were made to the EIS as a result of this comment.*

Comment: [If Lee Nuclear Station is built:] Tourism would suffer. (**0114-8** [Lovinsohn, Ruth])

Response: *Tourism and recreational activities are discussed in Section 2.5. Recreational impacts from construction and operation of the Lee Nuclear Station are discussed in Sections 4.4 and 5.5. No changes were made to the EIS as a result of this comment.*

Comment: DNR staff met with representatives of the Licensee in August 2010 regarding DNR's concern about viewshed impacts from the transmission lines to the Scenic Broad River. During this meeting, Duke's representatives provided DNR staff a presentation depicting a simulation of the view-shed post construction as would be seen by recreationists utilizing the Broad River. Based on these depictions, DNR understands that the transmission lines will be minimally visible to the recreating public during winter leaf-off conditions. Furthermore, DNR understands that impacts can be further reduced through the employment of shorter towers along the Scenic Broad River corridor. DNR requested and was assured of continued consultation during the design phase of the transmission lines; however, as of this date, DNR has not received any such consultation. DNR urges the Licensee to avoid and minimize visual impacts to the greatest practicable extent through the careful design and placement of

transmission lines (e.g., shorter towers and the use of wider buffer in those sections of the corridor along the Scenic Broad River). (**0126-18** [Vejdani, Vivianne])

Comment: Socioeconomics

We understand that the NRC cannot include mitigation measures in the license that do not pertain to nuclear security. However, EPA encourages the applicant to continue coordinating with the communities that will be impacted by the project's construction and operation, and to continue a comprehensive public outreach strategy to inform residents of the risks and impacts as a result of the proposed project.

EPA believes that comprehensive public outreach is part of any successful mitigation strategy. This should include, but is not limited to, targeted outreach campaigns to neighbors, informational literature, and updated websites. Specific resource impacts where EPA believes this would particularly beneficial, includes, but is not limited to:

construction schedule; work shifts and the resultant traffic expectations;

noise monitoring;

air quality monitoring data;

radiological data;

dewatering at the construction site and the resultant lowering ofwell levels;

refueling outages and the resultant increase in onsite personnel;

contact information for complaints and questions; and

emergency preparedness information.

Recommendations: EPA encourages the applicant to continue a comprehensive public outreach strategy to inform residents to the risks and impacts as a result ofthe proposed project. This should include, but is not limited to, targeted outreach campaigns to neighbors, informational literature, and updated websites. (**0142-21** [Mueller, Heinz])

Comment: Aesthetics
According to the DEIS, the closest residence is "0.74 mi south/i-om the site ofthe proposed Lee Nuclear Station Units I and 2, separated by woodland and the Broad River such that the proposed Lee Nuclear Station Units 1 and 2 and associated structures may be visible. In addition, the proposed units and associated structures may be visible from the Broad River and residence along McKowns Mountain Road. "

Recommendations: Local residents may experience benefits and burdens associated with this project, and should be involved in meaningful discussions with the project team throughout the

decision-making process. Every effort to meaningfully involve and outreach to residents closest to the site and with increased visibility to the proposed structures and its emissions should be made. (**0142-23** [Mueller, Heinz])

Response: *These comments are directed to Duke, and the NRC does not have the authority to require such conditions and mitigation. Socioeconomic impacts such as aesthetic impacts from construction and operation of the Lee Nuclear Station are discussed in Sections 4.4 and 5.4 of the EIS. No changes were made to the EIS as a result of these comments.*

E.2.10 Comments Concerning Environmental Justice

Comment: Section 5.5.2.1, Page 5-51, Line 14: The DEIS refers to "Section 4.5.3.1.", but there is no such section. (**0134-54** [Fallon, Chris])

Response: *The EIS has been updated to reflect the correct reference to Section 2.6.3.*

Comment: Pond C's creation would displace residents of up to 86 homes and mobile homes, mostly low income folks. I visited a few of them earlier today. The average per capita income of residents who would be displaced is below $16,000. (**0012-7-5** [Hicks, Katie])

Response: *The 86 housing structures have been demolished or removed and residents were provided with relocation services. These socioeconomic impacts from building and operating the Lee Nuclear Station are discussed in Sections 4.4 and 5.4 of the EIS and environmental justice impacts are discussed in Sections 4.5 and 5.5 of the EIS. No change to the EIS was made as a result of this comment.*

Comment: Finally, the draft EIS does not adequately address the range of environmental injustices we feel that this plant could create. The assessment included in the EIS only looks at demographics in the surrounding 50-mile radius as a whole, failing to include any pockets of low income or minority residents who could be selectively and disproportionately impacted by the facility. For example, the residents I visited earlier today displaced by Pond C would be mostly low to mid income, meaning relocating could be even more difficult for them. The residents of Union, whose water supply could be threatened by withdrawals and discharges to the Broad, could also be looked at in terms of those demographics. Those are just a few examples of the many direct and indirect ways in which this plant could severely impact vulnerable communities and populations. (**0012-7-7** [Hicks, Katie])

Response: *The environmental justice analysis was conducted in accordance with NRC guidance. The methodology used in this analysis is described in Section 2.6 of the EIS. The staff uses as guidance the Revision 1 of Addressing Construction and Preconstruction Activities, Greenhouse Gas Issues, General Conformity Determinations, Environmental Justice, Need For Power, Cumulative Impact Analysis, and Cultural/Historical Resources Analysis Issues in*

Environmental Impact Statements (NRC 2011b) and the Commission's Policy Statement on the Treatment of Environmental Justice Matters in NRC Regulatory and Licensing Actions (69 FR 52040). As stated in the NRC guidance, analyses of census data is done at the census block group level and provides information for geographic areas of approximately 1000 people each, on average, and as such provides sufficient geographic detail to assess the impact of the Lee Nuclear Station on minority and low-income populations. The Make-Up Pond C site was not in a census block group that was flagged as low-income based on the methodology in Section 2.6 of the EIS. Environmental justice impacts from building and operating the proposed Lee Nuclear Station are discussed in Sections 4.5 and 5.5 of the EIS. No change to the EIS was made as a result of this comment.

Comment: Environmental Justice (EJ)

The DEIS includes demographic and impact data related to minority and low-income populations. It indicates that the nearest minority and/or low-income populations of interest are located approximately 8 miles from the project site in Gaffney, SC. In addition, small pockets of migrant workers were identified in York and Cherokee Counties.

According to Section 2.6.5, low-income and minority populations within the 50-mile radius were found within the 50-miles radius that exceeded the criteria established for the EJ analysis. Therefore, NRC assessed the potential for disproportionately high and adverse health and environmental impacts, and concluded that there are no environmental pathways by which the identified EJ populations in the 50-mile region would be likely to suffer disproportionately high and adverse environmental or health impacts as a result of the proposed construction activities. The DEIS does indicate that subsistence fishing activities in York County were noted during a community surveyor interview, but concluded that the overall impacts of construction would be small. No additional mitigation efforts beyond the strategies outlined by Duke in their Environmental Report (ER) would be warranted (page 4-88).

Recommendations: EPA appreciates your previous outreach activities and the EJ assessment data in the DEIS. EPA notes that communities with EJ concerns may experience benefits and burdens associated with this project, and should be involved in meaningful discussions with the project team throughout the decision-making process. We encourage the project team to continue coordinating with the communities that will be impacted by the project's construction and operation. A project of this magnitude and scope has the potential to impact area residents, businesses and cultural resources, and project planning should take into consideration community concerns and appropriate mitigation measures. Meaningful involvement and discussion of project issues should take place throughout project planning.

We recommend that the FEIS provide additional discussion and information regarding potential socioeconomic impacts to EJ populations regarding the following concerns:

1. Clarify the potential for jobs for low-income and minority populations related to the implementation of the project. The FEIS should indicate whether the applicant plans to engage in local job training and job fairs for area residents and businesses within the vicinity of Lee Nuclear Station.

2. Discuss impacts to residences and schools in communities with EJ concerns due to construction activities (e.g., air quality, noise). EPA notes that approximately 86 housing structures will be demolished during the inundation of Make-Up Pond C. While it appears that many of these residents have already relocated, the FEIS should indicate what proportion of these relocation impacts involved low-income and minority populations. EPA also notes that there is some discussion regarding impacts to local schools in terms of their ability to absorb an influx of residents. However, the FEIS should clarify whether any of these schools, particularly those closest and/or most affected by the project, are located in communities with EJ concerns and whether project-related impacts, such as noise, will be an issue.

3. Discuss the impacts to businesses in and serving communities with EJ concerns, during both construction and operation of the project.

4. Develop an ongoing mechanism to access facility representatives to ensure that questions, concerns or recommendations that may arise during the construction and operation of the facility can be appropriately addressed.

5. Summarize EJ-related comments from community engagement activities and provide a responsiveness summary. The FEIS should also include copies or summa (**0142-22** [Mueller, Heinz])

Response: *The workforce necessary to build and operate a nuclear plant depends on a number of factors, including job requirements and occupational skills of the local workforce. Based on past experience from large-scale construction projects, Duke estimated that at least 1350 local construction workers necessary during peak construction would reside within the region (i.e., within commuting distance to the plant). Information on the construction workforce estimates and plant employee estimates is found in Chapters 4 and 5 of the EIS. The 86 housing structures have been demolished or removed and residents were provided with compensation and relocation services. The Make-Up Pond C site was not in a census block group that was flagged as minority or low-income based on NRC methodology described in Section 2.6 of the EIS. The nearest census block group with environmental justice populations is several miles from the site. As discussed in Section 4.5.2 of the EIS, no physical impact of construction is expected to disproportionately and adversely impact environmental justice communities. All comments, including environmental justice-related comments provided to the NRC are included in Appendices D and E of the EIS. A summary of discussions with local community officials and members are available on the NRC docket (Niemeyer 2008, NRC and*

PNNL 2008). Environmental justice impacts from building and operating the proposed Lee Nuclear Station are discussed in Sections 4.5 and 5.5 of the EIS. The NRC's NEPA responsibilities end when the Commission makes its permitting decision. Therefore, an "ongoing mechanism to access facility representatives..." is beyond the authority of the NRC. No change was made to the EIS as a result of this comment.

E.2.11 Comments Concerning Historic and Cultural Resources

Comment: Our office has been in consultation with the Nuclear Regulatory Commission (NRC), the Army Corps of Engineers (COE), and Duke Energy over the past several years on this project. The licensing and operation of the Lee Nuclear Station includes the following Area of Potential Effects (APE): * Lee Nuclear Station site * Make-Up Pond C * Transmission line corridors * Railroad spur corridor.

Our office worked with Duke Energy to develop both direct and indirect APEs for these four areas of the project. Over the course of several years, Duke Energy conducted cultural resources surveys, evaluations, and viewshed assessments of the APEs for Lee Nuclear Station. The following historic properties have been identified in the APEs: * Smiths Ford Farm - eligible for the National Register of Historic Places under Criterion A; transmission line corridor * Reid-Walker Johnson Farm eligible for the National Register of Historic Places under Criterion A; transmission line * Ellen Furnace Works (38CK0068)-listed in National Register of historic places; Railroad Spur * Ninety-Nine Islands Dam-eligible for the National Register of Historic Places under Criteria A and C; Lee Nuclear Station Site (visual APE); transmission line corridor * Ninety-Nine Islands Hydroelectric Project-eligible for the National Register of Historic Places under Criterion A; Lee Nuclear Station Site (visual APE); transmission line Corridor Cemeteries/burial grounds identified during surveys: * 38CK0019 (Stroup Cemetery)-Lee Nuclear Station site * 38CK0141 (Moss Cemetery)-Lee Nuclear Station site * McKown Family Cemetery-Lee Nuclear Station site * Unnamed cemetery-Lee Nuclear Station Site * 38CK0142 (Service Family Cemetery)-Make Up Pond C * 38CKOI72 (possible NA burial site)-transmission line.

Our office believes that the proposed Lee Nuclear Station, Make-Up Pond C, railroad spur, and transmission line corridors will cause no adverse effect on the identified historic properties provided that the following conditions are met: * Public access to cemeteries upon request is not limited * Fencing around cemeteries is maintained * Cemeteries are periodically monitored for vandalism or disturbance * Service Family Cemetery is relocated in consultation with our office and interested parties * Any construction, ground disturbance, or future improvements along the railroad corridor within the boundaries of38CK0068 (Ellen Furnace Works) are limited to the existing railroad right of way or are coordinated with our office We expect that these conditions will be met by the execution of a Cultural Resource Management Plan and Agreement between our office, Duke Energy, the Corps of Engineers, and the interested Native American tribes.

Our office has met with Duke and the Corps to develop a draft of this management plan and agreement. (**0109-1** [Dobrasko, Rebekah])

Response: *The NRC appreciates the feedback provided by the South Carolina State Historic Preservation Officer (SHPO) during consultation over the past few years and this current review of the draft EIS. The EIS has been modified to reflect final SHPO concurrence with the review team's findings and the conditions that must be met to support the finding of no adverse effects to the identified historic properties and cultural resources. The final cultural resources management plan and associated Memorandum of Agreement between the SHPO, Duke Energy, the Corps of Engineers, and the interested Native American tribes have also been incorporated into the EIS. Sections 2.7.4, 4.6.1.1, 4.6.2.1, and 5.6 of the EIS were changed as a result of this comment.*

Comment: Sections 4.6.1 and 4.6.1.1, Pages 4-92 and 4-93: Duke Energy does not believe there is any basis for determining that the Service Family Cemetery is culturally important to local members of the community. Descendents of the Service and Gaffney families did not contact Brockington and Associates about the Service Family Cemetery; rather, three descendents affirmed that they would be interested in visiting the cemeteries upon being contacted by Brockington and Associates. One of these individuals never followed up on the request (Duke 2010d). Regardless, it does not appear that determinations of a Moderate impact should be made when properties in which a few individuals have expressed interest are affected. The determination of a Moderate impact does not appear to align with NUREG-1437. (**0134-46** [Fallon, Chris])

Response: *As discussed in Sections 2.7 and 4.6 of the EIS, expressions of interest in the Service Family Cemetery and historic cemeteries in general are documented from local citizens, communities in the region, and the South Carolina SHPO, providing a clear indication of cultural importance and need for mitigation of direct impacts to the Service Family Cemetery through relocation in consultation with the South Carolina SHPO. The review team's determination of MODERATE impact is consistent with the threshold of environmental effects that are sufficient to alter noticeably, but not destabilize important attributes of the identified historic properties and cultural resources established under NRC general environmental guidance (Generic Environmental Impact Statement for License Renewal of Nuclear Plants [NRC 1996] and NRC's Environmental Review Plan [NRC 2000a]). No changes were made to the EIS as a result of this comment.*

Comment: To Duke Energy's knowledge, neither SHPO nor any local historians have indicated that any of the family cemeteries or the potential burial site 38CK172 along the transmission lines, have historic value and contribute substantially to the area's sense of historic character. Therefore, the impact significance level for the Lee Nuclear Station, and alternative sites in Chapter 9 that affect cemeteries, should be Small. (**0134-47** [Fallon, Chris])

Response: *As discussed in Sections 2.7, 4.6, and 5.6 of the EIS, expressions of interest in historic cemeteries and the possible human burial site (38CK172) are documented from local citizens, communities in the region, the South Carolina SHPO, and the Eastern Band of Cherokee Indians, providing a clear indication of cultural importance. The review team's determination of MODERATE impact for the proposed Lee Nuclear Station and associated offsite developments is consistent with the threshold of environmental effects that are sufficient to alter noticeably, but not destabilize important attributes of the identified historic properties and cultural resources, under the mitigations described in Section 4.6 and 5.6. As discussed in Sections 9.3.3.7, 9.3.4.7, and 9.3.5.7 of the EIS, determinations of MODERATE impacts for preconstruction activities associated with the Perkins, Keowee, and Middleton Shoals alternative sites are not based solely on the presence of historic cemeteries or possible human burial sites. Additional National Register-eligible, potentially National-Register-eligible historic properties, and sensitive cultural resources are known to occur in direct and indirect areas of potential effect for construction and preconstruction, justifying the review team's findings of MODERATE impacts. No changes have been made to the EIS as a result of this comment.*

Comment: Section 5.6, Page 5-54, Lines 11-22: This paragraph is specific to "construction and preconstruction" activities only, not operations, and thus could be deleted from Chapter 5 addressing operations. (**0134-55** [Fallon, Chris])

Response: *This comment identifies an editorial error in Section 5.6. The words "construction and preconstruction" have been removed and replaced with "operations" in the discussion in Section 5.6. The remainder of the paragraph is retained because the important concepts regarding integration of the National Historic Preservation Act and NEPA are applicable to all aspects of the Lee Nuclear Station site environmental review, including operations.*

Comment: Section 9.3.3.7, Page 9-87, Line 6: Reference Duke 2010t should be included in the list of references.
(**0134-77** [Fallon, Chris])

Response: *This comment identifies a missing reference. It has been added to the EIS.*

Comment: Table G-11, page G-24: Site# 38CK172 is listed as not NRHP eligible but culturally important, citing reference ACC 2009. The SHPO had no specific comment on cultural importance. ACC 2009 concludes 38CK172 is not significant archeologically but is protected under federal and state burial laws. Duke Energy has discovered no other documentation justifying 38CK172 as culturally important. The DEIS provides no documentation justifying 38CK172 as culturally important. Duke Energy recommends removing the reference to 38CK172 as a culturally important resource.
(**0134-88** [Fallon, Chris])

Response: *The possible human burial site, 38CK172, located in the direct, physical area of potential effects for transmission lines is discussed in Sections 2.7.3, 4.62, and 5.6 of the EIS. As noted in these discussions and by the commenter, cultural resource investigators do conclude that the possible human burial site, 38CK172, is "not archaeologically significant" and that it is "protected under state and federal burial laws" (ACC Inc 2009:91). Investigators also recommend the possible burial as a "potentially eligible" resource (ACC Inc 2009:54) that "should not be disturbed" (ACC Inc 2009:91) and that "all impacts to the possible grave site (38CK172) should be avoided" (ACC Inc 2009:102). The Eastern Band of Cherokee Indians have also expressed specific concern about 38CK172 and highlighted the need to protect the possible human remains under State and Federal law (EBCI 2009). As a result of this feedback, 38CK172 is specifically addressed in the cultural resources management plan and Memorandum of Agreement finalized between Duke, the South Carolina SHPO, Tribal Historic Preservation Officers, and the USACE. Failure to adequately protect the human remains that may be located there could result in violations of Federal and/or State law. The review team determined that the short phrase, "culturally important," captured the essence of the information obtained and tribal concerns expressed for the protection of 38CK172 during the building and operation of offsite transmission lines for the Lee Nuclear Station Site. No changes were made to the EIS as a result of this comment.*

Comment: Historic Preservation
We appreciate the thorough discussion of cultural and historic resources in the DEIS, and your coordination with the South Carolina SHPO and THPOs. The DEIS notes that one cemetery will need to be relocated due to groundbreaking activities, and that the SHPO concurred with the finding of no historic properties affected and recommendations for relocation of the Service Family Cemetery. We also note that the South Carolina SHPO concurred that the proposed transmission lines will cause no adverse effects to two historic farmsteads and no effects on any other historic properties.

Consultation under Section 106 of the NHP A is ongoing, and will not be complete until the draft cultural resources management plan and MOA between Duke, the USACE, the South Carolina SHPO, and interested THPOs are finalized.

The DEIS states that "For the purposes of the NEPA analysis, impacts cannot be fully assessed until the draft cultural resources management plan and MOA between Duke, the USACE, the South Carolina SHPO, and interested THPOs implementing Duke Energy's corporate policy for cultural resources consideration at the Lee Nuclear Station site and associated developments in the site vicinity and offsite areas are finalized. Presently, the review team does not expect any significant impacts to historic and cultural resources during operation of proposed Lee Nuclear Station" (page 5-59).

Recommendations: The FEIS should include an update of coordination activities with the SHPO and THPOs, along with the finalized decision documents, if available.
(**0142-26** [Mueller, Heinz])

Comment: [In addition, updated information regarding:] ...historic preservation should be included in the FEIS. (**0142-32** [Mueller, Heinz])

Response: *The NRC appreciates the EPA's review of the draft EIS and per the recommendations, has incorporated the final cultural resource management plan and associated Memorandum of Agreement into the EIS.*

E.2.12 Comments Concerning Meteorology and Air Quality

Comment: Whereas, nuclear plants produce electricity at high levels of such reliability while emitting no greenhouse or acid rain gases. (**0013-1-4** [Moss, Representative Dennis])

Response: *This comment generally supports nuclear power as a clean energy alternative. It does not provide any specific information relating to the environmental effects of the proposed action, and no change was made to the EIS as a result of this comment.*

Comment: The same study did a carbon footprint comparison and it showed that nuclear had the third highest carbon footprint among the same 20 candidates, worse only than conventional coal and tar sands. I have the references here. It's true nuclear doesn't produce CO2 when the plant is working, however, if you look at all the energy that's required putting into it, building it, dismantling it, the whole ball of wax, the carbon footprint of nuclear is not good. (**0012-13-2** [Howarth, Robert F.])

Comment: There are lots of green house emissions involved in the mining & transportation of uranium, as well as the building of the plant. (**0085-2** [Allison, Patricia])

Comment: [The following problems are among those we have identified:] The false claim that nuclear power has no carbon footprint, which ignores the huge carbon footprint involved in the entire nuclear chain: mining and processing the uranium, building the nuclear facilities, transporting fuel rods to and radioactive waste from nuclear power plants, etc.
(**0119-22** [Thomas, Ruth])

Response: *The comments relate to greenhouse gas emissions released during the uranium fuel-cycle activities. The NRC staff evaluated the impacts from the life-cycle of fuel production, construction, operation, and decommissioning of the Lee Nuclear Station. The results of this analysis are presented in Chapters 4, 5, and 6 of the EIS. The generic impacts of the fuel cycle are codified in 10 CFR 51.51(b), Table S-3, Table of Uranium Fuel Cycle Environmental Data. Per the guidance in 10 CFR 51.51, the staff relied on Table S-3 as a basis for the impacts of uranium fuel-cycle impacts (including fossil emissions) to include uranium mining and milling. A*

comparison of CO_2 footprints of nuclear power and reasonable baseload energy alternatives is presented in Section 9.2.5. Appendix J of the EIS presents a detailed breakout of the CO2 footprint of a nuclear power plant. No changes were made to the EIS as a result of these comments.

Comment: Do you also know that nuclear power increases the damaging effects of climate change?
(**0121-3** [Wallace, Kristine])

Response: *The impacts of nuclear power generation on climate change are addressed in the EIS in Chapters 4, 5, 6, and 7. No changes were made to the EIS as a result of this comment.*

Comment: The NRC incorrectly assesses greenhouse gas emissions and impacts on global warming Greenhouse gases rank among the top environmental concerns today. These emissions from many sources, in aggregate, are contributing to the destabilization of climate on planet Earth. Yet, regarding greenhouse gas emissions, the draft EIS states:

"The review team concluded that the atmospheric impacts of the emissions associated with each aspect of building, operating, and decommissioning a single plant are minimal. The review team also concluded that the impacts of the combined emissions for the full plant life cycle would be minimal."

These statements are fundamentally incorrect because the full range of alternatives was summarily dismissed. In the comparison of greenhouse gas impacts by power source, the draft EIS states:

However, because these alternatives were determined by the review team not to meet the need for baseload power generation, the review team has not evaluated the CO2 emissions quantitatively.

Phillip Smith and Willem Storm van Leeuwen report that a variety of negative factors, including the greenhouse gas emissions, make modern nuclear power plants a bad bargain:

"The exceedingly large and long-term energy debt, combined with the insecurities of the nuclear energy system will seriously delay the transition of the world energy supply to a really sustainable one. A delay we cannot afford. The nuclear option would absorb a disproportionate part of the ability to cope of the society in a ever diverging need for energy, high quality materials and human skills."

William States Lee III would not help the climate crisis, despite Duke Energy's claims. It is important that all public investment in global warming solutions rest on scientifically solid

ground. NRC's draft EIS fails to include a proper analysis of the global warming environmental impacts of construction, operation and nuclear waste management from of these reactors. (**0130-2** [Zeller, Lou])

Response: *The comment states that climate change impacts from construction, operation, and decommissioning of the proposed Lee Nuclear Station were not adequately considered in the EIS. Climate change impacts from the proposed action are discussed throughout the EIS. Section 4.7.1 discusses the preconstruction and construction impacts on greenhouse gases, Section 5.7.2 discusses the operational impacts on greenhouse gases, and Section 6.1.3 discusses the fuel-cycle impacts. Appendix J contains the details behind these discussions. The comment also questions why the EIS does not discuss the CO_2 emissions from all alternative energy sources. The proposed action involves baseload electrical power generation. The review team determined that certain energy alternatives do not meet the purpose and need for the action (i.e., they are not considered baseload), and therefore expanding the comparison of the CO_2 footprint of nuclear power and energy alternatives would not serve the purpose of NEPA. The comparison of CO_2 emissions from nuclear power and other alternatives capable of providing baseload electrical power is presented in Section 9.2.5. No changes were made to the EIS as a result of this comment.*

Comment: Whereas the fossil fuel inputs at every step of the process from mining fabrication, transport, and construction is high the carbon footprint of nukes negates nearly 70 percent of available energy output. (**0013-11-6** [Smith, Coleman])

Comment: A nuclear plant does create quite a lot of carbon emissions in its construction, from the mining to the transportation, etc. So it is not true to say it is carbon neutral. (**0084-2** [Lemoing, Melissa])

Comment: This project is not carbon neutral. It has a much larger cost in carbon through the building of the infrastructure, and the transportation of hazardous materials. (**0086-1** [Rylander, Kimchi])

Response: *These comments concern the greenhouse gas emissions of the entire fuel cycle and operation of the proposed Lee Nuclear Station. The discussion and impacts of greenhouse gas emissions, or the carbon footprint, from the life-cycle of fuel production, construction, operation, and decommissioning of the unit and for energy alternatives were presented in Chapters 4, 5, 6, 7, 9 and in Appendix J of the EIS. No changes were made to the EIS as a result of these comments.*

Comment: *Air Quality*
Cherokee County is designated as being in attainment or unclassified for NAAQS criteria pollutants (page 2-171). The DEIS states that development activities at the Lee Nuclear Station site would result in temporary impacts on local air quality (page 4-97). The project team

concludes that the cumulative impacts on air quality from the additional air emissions from intermittent operation of diesel generators at the Lee Nuclear Station site would be minimal, and that mitigation would not be warranted (page 7-42).

Duke plans to develop a mitigation plan to identify specific mitigation measures to control fugitive dust and other emissions (page 4-97). A mitigation plan should also include strategies to reduce $C0_2$ emissions. The DEIS concludes that the impacts from construction and preconstruction activities on air quality would not be noticeable because appropriate mitigation measures would be adopted.

Recommendations: The FEIS should include updated information regarding the status of the mitigation plan development, including the mitigation plan, if available. Plans for mitigation should be documented and committed to in the decision documents. (**0142-18** [Mueller, Heinz])

Comment: [In addition, updated information regarding:] ...air quality...should be included in the FEIS. (**0142-31** [Mueller, Heinz])

Response: *Section 4.7 of the EIS examines air-quality impacts associated with construction and preconstruction; emissions would be predominately dust from building activities and exhaust from equipment and vehicles. As noted in Sections 4.7.1 and 4.7.2 of the EIS, Duke stated in its ER that it would develop a fugitive dust control plan and traffic mitigation measures to limit emissions. Duke would develop these plans to be consistent with SCDHEC regulations prior to commencing building activities. Conclusions in the EIS account for some or all of these mitigation measures being implemented. There is currently no updated information regarding these mitigation measures. No change was made to the EIS as a result of these comments.*

Comment: Section 7.12, Page 7-54, Table 7-4, Air quality - greenhouse gas emissions: Add sentence in the middle column for this item. "The proposed W. S. Lee Nuclear plant would not significantly contribute to greenhouse gas emissions in the region." This would summarize the conclusions made in DEIS Sections 4.7, 5.7, 6.1.3, 6.3, 7.6.2, 7.6.3, and Table 7-3. (**0134-66** [Fallon, Chris])

Response: *Section 7.12, Table 7-4, was modified to reflect this comment.*

Comment: *Greenhouse Gases (GHGs)*
We appreciate your discussion of climate change and GHGs in the DEIS. The DEIS states that the majority of the potential carbon dioxide ($C0_2$) emissions of the proposed nuclear power station would be the life cycle contributions associated with the uranium fuel cycle (page 6-10).

The DEIS notes that such emissions primarily result from the operation of fossil-fueled power plants that provide the electricity needed to manufacture the nuclear fuel.

The DEIS concludes that the atmospheric impacts of the emissions associated with each aspect of building, operating, and decommissioning a single plant are minimal. In addition, the DEIS concluded that the impacts of the combined emissions for the full plant life cycle would be minimal (page 7-42).

Section 6.1, Table 6-1, Table of Uranium Fuel Cycle Environmental Data, needs clarification regarding what the center "total" column refers to, and how the references to the model plant compare to the proposed William States Lee Nuclear Station. The information should be organized in a manner that is easy to read and understand.

Section 6.1.3, Fossil Fuel Impacts, states in the 3rd paragraph "The CO_2 emissions from the fuel cycle are about 5 percent of the CO_2 emissions from an equivalent fossil fuel-fired plant." Please clarify whether this is in comparison with coal-fired power plants. Also, natural gas combined cycle turbine plants (NGCT) are also "fossil fuel-fired plants" which have less CO_2 emissions than coal plants, so the statement seems misleading. The FEIS should clarify which type of fossil fuel power plant is being referred to. While this difference appears "small", it appears that the 5% value is being compared to a conventional power plant, instead of the newer "cleaner" fossil fuel-fired power plants (such as NGCC turbine plants), which emit about 30% less CO_2 than coal plants.

Section 6.1.3, (page 6-10), also states that the NRC staff estimates that the carbon footprint for 40 years of fuel-cycle emissions would be approximately 51,000,000 metric tonnes (MT) an emissions rate of about 1,300,000 MT annually, averaged over the period of operation of CO_2. In comparison, a new natural gas combined cycle turbine plant (NG CT) of 1250 MW would have a potential to emit (PTE) of about 4.2 million short tons of CO_2e (which is about 3.8 million MT). Based on the math, the CO2 emissions are about 14% of what a new NG CT plant would be.

Recommendations: The FEIS should clarify the basis of comparison for the impacts of the proposed Lee Nuclear Station discussed in Section 6.1.3. In addition, Table 6-1 should be revised for clarity. Please refer to EPA's website (www.epa.gov/climatechange) for useful information on climate change. (**0142-19** [Mueller, Heinz])

Comment: [Also, EPA recommends that the FEIS include:] ...clarification of the GHG evaluation data... (**0142-29** [Mueller, Heinz])

Response: *The comments primarily focus on impacts to air quality from the uranium fuel cycle. Section 6.1, Table 6-1, is a reproduction of Table S–3 in 10 CFR 51.51(b). The "total" column refers to the total impact on the resource from the uranium fuel cycle during one reference reactor-year. This is described in Section 6.1 as a 1000-MW(e) LWR reactor operating at 80 percent capacity with a 12-month fuel reloading cycle and an average fuel burnup of 33,000 MWd/MTU. This is a"reference reactor-year" (Table S–3 or NUREG-1437; NRC 2013).*

To evaluate the environmental impacts of the nuclear fuel cycle for the proposed Lee Nuclear Station, the NRC staff multiplied the values in Table S-3 by a factor of 3. This scaling factor is discussed in Section 6.1 and accounts for the increased electric generation and capacity factor of the two proposed units at Lee Nuclear Station as compared to the reference reactor. Section 6.1 of the EIS has been modified for clarity in response to these comments. Section 6.1.3 discusses fossil fuel impacts of the uranium fuel cycle. The statement "The CO_2 emissions from the life cycle are about 5 percent of the CO_2 emissions from an equivalent fossil-fuel-fired plant" is referring to a coal-fired power plant. Table 6-1 compares emissions from a reference reactor to a 45 MW(e) coal-fired power plant. Accounting for differences in generating capacity, the reference reactor emits about 5 percent of that of a coal-fired power plant. Section 6.1.3 of the EIS has been modified to clarify the type of fossil-fuel-fired plant. The CO_2 emissions from a nuclear power plant are also a small percentage of those from a natural gas combined-cycle plant. Using the example in the comment which contains a specific emission rate for the natural gas combined-cycle turbine plant, the CO_2 emissions from the life cycle of a nuclear power plant are still comparatively small to those of a natural gas combined-cycle turbine plant, and the NRC staff's conclusion remains the same.

Comment: One of the things in the cumulative impacts part of the presentation was that there were moderate impacts to land use, surface water use, terrestrial and aquatic ecology, traffic, and this last one got me -- was greenhouse gas emissions, whereas, you know, the whole reason that this is being presented as a viable option is because -- to limit greenhouse gas emissions, but, yet, as far as cumulative impacts, greenhouse gas emissions are moderate. (**0013-30-1** [McWherter, Lisa])

Response: *The review team found that the cumulative impacts of greenhouse gas emissions were MODERATE. As discussed in Section 7.6.3, the review team found that the national and worldwide cumulative impacts of greenhouse gas emissions are noticeable but not destabilizing. The review team concludes that the cumulative impacts, which include impacts from other past, present, and reasonably foreseeable future actions, would be noticeable but not destabilizing, with or without the greenhouse gas emissions from the Lee Nuclear Station site.*

Evaluation of cumulative impacts of greenhouse gas emissions requires the use of a global climate model. The review team looked to the EPA finding regarding greenhouse gases. On December 15, 2009, the Administrator of the EPA issued (74 FR 66496) her determination under her authority under the Clean Air Act that: "… greenhouse gases in the atmosphere may reasonably be anticipated both to endanger public health and to endanger public welfare…." The Administrator reached her determination by considering both observed and projected effects of greenhouse gases in the atmosphere, their effect on climate, and the public health and welfare risks and impacts associated with such climate change. The review team's assessment that the cumulative impacts of greenhouse gas emissions reflect conditions within the NRC's impact category level of MODERATE for air quality related to greenhouse gases,

noticeable, but not destabilizing, is entirely consistent with the EPA Administrator's finding. No changes were made to the EIS as a result of this comment.

Comment: [EPA recommends the FEIS include...] ...a discussion of opportunities to reduce GHG and other air emissions during construction and operation of the facility. Specifically, energy efficiency and renewable energy should be a consideration in the construction and operation of facility buildings, equipment, and vehicles. (**0142-28** [Mueller, Heinz])

Response: *Section 4.7.1 of the EIS was modified to include more detail on mitigation measures that would reduce greenhouse gas and other air emissions during building of the proposed facility. As discussed in Section 5.7.2, during operation of the proposed facility, the primary contributors to air emissions would be operation of standby generators, which are subject to an operating permit through the SCDHEC, and emissions from worker vehicles. Section 5.7.2 currently discusses the mitigation measures that the applicant would consider to reduce worker vehicle emissions.*

E.2.13 Comments Concerning Nonradiological Health

Comment: Section 9.3.5.9, Page 9-196, Lines 8-10: The DEIS states: "Impacts from building activities, including the associated transmission lines and a 2200-ac supplemental cooling-water reservoir at the Middleton Shoals site would be minimal." The Duke Energy response to RAIs 127 and 131 updated the size of the reservoir to 3700 ac. (**0134-83** [Fallon, Chris])

Response: *The size of the Middleton Shoals supplemental cooling-water reservoir was corrected in Section 9.3.5.9.*

Comment: Diesel Exhaust
In addition to the EPA's concerns regarding climate change effects and GHG emissions, the National Institute for Occupational Safety and Health (NIOSH) has determined that diesel exhaust is a potential human 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, and asthma.

Recommendations: Although every construction site is unique, common actions can reduce exposure to diesel exhaust. EPA recommends that the following actions be considered for construction equipment:

Retrofit engines with an EPA certified or CARB verified exhaust filtration device to capture Diesel Particulate Matter before it enters the workplace.
Position 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.

A catalytic converter reduces carbon monoxide, aldehydes, and hydrocarbons in diesel fumes. These devices must be used with low sulphur fuels.

Ventilate 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.

Attach a hose to the tailpipe of a diesel vehicle running indoors and exhaust the fumes outside, where they cannot reenter the workplace. Inspect hoses regularly for defects and damage.

Use enclosed, climate-controlled cabs pressurized and equipped with high efficiency particulate air (HEPA) filters to reduce operators' exposure to diesel fumes. Pressurization ensures that air moves from inside to outside. HEP A filters ensure that any air coming in is filtered first.

Regular maintenance of diesel engines 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, bluelblack smoke indicates that an engine requires servicing or tuning.

Work practices and training can help reduce exposure. For example, measures such as turning off engines when vehicles are stopped or inactive (not performing a necessary function) for more than a few minutes; training diesel-equipment operators to perform routine inspection and maintenance of filtration devices.

When purchasing a new vehicle, ensure that it is equipped with the most advanced emission control systems available.

With older vehicles, use electric starting aids such as block heaters to warm the engine, avoid difficulty starting, and thereby reduce diesel emissions.

Respirators are only an interim measure to control exposure to diesel emissions. In most cases an N95 respirator is adequate. Respirators are for interim use only, until primary controls such as ventilation can be implemented. Workers must be trained and fit-tested before they wear respirators. Personnel familiar with the selection, care, and use of respirators must perform the fit testing. Respirators must bear a National Institute of Occupational Safety and Health (NIOSH) approval number. Never use paper masks or surgical masks without NIOSH approval numbers. (**0142-20** [Mueller, Heinz])

Response: *The comment concerns known and potential health effects of exposure to diesel exhaust, and offers strategies to mitigate such exposures. Construction equipment exhaust is*

discussed in Sections 4.7 and 4.8 of the EIS. While the NRC determined that nonradiological health impacts would be SMALL, it agrees that the measures identified in the comment would further reduce exposure to diesel exhaust. Section 4.8.1.2, Construction Worker Health, has been updated to include EPA's suggested mitigation measures.

E.2.14 Comments Concerning Radiological Health

Comment: One is in regard to health. Nobody's talked about low-level radiation health issues, and so I have a little study. It's called the Tooth Fairy study, and probably the NRC is familiar with the Tooth Fairy study. But for -- there's been 50 years' worth of teeth that have been collected from children. And they're looked at in terms of strontium 90 -- or SR90 -- that's in those teeth. And the reason that teeth are looked at is strontium 90 is very similar in our bodies as calcium, so our bodies think that it's calcium and stores strontium 90 in our teeth and in our bones. And so strontium 90 levels are seen in counties that are within 100 miles of nuclear reactors called nuclear counties. They're -- and it's higher than in non-nuclear counties. So when this study is done, you see that in the 3000-plus counties in the United States, women living in about 1300 of those nuclear counties are at greater risk of dying from breast cancer. And the risk is even higher for men with prostate cancer. Samples of baby teeth from during the eighties exhibit a detectable Chernobyl effect, meaning that you can see the spikes based on nuclear radiation that has gone out in these baby teeth that has been collected. And also you can increasing levels of radiation from the eighties and nineties. The study is ongoing, so you can look that up. I'll give you the place to look that up in a second. And the last thing that was collected that I wanted to share with you about that particular study is that in 1997 the federal government produced an estimate from the Nevada above ground nuclear testing site from the fifties and sixties that demonstrated that the tests caused up to 212,000 U.S. cases of thyroid cancer. In general, up to then there had been virtually no long-term health effects of low-level radiation. So that's what you can't see or what's not a big accident -- what happens just over the course of time at any nuclear power plant. And that can be found -- I don't think the guy's here anymore, but for all you that can be found on the Radiation Public Health Project's website. (**0013-29-1** [Greenburg, Lori])

Comment: I want to tell you about the Tooth Fairy Project, they have been collecting 50 years worth of data on baby teeth. The reason being, radioactive Strontium-90 (Sr-90) is one of the deadliest elements, caused by fission. "The chemical structure of Sr-90 is so similar to that of calcium that the body gets fooled and deposits Sr-90 in the bones and teeth where it remains, continually emitting cancer-causing radiation".... Strontium-90 levels are significantly higher in counties located within 100 miles of nuclear reactors (nuclear Counties) than in non-nuclear counties... of the 3,000 plus counties in the United States, women living in about 1,300 nuclear counties (located within 100 miles of a reactor) are at the greatest risk of dying of breast cancer and even higher risks for prostate cancer among men. Samples of baby teeth during from the 1980s exhibit a detectable Chernobyl effect. That strontium-90 levels in U.S. baby teeth show a temporal increase-year after year, throughout the 1980s and 1990s, reflecting the impact of low-

level radiation emissions from commercial nuclear reactors. And in 1997, the federal government produced an estimate from the Nevada above-ground nuclear weapons testing site of the 1950s and early 1960s that demonstrated the tests caused up to 212,000 U.S. cases of thyroid cancer. In general there has been virtually no long-term health effects studies of low-level radiation exposure, up until this study. This info can be found on The Radiation and Public Health Project's web-site. (**0099-1** [Greenberg, Lori])

Response: *In 2000, the Radiation and Public Health Project published a report entitled, "Strontium-90 in Deciduous Teeth as a Factor in Early Childhood Cancer." The report alleges that there has been an increase in cancer incidence as a result of strontium-90 released from nuclear power facilities. The report claimed that elevated levels of strontium-90 in deciduous (baby) teeth were evidence for cause of the increase in childhood cancer. Three sources of strontium-90 exist in the environment: fallout from nuclear weapons testing, releases from the Chernobyl accident in Ukraine, and releases from nuclear power reactors. The largest source of strontium-90 is from weapons-testing fallout as a result of aboveground explosions of nuclear weapons (approximately 16.9 million curies of strontium-90) (UNSCEAR 2000). The Chernobyl accident released approximately 216,000 curies of strontium-90. The total annual release of strontium-90 into the atmosphere from all U.S. nuclear power plants is typically 1/1000th of 1 curie, which is so low that the only chance of detecting strontium-90 is sampling the nuclear power plant effluents themselves. The NRC regulatory limits from effluent releases and subsequent doses to the public are based on the radiation protection recommendations of international and national organizations such as the International Commission on Radiological Protection (ICRP) and the National Council on Radiation Protection and Measurements (NCRP). Nuclear power facilities monitor gaseous effluent releases, and licensees report the results of their monitoring to the NRC annually. NCRP has found no statistically significant excess of biological effects from strontium-90 exposures at levels characteristic of worldwide fallout, which is the greatest source of strontium-90 in the environment. Likewise, there is no new evidence that links strontium-90 with increases in breast cancer, prostate cancer, or childhood cancer rates. The NRC staff has concluded that the claims of elevated levels of childhood cancer in the vicinity of nuclear reactors in the United States caused by the release of strontium-90 during routine operations are questionable and without scientific basis to support the claims. No causal relationship has been established between the levels of strontium-90 being reported by the Radiation and Public Health Project in deciduous teeth and childhood cancer. Furthermore, there is almost unanimous consensus among the scientific community on the adequacy of current radiation protection standards. No change was made to the EIS as a result of these comments.*

Comment: And one number was pulled out of the environmental report which kind of struck me, and that is 2,100,000 gallons, 2.1 million gallons of radioactive wastewater would be discharged annually from this plant into the Broad River. This is an average number over the lifetime of the plant, 2 million gallons per year. The rate could be as much as 50 times higher,

according to the environmental report submitted by Duke Energy. That is if there is no accident and nothing bad happens. (**0012-11-1** [Zeller, Lou])

Comment: If no bad things happen, earthquakes in this region -- which it's famous for -- or some other type of internal disaster does not happen, you still have 2.1 million gallons of radioactive water being discharged, according to the company's figures provided to the NRC, 2.1 million gallons of water, if none of these events happen, every single year into the Broad River. (**0012-11-3** [Zeller, Lou])

Comment: There are numerous people, families, representatives of organizations in the Gaffney area who have not received the Environmental Impact Statement or other notices or reports, nor have they been informed that there are expected to be "acceptable" releases into the air, water or soil during the nuclear plant's normal operations. For example, Duke Energy admits that 2.1 million gallons of low-level radioactive waste-water per year can be expected to go into the Broad River, and claims that this is safe for those downstream. It's thought by both Duke and the NRC that this figure might be 50% low, which means it could be 4.2 million gallons.
(**0119-17** [Thomas, Ruth])

Response: *These comments address the amount of liquid radioactive effluents projected to be released from the combined operation of the reactors at the Lee Nuclear Station site. Section 2.11 of the EIS addresses the radiological environment around the Lee Nuclear Station site. Section 3.4.3.1 addresses the liquid radioactive waste-management systems, Section 5.9 addresses the monitoring of effluent releases during operation and the impacts from these releases, and Section 7.8 addresses the cumulative radiological impacts of operating the proposed units along with existing nuclear units within a 50-mi radius of the Lee Nuclear Station site. The mean annual flow of the Broad River for water years 2000-2010 (used in Section 5.9) was 1858 cfs. The amount of liquid radioactive effluent would be a very small fraction of this and the releases must meet the requirements of 10 CFR Part 20 Appendix B. No changes were made to the EIS as a result of these comments.*

Comment: I just want to talk a little bit more about the problems with nuclear radiation. In the industry the idea of the standard man, the standard person and what amount of ionizing radiation would be a threshold level for it, I just want to comment about that, that women are about 50 percent more vulnerable to nuclear radiation than men are, having more reproductive tissue, and children and babies, I don't think I need to tell anybody about with their rapidly growing bodies, they're much more vulnerable to it also. (**0012-15-1** [Larsen Clark, Brita])

Comment: I'm concerned about the safety and health effects of toxic nuclear waste. A recently released paper from the Nuclear Information Resource Service shows that radiation is 50 percent more harmful to women than previously recognized, and I quote: "A woman is at significantly greater risk of suffering and dying from radiation-induced cancer than a man who

gets the same dose of ionizing radiation." This is news because data in the report on the biological effects of ionizing radiation published in 2006 by the National Academy of Science has been under reported. It's more often acknowledged that children are at higher risk of disease and death from radiation, but it is rarely pointed out that the regulation of radiation and nuclear activity worldwide ignores the disproportionately greater harm to both women and children. I again quote: "The current limits for most industrial radiation in the United States allows failed cancer members of the general public at a rate that is between 300 to 3,000 times higher than the legal rate of harm from most other industrial hazards." And that's the legal rates, and this is a very disturbing fact. (**0012-19-1** [Howarth, Irma])

Comment: I have a farm NW of Asheville, NC. and along with my family would be subjected to any risk of radiation exposure from such a facility. (**0025-2** [Dixon, Mary])

Comment: The dangers to human life that come from exposure to these plants and to nuclear energy is well-known and well-documented. (**0031-1** [Glaser, Christine])

Comment: How can safety risks resulting from more nuclear reactors be justified, when there are increasing reports published of increased incidences of leukemias and cancers among people, especially children, associated with their proximity to nuclear power plants in the US and elsewhere? (**0058-4** [Patrie, MD, MPH, Lewis E.])

Comment: A recently released paper from the Nuclear Information Resource Service shows that radiation is 50% more harmful to women than previously recognized. I quote: "A women is at significantly greater risk of suffering & dying from radiation-induced cancer than a man who gets the same dose of ionizing radiation. This is news because data in the report on the biological effect of ionizing radiation published in 2006 by the National Academy of Sciences (NAS) has been under reported. It is more often acknowledged that children are at higher risk of disease & death from radiation, but it is rarely pointed out that the regulation of radiation & nuclear activity (worldwide) ignores the disproportionately greater harm to both women & children." I again quote "The current limits for most industrial radiation in the U.S. allow fatal cancer members of the general public at a rate that is between 300 to 3000 times higher than the legal rate of harm from most other industrial hazards." This is very disturbing!! (**0092-2** [Howarth, Irma])

Comment: Other Nuclear Factors of Concern [include:] Health effects and cost - - may be unknown initially, but show up as poor citizen health & soon impact health insurance rates. (**0093-2** [Howarth, Robert F.])

Comment: ...radiation kills and also remains in our environment for millenia. (**0111-3** [Knudten, Cori])

Comment: [Building the W.S. Lee Nuclear Plant will:] Create strong health risks for human populations of Asheville NC, Greenville/Spartanburg SC, Charlotte NC. (**0112-6** [Andrews, Josephine] [Anonymous] [Beattie, Kathryn E.] [Boever, Virginia] [Boyle, Ella] [Brogan Prindle, Cathleen] [Davis, John] [Flores, S.] [Hamahan, Clare] [Keil, A. Eugene] [Leverette, Will] [Peterson, Harry] [Peterson, Martha J.] [Rittenberg, David] [Rustin, K.])

Comment: [If Lee Nuclear Station is built:] Populations of GAFFNEY, Charlotte & nearby Asheville, NC would be endangered. (**0114-7** [Lovinsohn, Ruth])

Comment: The problem that those most vulnerable to radioactive releases from nuclear plants are children, women, and the elderly. Radiation exposure causes cancer years down the road, but it also more immediately causes miscarriages and birth defects.
(**0119-23** [Thomas, Ruth])

Comment: The BEIR VII Committee published morbidity and mortality data in 2006 which show that children have a significantly higher risk of developing cancer from radiation than adults do and women have a higher risk of radiation-induced cancer than men do. BEIR VII found that a lifetime dose of one million person-rem results in a cancer incidence rate of 900 for men and 1370 for women; mortality rates for the same dose are 480 and 660 for men and women, respectively.
(**0130-8** [Zeller, Lou])

Response: *The NRC takes seriously its responsibility under the Atomic Energy Act to protect the health and safety of the public and the environment in regulating the U.S. nuclear power industry. 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. 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. The limits are based on the recommendations of standards-setting organizations. 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. 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. For example, the NRC has different occupational dose limits for declared pregnant women because the rapidly developing human fetus is more radiosensitive than an adult woman. The 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, the NRC dose calculation methods have always included age-specific dose factors for each radionuclide because they may be used differently by infant, child, and teen bodies, which are also generally smaller than adult bodies. Additionally, the calculation methods have always recognized that the diets*

(amounts of different kinds of food) of infants, children, and teens are different from adults. (See Regulatory Guide 1.109, "Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I," Revision 1, issued October 1977; NRC 1977a). No change was made to the EIS as a result of these comments.

Comment: We now -- we also know that radioactive tritium has already leaked from 48 of 65 U.S. nuclear power facilities, often in the groundwater. (**0013-16-3** [Zdenek, Dr. Joe])

Response: *The NRC has identified several instances of unintended tritium releases, and all available information shows no threat to the public. Nonetheless, the NRC is inspecting each of these events to identify the cause, verify the impact on public health and safety, and review licensee plans to remediate the event. The NRC also established a "lessons learned" task force to address inadvertent, unmonitored liquid radioactive releases from U.S. commercial nuclear power plants. This task force reviewed previous incidents to identify lessons learned from these events and determine what, if any, changes are needed to the regulatory program. Detailed information and updates on these liquid releases can be found on the NRC public website at http://www.nrc.gov/reactors/operating/ops-experience/grndwtr-contam-tritium.html. No changes to the EIS were made as a result of this comment.*

Comment: I thought it was interesting when I came in here this morning -- or this evening that somebody was passing out these radiation signs. So I grabbed one because I'm radioactive, and so are you and you and you and everyone in this room is radioactive. In fact, we're so radioactive that if you sleep with a partner you will receive more radiation exposure from that partner than you would by living next door to the Lee nuclear power plant. There's been a lot of discussion here about radiation without the qualification of the dose rate and what that dose rate means. The poison is in the concentration and the concentration of radiation from nuclear power plants is very, very low. (**0013-18-1** [Bromm, Bob])

Response: *These comments are generally related to the radiation dose a member of the public would receive daily from all sources. They do not provide specific information related to the environmental impacts of the proposed Lee Nuclear Station and therefore no changes were made to the EIS as a result of this comment.*

Comment: There's just -- toxins are cumulative. It's bad enough we have mercury and so on from coal power. We can't afford to add one bit of radiation to the toxic mix that is killing us. Now, I'm going to live to 100 or die hiking unless pollution gets me first. (**0013-31-1** [Bisesi, Philip])

Response: *This comment relates to the possible synergistic effect of chemicals and radiation and the cumulative impacts of the proposed Lee Nuclear Station reactors. The NRC staff evaluated cumulative impacts from the operation of the proposed reactors in Chapter 7 of the EIS. No change was made to the EIS as a result of this comment.*

Comment: Also, what about the normal radioactive releases that occur regularly at a nuclear facility? This pamphlet, which is available outside, from the Nuclear Information and Resource Service lists all of the many daily and annual emissions of radioactive material that occurs. And I encourage you to take this pamphlet and to research it to really question whether this is true or not. But not only do they say that there are all of these different kinds of releases -- just routine releases often -- but they also say that they are often not fully detected or reported. So in the Environmental Impact Statement are you including in that impact any of the radioactive planned releases? Finally, I want to just read this statement -- and this has been stated eloquently by others. But to emphasize again that any radioactive exposure can be cumulative and can affect people not a year from now, not ten years from now, but 15 or 20 years from now. And we know that we have a tremendous increase in all kinds of cancers and other diseases. So let me just read this in closure. It is scientifically established that every exposure to radiation increases the risk of damage to tissues, cells, DNA, and other vital molecules. Each exposure potentially can cause programmed cell death, genetic mutations, cancers, leukemia, birth defects, and reproductive, immune, and endocrine system disorders. (**0013-33-2** [Broadhead, Susan])

Comment: There are doubtless many other names that the public will never know about where releases of radioactive material have occurred on a much less dramatic scale but that nevertheless add to the increase of exposure and the subsequent increased cancer rates. I refer you to the recent studies done by the German and French governments that show increased cancer rates in the population living close to nuclear power plants. (**0060-1** [Craig, Tom])

Comment: All nuclear power plants leak dangerous substances, radioactivity and heat. (**0107-2** [Acs, Deborah])

Response: *These comments relate to the airborne and liquid radioactive effluents from the proposed Lee Nuclear Station. Chapter 2 of the EIS addresses the radiological environment around the Lee Nuclear Station site, Chapter 3 addresses the gaseous and liquid radioactive waste-management systems, and Chapter 5 addresses the monitoring of effluent releases during operation and the impacts from these releases. The EIS also assesses the environmental impacts of the uranium fuel cycle, including the impacts of solid radioactive waste management in Chapter 6 of the EIS. 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. 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. The limits are based on the recommendations of standards-setting organizations. Radiation standards reflect extensive scientific studies 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. If the NRC determines that there is a need to revise its radiation protection regulations, it will initiate a rulemaking. The models recognized by the NRC for use by nuclear power reactors to calculate dose incorporate*

conservative assumptions and account for differences in gender and age to ensure that workers and members of the public are adequately protected from radiation. On April 7, 2010, the NRC announced that it asked the National Academy of Sciences (NAS 1980) to perform a state-of-the-art study on cancer risk for populations surrounding nuclear power facilities (ADAMS Accession No. ML100970142). 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" (Jablon et al. 1990). The study's objectives are to: 1) evaluate whether cancer risk is different for populations living near nuclear power facilities; 2) include a listing of 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 website (http://www.nap.edu). No changes have been made to the EIS in response to these comments.

Comment: Everybody in this room has got some nuclear particles in his or her body -- everybody. The question is what's the safe number of bullets to shoot at somebody at close range, which is what the nuclear power industry is doing. They're shooting bullets at people at close range. The answer is zero. (**0013-14-2** [Richardson, Don])

Comment: Nuclear Power Is Dangerous. Radiation exposure damages, reproductive cells, imune system - causes genetic mutations and cancer, spontaneous abortion, mental retardation, spina bifida, heart disease, leukemia and more. (National Academy of Sciences, BEIR V & V!!; World Health Organization). The truth is... we all are at risk... depends on where the water flows and the wind blows. According to the National Academy of Science, there is no safe level of radiation. You cannot taste it, smell it or see it. Health effects can show up 10-30 years later. (**0017-1** [Morgan, Tom and Barbara])

Comment: Nuclear Power Is Dangerous: Radiation exposure damages reproductive cells, immune system??causes genetic mutations and cancer, spontaneous abortion, mental retardation, spina bifida, heart disease, leukemia and more. (National Academy of Sciences, BEIR V & V!!; World Health Organization). The truth is????..we all are at risk????.depends on where the water flows and the wind blows. According to the National Academy of Science, there is no safe level of radiation. You cannot taste it, smell it or see it. Health effects can show up 10-30 years later. (**0018-2** [Vestal, Majorie] [Vestal, Majorie])

Comment: According to the National Academy of Science, there is no safe level of radiation. You cannot taste it, smell it or see it. Health effects can show up 10-30 years later. I do not want anyone to suffer from this avoidable health risk. (**0041-2** [McMahon, John])

Comment: According to the National Academy of Science, there is no safe level of radiation. Radiation exposure damages reproductive cells, immune system?causes genetic mutations and cancer, spontaneous abortion, mental retardation, spina bifida, heart disease, leukemia and more. (National Academy of Sciences; World Health Organization). Health effects can show up 10-30 years later. (**0048-1** [Skeele, Michele and Skip])

Comment: No level of radiation is safe for the human body. (**0061-3** [Holt, Cathy])

Comment: Nuclear power is inherently dangerous. Radiation exposure damages reproductive cells and the immune system. There is no safe level of radiation. (**0082-1** [Karpen, Leah R.])

Comment: It is my opinion that building the plant poses far too great a risk to the health of citizens of our region. Radiation exposure damages reproductive cells and the immune system; it also causes genetic mutations, cancer, spontaneous abortion, mental retardation, spina bifida, heart disease, leukemia and more. (National Academy of Sciences, BEIR V & VII, World Health Organization). (**0083-2** [Broadhead, Susan])

Comment: It is my opinion that building the plant poses far too great a risk to the health of citizens of our region. According to the National Academy of Sciences and the World Health Organization, radiation exposure damages reproductive cells and the immune system; it also causes genetic mutations, cancer, spontaneous abortion, mental retardation, spina bifida, heart disease, leukemia and more. (**0098-2** [Broadhead, Susan])

Comment: Nukes have already contaminated Earth forever, and everyone in this room is carrying some radioactive particles in his or her body which is a threat to the health not only of yourself but to your progeny, even those not yet born. (**0100-1** [Richardson, Don])

Response: *The BEIR VII Summary report (National Research Council 2006) does not say that there is no safe level of exposure to radiation. The conclusions of the report are specific to estimating cancer risk and do not address "safe or not safe." The BEIR VII Summary report states: "In general the magnitude of estimated risks for total cancer mortality of leukemia has not changed greatly from estimates provided in past reports such as BEIR V and recent UNSCEAR and ICRP reports." The National Academies' "Report in Brief," June 2005, states, "In general, BEIR VII supports previously reported risk estimates for cancer and leukemia, the availability of new and more extensive data have strengthened confidence in these estimates." There is no statement about "no safe level or threshold" rather 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." Regarding non-cancer health effects, the BEIR VII Summary report further elaborates: "The 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."*

No changes were made to the EIS in response to these comments.

Comment: The so called 10 mile and 50 mile risk area around nuclear plants doesn't hold true to the people and children of Belarus, victims of 1986 Chernobyl fallout who are still suffering debilitating diseases as a result of contamination from 124 miles away. In Japan, Fukushima has sent fallout to Tokyo and Asheville/Hendersonville (where I live) is 3 times closer to Gaffney's proposed nuclear site. The NRC quotes the research done from the Chernobyl accident where thyroid cancer in children who ate radioactive food supplies OUTSIDE the safety zones was reported. There is also Chernobyl Heart, a genetic disorder in which children in Ukraine are born with holes in their hearts. (**0017-2** [Morgan, Tom and Barbara])

Comment: The so called 10 mile and 50 mile risk area around nuclear plants doesn't hold true to the people and children of Belarus, victims of 1986 Chernobyl fallout who are still suffering debilitating diseases as a result of contamination from124 miles away. In Japan, Fukushima has sent fallout to Tokyo and Asheville is 3times closer to Gaffney's proposed nuclear site. The NRC quotes the research done from the Chernobyl accident where thyroid cancer in children who ate radioactive food supplies OUTSIDE the safety zones was reported. There is also Chernobyl Heart, a genetic disorder in which children in Ukraine are born with holes in their hearts. (**0018-4** [Vestal, Majorie] [Vestal, Majorie])

Comment: The so called 10 mile and 50 mile risk area around nuclear plants doesn't hold true for the people and children of Belarus, victims of 1986 Chernobyl fallout who are still suffering debilitating diseases as a result of contamination from 124 miles away. In Japan, Fukushima has sent fallout to Tokyo and Asheville is 3 times closer to Gaffney's proposed nuclear site. (**0048-2** [Skeele, Michele and Skip])

Comment: The so-called 10 mile and 50 mile risk area around nuclear plants did not hold true for the people of Belarus, victims of 1986 Chernobyl fallout who are still suffering debilitating diseases as a result of contamination from 124 miles away. Gaffney is closer than that to many large population centers (as well as all the rural areas), including Charlotte and Asheville. (**0083-3** [Broadhead, Susan])

Comment: I would like to draw your attention to the most recent data from Chernobyl Russia. The so called 10 mile and 50 mile risk area around nuclear power plants does not hold time to the people and children of Belarus, victims of the 1986 Chernobyl fallout who are still suffering debilitating diseases as a result of the contamination from 124 miles away. (**0087-1** [Drouin, Michaeljon])

Comment: The so-called 10 mile and 50 mile risk area around nuclear plants did not hold true for the people of Belarus, victims of 1986 Chernobyl fallout who are still suffering debilitating

diseases as a result of contamination from 124 miles away. Gaffney is closer than that to many large population centers, including Charlotte and Asheville, and of course to large rural areas. (**0098-3** [Broadhead, Susan])

Comment: After the Fukushima disaster, we learned just how devastating nuclear radiation is to the land, water, people and animals. We still don't know the long term affects of Fukushima's nuclear meltdown. After the Chernobyl fallout, victims are still suffering from debilitating diseases 124 miles from the Chernobyl nuclear plant. (**0112-2** [Andrews, Josephine] [Anonymous] [Beattie, Kathryn E.] [Boever, Virginia] [Boyle, Ella] [Brogan Prindle, Cathleen] [Davis, John] [Flores, S.] [Hamahan, Clare] [Keil, A. Eugene] [Leverette, Will] [Peterson, Harry] [Peterson, Martha J.] [Rittenberg, David] [Rustin, K.])

Response: *These comments relate to the adequacy of emergency plans, which is an issue that is outside the scope of the NRC staff's environmental review. As part of its safety review for the proposed Lee Nuclear Station, the NRC staff will determine, after consultation with the U.S. Department of Homeland Security and the Federal Emergency Management Agency, whether the emergency plans submitted by Duke are acceptable will be evaluated in the Lee Nuclear Station FSER. As stated in 10 CFR 50.54, Conditions of Licenses, paragraph (q), the emergency planning zone (EPZ) consists of an area about 10 mi (16 km) in radius. The exact and configuration of the EPZ for a particular nuclear power reactor is determined in relation to local emergency response needs and capabilities as they are affected by such conditions as demography, topography, land characteristics, access routes, and jurisdictional boundaries. EPZs for power reactors are also discussed in NUREG–0396; EPA 520/1-78-016, "Planning Basis for the Development of State and Local Government Radiological Emergency Response Plans in Support of Light Water Nuclear Power Plants" (NRC 1978). No changes were made to the EIS in response to these comments.*

Comment: Out of 104 US reactor sites, 100 have contaminated soil leading to contaminated ground water. Why will Lee be different? (**0041-4** [McMahon, John])

Comment: Contaminated (SOIL) out of 104 US Reactor sites: at least 100 have already poisoned the Soil which in turn is poisoning our water. (**0114-10** [Lovinsohn, Ruth])

Comment: Out of 104 US reactor site now, 100 have contaminated soil leading to contaminated ground water. How could Lee be an exception? (**0133-8** [Christopher, Lucy D.])

Response: *Although NRC regulations require licensees to make surveys, as necessary, to evaluate the potential hazard of radioactive material released in order to assess doses to members of the public and workers, recent discoveries of releases at other plants indicate that undetected leakage to groundwater from facility structures, systems, or components can occur resulting in unmonitored and unassessed exposure pathways to members of the public. The NRC has identified several instances of unintended tritium releases, and all available*

information shows no threat to the public. Nonetheless, the NRC is inspecting each of these events to identify the cause, verify the impact on public health and safety, and review licensee plans to remediate the event. The NRC also established a "lessons learned" task force to address inadvertent, unmonitored liquid radioactive releases from U.S. commercial nuclear power plants. This task force reviewed previous incidents to identify lessons learned from these events and determine what, if any, changes are needed to the regulatory program. Detailed information and updates on these liquid releases can be found on the NRC public website at http://www.nrc.gov/reactors/operating/ops-experience/grndwtr-contam-tritium.html. No changes to the EIS were made as a result of these comments.

Comment: [Building the W.S. Lee Nuclear Plant will:] Create strong health risks for human populations of Asheville NC, Greenville/Spartanburg SC, Charlotte NC. (**0004-5** [Cunningham, Kristine])

Comment: NRC regulations will not prevent elevated levels of exposure. The limits for radiation dose to individual members of the public is 100 millirem, a dose which equates to an annual risk of 5 in 100,000 (5.0xE-05) and a lifetime risk of 3.5 in 1,000 (3.5-E03). This means that 5 persons could die for every 100,000 members of the public exposed the plant's ionizing radiation for a year; 3 to 4 persons per 1,000 could die if exposed over a lifetime. (**0130-10** [Zeller, Lou])

Comment: We [residents in the immediate vicinity of the plant] are the ones who will be subject to cancers from air and water pollution, etc. (**0144-2** [Brockington, Mary Sue and William B.])

Response: *The NRC takes seriously its responsibility under the Atomic Energy Act to protect the health and safety of the public and the environment in regulating the U.S. nuclear power industry. 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. 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. The limits are based on the recommendations of standards-setting organizations. Radiation standards reflect extensive scientific study by national and international organizations. The NRC actively participates and monitors the work of other 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. The public has been given the opportunity to participate in the rulemaking process that established the regulations that govern its review process. More information on NRC's roles and responsibilities is available on the NRC's Internet website at http://www.nrc.gov/what-we-do.html. No change was made to the EIS as a result of these comments.*

Comment: Section 7.8, Page 7-47, Lines 1-5: Change "The REMP would measure radiation and radioactive materials from all sources, including Lee Nuclear Station, area hospitals, and

industrial facilities" to state "The REMP would measure radiation and radioactive materials based on guidance provided in NEI 07-09A." Measuring radioactive materials and radiation from area hospitals and industrial facilities is not part of the REMP. The REMP will implement the guidance provided in NEI 07-09A as described in DEIS Section 5.9.6. (**0134-65** [Fallon, Chris])

Response: *The intent of the paragraph in Section 7.8, that "The REMP would measure radiation and radioactive materials from all sources, including Lee Nuclear Station, area hospitals, and industrial facilities," is that the monitoring program will detect radiation and radioactive materials in the environment, regardless of whether from the Lee Nuclear Station site or not. The monitoring program, by itself, will not discriminate by the source of the radiation. The focus of the REMP will be impacts from the Lee Nuclear Station Units 1 and 2; the preoperational survey will give a general idea of releases from nearby non-reactor sources, although these may also change from year to year. No change was made to the EIS in response to this comment.*

Comment: Section 5.9.6 discusses Radiological Monitoring. Duke should add information to this section that clarifies when increased monitoring and notifications to the state of South Carolina and NRC will be needed if radionuclides resulting from plant operations are detected on plant property. (For example, if tritium levels in groundwater over a 3-year period trend from 10% of the 20,000 pCi/l standard to 40% of standard, the appropriate regulatory organizations will be notified. In addition, sampling frequency will be increased and an evaluation will be made to determine if additional monitoring wells are needed.) (**0142-6** [Mueller, Heinz])

Comment: *Tritium*

EPA is concerned about potential tritium leakage. The NRC staff expects that the impacts from such potential leakage for proposed Lee Nuclear Station Units 1 and 2 would be minimal (page 5-71). Further information regarding the operational surface water and groundwater monitoring program should be included in the FEIS.

Recommendations: The FEIS should include a map of the groundwater monitoring wells. While we expect tritium levels in surface water discharge areas to be significantly diluted, we would also appreciate a map of surface water monitoring points. (**0142-8** [Mueller, Heinz])

Response: *Section 5.9.6 of the EIS states "Duke ... has endorsed the [Nuclear Energy Institute (NEI)] Groundwater Protection Initiative... The goals for the Groundwater Protection Initiative will be to provide a hydrologic characterization of the constructed plant and a monitoring well network capable of providing early detection of releases through the use of near-field wells and verification of no offsite migration through the use of far-field wells. Well locations will be selected based on proximity to plant systems that may be a source of radiological releases and/or in nearby projected down-gradient groundwater flow direction from such sources. Where shallow groundwater is expected to be present, shallow wells will be used*

as first detection monitoring locations. Deeper wells will be used where plant systems are deep. Wells will be installed such that the well screen is located near the potential release location. Deep wells may be located on top of rock or into rock as appropriate. Wells may be paired, either in shallow or deep locations, to evaluate the vertical component of groundwater flow."

Pursuant to the CWA, on July 17, 2013, the SCDHEC issued NPDES Permit No. SC0049140 to Duke for discharge to surface waters for the Lee Nuclear Station (SCDHEC 2013). In Section 5.2.4, the EIS states that Duke has committed to perform operational monitoring for groundwater and surface water that would satisfy the applicable requirements of State and Federal agencies.

The NRC concludes that it is not necessary to discuss the specific details of the effluent and environmental monitoring methods in the EIS to estimate the environmental impact of radiological effluent releases. Because the requested information has not yet been developed and is not required at this time, no change was made to the EIS in response to these comments.

E.2.15 Comments Concerning Nonradioactive Waste

Comment: Sustainable Infrastructure
EPA would appreciate more information in the FEIS regarding the planned sources of the construction materials. Please outline whether this material may be made of second-sourced material, for example, reclaimed aggregate. Please see our website regarding environmentally preferable purchasing: www.epa.gov/epp.

We encourage the applicant to consider construction of buildings in accordance with Leadership in Energy and Environmental Design (LEED) standards. If LEED standards are pursued, this information should be included in the FEIS. Also, potential use of Energy Star appliances, EPA's Water Sense program, EPA's GreenScapes program or other similar programs should be identified in the FEIS. These are important elements of reducing the overall environmental impact of the proposed project.

Recommendations: EPA recommends that elements of sustainable or "green" infrastructure be incorporated into all facets of the design and site layout, in areas where safety and site security permit. This should include consideration of, but is not limited to, using permeable pavement and re-planting construction lay-down areas with native vegetation. We recommend that all beneficial mitigation measures are outlined in the FEIS. EPA encourages the applicant to consider environmentally-friendly purchasing and sourcing, and sustainable development of the facility. Any plans currently proposed by the applicant to pursue programs or initiatives listed above should be disclosed in the FEIS.

We recommend that any auxiliary buildings, new roads, and other non-safety related structures be constructed with materials that are recycled, where feasible and where safety requirements are met. (**0142-27** [Mueller, Heinz])

Response: *Section 4.10, Nonradiological Waste, was edited to incorporate the commenter's suggestions to Duke regarding the incorporation of sustainable building practices into the development of the proposed Lee Nuclear Station. It should be noted that the NRC regulates the construction of safety-related structures, systems, and components, and performs construction oversight to ensure that proper materials are used during construction that has a nexus to radiological safety. The NRC does not have the authority to specify that the applicant procure "environmentally friendly" building materials.*

E.2.16 Comments Concerning Severe Accidents

Comment: One of them is, since there cannot be a guarantee that there will not be an accident that's just -- you cannot guarantee that no matter how many safeguards you put into place. Why doesn't an accident have to be put into the Environmental Impact Statement? Why isn't the impact of that accident part of the Environmental Impact Statement as a potential impact? (**0013-33-1** [Broadhead, Susan])

Comment: I live in Mill Spring, North Carolina, about 35 miles from the proposed project, so we would be directly affected in the event of any accidental release of radioactivity into the atmosphere. (**0079-4** [Schmitt, Brynn])

Response: *These comments concern postulated reactor accidents. The environmental impacts of postulated accidents are addressed in Sections 5.11 and 7.10 of the EIS. Tables 5-14, 5-15, and 5-16 of the EIS present estimates of the risk associated with severe accidents. As discussed in Section 5.11 of the EIS, the risks from a severe accident at the proposed reactors are lower than the risk levels for the nuclear reactors currently in operation and lower than the probability-weighted consequence levels set forth in the Commission's Safety Goals Policy statement (51 FR 30028). No changes were made to the EIS as a result of these comments.*

Comment: There's two cases: environmental impact, business as usual, and Fukushima. They are two separate cases. I hear all kinds of analysis about business as usual, job well done, great, traffic pattern analysis, that's great. How much use was that in Fukushima? It was not. (**0012-8-2** [Crissey, Brian])

Comment: In citing the radiation elevations in the U.S. the EPA stated, Elevated levels of radiation material in rainwater has been expected as a result of the nuclear incident in Japan, because they know that radiation is known to travel in the atmosphere. Two major nuclear accidents have occurred. People lost their lives, their homes, their livelihood, and families.

Today many people suffer cancer and birth defects from Chernobyl which are accurately documented. You can find that. The devastation to the land inhabited is not repairable for generations to come. These people don't go home. It's irresponsible for the NRC to approve any new nuclear plants based on all the data available, which proves accidents do happen, will happen. It's just a matter of where and when. In a letter to Senator Boxer, who's the Committee on Environment and Public works, the NRC chief Jaczko stated, Scientific studies of the Chernobyl accident have shown the ingestion was the predominant exposure pathway to populations living at distances beyond the evacuation area. This ingestion, like the drinking of contaminated milk, resulted in elevated thyroid doses and the later development in children of thyroid cancer. (**0013-7-2** [Sorensen, Laura])

Comment: Then why assume it is okay to build a nuclear power plant in a densely populated area, when we have repeatedly seen these plants malfunction with disastrous consequences? The people of Japan will be developing cancers of many sorts for many years to come as a result of the recent nuclear accident there. (**0079-3** [Schmitt, Brynn])

Comment: This probability of an accident has been show to cover much more ground than industry claims. (**0108-2** [Fisk, Bill])

Comment: "Accidents" happen, we can not prevent them, and the consequences in the case of nuclear plants are horrendous. (**0113-7** [Rose, Katherine])

Comment: The very real threat of catastrophic failure, attack or accident which could have an "environmental impact" of thousands of square miles and fallout in multiple countries, as has been the case with Chernobyl and Fukushima. (**0116-4** [Schmitt, Daniel])

Response: *The environmental impacts of postulated accidents are addressed in Sections 5.11 and 7.10 of the EIS. Protection against severe accidents is provided by regulatory requirements in two basic ways: 1) prevention of core damage events such that the likelihood of events that lead to core damage is very low; and 2) mitigation of consequences in the event of a severe accident. The NRC has determined that the combination of these two aspects does result in an acceptably low risk. However, as with almost every human endeavor, there are risks associated with the action. The NRC does not expect that the cited accidents will occur again, but the possibility cannot be entirely eliminated. No death or fatality attributable to nuclear power operation will ever be acceptable in the sense that the Commission would regard it as a routine or permissible event.*

NRC Fact Sheets that summarize the major accidents cited by the commenters can be found at:

- *http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/chernobyl-bg.html*
- *http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/fs-japan-events.html and*
- *http://www.nrc.gov/japan/japan-info.html*

In particular regards to Fukushima Dai-ichi, since the nuclear accident at Fukushima first began to unfold, the NRC has been working to understand the events in Japan and relay important information to U.S. nuclear power plant licensees and applicants. In a significant difference from the Chernobyl accident, Japanese authorities enacted prompt countermeasures based on international guidance to minimize the radiological health impacts from the release of radioactive material from the Fukushima Dai-ichi site. This included sheltering-in-place, evacuation, radiation monitoring and surveys, and interdiction of contaminated food-stuff and drinking water. Not long after the emergency began, the NRC established a task force of senior NRC experts to determine lessons learned from the accident and to initiate a review of NRC regulations to determine if additional measures should be taken immediately to ensure the safety of U.S. nuclear power plants. The task force reported the results of its review (NRC 2011c) and presented its recommendations to the Commission on July 12 and July 19, 2011, respectively. The task force concluded that continued U.S. nuclear plant operation and NRC licensing activities presented no imminent risk. The task force also concluded that enhancements to safety and emergency preparedness are warranted and made several general recommendations for Commission consideration. On March 12, 2012, the NRC issued three orders and a request for information (RFI) to holders of U.S. commercial nuclear reactor licenses and construction permits to enhance safety at U.S. reactors based on specific lessons learned from the event at Japan's Fukushima Dai-ichi nuclear power plant as given in the task force report. The NRC staff issued companion requests for additional information to Duke requesting information to address the applicable requirements of the orders and request for information.

Section 5.11 has been revised to discuss the task force recommendations and staff requests for additional information made to the applicant related to the lessons learned from the accident at Japan's Fukushima Dai-ichi nuclear power plant. No other changes were made to the EIS as a result of these comments.

E.2.17 Comments Concerning the Uranium Fuel Cycle

Comment: [Building the W.S. Lee Nuclear Plant will:] Create radioactive nuclear waste that has to be stored locally because there is no long term storage solution. Currently there are 145 million tons of waste stored at 77 sites. Out of 104 nuclear plant storage sites, 100 have contaminated soil leading to contaminated ground water. We are leaving the problem of radioactive waste for generations to come. (**0004-4** [Cunningham, Kristine])

Comment: Ubiquitous Nuclear Waste: Storing radioactive waste on-site has contaminated ground water at many reactor sites. After more than 40 years of commercial radioactive waste generation, there is no long term location to keep it safe and contrary to many claims, no way to "recycle" it. Out of 104 US reactor sites, 100 have contaminated soil leading to contaminated

ground water. Why will Lee be different? Nuclear waste remains radioactive for millions of years. This is critical to safety planning. There is currently 145 million Tons of waste at 77 US sites. (**0017-9** [Morgan, Tom and Barbara])

Comment: Threats to the environment. Storing radioactive waste on-site has contaminated ground water at many reactor sites. After more than 40 years of commercial radioactive waste generation, there is no long term location to keep it safe and no way to recycle it. (**0041-3** [McMahon, John])

Comment: Storing radioactive waste on-site has contaminated ground water at many reactor sites. After more than 40 years of commercial radioactive waste generation, there is no long term location to keep it safe and contrary to many claims, no way to "recycle" it. Out of 104 US reactor sites, 100 have contaminated soil leading to contaminated ground water. Why will Lee be different? Nuclear waste remains radioactive for millions of years. There are currently 145 million tons of waste at 77 US sites. We can't afford to generate more nuclear waste!! (**0048-10** [Skeele, Michele and Skip])

Comment: [Building the W.S. Lee Nuclear Plant will:] Create radioactive waste that has to be stored locally because there is no long term storage solution. Currently there are 145 million tons of waste stored at 77 sites. Out of 104 nuclear plant sotrage sites, 100 have contaminated soil leading to contaminated ground water. We are leaving the problem of radioactive waste for generations to come. (**0112-5** [Andrews, Josephine] [Anonymous] [Beattie, Kathryn E.] [Boever, Virginia] [Boyle, Ella] [Brogan Prindle, Cathleen] [Davis, John] [Flores, S.] [Hamahan, Clare] [Keil, A. Eugene] [Leverette, Will] [Peterson, Harry] [Peterson, Martha J.] [Rittenberg, David] [Rustin, K.])

Comment: What will be done with the NUCLEAR WASTE remains a major argument against the Lee plant ever going forward. What happens to the ground water surrounding the plant, OR the fact that there is no long-term location to keep it safe or to "recycle" the waste? (**0133-7** [Christopher, Lucy D.])

Response: *Regarding the comments on contaminated soil and potentially contaminated groundwater, the Lee Nuclear Station site is a greenfield site without existing contamination. Therefore, what actions the applicant will take regarding radiological monitoring for such potential occurrences are discussed in Section 5.9.6 of the EIS as part of the impacts from normal operations. No change was made to the EIS as a result of the comments about potentially contaminated soil and groundwater.*

As presented in Section 6.1.6 of this EIS, current national policy, as found, for example, in the Nuclear Waste Policy Act (42 U.S.C. 10101 et seq.) mandates that high-level wastes (HLW) and transuranic wastes are to be buried at deep geologic repositories. The environmental impacts of spent fuel storage after the licensed life of operations for nuclear power plants are being

addressed through rulemakingand development of a generic EIS. Section 6.1.6 of this EIS has been revised to incorporate the proposed NRC rulemaking regarding the environmental impacts of continued storage of spent fuel.

Comment: [Building the W.S. Lee Nuclear Plant will:] Increase uranium mining operations. Uranium fuel is not a renewable or clean source of energy. Mining not only affects the workers, it affects families as well. Mining releases radionuclide, radon, and other pollutants into streams. (**0004-8** [Cunningham, Kristine])

Comment: [We're opposed to the construction of all new nuclear reactors for many reasons:] ...generation of toxic radioactive waste and increased demand for fuel where mining has a massive record of health impacts on poor and indigenous communities. (**0012-7-3** [Hicks, Katie])

Comment: It uses uranium, which is not easily mined without permanent damage to miners and nearby communities. (**0013-13-4** [Bliss, Rachel])

Comment: What people tend to forget is that the mining and milling of uranium and then the transport of uranium is not an insignificant source of carbon emissions, not to mention the fact that it's tremendously for the people, mostly Native Americans on reservations in the southwest where uranium is mined in the United States, and that those nuclear tailings -- the radioactive uranium tailings pose a continued threat in that area. (**0013-32-1** [Holt, Cathy])

Comment: Uranium Mining: Uranium fuel is not a renewable or clean source of energy. Miners have been diagnosed with lung diseases, cancer. Uranium mining releases radon from the ground into the atmosphere. Mines and mining waste can release radionuclide, including radon and other pollutants to streams, springs, and other bodies of water.
(**0017-8** [Morgan, Tom and Barbara])

Comment: ...and mining uranium is a very dangerous venture. (**0019-9** [Doebber, Tom])

Comment: ...and mining uranium is a very dangerous venture. (**0020-9** [Klein, Art and Michelle])

Comment: ...and mining uranium is a very dangerous venture. (**0026-7** [Doebber, Ian] [Doebber, Rachel])

Comment: Uranium mining has its dangers and quantity limitations. (**0046-6** [Southworth, Win])

Comment: The proposed plant does not make fiscal sense! Uranium fuel is not a renewable or clean source of energy. Miners have been diagnosed with lung diseases, cancer. Uranium mining releases radon from the ground into the atmosphere. Mines and mining waste can release radionuclide, including radon and other pollutants to streams, springs, and other bodies of water. (**0048-8** [Skeele, Michele and Skip])

Comment: Uranium mining: Miners have contracted lung diseases and cancer from this activity. (**0082-4** [Karpen, Leah R.])

Comment: It uses uranium which is not easily mined without permanent damage to miners and nearby communities. (**0104-10** [Bliss, Rachel])

Comment: [Building the W.S. Lee Nuclear Plant will:] Increase uranium mining operations. Uranium fuel is not a renewable or clean source of energy. Mining not only affects the workers, it affects families as well. Mining releases radionuclde, radon, and other pollutants into streams. (**0112-8** [Andrews, Josephine] [Anonymous] [Beattie, Kathryn E.] [Boever, Virginia] [Boyle, Ella] [Brogan Prindle, Cathleen] [Davis, John] [Flores, S.] [Hamahan, Clare] [Keil, A. Eugene] [Leverette, Will] [Peterson, Harry] [Peterson, Martha J.] [Rittenberg, David] [Rustin, K.])

Comment: Uranium mining: endangering lives of all mines & workers in / around the plant. (**0114-9** [Lovinsohn, Ruth])

Comment: Surely you know of the devastating effects on life of uranium mining? (**0121-4** [Wallace, Kristine])

Comment: I am also AGAINST URANIUM MINING - such as the one spoken of in Virginia - for the risk it impose on miners, and for the radon it releases in the atmosphere; and to streams, springs and other bodies of water. (**0133-5** [Christopher, Lucy D.])

Response: *Section 6.1 of the EIS discusses the environmental impacts for the uranium fuel cycle by applying Table S-3 of 10 CFR 51.51(a) (see Table 6-1 of the EIS) which assumed conventional underground and strip mining of uranium ore. The Table S-3 impacts were reviewed for their applicability to the current action before the NRC. The NRC staff review factored in the current mining practices, namely the increased reliance on in-situ leach mining for uranium. In-situ leach mining has fewer environmental impacts compared to underground and strip mining of the ore, especially with respect to past mining practices, because (1) workers are not exposed to radon gas for underground mining, (2) the dusty ore-crushing process is not needed and (3) management of the extensive waste tailings that are generated from underground and strip mining is not needed. All steps in the in-situ leach mining operation involve the uranium in a less dispersible liquid form. The result of the current practices is a much reduced health impact from past practices of several decades ago. Regardless of the form, mining operations must comply with the regulations of the Federal and/or State agency managing the land. The CWA and the Clean Air Act apply to all mining operations in the United States. Additional State and local environmental laws may also be applicable, depending on the location. No change was made to the EIS as a result of these comments.*

Comment: Nuclear contamination begins with the mining of the uranium, it goes through the processing of the uranium, the transportation, when it's used in the reactors, the storing of the nuclear waste, transporting it, and then dealing with the decommissioned reactors when it's all over. All along the line, even on the best of circumstances, there's going to be some leaking of radiation. (**0012-15-2** [Larsen Clark, Brita])

Comment: Nuclear energy is dangerous to people and the environment starting with the mining process through to the disposal of radioactive waste. (**0059-4** [Raleigh, Carolyn])

Comment: From the mining and refining of the uranium, through the operation of the plant, to the disposal of the *spent* but still highly radioactive fuel, there are dangers to human health and the health of the world we live in that are simply too great to justify. (**0079-2** [Schmitt, Brynn])

Response: *In Sections 6.1 and 6.2 of the EIS, the NRC staff evaluated the environmental impacts of the uranium fuel cycle. The NRC staff is confident that the contemporary fuel-cycle impacts are below those identified in Table S-3 of 10 CFR 51.51(a) (see Table 6-1 of the EIS). This is especially true in light of the recent fuel-cycle trends in the United States that change the manner in which uranium is mined, milled, and enriched with lower health impacts and energy consumption. Transportation of radioactive material must conform to the regulatory requirements of 10 CFR Part 71. Additional state and local environmental laws may also be applicable, depending on the location and the uranium fuel-cycle activity. No change was made to the EIS as a result of comments concerning the uranium fuel cycle excluding spent fuel and high level wastes.*

The environmental impacts of spent fuel storage after the licensed life of operations for nuclear power plants are being addressed through rulemaking and development of a generic EIS. Section 6.1.6 of this EIS has been revised to incorporate the proposed NRC rulemaking regarding the environmental impacts of continued storage of spent fuel.

Comment: The problem of building and maintaining a repository which provides absolute containment for the length of time it takes for radioactive materials to decay to a safe level. For example, Plutonium-239 has a half-life of 24,000 years. (**0119-7** [Thomas, Ruth])

Comment: I am a local resident who is being asked to pay for Duke Energy's environmentally irresponsible proposal. Below is my primary concern. Let us not only consider the present environmental impacts, but also the entire lifespan of the waste stream, which is considerable. It takes about 100,000 years for the nuclear waste to be safe enough for our environment. There are long-term underground holding sites, such as Onkalo in Finland. However, the unresolved issue of human interference over the course of the 100,000 years is their largest threat. According to Juhani Vira, the Sr. Vice President, Research of Onkalo, there is no found way to prevent people's curiosity or ignorance when Finnish or other current languages and symbols may become extinct by that vast length of time. A perfect example of this is the Egyptian

pyramids, which were sealed ?permanently?, never to be interfered with. We are still not able to read all of the symbols and messages from certain lost civilizations. Vira states that it is safest to not leave any warning signs above the site, but to forget it in order to reduce the likelihood of interference. However, future societies may decide to unknowingly drill through the rock, as we do with wells today and as was have done as far back as the 16th century. Even though this catastrophe may not happen in our lifetime, it is a looming threat to the future environment of our children's children's children and so on. Plus, this example of Onkalo's underground holding facility only has the capacity for storing a fraction of the total approximately 250,000 tons of nuclear waste. With a need for more storage, there may eventually be several underground storage facilities, greatly increasing the danger of a breach of the holding facility. I feel that the NRC's Environmental Impact Statement does not adequately address the issue of long-term storage, as there is not currently a viable solution: ?there would be no on-site facilities for long-term storage or permanent disposal of solid wastes, so the packaged wastes would be temporarily stored in the auxiliary and radwaste buildings prior to being shipped to a licensed disposal facility (3-46).? However there is currently no permanent licensed disposal facility (in the United States), as stated by Andrew Kugler of the NRC. (**0131-1** [Apunte, Daya])

Comment: Let us not only consider the present environmental impacts, but its entire lifespan, which are inevitable. It takes about 100,000 years for the nuclear waste to make it safe enough for our environment. There are long-term holding sites, such as Onkalo in Finland. However, the unresolved issue of human interference over the course of 100,000 years is their largest threat. According to Iuhani Vira, the Sr. Vice President, Research of Onkalo, there is no found way to prevent people's curiosity or ignorance when Finnish or other current languages and symbols may become forgotten by that vast length of time. A perfect example of this is the Egyptian pyramids, which were sealed "permanently", never to be interfered with. We are still not able to read all of the symbols and messages from certain lost civilizations. Vira states that it is safest to not leave any warning signs, to forget it reduce the likelihood of interference. However, future societies may decide to unknowingly drill through the rock, as we do with wells today and as was done as far back as the 16th century. Even though this catastrophe may not happen in our lifetime, it is a looming threat to our future environment of our children's children's children and so on. Plus, this example of Onkalo's underground holding facility only has the capacity for storing a fraction of the total approximately 250 tons of nuclear waste, so there may eventually be several underground storage facilities, which would greatly increase the danger we impose on our environment (**0137-1** [Anonymous])

Response: *These comments concern the issue of disposal of spent fuel and other high-level radioactive wastes in a geologic repository. The ultimate disposal of spent fuel and high-level radioactive waste are discussed in Section 6.1.6 of the EIS. The current national policy, as found in the Nuclear Waste Policy Act (42 U.S.C. 10101 et seq.) mandates that the DOE eventually take control of spent fuel and transuranic wastes which would then be buried at deep geologic repositories. The EPA has responsibility to provide the environmental standards for a*

proposed high-level waste geologic repository. The NRC is responsible for conforming its regulations and guidance to those standards. On September 30, 2008, the EPA issued final standards for Yucca Mountain, requiring performance predictions for the period between 10,000 years and 1 million years after repository closure. On February 17, 2009, the Commission affirmed final regulations in 10 CFR Part 63 that conform to the EPA's final standards. No change was made to the EIS as a result of these comments.

Comment: Nuclear wastes have been batted around without solution for as long as nuclear power has been around. We can put men on the Moon, but we cannot handle our nuclear wastes safely? It is not that hard. It requires only imagination and money. Nuclear wastes can be solidified into glass cylinders. The cylinders can be encased in concrete, and the concrete can been closed in military depleted Uranium from the wars in Iraq and Afghanistan, and formed into great torpedoes. Fins on the back end would cause the torpedo to rifle, and the front end would be formed as a self-tapping screw. These heavy objects could be barged to the Mariana Trench in the Pacific, where moving tectonic plates carry anything buried there towards the center of the Earth over millions of years. Released from the barge, the torpedoes would spin 6.8 miles to the bottom and bury themselves safely for the quarter of a million years that they remain dangerous to living things. Just do it and pay for it. (**0117-3** [Crissey, Brian])

Comment: The nuclear industry needs to stop relying on the U.S. taxpayer to foot its bill for handling nuclear wastes. The time is long overdue for the nuclear industry to stand on its own. Duke can responsibly bury all itsnuclear wastes in the Mariana Trench and just pay for it. (**0117-4** [Crissey, Brian])

Response: *The United States disposed of some radioactive waste at sea, before such practices were discontinued pursuant to U.S. environmental laws and regulations and international agreements designed to prevent marine pollution, such as the London Dumping Convention (NOAA 2013). The United States no longer disposes of radioactive waste in this manner, and although the option of permanent deep sea bed disposal was studied, the concept was abandoned. [DOE 2003] Current national policy, as found in the Nuclear Waste Policy Act (42 U.S.C. 10101 et seq.) mandates that high-level wastes and transuranic wastes are to be buried at a deep geologic repository. This act also created a funding mechanism to ensure that the full costs of disposing of commercial spent fuel would be paid by utilities (and their ratepayers), with no impact on taxpayers or the Federal budget. 10 CFR Part 60 and Part 63 provide the regulations on what the NRC can license for the long term disposal of spent nuclear fuel in geologic repositories. Burial in the Mariana Trench would not satisfy these regulations and would be in violation of international law on disposing of radioactive material in the oceans. No change was made to the EIS as a result of this comment.*

Comment: I just picked up -- and this is off my written comments -- the radioactive waste brochure that was outside, and under the NRC responsibilities it says the NRC is responsible for

licensing and regulating the receipt and possession of high level waste, including spent fuel as well as reprocessing waste, at privately owned facilities -- and it goes on, but basically it says that they're going to take care, make sure that that waste is taken care of. In 1982, I believe it was, the act was passed in Congress to have a Nuclear Regulatory site -- or a DOE site -- excuse me -- that would take this waste. As of today, 30 years later, it still has not been built, and yet we are expected to sit back and say we trust you, we trust you to do it right, we trust you to listen to our complaints, we trust you to listen to our concerns, and we have lost the feeling that you do just that. (**0012-10-6** [Connolly, Mary Ellen])

Comment: And the uranium fuel cycle impacts included also transportation, decommissioning -- and I don't know whether there was anything else in there. But, I mean, the calculations. Now, this is -- their determinations on this were based on calculations, models, predictions. I couldn't see where they used any what I call real evidence of what had happened at places where they were exposed -- people were exposed and what levels it was and what caused it. And they came to the conclusion -- quote -- "The NRC staff," -- that's on page 6-5, Volume 1 -- "considered fuel cycle options." In other words, they -- in -- evaluated the one for -- the ones through with no reprocessing and the one where they would do reprocessing. Well, now, they did classify that spent nuclear fuel -- let's see -- after it was removed was considered radioactive -- highly radioactive waste. But they concluded -- this is another quote -- The no recycle option -- they would treat the waste and it would -- as radioactive waste and it would be stored at a federal repository. But there is no federal repository that exists. (**0012-3-1** [Thomas, Ruth])

Comment: Now, if these two units are built in Gaffney the waste that the two units would produce would be staying right there. I think they did predict that they might have another repository by 2038 or something like that. Oh, let's see. Well, for many years the answer to anybody who expressed concern about the radioactive waste was told, Oh, well, it's not a problem, it will be sent to Yucca Mountain in Nevada. That promise has proven to be a myth. (**0012-3-2** [Thomas, Ruth])

Response: *As presented in Section 6.1.6 of the EIS, current national policy, as found, for example, in the Nuclear Waste Policy Act (42 U.S.C. 10101 et seq.) mandates that HLW and transuranic wastes are to be buried at deep geologic repositories. The environmental impacts of spent fuel storage after the licensed life of operations for nuclear power plants are being addressed through rulemaking and development of a generic EIS. Section 6.1.6 of this EIS has been revised to incorporate the proposed NRC rulemaking regarding the environmental impacts of continued storage of spent fuel.*

Comment: A lot of people in this room have talked about nuclear waste. One of the things that people don't understand about the used nuclear material that comes out of our current basically second generation nuclear power plants is it comes out with about 95 percent of its potential stored energy still remaining. We don't have a waste problem, we have a resource that can be passed on to future generations. (**0012-12-1** [Adams, Rod])

Response: *Federal policy does not prohibit reprocessing; however, reprocessing is unlikely in the foreseeable future. Table S-3 from 10 CFR 51.51 does include impacts from reprocessing. In Section 6.1 of this EIS, the contributions in Table S-3 for reprocessing, waste management, and transportation of wastes are maximized for either of the two fuel cycles (uranium only and no-recycle); that is, the cycle that results in the greater impact is used. As discussed in this EIS, 10 CFR 51.51(a) allows the applicant to use Table S-3 as the basis for evaluating the contribution of the environmental effects of the uranium fuel cycle that includes reprocessing. Also presented in Section 6.1 of the EIS, during the 109th Congress, the Energy Policy Act of 2005 (42 U.S.C. 15801) was enacted. It authorized the DOE to conduct an advanced fuel recycling technology research and development program to evaluate proliferation-resistant fuel recycling and transmutation technologies that minimize environmental or public health and safety impacts. Consequently, while Federal policy does not prohibit reprocessing, additional governmental and commercial efforts would be needed before commercial reprocessing and recycling of spent fuel produced in the U.S. commercial nuclear power plants could begin. No changes were made to the EIS as a result of this comment.*

Comment: Have we learned nothing from Fukushima? Just the spent fuel rods stored at these facilities pose risks. With no storage facility and none in sight, we continue to play Russian Roulette with our future and the future of generations to come. (**0012-10-3** [Connolly, Mary Ellen])

Comment: How many years is it going to take to figure out what to do with the waste that's produced by these plants? It's not safe and it's not contained. I have asked many people, What do you do with the stuff when it leaves here? It goes to somebody else's backyard. I don't want it buried in my backyard -- metaphorically or literally. And you don't want it buried in your backyard. Why are we going to send even low-level waste to like Germany and Italy -- to another country or to the Southwest to bury it in tribal lands. We don't want to do this. We don't want to do this to their kids, and we don't want anybody to do it to our kids. The three arguments I've most heard for nuclear power are that the energy produced per amount of material is the highest that we know how to get at this point, the raw material and abundant, and the amount of waste is less than any other energy production -- means of energy production in large-scale use at this point. And what I have to say is that's not good enough. (**0013-9-1** [Tinnaro, Heather])

Comment: No one yet knows what to do with the spent fuel rods, so they are piling up on site, creating another problem for future generations to deal with. (**0063-6** [da Silva, Arjuna])

Comment: No one yet knows what to do with the spent fuel rods, so they are piling up on site, creating another problem for future generations to deal with. (**0076-4** [Anonymous])

Comment: I disagree that this project is safe for the ecology. Countless animals, plants, our water will definitely be threatened by a part of the plant ya'll don't even have to be concerned with the hazardous wastes! I fear that the waste materials will pose a dangerous challenge for generations to come. (**0086-3** [Rylander, Kimchi])

Comment: Potential release or leakage of waste material in transportation and storage--no disposal is possible, only storage (with half-life of waste being what it is, this will be a problem we are leaving for countless future generations) (**0116-3** [Schmitt, Daniel])

Comment: There is no safe way to dispose of or store the Radioactive waste. It's not fiar to future generations for us to pollute the Earth with Nuclear Waste that remains active for millions of years.
(**0139-2** [Dailey, Debbie])

Response: *These comments express concerns about spent fuel harming future generations. On January 26, 2012, the Blue Ribbon Commission on America's Nuclear Future (BRC) sent the Secretary of Energy its final report. The BRC provided recommendations on nuclear energy policy issues, including the storage, processing, and disposal of spent nuclear fuel. If the Secretary of Energy implements the recommendations of the BRC, any reprocessing or recycling program for spent fuel, on any significant scale, will not occur for many years. Appropriate NEPA reviews will be conducted by the NRC and/or DOE prior to the implementation of any recycling program for spent fuel. As presented in Section 6.1.6 of the EIS, current national policy, as found, for example, in the Nuclear Waste Policy Act (42 U.S.C. 10101 et seq.) mandates that HLW and transuranic wastes are to be buried at deep geologic repositories. The environmental impacts of spent fuel storage after the licensed life of operations for nuclear power plants are being addressed through rulemaking and development of a generic EIS. Section 6.1.6 of this EIS has been revised to incorporate the proposed NRC rulemaking regarding the environmental impacts of continued storage of spent fuel.*

Comment: Radioactive waste storage and disposal are ongoing concerns with existing and proposed nuclear power stations. The NRC approved final revisions to the Waste Confidence findings and regulation (10 CFR Part 51.23) in September 2010. The revision expresses the NRC's "confidence 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. " This refers to storage in a spent fuel basin or at either onsite or offsite independent spent fuel storage installations (ISFSIs), and eventual disposition in a repository. We are aware of the NRC's current proposal to extend onsite waste storage at nuclear power stations further into the future, assuming that no geologic repository becomes available for permanent disposition of this waste.

Since appropriate storage of spent fuel assemblies and other radioactive wastes are necessary to prevent environmental impacts, the Final EIS (FEIS) should provide a thorough consideration of impacts resulting from such storage. Given the uncertainty regarding ultimate disposal at a repository, on-site storage may continue for many years. (**0142-1** [Mueller, Heinz])

Comment: Also, EPA recommends that the FEIS include updated information about plans for radioactive waste storage and disposal... (**0142-2** [Mueller, Heinz])

Comment: *Radioactive Wastes*
Appropriate on-site storage of spent fuel assemblies and other radioactive waste is necessary to prevent environmental impacts. Plans include storage in a reactor's spent fuel basin, or at either onsite or offsite independent spent fuel storage installations (ISFSIs). Given the uncertainty regarding ultimate disposal at a repository, on-site storage may continue for along term, potentially hundreds of years, in relation to the Long-Term Waste Confidence Update currently under consideration by the NRC.

Yucca Mountain was formerly considered a possible final repository for spent nuclear fuel, but this plan was withdrawn by the U.S. Department of Energy by the motion of March 3, 2010. The abandonment of the plan to create a Yucca Mountain permanent geologic repository has been countered by NRC's Atomic Safety and Licensing Board. If another repository in the contiguous United States (other than Yucca Mountain) is ever selected, the environmental impact estimates from the transportation of spent reactor fuel to the repository should be calculated as required under 42 USC 4321 Fuel Cycle, Transportation, and Decommissioning.

In the Waste Confidence Rule (10 CFR 51.23), the Commission generically determined that the spent fuel generated by any reactor can be safely stored onsite for at least 30 years beyond the licensed operating life of the reactor. In a September 15, 2010 Decision and Rule, the NRC formally approved a final revision to its "Waste Confidence" findings and regulations. The revision expresses the NRC's "*confidence 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*. " The NRC made five findings:

1. Safe disposal in mined geologic repository is technically feasible.
2. At least one mined geologic repository will be available when necessary.
3. HLW (high level waste) and SNF (spent nuclear fuel) will be safely managed until a repository is available.
4. SNF can be stored safely and without significant environmental impacts for at least 60years beyond the licensed life.
5. Onsite or offsite storage for SNF will be made available if needed.

Recommendations: The FEIS should clarify the impact of this revision on the proposed project, as this new determination finds that spent nuclear fuel can be stored safely and securely without significant environmental impacts for at least 60 years after operation at any nuclear power station. EPA recommends that the FEIS cite any new analyses for longer-term storage regarding scientific knowledge relating to spent fuel storage and disposal. The FEIS should also mention any developments with the Presidential Blue Ribbon Commission on alternatives for dealing with high-level radioactive waste, if updates occur before FEIS publication.

EPA recommends discussion of the construction of the ISFSIs in the final EIS. The final EIS should include a more detailed description of the radioactive waste storage facility. (**0142-5** [Mueller, Heinz])

Response: *These comments by the EPA concern the environmental impacts of spent fuel presented in Section 6.1.6 of the EIS. Current national policy, as found, for example, in the Nuclear Waste Policy Act (42 U.S.C. 10101 et seq.) mandates that HLW and transuranic wastes are to be buried at deep geologic repositories. If the DOE selects and submits an application for an NRC license of another repository in the contiguous United States (other than Yucca Mountain), the NRC expects that a new repository application would include environmental impacts from the transportation of spent fuel specifically tied to the time and location of the action. The applicant does not have plans at this time to construct and operate an independent spent fuel storage installation (ISFSI) and will rely on the available internal capacity to store spent fuel provided by the AP1000 certified design. Whether an ISFSI at the Lee Nuclear Station site eventually would be necessary depends on the future actions of the DOE. If a COL is granted by the NRC under this action and Duke applies at a future time for an ISFSI license at the Lee Nuclear Station site, the appropriate assessment of the environmental impacts related to that ISFSI licensing action would developed in accordance with NRC regulations. The environmental impacts of spent fuel storage after the licensed life of operations for nuclear power plants are being addressed through rulemaking and development of a generic EIS. Section 6.1.6 of this EIS has been revised to incorporate the proposed NRC rulemaking regarding the environmental impacts of continued storage of spent fuel.*

Comment: I contend that toxic waste should not be stored in somebody else's backyard. Keep the toxic waste where it is created. Implement HOSS, which is hardened on- site storage, and keep toxic nuclear waste at its source. (**0012-19-3** [Howarth, Irma])

Comment: I contend that toxic waste should not be stored in someone else's back yard!! Keep the toxic waste where it is created! Implement HOSS, Hardened On-Site Storage & keep toxic nuclear waste at it's source. (**0092-4** [Howarth, Irma])

Response: *These comments concern the national policy for the disposal of spent fuel. As presented in Section 6.1.6 of the EIS, the current national policy, as found in the Nuclear Waste Policy Act (42 U.S.C. 10101 et seq.) mandates that the DOE eventually take control of spent fuel and transuranic wastes which would then be buried at a deep geologic repository. The environmental impacts of spent fuel storage after the licensed life of operations for nuclear power plants are being addressed through rulemaking and development of a generic EIS. Section 6.1.6 of this EIS has been revised to incorporate the proposed NRC rulemaking regarding the environmental impacts of continued storage of spent fuel.*

Comment: I think that the reactive waste is a problem that no states wants to store because of its toxic nature to people and other organisms. (**0022-1** [Sloss, Barbara])

Comment: Nuclear waste remains radioactive for millions of years. (**0041-5** [McMahon, John])

Comment: ...and the waste that it creates has been proven to be irreparably toxic to humans and habitat. (**0056-4** [Rhyne, Faith Rachel])

Comment: No more 'Nuclear' Plants should EVER be built with the risk knowledge that just the by product of 'Nuclear' being nuclear waste, has been defined as "POISON" to people, plants and any life form on this planet, and should not be produced day after day, month after month, year after year, and piled up somewhere or anywhere. (**0077-1** [Gilbert, Grace])

Comment: Stacks and stacks of extremely dangerous Poison stored, a time bomb set to strike and no defense available. (**0077-2** [Gilbert, Grace])

Comment: As a citizen of Western North Carolina, I and my friends find this a very frightening proposition. We are not very comfortable with the thought of nuclear waste being stored within 60 miles of our homes. We know that it lasts for millions of years & that there is no safe way to store it. (**0115-2** [Burnett, Linda])

Response: *These comments concern the environmental impacts of onsite storage and eventual disposal of low-level radioactive waste (LLW), spent fuel, and high-level radioactive waste likely to be produced by the proposed Lee Nuclear Station. Section 5.9 of the EIS evaluates the radiological impacts of operation of proposed Lee Nuclear Station, including the onsite storage of radioactive wastes until they can be shipped to a licensed waste disposal facility. Section 6.1 of the EIS addresses the environmental impacts of the fuel cycle, and Section 6.1.6 specifically addresses the environmental impacts of radioactive waste disposal after it is shipped from the site. For LLW, the impacts are related to near-surface disposal like that currently provided by Energy Solutions Inc. at the Class A LLW disposal facility near Clive, Utah and Waste Control Specialist, Inc. in Andrews County, Texas for Classes A, B, and C LLW. Section 6.1.6 also addresses options such as the addition of temporary onsite storage capacity if licensed disposal facilities are temporarily not available. As presented in Section 6.1.6 of this EIS, current national policy, as found, for example, in the Nuclear Waste Policy Act (42 U.S.C. 10101 et seq.), mandates that HLW and transuranic wastes which would then be buried at deep geologic repositories. The environmental impacts of spent fuel storage after the licensed life of operations for nuclear power plants are being addressed through rulemaking and development of a generic EIS. Section 6.1.6 of this EIS has been revised to incorporate the proposed NRC rulemaking regarding the environmental impacts of continued storage of spent fuel.*

Comment: I happen to have the access information as to what the Navy, which has been operating nuclear powered ships for 50 years, does with its used nuclear fuel. It takes it to a place in Idaho in the desert and stores all of the used nuclear fuel from all of the ships and submarines that have been powered by nuclear energy in one place. That one place is smaller

than this room. If you took all of the commercial nuclear fuel that the U.S. has been producing in 104 reactors that have been providing 20 percent of our electricity for the last 20 years and before that supplied a little bit less as we were building up, you could put all that commercial fuel in the size of one Super Walmart, one Super Walmart. (**0012-12-4** [Adams, Rod])

Comment: There is no long-term solution for disposal of radioactive waste from nuclear power plants. Personally, I'm not opposed to research addressing this topic. Until there is a long-term solution for disposal of radioactive waste from nuclear power plants, I'm hoping we give high priority to not building additional nuclear power plants. (**0012-6-1** [Gilman, Steve])

Comment: Whereas there is no safe way to dispose of high-level radioactive waste. (**0013-11-4** [Smith, Coleman])

Comment: We still cannot adequately deal with nuclear waste... (**0013-13-5** [Bliss, Rachel])

Comment: And also how can a technology that creates waste material that will last for millions of years -- how can this ever been environmentally sound? There's no safe way to store it, and what community wants to have it passing through their town? (**0013-19-3** [Dailey, Debbie])

Comment: And one of the biggest problems that I want to address is the waste. There is currently no repository for high-level nuclear waste in this country. The people that build the plant and the NRC are not responsible for ultimately deciding and taking responsibility for what to do with the high-level nuclear waste. All they can do is keep it on site until the Department of Energy decides they know where to put it and does something. Now, this stuff has half-lives. This stuff lasts thousands of years. Some has a half-life of a couple of days; some has a half-life of hundreds and hundreds of years. That only means half of it's gone; the rest of it's still there. If I kept my garbage on my property and hoped somebody else would come and take it away some day, my neighbors would have a problem and it's not even toxic. I'm your neighbor. I have a problem with this. Until nuclear industry can figure out what to do with the waste it's totally irresponsible to generate it. (**0013-26-3** [Sloan, Judie])

Comment: ...plus all the dangers of nuclear waster storage and the shipping of nuclear waste on highways we feel that the risks are too great. (**0014-2** [Wilson, Rev. Mason and Barbara S.])

Comment: Besides the risk of a calamity, nuclear waste storage continues to be a major problem... (**0019-8** [Doebber, Tom])

Comment: Besides the risk of a calamity, nuclear waste storage continues to be a major problem... (**0020-8** [Klein, Art and Michelle])

Comment: [Before acting on this proposal, adequate AND PUBLIC review should include:] Acceptable plan for management and disposition of the spent fuel... (**0021-2** [Rinsler, MD, Steve])

Comment: Nuclear power leaves waste impossible to dispose of and dangerous to transport. (**0024-2** [Whitefield, Anne])

Comment: Besides the risk of a calamity, nuclear waste storage continues to be a major problem... (**0026-6** [Doebber, Ian] [Doebber, Rachel])

Comment: Nuclear power is non-renewable, and the spent fuel storage issues are insane. (**0037-2** [Collins, Richard])

Comment: We have no long-term solution to the question of what to do with radioactive nuclear waste. (**0039-4** [Whiteside, Cassie])

Comment: We have no long-term solution to the question of what to do with radioactive nuclear waste. (**0043-4** [Reeser, Rachel])

Comment: ....not to mention the issues with storage and disposal of waste. (**0044-2** [Bertram, Beth])

Comment: Nuclear waste is a growing problem and potential threat. (**0046-7** [Southworth, Win])

Comment: My position [opposition] is based on... The inherent DANGERS of nuclear waste, which projects already on line Have just not been able to protect against or solve. (**0047-4** [Lauden, Loy])

Comment: And even if it were, there has been no SAFE plan developed on what to do with the nuclear waste from nuclear power plants. (**0051-3** [Oehler, Susan])

Comment: How can we fail to recognize that finding a safe and reasonable solution to the problems of managing radioactive waste is not available despite the recommendations of the Blue Ribbon Commission? (**0058-5** [Patrie, MD, MPH, Lewis E.])

Comment: Nuclear waste: No one has yet figured out how safely to dispose of such waste. (**0082-5** [Karpen, Leah R.])

Comment: [There are many other decisive reasons to stop the proposed plant...] ...not to mention our inability to find safe long-term storage for the radioactive waste. (**0083-9** [Broadhead, Susan])

Comment: There is NO SAFE DISPOSAL OF WASTE!!! (**0085-5** [Allison, Patricia])

Comment: I am concerned about the safety & health effects from toxic nuclear waste. (**0092-1** [Howarth, Irma])

Comment: ...not to mention our inability to find safe long-term storage for the radioactive waste. (**0098-8** [Broadhead, Susan])

Comment: We still cannot adequately deal with nuclear wastes... (**0104-11** [Bliss, Rachel])

Comment: The nuclear waste cannot be dealt with in any good way. (**0107-3** [Acs, Deborah])

Comment: Storage of the spent fuel is a continuing problem, one that nobody has found a good solution to. (**0113-4** [Rose, Katherine])

Comment: We CANNOT HANDLE EXISTING NUCLEAR WASTE let alone produce more. (**0114-3** [Lovinsohn, Ruth])

Comment: The problem of highly radioactive spent nuclear fuel having to be stored onsite because there is no safe repository. (**0119-8** [Thomas, Ruth])

Comment: It has been decades since nuclear power was introduced in the USA and even after all this time no effective program has been developed to deal with the radioactive waste. It seems to be a very poor business decision to proceed with more nuclear plants without effective waste management. (**0120-2** [Wilson, Dawn])

Comment: ...and nuclear waste that cannot be safely disposed of. Where would this waste go? Surely you know that it remains toxic practically forever? (**0121-2** [Wallace, Kristine])

Comment: Waste disposal - To date we do not have a source of long term safe disposal/storage. (**0122-3** [Justice, Cynthia and Michael])

Comment: Furthermore, there remains no good solution to storage of spent fuel. (**0124-3** [Hayes, MD, J. David])

Response: *These comments are concerned with the development and implementation a national program to safely dispose of the Nation's nuclear waste. For LLW, Section 6.1.6 of the EIS discusses the near-surface disposal facilities organized under regional LLW management compacts. In particular, the Energy Solutions Inc. disposal facility in Barnwell, South Carolina in the Southeast Compact would serve the Lee Nuclear Station until 2038. Also presented in Section 6.1.6, current national policy, as found, for example, in the Nuclear Waste Policy Act [NWPA] (42 U.S.C. 10101 et seq.) mandates that HLW and transuranic wastes are to be buried at deep geologic repositories. The environmental impacts of spent fuel storage after the licensed life of operations for nuclear power plants are being addressed through rulemaking and development of a generic EIS. Section 6.1.6 of this EIS has been revised to incorporate the proposed NRC rulemaking regarding the environmental impacts of continued storage of spent fuel.*

E.2.18 Comments Concerning Transportation

Comment: Transporting nuclear waste on our highways to deposit it at some unknown repository or recycling site and hauling those toxic dangerous wastes on our highways is frightening and not safe. Currently used to transport by truck are rail are the unsafe nuclear waste shipping casks that emit neutron and gamma radiation as they travel through cities and other populated areas, and are more prone to accidents as they travel thousands of miles and also on our curvy mountain roads. (**0012-19-2** [Howarth, Irma])

Comment: Transporting toxic nuclear waste on our highways to deposit it at some unknown repository or recycling site & hauling these toxic, dangerous waste on our highways is frightening & not safe. Currently used to transport by truck or rail are the unsafe nuclear waste shipping casks that emits neutron & gamma radiation & are more prone to accidents at they travel our curvy mountain roads. (**0092-3** [Howarth, Irma])

Comment: The problem of providing containment during transport of radioactive materials. For example, an accident on I-85 would result in the total disruption of access from Atlanta to Greenville/Spartanburg to Charlotte. If there were an accident, all tourism and jobs in the surrounding area would cease, and everyone that lives in close proximity would have to have their food and basic necessities imported, or else leave.
(**0119-9** [Thomas, Ruth])

Response: *Transportation of spent fuel is discussed in Section 6.2.2 of the EIS. The NRC has conducted several transportation studies to evaluate the risks associated with transporting radioactive material. The NRC (1977b) issued NUREG-0170, "Final Environmental Statement on the Transportation of Radioactive Material by Air and Other Modes," in December 1977 to support its rulemaking set forth in 10 CFR Part 71, "Packaging and Transportation of Radioactive Material." Based on this study, the NRC concluded that the transportation regulations are adequate to protect the public against unreasonable risks from the transport of radioactive materials, including spent fuel. The NRC (1987) sponsored another study, NUREG/CR-4829, "Shipping Container Response to Severe Highway and Railway Accident Conditions," issued February 1987, known as the "Modal Study." Based on the results of this study, the NRC staff concluded that NUREG-0170 overestimated spent fuel accident risks by about a factor of three. The NRC (2000b) initiated another spent fuel study, issued as NUREG/CR-6672, "Reexamination of Spent Fuel Shipment Risk Estimates," in March 2000. This study focused on the risks of a modern spent fuel transport campaign from reactor sites to possible interim storage sites and/or permanent geologic repositories. This study concluded that risks from accidents were much less than those estimated in NUREG-0170 and that more than 99 percent of transportation accidents are not severe enough to impair the function of the NRC-certified spent fuel package. While very severe accidents could cause damage the package, the studies show that any release of material would be very small and pose little risk to the local population/public. No changes were made to the EIS as a result of these comments.*

E.2.19 Comments Concerning Cumulative Impacts

Comment: Indirect and Cumulative Impacts
In a project of this magnitude, there is a potential for significant indirect and cumulative impacts to important resources. The DEIS notes that air quality, water resources, habitat, farmland, historic and archaeological resources are particular areas of concern that may be subject to indirect and cumulative impacts. In addition, EPA recommends further consideration of the project's indirect and cumulative impacts related to socioeconomic resources and EJ communities.

Recommendations: We appreciate the information in the DEIS regarding your coordination with resource agencies regarding mitigation planning for ecological, cultural and historical resource impacts, and we recommend that continuing coordination take place as the project proceeds in order to minimize direct, indirect and cumulative impacts.
(**0142-25** [Mueller, Heinz])

Response: *The USACE will continue to coordinate with Federal- and State-resource agencies regarding proposed mitigation for both ecological and cultural and historic resource impacts. The USACE is working closely with the EPA, the FWS, the U.S. Forest Service, the SCDNR, and the SCDHEC to guide Duke toward finalizing the project's Section 404 permit application mitigation plan. This coordination will continue through the implementation and eventual monitoring of the planned mitigation. In addition, the USACE was the lead agency for coordinating the implementation of the joint cultural resources management plan and memorandum of agreement between the USACE, Duke, and the SC SHPO. Though some coordination between Duke and Cherokee County has occurred, the NRC does not have the authority to require continuing coordination with respect to socioeconomics and environmental justice. No changes were made to the EIS as a result of this comment.*

E.2.20 Comments Concerning the Need for Power

Comment: We spoke earlier about growth. In the 2010 census South Carolina grew by about 15-plus percent, Cherokee County grew by 5 percent, and York County which is just right across the Broad River, grew by 37 percent. This influx in population necessitates additional power sources to meet those people's residential needs and also to meet industry's needs, so the nuclear plant would provide those sources. (**0012-14-2** [Boger, Paul])

Comment: If for no other reason than national security, we will need to provide a viable and immediate solution to what could be a pending crisis of increasing electricity demand. The recent financial fiasco will pale in comparison to the economic impact if we're unable to meet the future energy demands. (**0012-16-3** [Farris, Mark])

Comment: Whereas, demand for electricity for the state of South Carolina is growing and is in our best interest for South Carolina utilities to produce the needed electricity in our state through the development of new nuclear power plants. (**0013-1-2** [Moss, Representative Dennis])

Response: *In general, the comments support the discussion provided in Chapter 8 of the EIS regarding the need for power. No changes to the EIS were made as a result of these comments.*

Comment: Many of you know that Duke uses a very comprehensive, integrated planning approach to ensure we can continue to safely and reliably meet the electricity needs for our customers, both now and in the future. The integrated planning considers many variables, including projected energy use, existing generation resources and planned retirement, energy efficiency. So I was speaking about the integrated approach that we use. This planning approach considers many variables, including projected energy use, existing generation resources and planned retirements, energy efficiency and the addition of new generation, including renewable resources. We're fortunate to have a diverse portfolio of generation stations with nuclear, of course, serves as a part of that fuel mix in the Carolinas for over or nearly 40 years. Many of you know that we operate five stations in the State of South Carolina, five units in the State of the South Carolina. Two of the units are the Catawba units in York County, South Carolina and three of the units are the Oconee Nuclear Station, which is the Oconee County of South Carolina. These two stations, along with two other units, the McGuire units in North Carolina, provide approximately half of the electricity used by our customers in the Carolinas and have collectively generated more than 1.5 billion megawatt hours of electricity since they've started operation. Let me pause and tell you just briefly about the performance of those assets. Our nuclear capacity factor in 2011 was approximately 93 percent, making 2011 the 12th consecutive year our capacity factor was more than 90 percent. For those of you not familiar with the term, capacity factor is units of reliability. It's basically the amount of electricity generated from a unit or a facility compared to the amount of electricity that can be generated if the unit was operating all the time. As part of our plan to serve our customers' future electricity need it's important that we make sound decisions now on their behalf. This includes our decision to submit a combined construction and operating license application to the NRC for the Lee station and to continue project development activities. The units planned for Lee Nuclear will have a combined output of more than 2,200 megawatts, enough generation to reliably serve thousands of homes for decades. (**0012-2-1** [Jamil, Dhiaa])

Response: *The comments support the discussion in Chapter 8 and Section 9.2 of the EIS regarding alternative energy resources including energy efficiency and renewable energy. No changes to the EIS were made as a result of this comment.*

Comment: Nuclear power is the most viable and affordable bridge to energy independence for South Carolina and the region. The business community understands the need of expanded energy capacity in the state as population continues to grow in South Carolina and across the

southeast. Energy costs represents one of the highest costs of businesses on a daily basis. The availability of energy is at the cornerstone of many of our businesses' success. It is estimated between now and 2025, the Palmetto State's population will increase by more than a million people. Anticipated growth around the Port of Charleston, with the increase in distribution facilities and big boxes and the increased population growth will result in an estimated need of 5,000 megawatts of energy by 2025. If we continue pressing forward with the energy we have today, our resources will not be sufficient to shoulder the increased demand. Current statistics show our state energy reserve margins are shrinking each year. If not addressed, they are positioned to place the state at a huge economic disadvantage as early as 2014. (**0012-5-2** [Rawl, Otis])

Comment: And now because of forecasted need -- and by the way, that need forecasted not just by Duke Energy but by my members, the manufacturers, that will provide the best jobs in South Carolina -- because of forecasted need, we've got to make decisions again, and we believe nuclear energy is a good way to do that. (**0012-9-2** [Gossett, Lewis])

Comment: In order to see the kind of expansion and growth we're going to want to see in the manufacturing base in South Carolina, we've got to have new capacity, and this is the best way, in our minds, to have that. (**0012-9-4** [Gossett, Lewis])

Comment: Nuclear energy is a vital part of America's energy portfolio. Nuclear energy currently produces electricity for one in every five homes and businesses in the United States and accounts for about 50 percent of the energy for Duke Energy Carolinas' customers. As we look to the future and how we will continue to meet our future needs of our customers we will continue to rely on a diverse energy portfolio that includes nuclear energy, which is the only baseload energy resource that can produce electricity 24 hours a day, seven days a week without emitting any greenhouse gases. (**0013-4-1** [Fallon, Chris])

Response: *The NRC does not establish public policy regarding electric power supply alternatives, nor does it promote the use of nuclear power as a preferred energy alternative. Decisions regarding which generation resources and energy alternatives to generation to deploy were made by the applicant through least-cost planning and integrated resource planning. The comment generally supports the discussion regarding the need for power found in Chapter 8 and Chapter 9.2 including aspects of the growth in demand for energy, reserve margin analysis, generating resources, and alternatives to energy resources. No changes were made to the EIS as a result of the comment.*

Comment: The good news is over the past year, two, maybe going back as far as into 2009, my members have started to rebuild and started to reinvest, and they've got ideas about continuing to do that, but I can assure you that one of -- if not the key -- factors in their decision-making process is reliable, affordable energy. Got to have abundant energy in order to do it. And my members have made those assessments. They make those assessments every time

they make economic development decisions, and I get to be in a lot of those meetings. My friend, Otis Rawl, of the state Chamber does as well. We know, importantly, why South Carolina wins projects, and just as importantly, we know why South Carolina loses projects, and believe me, Duke Energy's provision of power to the upstate has been a key, if not the key, component to the growth of manufacturing in this area. (**0012-9-1** [Gossett, Lewis])

Response: *In general, the comment supports the need for power discussion in Chapter 8, which includes discussion about State directives for franchised service territories, and the requirements to supply power that meets tests for reliability and economics. No changes to the EIS were made as a result of this comment.*

Comment: The reactor is not needed nor cost effective. (**0052-2** [Boots, Debby])

Response: *The need for power is described in Chapter 8. The economic decision made by the applicant to pursue licensing is outside the scope of the environmental review. Tests of reliability and cost-effectiveness are governed by the respective States in which the applicant operates and sells power into, and is reflective of business decisions over which the NRC has no regulatory control. No changes were made to EIS as a result of the comment.*

Comment: Section 1.3.1, Page 1-11, Lines 15-16: The demand for the year 2026 increases to 5176 MW(e) in the 2011 IRP provided to NRC in the September 15, 2011 letter WLG2011-09-04. (**0134-3** [Fallon, Chris])

Comment: Section 8.1.4, Page 8-10, Line 8: The Duke Energy 2010 annual Integrated Resource Plan (IRP) was approved by the North Carolina Utilities Commission on October 26, 2011. The South Carolina Public Service Commission publicly vetted and heard testimony regarding the 2010 IRP on November 9, 2010. (**0134-67** [Fallon, Chris])

Comment: Section 8.1.4, Page 8-10, Line 8: Duke Energy provided the 2011 annual Integrated Resource Plan to the South Carolina Public Service Commission (Docket No. 2011-10-E) on September 1, 2011, the North Carolina Utilities Commission (Docket No. E-100 Sub 128) on September 1, 2011, and the Nuclear Regulatory Commission (Accession No. ML11262A205) on September 15, 2011. (**0134-68** [Fallon, Chris])

Response: *The need for power evaluation completed for the EIS was based on the applicant's 2012 IRP; State approval of the IRP forecast methodologies, specifics regarding resource management, and results of the power and energy forecast are relevant to the findings presented in the EIS. The EIS was changed to reflect recent changes to the projected supply and demand for electricity but retains the draft's earlier discussions of (1) the review and approval of the 2010 IRP by the North Carolina Utilities Commission on October 26, 2011; and (2) public review and testimony addressing the 2010 IRP by the Public Service Commission of South Carolina on November 9, 2010.*

E.2.21 Comments Concerning Energy Alternatives

Comment: Please say NO and ask for proposals of renewable energy. (**0001-5** [Stoll, Irene])

Comment: We need to focus on solar and wind energy as well as energy use reductions. (**0003-3** [Arnold, Debbie])

Comment: I would rather see this money go into incentive programs for people to install solar, wind, or geothermal systems and into education about conservation. (**0005-2** [Lewis, Brenda K.])

Comment: We need to concentrate on renewable energy, not dirty expensive energy. (**0006-2** [Flaherty, David])

Comment: [Before acting on this proposal, adequate AND PUBLIC review should include:] Alternative approaches to provide additional energy that don't involve the use of nuclear fuel, specifically including non-fossil fuel approaches (wind, solar, hydro, etc). (**0021-3** [Rinsler, MD, Steve])

Comment: Solar, tidal, geothermal and wind power are clean and harmless. (**0024-3** [Whitefield, Anne])

Comment: I am convinced that our government has the financial resources, intelligence and imagination to find alternative energy sources that do not create the risk involved in Nuclear Energy. We have the potential to lead the world in clean energy technology and ingenuity. (**0025-3** [Dixon, Mary])

Comment: Put your money and research into safer, more reasonable renewable energy sources and negotiate for more subsides from the government for these alternative energies and then they might actually happen. Germany has been able to turn this around, why not the US, too. (**0027-5** [Nord, Felice])

Comment: Why are we not pursuing a national campaign for energy conservation, so there is no longer a call for an increase in energy sources? Why are we not robustly encouraging innovation in renewable energy technologies? (**0029-2** [Scott, Cathy])

Comment: We have many other options which are clean and renewable--like wind, solar, geothermal, etc. (**0039-1** [Whiteside, Cassie])

Comment: Nuclear power is not a clean and renewable energy. We have many other options which are clean and renewable--like wind, solar, geothermal, etc. (**0043-1** [Reeser, Rachel])

Comment: The wise choice for the US is to make the same commitments to renewable sources, and NOT build any more nuclear plants. (**0044-3** [Bertram, Beth])

Comment: I believe we should invest our resources in clean, renewable energy systems such as solar! (**0048-9** [Skeele, Michele and Skip])

Comment: Nuclear power is not clean, it is not renewable... (**0056-3** [Rhyne, Faith Rachel])

Comment: There are plenty of alternatives to supply the Upstate region with clean, renewable energy. (**0056-5** [Rhyne, Faith Rachel])

Comment: Such alternatives include reducing the current waste and inefficiency of electricity usage, and solar, wind and other truly renewable sources of electrical power. (**0058-2** [Patrie, MD, MPH, Lewis E.])

Comment: Would not our decision makers better decide to instead move forward by investing in energy efficiency, conservation and clean renewable energy? (**0058-6** [Patrie, MD, MPH, Lewis E.])

Comment: I support energy conservation, efficiency, and safe, renewable energy sources and want to see these promoted instead. (**0059-2** [Raleigh, Carolyn])

Comment: And there are safe, renewable energy sources available for LESS cost to the pocketbook and the environment, not to mention simple smart conservation. (**0061-4** [Holt, Cathy])

Comment: Please look to alternative and safe energy for future generations. (**0062-3** [Smith, Joy])

Comment: ...and encourage the development of viable alternatives. (**0063-3** [da Silva, Arjuna])

Comment: The power companies should phase out existing nuclear facilities and invest in localized, safe, clean, renewable sources, and encourage the public to conserve power and to employ new technology to reduce the draw from the power grid. (**0063-8** [da Silva, Arjuna])

Comment: ...invest in localized, safe, clean, renewable sources, and encourage the public to conserve power and to employ new technology to reduce the draw from the power grid. (**0076-7** [Anonymous])

Comment: I think it would be far better to have each building, business or home installed with a separate power source either maintained by "the big power company' or the owner. Using solar, renewable, wind, a power source that is uniquely correct and safe for each building. (**0077-4** [Gilbert, Grace])

Comment: Now's the time for conservation and developing renewables and efficient use of existing and soon to be available green sources. (**0078-3** [Atanasoff, Mike])

Comment: ...we need to put all available funds into the development of alternative energy! (**0081-2** [Severin, Patricia])

Comment: We MUST spend our creativity and money on perfecting carbon-free, nuclear-free energy systems which feed into and tap into a smart grid, where people can install solar panels or windmills at their homes or businesses and feed excess energy into the smart-grid. (**0089-4** [Thomas, Ellen])

Comment: Support viable, sustainable & clean alternatives that also create many more permanent jobs. (**0092-6** [Howarth, Irma])

Comment: Let's shift to safe renewables: wind, solar. It can be done, let's do it. (**0105-1** [Craig, Anne])

Comment: Please abandon dangerous nuclear technology and instead fund truly green energy sources we can live with. (**0106-2** [Hearne, Ray])

Comment: Now and going forward America and the world must spend our funds on Green, truly clean energy. (**0107-1** [Acs, Deborah])

Comment: I give 100 percent approval to wind power as a source of energy. (**0110-2** [Genetti, Phyllis])

Comment: There are other alternatives to nuclear power, so much more humane, that we should be focusing on. (**0113-5** [Rose, Katherine])

Comment: There are safe, renewable, clean energy sources / technologies available. (**0114-12** [Lovinsohn, Ruth])

Comment: I am in favor of using that money to finance safe, reliable reusables. (**0115-4** [Burnett, Linda])

Comment: Drop the nuclear option and invest in energy efficiency and renewables. (**0117-11** [Crissey, Brian])

Comment: We must pursue other energy solutions such as wind and solar. (**0121-6** [Wallace, Kristine])

Comment: Our resources are put to much better use by pursuing clean, renewable sources of energy. (**0124-4** [Hayes, MD, J. David])

Response: *These comments express general support for renewable energy sources and conservation/energy efficiency, and a belief that funds would be better spent on renewable energy. Renewable energy sources and their ability to meet the purpose and need of the*

project were evaluated in Section 9.2 of the EIS, and none of the alternatives mentioned in the comments were determined to be both capable of meeting the purpose and need for the project and environmentally preferable. In accordance with NRC guidance for the review of energy alternatives, the cost of an alternative is only considered if the alternative is environmentally preferable, Because none of the competitive alternatives was environmentally preferable, the issue of cost was not considered. No changes were made to the EIS in response to these comments.

Comment: Finally, building W.S. Lee nuclear power plant is unnecessary because the cost of wind energy is now below the cost of nuclear energy. Renewable energy options don't pose a radiation hazard to the public and the environment. (**0004-11** [Cunningham, Kristine])

Comment: There are other, cleaner sources of power that do not leave permanent and potentially lethal scars on our environment, our families, and our children. (**0007-2** [Tinnaro, Heather])

Comment: The handwriting is clearly on the wall. Either turn away from nuclear and toward conservation, efficiency, and safe renewable energy production or turn out planet into an increasingly radioactive, cancer generating, lung disease producing, toxic world. (**0013-20-5** [Craig, Anne])

Comment: If we spend $14 billion on this nuclear power plant that is $14 billion less that we will have to spend on alternative energy. It seems to me that we are engaging in an incredibly dangerous experiment with the future of our children, grandchildren, great grandchildren, and our students and lots of others. Let's do an experiment -- a $14 billion experiment with alternative energy -- with solar, wind, and geothermal -- rather than doing a $14 billion experiment with things that we know are dangerous. (**0013-21-1** [Norris, Steve])

Comment: My request is to implement a balanced solution -- to move away from nuclear and coal and aggressively adopt renewable energy solutions for businesses and families. South Carolina needs a diverse, balanced energy portfolio in which utilities are required to support renewable resources and move towards a balanced distribution of energy. Solar, wind, and water energy sources should be encouraged through strong incentives and promoted as another viable local energy option so the strain and consumption from one energy source is not so strongly felt. We are running out of time and continue to destroy our precious land and water resources. By implementing a balanced energy solution we can begin to be less dependent on destructive, toxic form of energy. (**0013-36-1** [Cranford, Kelley])

Comment: These billions of dollars should be used for solar or wind energy that does not increase the risk of nuclear meltdowns, contaminate the water, or generate nuclear waste that will poison the ground for millions of years. (**0030-7** [Swing, Carol])

Comment: While knowing that energy alternatives are necessary, perhaps we should look to more benign sources such as solar to meet our needs. (**0034-2** [Gardner, Janet])

Comment: I realize only too well the difficulties of our energy usage and future needs. Much can be accomplished with various modes of energy conservation and the evolving technologies of sustainable, renewal energy sources. And, given time and much work, I sincerely believe we shall no longer need to rely on polluting nonrenewables and massively expensive and life-threatening sources such as our currently configured nuclear power stations. (**0046-1** [Southworth, Win])

Comment: My position [opposition] is based on... The opportunity to ADVANCE RENEWABLE AVENUES of ENERGY And sane steps toward energy management HAVE NOT BEEN SUFFIENTLY UNDERTAKEN BEFORE deferring to this Hazardous and potentially unsustainable course. (**0047-6** [Lauden, Loy])

Comment: The public demands alternative energy that is guaranteed safe. Please try looking at the sun and wind and cease digging underneath the ground and mixing up unpredictable chemicals (**0052-4** [Boots, Debby])

Comment: The irony of this proposed toxic nuclear plant is that increased efficiency and downscaling of power usage could render it unnecessary at present. For future needs, I believe that we should develop and build as much green energy, such as wind and solar power, as fast as we can. (**0083-4** [Broadhead, Susan])

Comment: Either turn away from nuclear and toward conservation, efficiency and safe renewable energy production (wind, solar) or turn our planet into an increasingly radioactive, cancer generating, lung disease producing, toxic world. (**0095-6** [Craig, Anne])

Comment: The irony of this proposed toxic nuclear plant is that increased efficiency and downscaling of power usage could render it unnecessary at present. For future needs, I believe that we should develop and build as much green energy, such as wind and solar power, as fast as we can. Two footnotes here: 1) I believe that the fact that nuclear facilities are too risky to be insured by private insurers means that the U.S. government takes the risk, in other words, the public takes the risk-this in addition to having to pay for its installation in the first place. 2.) According to Alan Nogee, former director of Clean Energy Programs for the Union of Concerned Scientists (in which capacity he served for 12 years), now heading up his own Clean Energy Consulting Firm, in 1973 nuclear energy installations cost c. $1/watt and solar PV modules cost c. $100/watt; today, solar PV costs c. $1/watt to install and nuclear costs about $6-$10/watt. So in terms of economics, solar is now more cost effective. (**0098-4** [Broadhead, Susan])

Comment: ...the NRC should be helping this country move away from nuclear power to safe alternatives that do not carry the risk of killing millions of our citizens. (**0111-5** [Knudten, Cori])

Comment: I realize we need to generate more power but with the safety of nuclear power clearly demonstrated in Japan as dangerous, those funds should be used for solar and wind power. (**0123-3** [Thomas Orengo, Cheryl])

Response: *These comments indicate a concern that nuclear power presents a greater hazard than the alternatives. The NRC regulates the nuclear industry to protect the public health and safety. As part of the COL process and in conjunction with the EIS, the NRC staff conducts a safety review detailing a site- and design-specific safety analysis. Therefore, safety issues are generally not discussed in the EIS. As part of the NEPA analysis, the review team evaluated alternative energy sources, including wind, solar, and biomass, in Chapter 9 of the EIS, and compared the environmental impacts from feasible alternative energy sources in Section 9.2.5. The comments did not provide any information that changed the results of that analysis, therefore no changes were made to the EIS.*

Comment: We have here at this time in 2012 a decision point societally where many things are changing, things that are unsustainable are failing, options are being created to perhaps allow courageous people in societies to make other choices than we have made in the past. In the past we have made choices on the energy issue that have resulted in centralized energy production, such as this proposed pair of plants, that has a low probability of utterly massive destruction. The alternate approach which is seen more realistically in the ideas around energy efficiency and solar and wind and other renewables. These are energy options which have a high probability of almost no impact, plus a lot of employment opportunities, and they are sustainable. (**0012-8-3** [Crissey, Brian])

Comment: We remind commissioners that for as much as the plant will cost by the time it is complete the number of gallons of water that will be required to make it work there are better alternatives. These alternatives are solar, wind, geothermal, and other clean and renewable energy sources: low scale, community based, community owned, and safe. Here's some information from the World Bank's website. I'll just quote it verbatim: The World Bank and International Finance Corporation constitute a major financer of solar, photovoltaic, and is developing countries with projects valued at more than 600 million U.S. dollars serving about 1.3 million households and public utilities in about 30 countries in Africa, Asia, and Latin America. Imagine how many households would benefit from a $14 billion investment which it costs for the William States Lee plant. (**0013-13-2** [Bliss, Rachel])

Comment: And I just want to point out again -- which it has been pointed out before -- this -- on one of the slides it says none of the feasible alternatives would be environmentally preferable. That is a lie, that is deceitful, that is not true, and that needs to be -- we need to -- somebody needs to investigate this because this is wrong. You know, to try and to do what you're doing -- to be trying to take -- put one over on the American people -- it's just unconscionable. I can't believe you're doing this. And so I'm just here agreeing with everything everybody said and pointing out that you all are lying. You all are lying to all of us and really do need to change

strategies and support renewable and things that are good for the environment and conservation and all that kind of thing. (**0013-28-1** [Richards, Kitty Katherine])

Comment: I believe one answer for retrofitting plants is to put windmills in, pump water uphill, use hydro power. Windmills are very reliable if you use them to pump water. Think about that. Then let's -- I'm going to vote for a prospective senator who has lived off the grid most of his adult life. And I'd like to see all the nuclear submarines docked and their power put into the grid. I'd like to see Americans working at home. Let us build offshore wind power plants and solar collecting plants -- retrofits with products and labor from the Carolinas. (**0013-31-2** [Bisesi, Philip])

Comment: We've got big brains. We can use these to produce other means of energy -- to find other means of energy that will be safe. Wind turbines, solar energy, hydro electric -- which at this point is a bit of a problem as well. We can find these other means of energy production and have a safe and comfortable and a continually advancing society. And as a whole I'm asking all of you to continue thinking about ways to conserve and other ways of finding power. It can be done. (**0013-9-2** [Tinnaro, Heather])

Comment: Let's put our money and jobs into solar and wind energy which are both much more safe and environmental. (**0033-3** [Gardner, Janet])

Comment: According to Alan Nogee, former director of Clean Energy Programs for the Union of Concerned Scientists (in which capacity he served for 12 years), now heading up his own Clean Energy Consulting Firm, in 1973 nuclear energy installations cost c. $l/watt and solar PV modules cost c. $100/watt; today, solar PV modules cost c. $l/watt to install and nuclear costs about $6-$10/watt. (**0083-6** [Broadhead, Susan])

Comment: For the same price, we could build instead a solar array that would provide more local jobs, and provide a safer alternative. (**0084-5** [Lemoing, Melissa])

Comment: ...there are better alternatives. These alternatives are solar, wind, geothermal and other clean and renewable energy sources.... low scale, community-based, community-owned and safe. From the World Bank website comes this article about investments in renewable energy sources. "The World Bank and the International Finance Corporation constitute a major financier of solar photovoltaics (PV) in developing countries with projects valued at more than US$600 million, serving about 1.3 million households and public facilities in about 30 countries in Africa, Asia, and Latin America." Imagine how many households would benefit from an $11 billion investment, the amount estimated to be spent on the construction of the William States Lee plant. (**0104-3** [Bliss, Rachel])

Comment: Wind, solar, tidal & geothermal are much more cost effective than nuclear can ever be. (**0108-1** [Fisk, Bill])

Comment: Finally, building W.S. Lee nuclear power plant is unnecessary because the cost of wind energy is now below the cost of nuclear energy. Renewable energy options don't pose a radiation hazard to the public and the environment. (**0112-11** [Andrews, Josephine] [Anonymous] [Beattie, Kathryn E.] [Boever, Virginia] [Boyle, Ella] [Brogan Prindle, Cathleen] [Davis, John] [Flores, S.] [Hamahan, Clare] [Keil, A. Eugene] [Leverette, Will] [Peterson, Harry] [Peterson, Martha J.] [Rittenberg, David] [Rustin, K.])

Comment: But energy efficiency and renewable energy create more sustainable jobs per dollar of investment than does nuclear. We are told that the proposed reactors are needed for future growth, but the same investment in energy efficiency and renewables will have a greater impact on the energy supply and demand balance. (**0117-8** [Crissey, Brian])

Comment: [The following problems are among those we have identified:] The financial drain to taxpayers and rate-payers of subsidies to the nuclear industry for 50-plus years has interfered and continues to interfere with funding for solar, wind, tidal, geothermal and other suppliers of clean energy, and for conservation measures such as retrofitting, all of which would provide many more jobs for much longer than nuclear.
(**0119-13** [Thomas, Ruth])

Comment: The millions of dollars scheduled for this program would be better spent developing solar and wind applications. Look into the way wind tubes are placed on ridges in France, right on the power line towers, feeding directly into the grid, with no additional damage to the environment or scenic beauty.
(**0120-3** [Wilson, Dawn])

Comment: At a time when we need to incentivize distributed generation of renewables we should not be investing
fortunes in new centralized generation such as this facility. (**0125-2** [Clere, Daniel])

Comment: ...we are letting the rest of the world surpass us - Germany and China, for instance - by using the technologies of the future: solar and wind. I've been to Germany and seen the countless clever ways they use the solar and wind technology, such as: home heating, meter maids, recycling, garage door openers, transit systems, etc. And it's safe. The Germans are no longer building nuclear plants, where as we here in the (esp. southern) United States have so much potential solar and wind power.
(**0143-3** [McAfee, Patricia B.])

Response: *To be considered in detail as reasonable alternatives, the energy alternatives must be technically viable, feasible, and competitive. Alternative actions such as the no-action alternative, energy efficiency and demand-side management (DSM), new generation alternatives, purchased electrical power, alternative technologies (including renewable energy sources such as wind and solar), and the combination of alternatives were considered in Chapter 9 of the EIS. The review team concluded in Section 9.2.3 of the EIS that energy*

alternatives other than coal and natural gas would not be reasonable alternatives to two new nuclear units that would provide baseload power. The review team concluded in Section 10.5 of the EIS that none of the alternative energy options capable of meeting the purpose and need of the project were environmentally preferable to the proposed action. In accordance with NRC guidance, cost is not considered by the staff unless a feasible alternative is found to be environmentally preferable to the proposed action. Ultimately, decisions regarding which generation sources and alternatives to deploy are made by the applicant and regulatory bodies such as State energy planning agencies. No changes were made to the EIS as a result of these comments.

Comment: And the renewable energy industry actually creates more jobs for every dollar of investment than any other industry, not just energy industry -- than any other industry period. And those are jobs that can local -- locally owned as opposed to corporate owned. (**0013-23-3** [Buscarino, John])

Comment: I agree also with the need for power, although I think that we have yet to really reach for the low-hanging fruit of energy efficiency. So I say let's go for that first. But if you want power, once again, renewable energy. It's what creates jobs and it's what creates our future. So let's look there. And also I just want to address the statement that -- in the Draft Environmental Impact Statement that none of the feasible energy -- alternative energy sources would be environmentally preferable. (**0013-23-5** [Buscarino, John])

Comment: And the other fact is that the Vermont Department of Public Service has a study that shows people who have been talking about sustainable energy. And per megawatt hour that study shows that wood, wind -- and for some reason they only have wood and wind in that study -- employee five people for every one person in a nuclear power plant. So if we put the money into alternative energies you get more people working as a couple of people have pointed out this evening. The use of renewable energies means more local jobs. (**0013-29-2** [Greenburg, Lori])

Comment: Two-is in regard to jobs -when we hear about new plants coming down the pike we almost always hear about the promise of employment. In my former community there were only 257 local employees, most of the plant work was contracted and seasonal by people from out of the area. In fact, The Vermont Department of Public Service has a study that shows an increase in jobs per megawatt hour when people work providing wood, or wind power as compared to nuclear power. Wood and wind employs 5,-people per megawatt hour compared to 1 person per megawatt hour with nuclear energy. Efficiency Vermont employs 3 people/megawatt hour. If you add solar, the increase is even higher. The use of renewable energies means more local jobs. (**0099-2** [Greenberg, Lori])

Comment: Perhaps jobs would be created temporarily in building the two plants in Gaffney. Could we not support even more jobs by subsidizing green industries such as solar energy, wind and water? (**0132-4** [Cahill, Joanne])

Response: *Alternative actions such as the no-action alternative, energy efficiency and DSM, new generation alternatives, purchased electrical power, alternative technologies (including renewable energy sources such as wind and solar), and the combination of alternatives were considered in Chapter 9 of the EIS. Job creation (in the context of socioeconomics) was discussed for those alternatives capable of meeting the purpose and need of the proposed action to provide baseload power. The review team concluded in Section 10.5 of the EIS that none of the alternative energy options capable of meeting the purpose and need of the project were environmentally preferable to the proposed action. In accordance with NRC guidance, cost is not considered by the staff (and no cost-benefit balancing is performed) unless a feasible alternative is found to be environmentally preferable to the proposed action. Ultimately, decisions regarding which generation sources and alternatives to deploy are made by the applicant and regulatory bodies such as State energy planning agencies. No changes were made to the EIS in response to these comments.*

Comment: Other alternatives for generating electric power are available at much lower health risks. Several more acceptable alternatives for electric power include natural gas combustion, photovoltaic cells, wind turbines, and energy conservation. Abundant reserves of natural gas are now available in the U.S. Natural gas combustion causes little air pollution, minor health risks, and requires much lower capital investment than nuclear power plants. Instead of waisting money on building dangerous nulcear power plants, more funds should be applied to research, development, & construction of lower risk power generators using solar energy by photovoltaic cells & wind turbines. Also, more efforts should be applied to educate the public to stop wasting energy by adding extra insulation to homes & commercial buildings, and converting to more efficient lighting, etc. (**0038-1** [Burt, Rick])

Response: *The NRC staff's evaluation of alternative energy sources, including renewable sources such as wind and solar, is in Section 9.2 of the EIS. The staff concluded in Section 9.2.3 of the EIS that energy alternatives other than coal and natural gas would not be reasonable alternatives to two new nuclear units that would provide baseload power. The staff concluded in Section 9.2.1 of the EIS that conservation and DSM would not be a reasonable alternative to providing new baseload power generating capacity. In Section 9.2.2 the staff concluded that natural gas was a feasible alternative to the proposed action. However, in Section 9.2.5 the staff concluded that natural gas was not environmentally preferable to the proposed action. The staff concluded in Section 10.5 of the EIS that none of the feasible alternative energy options were environmentally preferable to the proposed action. The cost of energy alternatives was not considered in the EIS because the options were either not feasible, or were not environmentally preferable. No change was made to the EIS as a result of this comment.*

Comment: The southeast is blessed with an abundance of sunny days and could more easily than much of the nation use this resource to develop solar energy. We can limit the amount of energy needed by sensible energy use, retrofitting older, energy-inefficient buildings and homes, along with many other energy-saving tactics. We do not need these expensive and dangerous facilities. (**0012-10-4** [Connolly, Mary Ellen])

Comment: We can do better and we will do better. I would implore citizens of this community, Cherokee County, to give these numbers a really good look. It's suggested that $14 billion put into a solar -- into solar panel -- into solar power would yield comparable energy and far more jobs: smart jobs, not dirty jobs. Dirty jobs are not what are going to bring real economic development that South Carolina needs. I believe it was 47 is the current number where South Carolina rates in economic development. The future is in solar, folks. The future is in smart jobs, not dirty jobs. And why the added risk when it's just not needed? (**0013-25-1** [Sadler, Timothy])

Comment: Can you imagine what kind of solar installation could be put together for 10 to 20 billion dollars? Also, such an installation could start producing power within weeks, not years! (**0116-6** [Schmitt, Daniel])

Comment: Multiple 5 ? 10 megawatt solar plants would produce equivalent power with less environmental concern, employee more people, be less hazardous and present less of a [terrorism] target and provide redundant mission critical capability. (**0124-6** [Hayes, MD, J. David])

Response: *The review team evaluated the feasibility of solar energy acting as a discrete substitute for the proposed nuclear reactor in Section 9.2.3.3. Although solar power offers some positive environmental attributes, the current state of both photovoltaic and concentrated solar power technology with respect to power conversion efficiency, and the intermittent nature of the power that can be produced erode solar power's attractiveness as a discrete alternative for a baseload power source. A baseload power source must deliver power efficiently, continuously within the control of the facility operator, and not subject to the vagaries of weather conditions. The review team therefore concluded that solar power was not a feasible alternative to the proposed action. Solar power was, however, included as a portion of the combination of energy alternatives in Section 9.2.4. The comment did not provide any information that would change the review team's conclusions. Therefore, no changes to the EIS were made as a result of these comments.*

Comment: I have a proposal for Duke Energy from the people of North and South Carolina. Reinvest your money in sustainable infrastructure. Rather than spending $14 billion on this dangerous 2.2 gigawatt nuclear project you should spend that same money on a 3.9 gigawatt solar project. Here's why. Solar allows for quick incremental deployment. The first solar power rays can start producing within a month of breaking ground, rapidly increasing output as each tiny piece is switched on. It will take almost ten years before this nuclear plant produces a single watt. A $14 billion solar ray could be fully operational before the safety review papers for this

proposed nuclear plant even get approved. This multi-billion dollar nuclear plant will create only 3,000 construction jobs, while a solar plant will create 27,000 local jobs during the construction phase. This is fully nine times the jobs created by these proposed nuclear reactors. And, best of all, solar technology takes advantage of the cleanest, safest, and most plentiful nuclear power known to man -- our sun. Duke Energy wants to raise the cost of electricity. They have already raised the price and they are going to raise it again. What better way to use that money than to transition our region into a new era of clean energy infrastructure by building the biggest solar ray in the country. Let's place these two $14 billion projects side by side, one solar and one nuclear. If work on the solar began today it would produce over 50 billion kilowatt hours before the nuclear reactor makes a single watt. And that assumes it comes online in 2016. With the present time line of design, approval, and construction for the William States Lee III Nuclear facility it would take 15 years for these two nuclear reactors to catch up to the accumulated kilowatt hour output of a 3.9 gigawatt solar power plant. My plan provides a quicker return on investment for Duke Energy and clean renewable energy right now for this fast-growing region. In 50 years what does Gaffney's section of the Broad River look like? Let's say these proposed power plants have outlived their usefulness and are ready to be shut down. Even after decommissioning, nuclear reactors leave a mar on the land, a dead zone that cannot be easily cleaned or reused for anything besides another nuclear reactor. Solar panels, in contrast, are nontoxic and fully recyclable, leaving behind nothing more dangerous than concrete footers. The solid-state technology used in today's photovoltaic equipment does not depend on moving parts like pumps, valves, and motors. It does not need backup generators or millions of gallons of water to prevent it from catastrophically melting down. The electronic solar inverters of today are self-regulating, producing only as much energy as needed in any given moment. They also are able to shut down in milliseconds, compared with the several days it take to cool off hot uranium fuel rods. As a specialist in appropriate technologies, I have worked in the renewable energies industry in this state for the past several years, and I know that solar is reliable and effective for any size project. I have personally been involved in hundreds of solar projects across the region helping bring almost 2 megawatts of clean energy online. While the rest of the economy has foundered, the solar industry in this region has grown by leaps and bounds. Finally, with solar panel prices at an all time low it's clear that clean energy in the 21st century is no longer a bourgeois novelty. It has become a cost competitive industry standard. Solar energy is the right choice for the economy of today and for the children of tomorrow. (**0013-10-1** [Gamble, Dan])

Comment: I emphatically propose that there is an environmentally preferable alternative to the William States Lee III nuclear station. This alternative could replace any nuclear power plant, however it is particularly compatible with being installed at this very same site along the Broad River in Gaffney, SC. This alternative is popular with the electorate, and far less controversial than nuclear, coal, or even natural gas. This alternative harnesses the same, virtually unlimited energy source that has reliably powered our planet for billions of years. Every human being recognizes its potency and can attest to its reliability. I propose that we harness the power of the

sun, using industry tested and proven methods that have become newly affordable in 2011 with the massive increase in the global production capacity of both crystalline silica and pre-assembled Photovoltaic Modules. Solar

Alternative for New Baseload Development:

Categorical Justifications

Waste: Solar PV generates no nuclear waste, and minimal landfill material. It has no ongoing mining or transportation of fuel, and no need to process effluent. As such, it is incomparably superior to any conventional means of electrical power production.

Availability of modules: Solar Photovoltaics are a mature technology, with global acceptance and a growing list of manufacturers, together producing around 30 Gigawatts of modules annually. The photovoltaic effect has been a recognized means of producing electricity since the 19th century, and has been successfully used for power production throughout the past 50 years in such extreme conditions as the Sahara desert, Antarctica and the vacuum of space.

Finally, in 2011, solar PV has surpassed the initial investment costs of building new nuclear reactors (per MW nameplate rating). Thus, solar power will likely dominate the 21st century as the only cost-effective power source limited neither by fuel prices and availability (like all conventional power sources) nor by specialized geographical phenomena (like wind, hydro and tidal energy). Cost Solar PV is cost competitive. The Lee Nuclear Station will produce 2.2 Gigawatts for a cost of 14 billion dollars (6.36 dollars per watt). This is expensive when compared with solar power, at an installed market price of $3.00 per watt (as of mid-2011), 14 billion dollars = 4.67 Gigawatts. Given the statistical hourly availability factor of 25%, or even the more conservative 20% availability in this area adjusted for statistical weather events and a 5 degree low profile array tilt, this is the equivalent of a 1 Gigawatt plant running 24/7.

Furthermore, given the falling cost of solar and rising cost of nuclear, we can project the cost of a solar facility that would come online by 2023, the completion date proposed for the second reactor at the Lee Nuclear station. Due to the relatively quick deployment time of solar (China put 2 gigawatts online in 2011 alone), and the 15% annual decrease in price, we can project that a 10 Gigawatt solar plant (equivalent annual kWh output to a 2.2 Gigawatt Nuclear facility) would take 5 years to complete and cost around 11 Billion dollars if begun in 2018. Other factors further improve the case for solar, as these up-front costs do not account for either cost of upkeep (Fuel costs, maintenance, personnel, etc) or return on investment (Deployment time, interest payments, disaster insurance, waste storage). For a nuclear facility, these expenses equal hundreds of millions annually, while for solar these costs are near zero. (**0129-1** [Gamble, Dan])

Comment: Solar Photovoltaics do not evaporate any water during normal operation, and could even be used to harvest rainwater for agricultural or municipal distribution, using integrated gutter systems. The 2000 acre Lee site alone could collect 54 million gallons of water for each inch of rainfall, or approximately 2.5 billion gallons per year, enough to fill "pond A" 6 times annually. (**0129-4** [Gamble, Dan])

Comment: Storage
Water is more than just the fundamental unit of all life on earth. It can also the answer the question of storing solar energy, so that it will be available 24/7. Duke Energy Carolina currently operates 1.8 Gigawatts of pumped storage hydroelectric facilities less than 100 miles away. Currently, these pumping stations are being used to store waste energy from existing base-load plants, which have significant excess capacity. If there is truly need for building additional base-load generation for 2023, as the proposed nuclear station pre-supposes, then these pumping stations will be obsolete in their current occupation, as there will be no significant waste energy to be stored. Thus, these pumping stations must be repurposed as storage facilities for renewable energy, creating a battery that can be charged during daylight hours to make solar energy available even at night. Repurposing these existing facilities is certainly the most cost-effective storage solution, as they are already connected to the 525-kV Oconee-Newport line intended for use by the proposed Lee site.

If on-site storage is a necessity, two notable battery technologies exist that are currently operating in utility-scale projects: Sodium Sulfur and Zinc-Bromine. Sodium Sulfur batteries, the most affordable non-toxic technology to date, at this scale would add approximately 300 million dollars per GWh of storage capacity to the project cost. These are commercially available from NGK corporation of Japan, and are being used in systems from 3 MWh to 2 GWh in Japan, France and the U.A.E.

In order to satisfy the future need for base load development, it is clear that one of the above, industry proven technologies will need to be included in this project. In combination with solar PV, either pumped water storage or sodium sulfur batteries will satisfy South Carolina's definition of "base load" as a facility "greater than 350MW and having at least 70% availability". (**0129-5** [Gamble, Dan])

Comment: Let us address the one remaining impediment to massive deployment of solar energy: the question of acreage. The environmental impact of installing solar PV on thousands of acres of land would be tremendous if it were to replace forests, wetlands or agricultural fields. Using virgin land for solar farms on this scale would be absurd. Fortunately for solar, our society has already turned millions of acres into barren wastelands ripe for the planting with solar panels. In the United States public road systems alone, there are over 12 million acres of pavement (assuming 12 ft wide lanes, not including medians). Privately owned rooftops and parking lots account for millions more. Based upon the SRCC's national average minimum solar

irradiation of 1000 BTU/sq ft/day, 12 million acres of road adsorbs 540 trillion BTUh per day (less 3-5% reflectance), contributing significantly to climate change vs. more highly reflective natural landscapes. If less than half of these roads were to be covered with PV, it would provide 100% of our nation's annual kWh needs. While there are many strategies for distributed generation using solar PV, I advocate using public roads for these reasons:

- Harvest rainwater and eliminate stormwater runoff
- Use existing easements
- Simplify maintenance access
- Extend life of roads (UV and freeze-thaw protection)
- Increase safety of driving (eliminate water on roads)
- Built in electrical distribution network that is proportional to population density and adjacent to points of use
- Make new jobs where they are needed most - in places of high population density
- Employ existing maintenance crews and equipment

Other popular land management strategies include pastureland amongst pole-mounted PV arrays, rooftop solar arrays and solar parking structures. If Solar is installed on the proposed Lee Site, the 2000 acre site can accommodate 1 Gigawatt capacity of the most affordable commercially available solar modules, given a 5 degree south-facing tilt. (30%-40% higher energy densities are available from SunPower Corp. for a significant cost increase). A 5 degree tilt will increase summer production, while decreasing winter production, for a total annual kWh loss of 8.5% vs. the "ideal" latitude tilt of 35 degrees. However, this small sacrifice is more than justified considering the increased energy density and reduced land disturbance. In recent years, low tilt systems have become the industry standard for large-scale rooftop installations. (**0129-6** [Gamble, Dan])

Response: *These comments present a proposal for the use of solar power as an alternative to the proposed nuclear units, and attempt to address both the positive attributes of solar and its drawbacks. The review team evaluated the feasibility of solar energy acting as a discrete substitute for the proposed nuclear reactor in Section 9.2.3.3. Although solar power offers some positive environmental attributes, the current state of both photovoltaic and concentrated solar power technology with respect to power conversion efficiency, and the intermittent nature of the power that can be produced erode solar power's attractiveness as a discrete alternative for a baseload power source. The commenter attempted to address the intermittent nature of solar power by postulating that existing pumped-storage facilities could be used to smooth the output of the solar facilities. However, the pumped-storage facilities are already in use and the review team expects they would continue to be used in conjunction with the existing power generation facilities. There is no basis to assume the pumped-storage facilities could be repurposed as the commenter indicates. Therefore, the primary issue with solar—its intermittent nature—remains as an obstacle to meeting the need for baseload power. A baseload power source must deliver*

power efficiently and continuously within the control of the facility operator and not be subject to the vagaries of weather conditions. These same issues are discussed in Section 9.2.3.3, in which the review team concluded that solar power was not a feasible alternative to the proposed action. The comments did not provide any information that would change the review team's conclusions. Therefore, no changes to the EIS were made as a result of these comments.

Comment: This pellet is a simulated fuel pellet. In our current early technology of nuclear energy, it releases as much heat energy as burning a ton of coal. A ton of coal would fill up a pickup truck, a big pickup truck. Instead, we have these little pellets that we put in the fuel rods. Nuclear power plants operate for 18 months on three truckloads of commercial nuclear fuel. Instead, if a same size power plant was burning coal, it would require 100 train carloads of coal every single day. That's about 10,000 tons of coal and it releases 40,000 tons of CO2 into the atmosphere, as opposed to a nuclear plant which releases no CO2 into the atmosphere. Yes, there's a little CO2 involved with mining, but when you're mining real concentrated material, you don't use much to move it around the world. (**0012-12-2** [Adams, Rod])

Comment: Compare that to the alternative, in the U.S. today, yes, I'd say we can reduce some use of electricity, maybe, but we burn a billion tons of coal and 6 trillion cubic feet of natural gas to produce electricity. Why, if you're going to conserve, would you shut down the cleanest source of electricity [nuclear] instead of those dirty sources first? (**0012-12-5** [Adams, Rod])

Comment: Right now there's people in the U.S. that say we have a huge supply of natural gas that's going to supply us forever. I've done the numbers, all of the natural gas that we have today in the U.S., if we burn it at the rate we burn it today, will last 90 years. We have 2,170 trillion cubic feet, we burn 24 trillion cubic feet a year, do the math, 90 years. (**0012-12-6** [Adams, Rod])

Comment: I wish we were here today talking about an alternative energy source that could solve our problems. Solar, biomass, wind, they all are good options. Duke, in fact, has continued to lead the effort in finding alternative energy sources. I also wish we could live a more sustainable lifestyle and have capacity issues solved by diligence and energy conservation, but the fact is that won't happen. We have three major choices: coal-fired units, hydroelectric, and nuclear to satisfy those increasing demands. Of those three, I choose nuclear. I've been around long enough to remember the proposed concept to dam the Broad River. It was met with outrage by the local citizens. In 1988 I was at a hearing much like this and thank goodness we had York County Sheriff's deputies there. The outrage associated with another hydroelectric project paled in comparison to the discussion we've had here today. I've also seen resistance to other coal-fired units. In fact, worried myself about fly ash, burned hydrocarbons and acid rain. And I've also seen nuclear operations provide thousands of megawatts of reliable power in North and South Carolina with very limited environmental impact. As I tell my children, life is about choices. There's no form of power generation with zero impacts on our environment, not even wind and solar. (**0012-16-2** [Farris, Mark])

Comment: Business and residents are extremely supportive of expanding nuclear capacity in the state. There are no other alternatives currently available or as reliable as nuclear in providing baseload power in a carbon-free manner. (**0012-5-3** [Rawl, Otis])

Comment: That power is the same kind of power that we are going to be using here at the William States Lee Nuclear facility. That facility will be 2,200 megawatts. If it was being powered by coal it would require a 200-car trainload of coal every single day. Instead, it's going to need about six, eight semi- tractor trailer loads of fuel every 18 months. The environmental impact of that plant will be significantly lower than any other alternative. We had a solar salesman up here talking about how solar power is so great. What is the solar power of his 3,200 megawatt facility between the hours of 6:00 p.m. and 6:00 a.m.? Zero -- absolutely zero. During -- I'm sorry. I'm a retired sailor. Okay. I spent 33 years in the Navy so my language sometimes goes off. But the reality is the sun does not stay up all the time, believe it or not. Also, the wind doesn't blow all the time. People call renewables renewable. What I call them is unreliable. We need power when we need power. There's no way to store it. We've been studying that stuff for 100 years. Thomas Edison invented batteries over 100 years ago and we still haven't got anything better because chemistry is chemistry -- it doesn't change. Physics is physics. We know how to produce electricity reliably, safely. (**0013-12-2** [Adams, Rod])

Comment: And if we decide we're going to use natural gas to replace coal, to replace nuclear, and to power semi-tractor trailers across the country like T. Boone Pickens wants to do we'll run out of natural gas a lot quicker than that. We don't have the ability to produce wind power reliably because the wind doesn't blow. (**0013-12-4** [Adams, Rod])

Comment: We've been studying energy for a long time. We've known the sun has energy for thousands of years. We've known the wind has energy for thousands of years. We've only know about nuclear for the last 62 years, and we've done pretty well at making it a reliable power source in competition with the coal and oil and gas, in competition with those. It replaces them, it pushes them out of the marketplace, which is one of the reasons why Wall Street doesn't like nuclear, because Wall Street likes coal, oil, and gas (**0013-12-6** [Adams, Rod])

Comment: We've heard a lot about Germany lately. I found some numbers today. Germany's trying to shut down their plants by 2022. The German Association of Industrial and Commercial Energy Cost Customers estimates the cost of an early nuclear exit to be over $4.5 billion per year, which, of course, gets transferred to the people paying the bills. Also, there's -- nuclear is a clean 24/7 baseload source of power, provides almost 20 percent of U.S.'s energy. Unlike wind and solar, nuclear can provide electricity around the clock, even at night when the wind isn't blowing. We heard earlier -- I just want to mention -- a 3.2 gigawatt solar plant that he thought he could build. He also mentioned that he's built -- worked on over a hundred solar plants in the Carolinas. The numbers added up to two megawatts for all 100 of those. So 3.2 gigawatts for one solar farm seems a little bit unreachable. According to the Department of Energy's voluntary reporting of greenhouse gases in 1997 report the single most effective

emission control strategy for utilities was to create nuclear generation. In 2010 nuclear energy accounted for 69% percent of the U.S.'s emission-free generation. (**0013-17-4** [Reichenbach, Adam])

Comment: Alternatives to that are coal, solar, wind, hydro, natural gas. Without trying to go into the discriminators between all of them -- the problem, and as mentioned here before, solar and wind are not reliable. They're periodic suppliers. The energy might be free; the capital cost is not free. The cost per unit of energy delivered is higher than a nuclear plant. Coal is very dirty. I don't know -- there's probably nobody in this room that would like to see a coal plant built near them. I used to work at a coal plant when I was in college. They are quite dirty. Hydro's really not an option for here. Natural gas is probably the closest alternative to nuclear power. However, it's a limited resource. It still is a fossil fuel that emits pollution into the atmosphere that nuclear power plants don't. In summary, nuclear plants are clean, safe, economical, but, most importantly, they're reliable. Electricity -- lots of electricity 24 hours a day, seven days a week. (**0013-18-3** [Bromm, Bob])

Comment: Nuclear power is the cleanest and most efficient source of power that we have. I live near Asheville, NC and I welcome having a nuclear power plant close by, although, I would not welcome a coal burning plant. (**0054-2** [Gaddy, Ron])

Comment: I personally think that the environmental risks are very small compared to a coal plant. With government oversight, nuclear plants are very safe. (**0054-4** [Gaddy, Ron])

Response: *The comments express views that nuclear power is a good alternative compared to other energy generation options. The comments are generally supportive of the finding of the review team in Section 9.2 of the EIS that a number of the alternatives are not capable of meeting the project purpose and need, and that none of the feasible alternatives is environmentally preferable to the proposed action of building two nuclear units at the Lee Nuclear Station site. No changes were made to the EIS as a result of these comments.*

Comment: I think we have to look at a better alternative. I'm happy to say that the United States Department of Energy, on January 12, 2012, seven days ago, released two groundbreaking information resources on national hydrowave and tidal energy resources. According to those reports, which are called the most comprehensive of their kind to date, these water power resources, if developed, could supply one-third of the total U.S. energy demand by 2030. That's not so far away. It would take four or five years before this place could come online if it was built, and I hope it's not. But hydrowave and tidal are among the best of the 20 sources in the EROEI analysis that I cite, and they are all greatly superior to nuclear, both in terms of what you get out for what you put in and in carbon footprint, and hydrowave and tidal are free. These are all greatly superior to nuclear, they're being used in other countries as well as some here. Holland uses tidal and wave generation of electricity and has for some years. The technology is there, it's safe, it works. And another thing nice about it is all of these waterborne,

tidal and ocean doesn't take anything out of our rivers and doesn't put anything in them. All of these can support baseload demand, and that is one of the reasons we've seen things like solar, and rightly so, solar is weak on baseload demands and wind power is sporadic, but tides, waves are pretty darn stable and pretty long lasting. So pursuing this, thanks to the U.S. Department of Energy's recent work, this shows us a better path, and I would hope that we would pay attention and put our money, resources, energy and efforts in that manner. (**0012-13-5** [Howarth, Robert F.])

Comment: Other alternative means of power generation can be brought on line in less time, provide many more construction jobs for many more companies, are less risky, do not require large taxpayer liability subsidy, and do not hold the threat to my health, your health, and ecological health posed by operation of nuclear plants and centuries of storing toxic radioactive wastes. A Better Alternative The U.S. Department of Energy on Jan. 12, 2012 5released two groundbreaking information resources on national hydro, wave and tidal energy resources. According to the reports -the most comprehensive of their kind to date - these water power resources, if developed, could supply 1/3 of total U.S. electricity demand by 2030. Hydro, wave and tidal are among the best of the 20 sources in the EROEI analysis I cite, all are greatly superior to nuclear, and all can support base load demand. (**0093-6** [Howarth, Robert F.])

Response: *The NRC staff recognizes that when evaluating energy alternatives to the proposed project, particularly for technologies that are being developed, the evaluation must include relevant information representative of the current technology. However, the viability of various alternatives to the proposed project is pertinent to the discussion to the extent that the alternative must be capable of reasonably replacing the baseload energy supplied by the proposed project. The alternatives must be technically viable, feasible, and competitive. In accordance with staff guidance (ESRP 9.2.2), the energy-conversion technology should be developed, proven, and available in the relevant region. The staff is not aware of any specific siting, development, or operation of the types of wave and tidal-based hydropower resources described in the comments in this region that are on a large scale (i.e., 10s or 100s of MW). Therefore, this alternative will not be addressed in the EIS. No changes were made to the EIS as a result of these comments.*

Comment: We [Clean Water for North Carolina] support the energy conservation alternative in Section 9.2.1.3 of the draft EIS. Despite the NRC's claim that this method isn't a reasonable alternative, our extensive research has shown that demand reduction through energy efficiency programs is the most cost- effective and job-creating strategy for meeting our energy needs. (**0012-7-8** [Hicks, Katie])

Comment: ...the most cost-effective way to approach the energy supply and demand and environmental issues around energy is energy efficiency. It produces more jobs, it's safer, it has a bigger impact per unit of dollar and energy than any of the other approaches. (**0012-8-1** [Crissey, Brian])

Comment: ...since people are talking about wasting energy I just thought I would give you some real statistics that my husband I have collected. In 2005 I finally convinced the family to turn off things that weren't being used. So in one year just by turning off what we weren't using we reduced our kilowatt hour usage by 43 percent. So I don't think we're really that unusual or atypical. So I just think that this could be a possibility. (**0013-22-1** [Larson, Jean])

Comment: But I want to talk more about the alternatives. And one of the alternatives that is really the most overlooked is energy conservation. Did you know that in Europe the energy consumption is about 40 percent less than what we consume in the United States? That's Europe, folks. They have a high standard of living. We're not talking about the Third World here. Although if you want to talk about the Third World there is a very low energy consumption in Peru, where I just was. And the fact is that we can do a lot better with energy conservation. Energy conservation is an amazing contributor of jobs. And those are local jobs, they are good jobs, they are jobs that last for a lifetime as opposed to some of these nuclear power plant construction jobs that are just short term. We're talking about jobs that could be considered green collar jobs, like weatherizing homes, stopping the energy leaks. Emory Levins used to say instead of -- if you have a stopper to plug up your bathtub, then you don't have to keep filling it up with hot water every five minutes. So we need to design better energy efficiency, and actually just to utilize the energy efficiency measures that we already know about. This would help to improve the housing stock for many poor people who are, you know, spending tremendous amount of money trying to heat their homes, sometimes with electricity, because that's the only thing that they have. We need to realize all of the amazing wealth of knowledge that's out there about energy conservation. The problem has been, of course, that we have energy industries which really do not want conservation. So they may give lip service to conservation and they may do a little bit so that people are fooled into thinking that, oh, yeah, they've already done the conservation bit. Well, I'm sorry, but we should at least be able to catch up with where Europe is. (**0013-32-2** [Holt, Cathy])

Comment: We as a species need to begin thinking about what we can do differently in our lifestyle. And the comment was made, Well, I leave my computer on during the day, I leave this on, I leave that on. Each one of us has a responsibility to use as little power as possible. And I think what we're losing sight of here is that conservation is a source. That's where we all need to begin. And then after conservation we need to look at renewable, safe energy systems. (**0013-5-3** [Cremer, Claudine])

Comment: [Before acting on this proposal, adequate AND PUBLIC review should include:] Approaches to eliminate or minimize growth in energy consumption should be considered as well. (**0021-4** [Rinsler, MD, Steve])

Comment: I would be more in support of energy conservation efforts and education and less toxic forms of energy production like wind and solar. (**0022-4** [Sloss, Barbara])

Comment: Let's all cut back on our electric usage which not only affects our individual bottom line, but also protects the environment for future generations. (**0035-2** [Gardner, David])

Comment: Conservation alone would eliminate the need for more electricity. (**0085-4** [Allison, Patricia])

Comment: Conservation & efficiency alone can eliminate the need for this plant. (**0086-4** [Rylander, Kimchi])

Comment: The Southeast has done very little to reduce use of electricity. We can make significant reductions with little effort and few dollars spent. In 2005 my family decided to simply turn off lights when we left a room and turn off the TV, radio and music when we were no longer paying attention. We also change most light bulbs to CFLs. In one year we reduced our KWHs used by 43%. We had been needlessly wasting energy. When we decided to stop using the dryer and hang our clothes on a drying rack we reduced our usage from 2005 by 62%. I am guessing that our family is not that different than others and they, too, could save about 30 to 40% of the KWHs used by turning off what they no longer need to have on. (**0097-1** [Larson, Jean])

Response: *The comments suggest that energy efficiency and conservation would be a better alternative than the proposed nuclear units. Any alternative energy source must be able to meet the purpose and need of the action (i.e., production of 2200 MW(e) of baseload power to supply the future needs of the service territory). As discussed in Section 9.2.1 of the EIS, the review team concluded that conservation and DSM programs are very successful in reducing peak load. Duke's programs in these areas are expected to offset the need for 1800 MW(e) of generation by the year 2030. However, those savings have already been accounted for in power planning and there is still a demonstrated need for additional baseload capacity, as discussed in Chapter 8 of this EIS. Thus, the implementation of conservation and DSM programs is not a reasonable alternative for providing baseload power generating capacity. No changes were made to the EIS in response to these comments.*

Comment: Section 9.2.5, Page 9-38, Lines 20-23: Referring to Table 9-5, the DEIS states: "Considering the addition of life cycle greenhouse gas emissions from the production of electricity from a nuclear power source, i.e., those from the fuel cycle and transportation of workers, total emissions for plant operation over a 40-year period would increase to about 54,000,000 MT." Because Table 9.5 represents "Direct Carbon Dioxide Emissions", carbon emissions estimated for the coal-fired, natural-gas-fired, and combination alternatives shown in Table 9-5 presumably also do not include fuel cycle and transportation-related emissions. (**0134-70** [Fallon, Chris])

Response: *The commenter is correct. However, the review team believes that the current text is sufficiently clear. No changes were made to the EIS as a result of this comment.*

Comment: Section 9.2.2, Page 9-7, Lines 19-23: The DEIS states: "the EIA reference case is projecting that between 2010 and 2035, natural-gas-fired capacity would account for approximately 60 percent of new capacity additions; renewable energy sources would account for approximately 25 percent of new capacity additions; coal-fired capacity additions would increase by 11 percent; and new nuclear plants would account for approximately 3 percent of new capacity additions (DOE/EIA 2011)." The coal-fired capacity will not increase by 11 percent; rather coal-fired capacity will account for 11 percent of the new capacity additions. (**0134-69** [Fallon, Chris])

Response: *The commenter is correct. Section 9.2.2 was revised to indicate that coal would represent 11 percent of new capacity additions.*

Comment: I honestly just don't see how that conclusion [environmentally preferable] can be legitimately reached with the life cycle of radioactive waste. This is incalculable generations out into the future that this would effect. So, yeah, I would just like to ask you to invest in my generation's future. (**0013-23-6** [Buscarino, John])

Response: *This comment concerns Section 9.2 of this EIS regarding radioactive wastes as a factor in the energy alternatives assessment. As discussed in the Section 9.2.5, Summary of Comparison of Energy Alternatives, the distinguishing impacts among the energy alternatives are primarily related to emissions from the alternative generation sources (air quality). The footnote for Table 9-4 indicates that the conclusions for the environmental impacts from nuclear energy are presented in Chapters 4 and 5. This excludes the impacts related to the fuel cycle and transportation which are presented in Chapter 6. This apparent exclusion was not intentional. The review team agrees that the impacts related to the fuel cycle and the associated transportation impacts should be included for the nuclear option. The footnote to Table 9-4 has been modified to reflect the inclusion of these impacts. As discussed in Sections 6.1 and 6.2 of this EIS, the environmental impacts related to radioactive waste and transportation are SMALL. The review team concluded that the impact category for Waste under the nuclear option is SMALL with the impacts of the fuel cycle included. The comparison of nuclear to the other energy alternatives is unaffected. The distinguishing resource area impacts between the alternatives (air quality and waste for coal, air quality for natural gas, and the combination of alternatives) remain. The review team concludes that none of the alternatives is environmentally preferable to the proposed nuclear units.*

E.2.22 Comments Concerning System Design Alternatives

Comment: CHAPTER 9 -ENVIRONMENTAL IMPACTS OF ALTERNATIVES
DNR has concluded the Licensee has conducted a thorough and exhaustive review of the need for obtaining additional water supply for safe operation of the proposed facility during periods of extreme drought. A number of the alternatives that have been put forward for additional water supply represent engineering solutions exceeding the capability for DNR analysis. DNR is

satisfied the Licensee has identified the least damaging alternative to natural resources for provision of additional water supply based on comparison of alternative supplemental water supply options. (**0126-29** [Vejdani, Vivianne])

Response: *This comment states that the SCDNR is satisfied that the applicant has identified the supplemental water supply alternative that is least damaging to natural resources. No change was made to the EIS as a result of this comment.*

Comment: [Recommendations:] Water sources that would reduce impacts to Water of the United States should be explored, and these and other alternatives evaluated in the FEIS. The FEIS should explain the rationale for exclusion of alternatives that are eliminated from consideration. (**0142-13** [Mueller, Heinz])

Comment: Alternatives in the DEIS include the no-action alternative, energy source alternatives and system design alternatives. Regarding design alternatives, we note that the NRC recently approved the Westinghouse AP1000 pressurized reactor design in a design certification process. 40 CFR Part 230.10(a) requires that the preferred alternative should be the least environmentally damaging practicable alternative (LEDPA).

EPA reviewed the Joint Public Notice (JPN) and submitted comments regarding the compensatory mitigation and permit action under separate cover on March 6, 2012 (see enclosed letter to USACE). EPA's letter states: "*The applicant has explored many alternative sites and alternatives for cooling water sources. However, the EPA recommends further analysis of possible avoidance and minimization, as well as a more comprehensive alternatives analysis. The applicant states in the Draft Environmental Impact Statement dated December, 2011 (DEIS) that using a Combination Wet/Dry Hybrid Cooling-Tower System would reduce the water required from Pond C from 9,874 acre-feet to 2,804 acre-feet, a 72 percent reduction. While the applicant states this would not fully eliminate the need for Pond C, it could greatly reduce the needed size of the impoundment allowing a smaller footprint at the current location or allowing the impoundment to be relocated. Further, water sources such as offline impoundments that would eliminate impacts to Water of the United States should be explored, and we recommend that these and other alternatives be integrated into the Final Environmental Impact Statement (FEIS)*. "

Recommendations: We appreciate the analysis of many alternative sites and alternatives for cooling water sources. However, EPA recommends further analysis, in order to avoid and minimize environmental impacts related to water sources for the proposed project. The FEIS should document the evaluation and decision processes, and discuss the rationale for exclusion of alternatives that are eliminated from consideration. (**0142-4** [Mueller, Heinz])

Response: *These comments suggest further analysis of alternative water sources for the two proposed units. Duke provided detailed analyses of alternative water sources in its supplement*

to revision 1 of the ER and subsequent responses to requests for additional information. The review team evaluated other potential water sources in the area and determined that there are no viable alternatives to the Broad River. As a result, the review team concluded that none of those water supplies were environmentally preferable to that proposed for use at the Lee Nuclear Station site. The review team's evaluation of alternative water supplies is presented in Section 9.4.2 of this EIS. No changes were made to the EIS as a result of these comments.

E.2.23 Comments Concerning Alternative Sites

Comment: I am writing to state that as a resident of Buncombe County in North Carolina I do not want to see a nuclear power plant within 60 miles of my home. My understanding is that there may be one located in Gaffney, SC. I sincerely hope you will consider relocating it further away from our area. (**0008-1** [Kelly, Kitty])

Response: *In its search for alternative sites, Duke started with a region of interest defined as its service territory. The use of a defined service territory is consistent with the staff guidance in ESRP 9.3, as discussed in Section 9.3.1 of the EIS. Duke, and the NRC staff in its evaluation in Section 9.3.1, did consider alternative locations throughout Duke's service territory. The NRC staff concluded in Section 9.3.6 that none of the alternative sites were environmentally preferable to the proposed Lee Nuclear Station site. No changes were made to the EIS as a result of this comment.*

Comment: Section 1.4, Page 1-13, Lines 17-19: Duke Energy no longer owns the Middleton Shoals Site. The site was owned by Duke at the time of the siting study but was transferred to Crescent Development when Crescent was separated from Duke Energy. (**0134-4** [Fallon, Chris])

Comment: Section 9.3.5, Page 9-156, Lines 2-3: The DEIS states: "The Middleton Shoals site is wholly owned by Duke, and is maintained as forested land." The site was owned by Duke during the alternative site evaluation (Environmental Report 9.3.2.1, page 9.3-8 and 9.3-9); however, the land was transferred to Crescent Development when Crescent was separated from Duke Energy. (**0134-78** [Fallon, Chris])

Response: *The comments request changes to the EIS to reflect the fact that the Middleton Shoals site is no longer owned by Duke. (It was owned by Duke at the time of the site-selection study.) Changes were made to Sections 1.4 and 9.3.5 to reflect the change in ownership.*

Comment: Section 9.3.3, Page 9-48, Table 9-6: Shearon Harris Units 2 and 3 should also be identified. (**0134-71** [Fallon, Chris])

Response: *The commenter is correct, proposed Units 2 and 3 at the Shearon Harris site should have been included in the table. The only portion of the review of the Perkins site that*

would be affected is the evaluation of severe accidents in Section 9.3.3.11. In the draft EIS, the staff had already included the two proposed units at Shearon Harris site in its evaluation, even though the units were not listed in the table. So, no changes are required to that section. Table 9-6 was revised to include the two proposed units at the Shearon Harris site.

Comment: Section 9.5, Pages 9-213 and 9-214: The Section 404 permit application submitted in November 2011 provides updated acreages and linear feet for impacts to wetlands, open waters, and streams. The application also provides updated acreages and linear feet of wetlands, open waters, and streams within the entire project boundary. The permit application includes impacts not only from fill, but impacts resulting from draining and dredging of open waters, inundation, and clearing of forested wetlands. This section should be revised using acreages in the permit application. Additionally, impacts should be described to clarify that not all impacts are directly due to the placement of fill. For example, out of the 67,275 linear feet of impacts to streams, 60,414 linear feet are due to inundation and not fill. It would also be helpful to distinguish between permanent, temporary and clearing impacts. (**0134-84** [Fallon, Chris])

Comment: Section 9.5.2, Page 9-214, Table 9-19: This table should be updated with acreages and linear feet provided in the Section 404 permit application. Either the subheading of "Sites" should be changed to reflect that these impacts also include those from the supplemental cooling water reservoirs or impacts from the cooling water reservoirs should be separated into another subgroup and labeled separately. It may also be helpful to remove the word "fill" from the row headings, since many of these impacts do not directly result from the placement of fill. (**0134-85** [Fallon, Chris])

Response: *The text and table in Section 9.5, U.S. Army Corps of Engineers Alternatives Evaluation, have been edited to reflect updated impacts to wetlands, streams, and open waters contained in the November 2011 Section 404 permit application and the commenter's suggested changes.*

E.2.24 Comments Concerning the Benefit-Cost Balance

Comment: In addition, Duke Power is proposing a rate hike from its customers to fund the purchase of Progress Energy and the construction of this unwanted nuclear power plant! (**0001-4** [Stoll, Irene])

Comment: Duke Power is apparently expecting taxpayer guarantees on this construction??if it were truly a wonderful idea there would be much private money available and taxpayer involvement would not be necessary. (**0002-4** [Smy, Gayle and Allison])

Comment: Rate payers and taxpayers should not have to pay for a plant they do not want and Wall Street won't touch! (**0004-10** [Cunningham, Kristine])

Comment: Nuclear power is too expensive and dangerous, both in start up costs and in long term environmental hazards and waste materials. (**0005-3** [Lewis, Brenda K.])

Comment: The cost of commercial nuclear fuel today is 65 cents per million BTU. Now, a lot of people don't deal in million BTUs, but that's the market that we use for natural gas in the U.S. If you look on Bloomberg, you'll see that cheap natural gas, the stuff that everybody is so excited about, costs $2.75 per million BTUs today. Back in 2008 when the manufacturers in South Carolina were having so much trouble, part of the reason they were having trouble in 2008 was the cost of natural gas had skyrocketed up to about $14 per million BTU. Compare that to 65 cents per million BTU from commercial nuclear fuel, and that price has been relatively stable, even not adjusting for inflation, for about 25 years. There's no projection that that cost will go up because that cost includes the cost of disposal, it includes the cost of enriching the material, it includes the cost of mining, transporting, storing and interest on the investment during that time. (**0012-12-3** [Adams, Rod])

Comment: Affordable, $14 billion and a price tag that is likely to increase. The ones that I've been familiar with over the years, I was deeply involved in trying to stop the Clinton Nuclear Power Plant in Illinois back many years ago, it was said this is going to be efficient, it's going to be $1 billion, turned out to be $4-. I mean, these prices continually go up, this was $11-, now it's $14-, what's it going to be later? Where is the line item that includes the cost of proper, with integrity, waste management? That's off-loaded, that's not shown in the costs. Who pays for that? Well, the taxpayers. Well, that's still us. (**0012-8-4** [Crissey, Brian])

Comment: I've heard talk about cost. From our perspective, cost is a big deal, believe me. We will be paying the lion's share of the cost of these facilities, and my members understand that, and they have had a lot of give and take with Duke Energy over that fact, regarding the nuclear plants in particular. That's not an easy thing for us to look at, but it's something that has been a big issue for us and we understand that this is money that should be invested at this time in these facilities. (**0012-9-3** [Gossett, Lewis])

Comment: Whereas since the 1970s Wall Street has advised against investment in the nuke industry U.S. taxpayers shoulder the entire financial risk through federal loan guarantees to an industry with default rates of well over 50 percent. (**0013-11-7** [Smith, Coleman])

Comment: Historical Money Problems: Price tag for the 2 nuclear reactors has grown from $11 to $14 billion. Duke Power wants customers, 70% in NC and 30% in SC, to pay pre-construction costs through rate hikes in addition to taxpayers shouldering the entire financial risk through Federal Loan Guarantees. Another Bail-Out ? Wall Street won??t invest because as the Congressional Budget Office says, default rate on loans for new reactors ??very high well above 50%. Duke and Progress said their proposed merger was the only way to build more nuclear but the Fed. Govt. has refused the request twice in opposition to such a large monopoly. The estimated start up date is from 2018 to 2020. (**0017-7** [Morgan, Tom and Barbara])

Comment: The complete costs for this reactor would be staggering and shouldered by Duke Power customers and American taxpayers, an aweful burden in these bad economic times. (**0019-5** [Doebber, Tom])

Comment: The complete costs for this reactor would be staggering and shouldered by Duke Power customers and American taxpayers, an aweful burden in these bad economic times. (**0020-5** [Klein, Art and Michelle])

Comment: Nuclear power plants are expensive to construct and maintain. (**0022-2** [Sloss, Barbara])

Comment: Nuclear power is not a cost-effective solution; in fact, it would tie up huge amounts of capital which can be more quickly, equitably and safely used for efficiency/conservation and renewable energy. (**0024-1** [Whitefield, Anne])

Comment: The complete costs for this reactor would be staggering and shouldered by Duke Power customers and American taxpayers, an aweful burden in these bad economic times. (**0026-4** [Doebber, Ian] [Doebber, Rachel])

Comment: On a personal issue, I do not want my own electric bills to soar upwards in order to pay for building a plant that I am extremely opposed to. (**0030-6** [Swing, Carol])

Comment: Who is going to pay for this mega project? As a retired person living on a limited income, I hope it will not be me as I fear. I know that electric power is necessary for modern life. Both domestic oil and coal are becoming more expensive, and relying on foreign petroleum from the Middle East holds us hostage to foreign agendas. Perhaps it is time to prioritize our energy spending. (**0035-1** [Gardner, David])

Comment: Cost. Duke Power wants customers, 70% in NC and 30% in SC, to pay pre-construction costs through rate hikes. In addition, taxpayers will be asked to take on the entire financial risk through Federal Loan Guarantees. Wall Street won't invest because, as the Congressional Budget Office says, default rate on loans for new reactors is very high well above 50%. This seems like another bail-out in the making. (**0041-6** [McMahon, John])

Comment: Particularly distressing -- and one might even state, "undemocratic" -- is the fact that nuclear energy companies are attempting to place the huge costs on the backs of taxpayers -- even before a plant begins construction and before the final price tag is realized. Wall Street won't risk investing in such stations and insurance companies won't risk insuring them. These facts should tell us loudly and clearly that such projects are unwise and not to be subjected to taxpayer risk. (**0046-3** [Southworth, Win])

Comment: My position [opposition] is based on... The cost of the project which DUKE ENERGY would encumber on the heads of it's customers even BEFORE it's completion. (**0047-3** [Lauden, Loy])

Comment: The price tag for the two nuclear reactors at Lee has grown from $11 to $14 billion. Duke Power wants customers to pay pre-construction costs through rate hikes in addition to taxpayers shouldering the entire financial risk through Federal Loan Guarantees. Another Bail-Out in the making! Wall Street won't invest because as the Congressional Budget Office says, default rate on loans for new reactors are very high, well above 50%. (**0048-6** [Skeele, Michele and Skip])

Comment: There is no way that nuclear power plants can be developed or built without massive subsidies from the government. (**0051-4** [Oehler, Susan])

Comment: Duke wants its customers, 70% of whom are in NC and 30% in SC, to pay pre-construction costs through rate hikes--paying for a product that they may or may not receive in the future. Through Federal Loan Guarantees, Duke would be bailed out if the plants wind up not being built and rate increases would not be refunded, even though the default rate on loans for new reactors is above 50%. (**0055-3** [Schneyer, Julie])

Comment: Regardless of what Duke and Progress Energy may tell you, this is not a cost effective way to supply the Upstate with power. (**0056-2** [Rhyne, Faith Rachel])

Comment: How can the inevitable costs clearly greater than $12 billion, largely underwritten by public and ratepayer funds, be justified, when more economical alternatives for providing electrical energy needs are available? (**0058-1** [Patrie, MD, MPH, Lewis E.])

Comment: The collosal cost of building one of these plants should also be considered, particularly when one considers the fact that new energy technologies that could come on line in the foreseeable future will render them obsolete, in which case the investors will not get paid back. (**0063-7** [da Silva, Arjuna])

Comment: The collosal cost of building one of these plants should also be considered, particularly when one considers the fact that new energy technologies that could come on line in the foreseeable future will render them obsolete, in which case the investors will not get paid back. (**0076-6** [Anonymous])

Comment: Cost: The price tag for the 2 nuclear reactors now stands at $14 billion; and could rise further. Duke Power wants customers to pay this. Federal loan guarantees? The default rate is high. Is this where the U.S. should spend its monetary resources when we have so many other needs for infrastructure, housing, environmental protection? (**0082-3** [Karpen, Leah R.])

Comment: I believe that the fact that nuclear facilities are too risky to be insured by private insurers means that the U.S. government takes all the risk, in other words, the public takes the risk-this in addition to having to pay for its installation in the first place. (**0083-5** [Broadhead, Susan])

Comment: [There are many other decisive reasons to stop the proposed plant, including...] ...the exorbitant cost... (**0083-8** [Broadhead, Susan])

Comment: Construction costs of nuclear facilities are often 7 times estimates. Construction times are 2 times or more than estimates. These all show up as costs that are ultimately borne by we taxpayers. (**0093-3** [Howarth, Robert F.])

Comment: Economics I believe investing millions of dollars required to bring on line a nuclear power plant is not a good investment. History demonstrates that cost always exceeds initial estimates, financing is dependent on government subsidy in the form of liability insurance, and the 5 to 10 year or more construction time is too long. (**0093-5** [Howarth, Robert F.])

Comment: [There are many other decisive reasons to stop this plant, including] ...the exorbitant cost... (**0098-7** [Broadhead, Susan])

Comment: And it [nuclear power] is subsidized with public monies against the will of the majority of citizens, a massive welfare program. (**0100-5** [Richardson, Don])

Comment: Rate payers and taxpayers should not have to pay for a plant they do not want and Wall Street won't touch! (**0112-10** [Andrews, Josephine] [Anonymous] [Beattie, Kathryn E.] [Boever, Virginia] [Boyle, Ella] [Brogan Prindle, Cathleen] [Davis, John] [Flores, S.] [Hamahan, Clare] [Keil, A. Eugene] [Leverette, Will] [Peterson, Harry] [Peterson, Martha J.] [Rittenberg, David] [Rustin, K.])

Comment: This is not to mention the fact that that given cradle-to-grave analysis, nuclear power is simply not very cost-effective. (**0116-5** [Schmitt, Daniel])

Comment: When insurance and responsible waste management are factored in, nuclear power is most likely to be prohibitively expensive. (**0117-10** [Crissey, Brian])

Comment: Nuclear power is allegedly a cheap form of electricity, but the playing field is not level. The public is not interested in bailing out an uninsured nuclear accident, so the cost of sufficient insurance needs to be included, which might be about $4 billion annually, if Duke's rates are similar to my fire insurance. (**0117-6** [Crissey, Brian])

Comment: The problem of financing nuclear reactors and the expensive equipment and backup systems to limit the dangers of both routine and accidental releases of radioactivity into the air, the soil, and the water. (**0119-1** [Thomas, Ruth])

Comment: [The following problems are among those we have identified:] The cost of new equipment and additional risk-reduction measures which Fukushima made us aware that we need. (**0119-12** [Thomas, Ruth])

Comment: The problem that Duke Power wants to charge rate-payers for these pre-construction activities without any guarantee that its customers will ever receive electricity from the proposed plant. For example, the Cherokee plant was never finished at this same site, after many millions of dollars had been spent. (**0119-19** [Thomas, Ruth])

Comment: Expense - With the merger of Progress Energy and Duke, we will all be footing the bill. (**0122-4** [Justice, Cynthia and Michael])

Comment: And speaking of subsidizing, why is the public expected to subsidize a risky, expensive investment by Duke Energy? When they finish, if they do, they will still charge the public whatever they want for the privilege of paying for nuclear energy? Duke Energy will profit and the rest of us will pay unwillingly as a matter of regulation. Perhaps one has to be a millionaire to be considered an "investment partner" in a risky venture and reap benefits if it pays off. The public is just being used and will not reap any monetary benefits, but will certainly pay in rate hikes and in risk to health and safety. No increase in power bills for corporations using public money for their own profits! (**0132-5** [Cahill, Joanne])

Comment: Duke wants its customers to support the huge $11-$14 billion price tag for this project. This BURDEN it purports to place in the current depressed economy ON ITS CUSTOMERS to support its own expansion and profits is nothing less than UNCONSCIONABLE! Allowing these plans to go forward will be allowing another BAIL-OUT! (**0133-4** [Christopher, Lucy D.])

Comment: Section 10.6.2.1, Page 10-30, Lines 6-9: The transmission costs are included in the overall $11 billion cost. (**0134-87** [Fallon, Chris])

Comment: I am a resident of Buncombe County, NC and a customer of Progress Energy who is attempting to merge with Duke. If that happens, I will be among them any forced to bankroll this unsafe, unprofiable technology through Forced increases in my electric bill. (**0140-2** [G., Edith A.])

Response: *The NRC is not involved in establishing national energy policy. Rather, it regulates the nuclear industry to protect the public health and safety and common defense and security within existing policy. These comments express concerns regarding the cost of building a nuclear power plant and what impact potentially increasing costs may have on the financial viability of the company, regional electric rates, and taxpayers. Although the NRC has requirements for licensees (10 CFR 50.75) to provide reasonable assurance that funds would be available for the decommissioning process and to establish financial qualifications (10 CFR*

50.33), general issues related to the applicant's financial viability and rate setting are outside the NRC's mission and authority and are not considered in the EIS. Issues related to taxes, loans, or other governmental incentives for particular types of energy production are also outside the NRC's mission and authority and are not addressed in the EIS. No change was made to the EIS as a result of these comments.

Comment: Today I want to emphasize one overriding concern and that is that we citizens for a long time have been misled by nuclear proponents claiming that nuclear energy is clean and less expensive than other sources of energy. I say this because I recently became aware of EROEI analysis, energy return on energy invested. That analysis illustrates in a study that of 20 feasible energy sources considered, 14 are superior to nuclear. EROEI, also known as Net Energy, has been defined as the energy delivered by an energy-obtaining activity compared to the energy required to get it. In other words, how much energy you get out of something divided by the amount of energy you put into it to get it. This is an overall efficiency assessment and it constitutes a whole system consideration. In the case of nuclear from the extraction of ore at its source, its transportation and processing, the construction and operation of the delivery plant, and the cost of any subsequent waste handling and/or disposal. This, I believe, is looking at the whole picture, the way it really is. (**0012-13-1** [Howarth, Robert F.])

Comment: I contend that the EROEI analysis should be applied to all projects, especially those that are dependent on taxpayer support. I am concerned that EROEI appears to have been ignored in your work in the EIS. While I recognize that the mission of NRC is not to determine national energy policy, I do think you would be obliged to recommend the use of EROEI as a powerful tool toward your goal of, quote, recommending a new plan for America's nuclear future (**0012-13-3** [Howarth, Robert F.])

Comment: As far as the economics, I believe that investing millions of dollars required to bring online a nuclear power plant is not a good investment. History demonstrates that cost always exceeds initial estimates, financing is dependent on government subsidy in the form of liability insurance -- we heard about that already today, Price Anderson, what-have-you -- and the five to ten year or more construction time is too long. Other alternative means of power generation can be brought online in less time, provide many more construction jobs for many more companies, are less risky, and do not require a large taxpayer liability subsidy, and do not hold a threat to my health, your health, our children's health and ecological health that is posed by the operation of nuclear plants and the centuries of storing toxic radioactive waste. (**0012-13-4** [Howarth, Robert F.])

Comment: Concern Today I want to emphasize the overriding concern that we citizens have been misled by nuclear proponents claiming that nuclear energy is clean and less expensive than other sources of energy. This is revealed by EROEI analysis, Energy Return on Energy Invested ', illustrating that of 20 feasible energy sources considered, 14 are superior to nuclear. EROEI, also known as Net Energy, has been defined as "the energy delivered by an energy-

obtaining activity compared to the energy required to get it". This overall efficiency assessment constitutes a whole system consideration from the extraction of ore at the source, its transportation and processing, construction and operation of the delivery plant, and cost of any subsequent waste handling and/or disposal. This I believe is looking at the "whole picture" in the way it really is. A carbon footprint comparison shows nuclear as having the 3rd highest carbon footprint among the same 20 candidates following only conventional coal and tar sands. I contend that EROEI should be applied to all projects, especially those dependent on taxpayer support. I am concerned that EROEI appears to have been ignored in your work. While I recognize that the mission of BRC is not to determine national energy policy I do think you would be obliged to recommend the use of EROEI as a powerful tool for your goal of "recommending a new plan for America's Nuclear Future". (**0093-1** [Howarth, Robert F.])

Comment: The position of short term bottom line profit thinking proponents of nuclear relies on huge taxpayer supported government subsidies for liability insurance, and on a narrowly defined "partial system" efficiency assessment. Rather we must look at the "whole picture" the way it really is using EROEI. (**0093-4** [Howarth, Robert F.])

Comment: Whatever it costs to do it right [i.e., dispose of spent nuclear fuel] is the cost that needs to be included, before anyone alleges that nuclear power is cheaper than energy efficiency or solar. (**0117-5** [Crissey, Brian])

***Response*:** *The level of detail in the EIS for the comparison of the relative benefits and costs of the proposed project is consistent with the staff's charge under NEPA and its own guidance. The relative cost and efficiency of alternative energy sources was not considered in Section 9.2.5 because no alternative energy sources were determined to be feasible and environmentally preferable. The comments did not provide any information that changed the results of that analysis. Therefore no change was made to the EIS.*

Comment: Additionally, nuclear power plants have the lowest electricity production cost since 2001 when compared to other options such as coal, natural gas, and oil, which helps -- this helps keep customers' electricity rates lower. (**0013-4-3** [Fallon, Chris])

Response: *This comment expresses support for nuclear power in general. No change was made to the EIS as a result of this comment.*

Comment: And the Japanese, who have been dealing with earthquakes forever, have major earthquakes all the time and their buildings sway back and forth on big shock absorbers, their design was safe and Fukushima was a major disaster amounting to at least $235 billion so far and still counting, getting larger because there's going to be Fukushima disease, there's going to be genetic downsides to this, it's going to go on and on, get worse and worse. So don't worry about it, there's insurance. 1957 Price Anderson Act limits the liability of the nuclear industry to $11 billion, after which what do you have? Bailout. Who's in favor of a bailout proposal for the

insurance for the disaster possibility for this plant? How many of those politicians running in the State of South Carolina right now come out and say, Well, I'm really in favor of bailouts? No. Bailouts are not good. You've got a 10 percent, 5 percent, 10 percent coverage of the potential disasters from something like Fukushima happening here. Now, Fukushima was $235 billion and counting, they had four of the six reactors in operation, two of them would be accounted for with the plant here, so maybe half of the damages at Fukushima could be estimated, $117 billion, maybe $120 billion. If you're covering maybe 10 percent of that with the Price Anderson Act, you basically have no insurance plus bailout, and that doesn't work. (**0012-8-6** [Crissey, Brian])

Response: *The NRC does not consider a number of issues in its environmental reviews for licensing actions, but does address safety, security, and emergency preparedness issues in the safety review that the agency conducts in parallel with the environmental review. No change was made to the EIS as a result of this comment.*

Comment: So anyway, when you look at the price issues, imagine that what's being discussed here is really not honest, these are not the honest prices. It doesn't include proper management of the waste and it doesn't include proper paying for evacuations and things like this. There are things that are missing in the prices. (**0012-8-7** [Crissey, Brian])

Comment: There are so many concerns about producing power with nuclear energy from the fact that the AP1000 isn't in operation anywhere at this time to the cap on liability. If anything goes wrong, which is 12.8 -- costs 14 billion to build the plant, but if anything goes wrong and the plant impacts, let's say, 300,000 people at $12.8 billion that's like $44,000 a person for loss of your land or your property. (**0013-26-1** [Sloan, Judie])

Comment: [Before acting on this proposal, adequate AND PUBLIC review should include:] The lifetime costs of the different approaches should be calculated, including prevention and remediation of environment damage. The lifetime costs should be borne by the company undertaking the project, rather than users or the community at large. (**0021-5** [Rinsler, MD, Steve])

Comment: The problem of escalating costs of building the proposed Lee Station as well as increased costs for transportation, storage, and disposal. (**0119-20** [Thomas, Ruth])

Response: *The NRC does not consider a number of issues in its environmental reviews for licensing actions but does address safety, security, and emergency preparedness issues in the safety review that the agency conducts in parallel with the environmental review. The NRC conducts a benefit-cost analysis during the environmental review. It requires financial assurance for decommissioning for all applicants, who also must carry nuclear accident insurance under the Price-Anderson Act. The comments did not provide any information that changed the results of that analysis. Therefore, no change was made to the EIS as a result of these comments.*

Comment: Uranium is not a sustainable commodity. (**0024-6** [Whitefield, Anne])

Response: *This comment provides general information in opposition to nuclear power. It provides no specific information related to the environmental effects of the proposed action and will not be evaluated in the EIS. The comment did not provide any information that changed the results of that analysis. Therefore, no changes were made to the EIS.*

E.2.25 General Comments in Support of the Licensing Action

Comment: And last but not least, I live right here in Cherokee County, I live on the Broad River, I live right across from where this thing is going to be built, so safety and environment are, of course, important to me personally as well as professionally here in town. I've personally worked with folks from Duke Energy, I've seen their commitment to excellence, and I have the utmost faith in them that they're going to do what is right to continue to be able to provide low cost, safe, reliable energy for us in the future. (**0012-17-2** [Cook, Jim])

Comment: My third point is that this site will be safe, clean and environmentally friendly. Citizens wish to live and businesses seek to operate in areas that are clean, safe and environmentally sound. These are also key factors affecting the region's quality of life, as I'd mentioned earlier. In addition to being an outstanding corporate citizens, Duke Energy has a good reputation for operating safely and for protecting the environment in the regions in which they operate and serve. (**0012-18-3** [Youngblood, Rob])

Comment: Nuclear energy currently plays and will continue to play a key role in meeting our nation's electricity needs. Duke Energy remains firmly committed to nuclear energy and to keeping Lee Nuclear Station an option for our customers in the future. Thank you once again for giving me this opportunity. (**0012-2-4** [Jamil, Dhiaa])

Comment: I will say this, if you've got to look at things like safety and health, which this organization should do and which I have spent a lot of time doing through my career, there's no better place to start than Duke Energy. Again, I regulated them. I've worked with them over time, I'll admit that up front and disclose that to you, but I've also regulated them, and they set the standard for health and safety. They have reliably and safely operated one of these facilities just down the road from where I was born and raised in Greenville County. They've operated one over in Oconee County for a long time, no issues. (**0012-9-5** [Gossett, Lewis])

Comment: Also, the community involvement Duke provides is being shown greatly throughout the Carolinas, and we have a great history -- Duke has a great history of community service and more areas -- more people in the area will offer more community service. (**0013-17-3** [Reichenbach, Adam])

Comment: And we feel that Duke Power will be -- or Duke Energy -- it used to be Duke Power when I was growing up. Duke Energy will be a good steward of our natural resources. (**0013-2-2** [Moss, Representative Steve])

Comment: Because with their history of environmental stewardship and what they've done in the communities we look forward to having Duke Energy as a neighbor. (**0013-2-5** [Moss, Representative Steve])

Comment: I mean, this is a great thing for Cherokee County. This is a blessing. Cherokee County has been blessed to have this surplus that we've had, but this is just a blessing to where we're going to be able to give employees raises, we're going to be able to create revenue, infrastructure for this -- and we just welcome Duke. I mean, one of the duties that we do take on as an elected official is to create jobs, to create revenue, to create working partnerships with these companies that come in there. And it's our duty. We wouldn't let anything come to Cherokee County that's not safe. I don't think the NRC would do that either. But, you know, that's where the Council stands. We support this whole-heartedly and we welcome Duke to Cherokee County. (**0013-3-1** [Spencer, Tim])

Response: *These comments express support of the Lee Nuclear Station COL application and Duke Energy, but do not provide any specific information relating to the environmental impacts of the proposed action. No change was made to the EIS as a result of these comments.*

Comment: You have my backing on these measures. (**0010-1** [Cox, Judith])

Comment: We [South Carolina Chamber of Commerce] strongly encourage continued forward progress on the construction and operating license to Duke Energy in a timely manner. (**0012-5-6** [Rawl, Otis])

Comment: But I support this project 100 percent. (**0013-2-1** [Moss, Representative Steve])

Comment: GO FOR IT! The sooner we learn about the safeness of Nuclear power the better! YOU have MY VOTE. (**0036-1** [Richardson, Ed])

Response: *These comments express general support of Duke's COL application. No changes to the EIS were made as a result of these comments.*

Comment: I believe the Lee facility will be the most efficient and less environmentally impactful situation we have to sustain our economy, security and overall quality of life we now enjoy. (**0012-16-4** [Farris, Mark])

Comment: I am the president of our [York County] chamber of commerce. We have 800 business members and represent a broad spectrum of businesses actually throughout York

County. I'm here to speak on behalf of the project and in support of the NRC's findings that there are no environmental impacts that would preclude the issuing of the licenses for the two new reactors at the Lee Nuclear Station. (**0012-18-1** [Youngblood, Rob])

Comment: We've also worked to ensure safety and security will be our highest priority for this proposed station just as it is for our current nuclear stations. Following the tragic events in Japan last year after the earthquake and the devastating tsunami, the nuclear industry, including Duke Energy, undertook immediate actions and continues today implementing longer term recommendations to ensure our nuclear stations remain in a high state of readiness to respond to potential emergency events. This focus on safety will continue as our top priority. (**0012-2-3** [Jamil, Dhiaa])

Comment: I'm here representing 60,000 businesses and 73 state chambers of commerce across the state in support of the Lee Nuclear Station project moving forward. There's no one single factor or answer for solving our energy needs. We know that we've got to continue to work on renewables as well as conservation efforts, but the creation of nuclear power as a sustainable energy source is promising and will be one of South Carolina's greatest assets of the future. (**0012-5-1** [Rawl, Otis])

Comment: First I want to talk about the nuclear safety. Safety culture remains the number-one focus of any nuclear plant across the country. Examples of how we do that is our human performance tools, like take-a- minute pre-job briefs, which we do every day before we do any job, before we do any task. Even in the office we tend to do things like this. We also review operating experience. We continuously strive for improvement to get better safety every day. Nuclear plants are some of the safest industrial facilities, and there have been zero fatalities in the U.S. due to exposure of radiation due to commercial nuclear power plant incident. Nuclear plants survived some tough natural disasters in 2011 as we've heard before -- record flooding in Nebraska, tornadoes in the southeast, earthquake and hurricanes on the east coast. And through all the natural disasters there has been no problem with safety. We've had safe shutdowns whenever we needed too. There's been no breach in containment. There's been no release to the public. We proved that we have a robust design in all these reactors. The AP1000 specifically has been designed so that it can be automatically shut down without the need for off-site power. I saw a quote today from our -- from Duke's chief nuclear officer, Dhiaa Jamil, and he said that our nuclear plants were safe a decade ago and will be even safer as the years pass. (**0013-17-1** [Reichenbach, Adam])

Comment: In our planning for new nuclear we continue to focus on operational safety and security as our top priority just as we do at all the Duke energy operated stations today. Following the catastrophic earthquake and destructive tsunami in Japan last year the nuclear industry across the world, including Duke Energy, undertook immediate actions and continues to identify and implement additional recommendations to ensure our nuclear plants are always in a high state of readiness to respond to any potential emergency events. (**0013-4-4** [Fallon, Chris])

Comment: I am in full support of approving the combined licenses application for Lee Nuclear Station Units 1 and 2. I do not believe the environmental impacts outweight the advantageous outcomes - jobs; alternative energy source - for this and surrounding counties. (**0091-1** [McFadden, Cindy])

Response: *These comments provide general information in support of the Lee Nuclear Station COL application. They do not provide any information which would require changes to the EIS.*

E.2.26 General Comments in Support of Nuclear Power

Comment: I certainly don't want to turn over a country that has depleted all of its methane because people were afraid of something that even at Fukushima not one single person, not one was killed by radiation, not one. 18,000 people were killed by tsunami, a huge swath of Japanese territory was destroyed by a tidal wave, all of the video that you keep seeing is video of the damage done by salt water, not by radioactive material. (**0012-12-7** [Adams, Rod])

Comment: One of the things that I learned when I was very young was that my father brought home this little pellet -- actually it wasn't this pellet, because I lost the pellet he brought me home. But this pellet represents the size of a fuel pellet. It's simulated -- of course, I can't bring uranium into this building -- but it is a nine gram pellet. It has the same energy value in our current basically second generation technology as a ton of coal. That's a pickup truck load of coal, a big pickup truck load of coal. The submarines I used to serve on operated for 14 years on a single load of fuel. The current submarines that we build today operate for 33 years on a single load of fuel. The power they produce is clean enough to run inside a submarine sealed up full of people, making fresh air, fresh water, all the air conditioning, all the power that we need. (**0013-12-1** [Adams, Rod])

Comment: Not one single person has ever been killed by a nuclear power plant in the U.S.--commercial nuclear power plant in the U.S. And nobody was killed by radiationat Fukushima. (**0013-12-3** [Adams, Rod])

Comment: Humans can't control it. Yes, humans do make mistakes, but humans canoperate power plants safely and reliably because we do it, we do it carefully,we have a lot of backups, we have backups to the backup, we have people thatfollow procedures, we have carefully trained people, and, yes, we do have bigbrains, darn it. (**0013-12-5** [Adams, Rod])

Comment: Let's talk about Fukushima for one second before I pass the mike. Right now the -- one of the greatest tragedies I think is the thousands upon thousands of people that have lost their lives. Over 15 and a half thousand people died in that. Over 3 and a half thousand were missing -- still are. And over 5 and a half thousand also are injured. How many people died from radiation poisoning? None. The four people that died, two died in drowning in the cooling

towers. One person died in the crane, and one individual died of a heart attack. The true tragedy is that we're focusing on nuclear versus the people that have lost their lives. (**0013-6-1** [Baker, Kasey])

Comment: I DO SUPPORT NUCLEAR POWER and have no financial investment in it either. I do not spend my time in meetings in protest or support but like to make my support known. (**0042-1** [Paterson, Wallace])

Comment: I am in strong support of building nuclear power plants in the US. (**0054-1** [Gaddy, Ron])

Comment: In my opinion, I don't think the US can afford not to start building nuclear power plants. We have been asleep at the wheel for 30 years. It's time to start building nuclear plants in all states. (**0054-5** [Gaddy, Ron])

Response: *These comments express general support of nuclear power. No changes to the EIS were made as a result of these comments.*

Comment: I found nuclear plants in my venue to be a good neighbor and friendly to the environment. And the new proposed nuclear plant will be a state-of-the-art component, the Westinghouse AP1000 that has been designated here tonight. And the state of South Carolina, by designation of a concurrent resolution, has found nuclear energy to be the source of the future. And I'd like to read the concurrent resolution which was adopted June 1. 2006. It was first introduced and read May 31, 2006. To advance the need for electric utilities to build new nuclear power plants in South Carolina and to urge the Office of Regulatory Staff and the Public Service Commission to encourage such consideration. (**0013-1-1** [Moss, Representative Dennis])

Comment: Whereas, the United States Congress passed a 2005 energy bill providing a number of incentives that function to encourage electric utilities to pursue nuclear energy to reduce dependence on energy supplies from unstable parts of the world, and, Whereas, the Office of Regulatory Staff and Public Service Commission are the appropriate state agencies to promote the construct of nuclear power plants by South Carolina utilities and to architect the necessity for utilities to take responsible and reasonable steps to maintain the nuclear generation option in South Carolina. Now, therefore, be it resolved by the House of Representatives, the Senate concurring, that the General Assembly of the State of South Carolina by this resolution advance the need for electric utilities to build nuclear power plants in South Carolina and urge the Office of Regulatory Staff and the Public Service Commission to encourage such consideration. Be it further resolved that a copy of this be forwarded to each member of the Public Service Commission and to the executive director of the Office of Regulatory Staff. Adopted June 1, 2006. I represent Cherokee County in the House of Representatives, where this proposed plant is physically going to sit. The McKowns Mountain community of Cherokee County, adjoining York -- Western York County, which also represent

and touching Western Chester County that I represent, and the constituents and voters in my area do not oppose this project. (**0013-1-5** [Moss, Representative Dennis])

Response: *These comments provide general information in support of nuclear power via the recital of a resolution passed by the General Assembly of South Carolina in 2006. No changes were made to the EIS as a result of these comments.*

E.2.27 General Comments in Opposition to the Licensing Action

Comment: I request your strong opposition to the William States Lee III Nuclear Station Units 1 and 2 licenses. (**0001-1** [Stoll, Irene])

Comment: We ask that this nuclear power plant not be built. Please do not allow any more of these potentially disastrous facilities to be built. (**0002-5** [Smy, Gayle and Allison])

Comment: I am opposed to the proposed nuclear plant in Gaffney, SC. (**0003-1** [Arnold, Debbie])

Comment: I live near Gaffney and do not want this facility in my backyard. (**0003-4** [Arnold, Debbie])

Comment: I am writing to oppose Duke Energy's combined license application(COL) to build William States Lee Nuclear power Station in Gaffney SC. (**0004-2** [Cunningham, Kristine])

Comment: No nuclear power near asheville please.... too expensive and too dangerous.... (**0006-1** [Flaherty, David])

Comment: No, NO, and NO, to the Duke's Lee Nuclear Station. (**0007-3** [Tinnaro, Heather])

Comment: I strongly oppose any new nuclear power plant construction, but especially ones that are only 60 miles from my home! Have we learned nothing from history??? (**0011-1** [Miller, John C.])

Comment: I oppose the construction of Lee Nuclear Station and will continue to fight for clean energy options. (**0013-36-2** [Cranford, Kelley])

Comment: We strongly oppose the building of a Nuclear Station in Gaffney, SC, or any other place. (**0014-1** [Wilson, Rev. Mason and Barbara S.])

Comment: As a Henderson County resident, and mother of two young children, and member of a vital community, I am deeply opposed to a nuclear power plant near here. (Gaffney, SC) Please consider my opposition, and the opposition of many who live here because it is a healthy place to be! (**0015-1** [Schott Cummins, Gretchen])

Comment: Achieving results which produce the greatest good for the most citizens takes determination in the face of pressure from many disparate interests. But this is a real "no-brainer." There is so much on the negative side of this project that approval for this project would be counter-intuitive. Please don't allow this nuclear plant application to proceed. (**0017-11** [Morgan, Tom and Barbara])

Comment: I am writing to voice my opposition to the propose nuclear plant in Gaffney, SC. As a nearby resident, tax payer parent and grandparent, this is not a healthy option for our region. (**0018-1** [Vestal, Majorie])

Comment: I am communicating to you my strong opposition to the proposed William States Lee Nuclear Plant, Gaffney, NC. My wife and I, our daughter, 3 month granddaughter, and son in law live in Asheville NC, 60 miles Gaffney SC. This nuclear plant proposal is WRONG for many reasons... (**0019-1** [Doebber, Tom])

Comment: For these major reasons and others, the plan for the William States Lee Nuclear Plant must be stopped now. (**0019-7** [Doebber, Tom], **0020-7** [Klein, Art and Michelle])

Comment: I am communicating to you my strong opposition to the proposed William States Lee Nuclear Plant, in Gaffney, NC. My wife and I live in Asheville NC, 60 miles from Gaffney SC. This nuclear plant proposal is WRONG for many reasons... (**0020-1** [Klein, Art and Michelle])

Comment: NO!!!! to Nuclear Power Plant in Gaffney, SC. No! No! No! (**0023-1** [Brackett, Cheri])

Comment: I am very much agains't the proposal. (**0025-1** [Dixon, Mary])

Comment: Please do not build this facility. (**0025-4** [Dixon, Mary])

Comment: I am seriously against the plans for building a new nuclear power plant in Gaffney, SC or anywhere for that matter. (**0027-1** [Nord, Felice])

Comment: I would like to express my opposition to construction of Units 1 and 2 in Gaffney, South Carolina. (**0030-1** [Swing, Carol])

Comment: I would like to go on record as objecting to the proposed nuclear facility in Gaffney, SC. (**0033-1** [Gardner, Janet])

Comment: I am writing to express my opposition to the proposed William States Lee nuclear plant in Gaffney, South Carolina. (**0041-1** [McMahon, John])

Comment: As a resident of Hendersonville, NC, I want to register my opposition to the plan to construct a nuclear power plant in Gaffney, Sc. Nuclear power is toxic and outdated. (**0045-1** [Mewborne, Janice])

Comment: I am opposed to building William States Lee III Nuclear Stations 1 &2. (**0049-1** [Ruthye100, You Tube Service])

Comment: I am writing tonight to tell you that I OPPOSE a new nuclear power plant in Gaffney, SC. (**0051-1** [Oehler, Susan])

Comment: As a Duke customer and North Carolina resident taxpayer, I urge you to turn down the proposed W. S. Lee nuclear plant near Gaffney, South Carolina. (**0052-1** [Boots, Debby])

Comment: I am urging the Nuclear Regulatory Commission not to approve these permits (**0055-1** [Schneyer, Julie])

Comment: I would like to ask that you seriously consider denying the permit for two additional reactors in Gaffney, SC. (**0056-1** [Rhyne, Faith Rachel])

Comment: I request as a concerned citizen that you do NOT approve permits for the William States Lee III Nuclear Station! (**0059-1** [Raleigh, Carolyn])

Comment: I am here to express my concern about William States Lee III Nuclear Station. (**0062-1** [Smith, Joy])

Comment: We are writing to OPPOSE the proposed building of two nuclear power stations, called the William States Lee Nuclear Facility, in Gaffney, SC. (**0063-1** [da Silva, Arjuna])

Comment: We are writing to OPPOSE the proposed building of two nuclear power stations, called the William States Lee Nuclear Facility, in Gaffney, SC. (**0076-1** [Anonymous])

Comment: I want this Nuclear Plant stopped. (**0077-3** [Gilbert, Grace])

Comment: Please stop this Nuclear Plant construction. (**0077-5** [Gilbert, Grace])

Comment: I am writing to express my opposition to the proposed William States Lee III Nuclear Station Units 1 and 2. (**0079-1** [Schmitt, Brynn])

Comment: I am writing you to ask you to stop the approval of William States Lee III Nuclear Station Units 1 & 2. (**0081-1** [Severin, Patricia])

Comment: I am writing to express my strong opposition to the proposed William States Lee Nuclear Plant. (**0083-1** [Broadhead, Susan])

Comment: Please decide not to build the proposed plant. (**0083-10** [Broadhead, Susan])

Comment: I am opposed to the proposed William States Lee Nuclear power Plant. (**0084-1** [Lemoing, Melissa])

Comment: I wish to refute the conclusion that the power station is a good idea. (**0085-1** [Allison, Patricia])

Comment: PLEASE VOTE AGAINST building two new nuclear plants in Gaffney, SC. (**0088-1** [Lovinsohn, Ruth])

Comment: I am strongly opposed to the proposed William States Lee Nuclear Plant. (**0098-1** [Broadhead, Susan])

Comment: I urge the NRC to say NO to this proposed plant. (**0099-4** [Greenberg, Lori])

Comment: I OPPOSE this license application! (**0105-2** [Craig, Anne])

Comment: STOP THIS PLANT! (**0108-3** [Fisk, Bill])

Comment: I am writing to opposed Duke Energy's combined license application (COL) to build William States Lee Nuclear power plant in Gaffney, SC. (**0112-3** [Andrews, Josephine] [Anonymous] [Beattie, Kathryn E.] [Boever, Virginia] [Boyle, Ella] [Brogan Prindle, Cathleen] [Davis, John] [Flores, S.] [Hamahan, Clare] [Keil, A. Eugene] [Leverette, Will] [Peterson, Harry] [Peterson, Martha J.] [Rittenberg, David] [Rustin, K.])

Comment: I am writing as a resident of Buncombe County, NC to request that you NOT approve permits for the proposed William States Lee III Nuclear Plant near Gaffney Units 1 and 2. (**0113-1** [Rose, Katherine])

Comment: I am writing you to register my feelings regarding the proposed building of William States Lee III Nuclear Stations Unit 1 & 2. I AM OPPOSED!!!! It is a BAD IDEA. (**0114-1** [Lovinsohn, Ruth])

Comment: I am writing to oppose the building of the William State Lee III Nuclear Power Plant in Gaffney South Carolina. (**0115-1** [Burnett, Linda])

Comment: Please do not allow this plant to be constructed. (**0115-3** [Burnett, Linda])

Comment: This power plant must NOT be built! (**0116-1** [Schmitt, Daniel])

Comment: ...we adamantly oppose the licensing or building of the Lee Nuclear Stations 1 and 2, or any other nuclear power plants, anywhere.
(**0119-25** [Thomas, Ruth])

Comment: Please do not build a nuclear power plant in the area near Asheville, NC. (**0120-1** [Wilson, Dawn])

Comment: We oppose the nuclear power plant proposal for numerous reasons. (**0122-1** [Justice, Cynthia and Michael])

Comment: I wish to register a firm NO for the planned nuclear power plant in SC. (**0123-1** [Thomas Orengo, Cheryl])

Comment: I am writing to express my sincere opposition to the construction of thisfacility. (**0124-1** [Hayes, MD, J. David])

Comment: Please do not approve the new facility in Gaffney. (**0125-1** [Clere, Daniel])

Comment: I am writing to oppose the construction of two nuclear plants in Gaffney, SC. (**0132-1** [Cahill, Joanne])

Comment: Please oppose the William S. Lee Nuclear Plant. (**0132-7** [Cahill, Joanne])

Comment: My letter speaks to OPPOSITION of the proposed WILLIAM STATES LEE NUCLEAR PLANT. (**0133-1** [Christopher, Lucy D.])

Comment: I am writing to oppose the approval of the proposed William States Lee III Plant in Gaffney, S.C. (**0139-1** [Dailey, Debbie])

Comment: I implore you not to approve the construction of the William States Lee III plant. (**0139-4** [Dailey, Debbie])

Comment: Please do not approve the construction or operation of the proposed William States Lee III Plant. (**0140-1** [G., Edith A.])

Comment: I ask again that you do not issue a construction license for this plant. (**0140-4** [G., Edith A.])

Comment: I am writing to implore you to reconsider building that nuclear (WS Lee III) power plant in upper South Carolina. (**0143-1** [McAfee, Patricia B.])

Response: *These comments express general opposition to the Lee Nuclear Station COLs. No changes were made to the EIS as a result of these comments.*

Comment: Regarding the proposed William States Lee III Nuclear Station units 1 and 2, near Gaffney SC: We are residents of Weaverville NC, which is near the site of the proposed nuclear station near Gaffney, SC and are thus susceptible to being exposed to any unfortunate

happenings at this plant. We are very much opposed to having any nuclear plant built in Gaffney, or anywhere else. (**0002-1** [Smy, Gayle and Allison])

Comment: There is no good argument for building this nuclear plant, or any other, and there are many reasons to not do so. The history of the disasters and the ecological problems are sufficient reason to avoid this source of power. (**0002-3** [Smy, Gayle and Allison])

Comment: Please, I implore you to not build this power plant....the lives of millions of people are at stake, and not to count the countless millions of flora and fauna..... Please, I implore you once more.....do not build this power plant..... (**0009-1** [vonSeideneck-Houser, Rebecca])

Comment: I'm here to oppose the building of these enormously expensive nuclear plants at taxpayer expense for all the reasons that were -- have been outlined up to this point. (**0013-16-1** [Zdenek, Dr. Joe])

Comment: I wouldn't want to see that [health impacts from radiation] happen to the citizens of Gaffney and Cherokee County, and I wouldn't want to have it happen to others of us further away from the plant. And I ask you please do not approve this plant. (**0013-33-3** [Broadhead, Susan])

Comment: With the immense amount of scientific evidence as well as experiential data from scores of nuclear power plants around the world confirming how dangerous nuclear power is and always will be in multiple aspects, how can any sane person consider building more nuclear power plants?? As a very concerned resident of nearby Hendersonville, NC, I wish to register strong objection to building a plant in Gaffney, SC (**0016-1** [Howell, Martha N.])

Comment: There is no possible justification for endangering hundreds of thousands of human beings in the radius around Gaffney that will have their health seriously damaged by the production of nuclear power at this proposed facility. I look forward to hearing that this ill-conceived project has been cancelled. (**0016-2** [Howell, Martha N.])

Comment: My wife and I live sixty miles from a proposed nuclear power plant in/near Gaffney, SC. In view of the numerous historic unresolved problems with the use of nuclear fuel for power production, we judge this a dubious, as well as high-risk project. (**0021-1** [Rinsler, MD, Steve])

Comment: Watching NC develop into the next generation of possibilities and opportunities is clearly exciting. But part of what has made this a workable evolution are some specific characteristics this area offers. Asheville is growing and touted as one of the best places to retire because people are drawn to the beauty, consciousness and weather. By proposing to build a nuclear plant this close to Asheville, and in the range of three major colleges, you are seriously threatening 2 of those premises, Please, I beg of you, reconsider. (**0040-1** [Siler, Jill])

Comment: I cannot state strongly enough my opposition to Duke Energy's Lee Nuclear Station license application. Such ultra-problem laden power stations must not be allowed to lessen the future health -- economic and potentially physical -- or this generation and future generations of our citizens. (**0046-5** [Southworth, Win])

Comment: Its design is questionable and presents risks to water, air, the surrounding land and human health. (**0052-3** [Boots, Debby])

Comment: We don't want the nuclear industry in our area and although I am not a resident of South Carolina, I am too close to Gaffney and thus terribly concerned about the safety of such a potentially deadly boondoggle. (**0060-2** [Craig, Tom])

Comment: I beg you to not give in to the lobbying of money-making Duke Energy, and instead encourage those who are developing carbon-free, nuclear-free energy, so that we won't ever again suffer a Three Mile Island or Chernobyl or Fukushima. (**0089-1** [Thomas, Ellen])

Comment: Many of us who are parents and grandparents say the chances of failure of this newly designed AP 1000 are just too high. (**0104-2** [Bliss, Rachel])

Comment: ...we do not trust the safety of this plant's untested reactor, with Gaffney being just one of the nuclear sites where this reactor will be used. (**0104-6** [Bliss, Rachel])

Comment: No to raising my rates for creating nuclear waste & destruction in my nameor my children. (**0118-1** [Williams, David])

Comment: It is much too close to Asheville where I live and too close to people in general. (**0123-2** [Thomas Orengo, Cheryl])

Comment: I strongly urge you to deny this license and help to move the country toward a safe, easily protected, environmentally friendly, energy solution.
(**0124-7** [Hayes, MD, J. David])

Comment: I am opposed to this plant and all nuclear power. Future generations should not have to bare the burden of our current consumption by babysitting our spent fuel rods. We should take responsibility for such things now by not producing them in the first place. Please do not move forward with the William States Lee plant in Gaffney, SC.
(**0125-3** [Clere, Daniel])

Comment: I feel this [waste disposal] is the major problem with nuclear power. It is the worse possible course of action. This plant should not be licensed. It is immoral to force generations to come to deal with the waste from the process.
(**0145-1** [Macko, Karl])

Response: *These comments provide general information in opposition to Lee Nuclear Station. The NRC carefully reviewed Duke's COL application against its regulations that are intended to protect public health and safety and the environment. These comments do not provide specific information related to the environmental effects of the proposed action, and no changes were made to the EIS as a result of these comments. Specific comments and NRC staff responses regarding benefit-cost, surface-water use, energy alternatives, the storage of spent fuel, the severe accidents analysis in the EIS, and plant safety are addressed in other sections of Appendix E.*

E.2.28 General Comments in Opposition to the Licensing Process

Comment: Whereas the NRC has a clear record of putting profits ahead of people and production ahead of health and safety. (**0013-11-1** [Smith, Coleman])

Comment: The Nuclear Regulatory Commission is supposed to pay attention to the dangers of nuclear energy. To rubber-stamp Duke Enegy's proposal is a betrayal of your responsibility to keep our country and our region safe. (**0089-3** [Thomas, Ellen])

Comment: It is your job to protect us. It is your job to get educated enough to be able to protect us. For obvious reasons, you cannot educate yourself by listening to the industry; you need to listen to the scientists who do not stand to profit from promoting (or banning) nuclear power. Please listen to the doctor Helen Caldicott who has been trying to get us all to listen to the dangers of nuclear power: www.helencaldicott.com. Please also familiarize yourself with the work of scientist Amory Lovins at the Rocky Mountain Institute: www.rmi.org

You have a very important job, a job that you cannot just float through to get a paycheck -- you have a moral duty to wake up to reality and see how incompatible to life nuclear power is. It is your job to understand that we cannot afford the risks of nuclear anymore, and you must act on that understanding. (**0121-5** [Wallace, Kristine])

Response: *These comments express opposition to the NRC's COL application review process. The NRC carefully reviewed Duke's application against its regulations that are intended to protect public health and safety and the environment. One commenter cites Amory Lovins' work at the Rocky Mountain Institute. Lovins advocates efficient use of electricity and reliance on renewable energy sources such as wind, solar, geothermal, etc. Other comments on the EIS regarding energy alternatives and NRC staff's responses are found in Section 2.28 of this appendix. These comments do not provide specific information related to the COL process or environmental effects of the proposed action, and no changes were made to the EIS as a result of these comments.*

Comment: I thought that any nuclear construction was on hold following the disaster in Japan. (**0027-2** [Nord, Felice])

Response: *NRC licensing of new nuclear reactors has not been suspended. Since the nuclear accident at Fukushima first began to unfold, the NRC has been working to understand the events that took place in Japan and relay important information to U.S. nuclear power plant licensees and applicants. Not long after the emergency began, the NRC established a task force of senior NRC experts to determine lessons learned from the accident and to initiate a review of NRC regulations to determine if additional measures should be taken immediately to ensure the safety of U.S. nuclear power plants. The task force issued its report on July 12, 2011, concluding that continued U.S. nuclear plant operation and NRC licensing activities presented no imminent risk. The task force also concluded that enhancements to safety and emergency preparedness are warranted and made several general recommendations for Commission consideration. The NRC (2012d) issued SECY 12-0025, detailing the proposed Orders and required actions in response to lesson learned from Japan's March 11, 2011, earthquake and tsunami. For new reactors and combined license applications (e.g., Lee Nuclear Station), the staff will ensure that the Commission-approved Fukushima actions are addressed prior to licensing.*

On March 9, 2012, the Commission directed the NRC staff to issue immediately effective Orders to U.S. commercial nuclear reactors to begin implementation of several recommendations for enhancing safety at U.S. reactors, based on lessons learned from the accident at Japan's Fukushima Dai-ichi nuclear power plant (see NRC News Release 12-023 at http://pbadupws.nrc.gov/docs/ML1206/ML120690627.pdf). Two of the Orders apply to every U.S. commercial nuclear power plant, including those under construction and the recently licensed new Vogtle and V.C. Summer reactors. The first Order requires plants to better protect safety equipment installed after the September 11, 2001 terrorist attacks and to obtain sufficient equipment to support all reactors at a given site simultaneously. The second Order requires plants to install enhanced equipment for monitoring water levels in each plant's spent fuel pool. The third Order applies only to U.S. boiling water reactors that have "Mark I" or "Mark II" containment structures. These reactors must improve venting systems (or, for the Mark II plants, install new systems) that help prevent or mitigate core damage in the event of a serious accident. Plants have until December 31, 2016, to complete modifications and requirements of all three Orders. The NRC also issued a detailed information request to every operating U.S. commercial nuclear power plant; certain parts of this request apply to reactors currently under construction or recently licensed.

E.2.29 General Comments in Opposition to Nuclear Power

Comment: I would like to express my strong opposition to building a nuclear plant. (**0005-1** [Lewis, Brenda K.])

Comment: We [Blue Ridge Environmental Defense League] oppose the environmental impacts, we oppose the public health impacts, as well as the problematic and dangerous use of nuclear energy in this part of the world. I think we should follow the lead of some of the most

advanced technological societies on earth, Japan, Germany, and phase these out, certainly not build a new one. (**0012-11-4** [Zeller, Lou])

Comment: And as a taxpayer, I don't want my money going to support and subsidize dirty toxic energy. Please phase out nuclear. Support viable, sustainable and clean alternatives that also create many more permanent jobs. (**0012-19-5** [Howarth, Irma])

Comment: I'm Katie Hicks. I'm the assistant director of Clean Water for North Carolina, a nonprofit organization working with communities for clean water and environmental justice. We're opposed to the construction of all new nuclear reactors for many reasons... (**0012-7-1** [Hicks, Katie])

Comment: Whereas all nuclear power stations pollute the environment with heat, chemicals, and radiation. (**0013-11-3** [Smith, Coleman])

Comment: Whereas the NRC cannot be trusted to protect the citizens of western North Carolina who live outside the 50-mile radius, Therefore, we the people of western North Carolina question the fairness and the integrity of the Nuclear Regulatory Commission bias of promoting expensive, dirty, and dangerous nuclear energy over affordable clean and safe renewable energy alternatives. As part of the 99 percent we say no nukes. No nukes. No nukes. (**0013-11-8** [Smith, Coleman])

Comment: And, of course, nuclear power plants are all old. They're going to be decommissioned in a short period of time and there's no way that we could possibly replace those nukes faster than they're going to be decommissioned. So nuclear power's going to die anyway. Nukes have already contaminated the planet forever. (**0013-14-1** [Richardson, Don])

Comment: We're committing suicide is what we're doing. We're leaving the planet -- we are going to leave the planet to perhaps the only species that can survive our legacy of radiation -- and that would be the cockroaches. (**0013-14-4** [Richardson, Don])

Comment: You should no longer be in the business of approving new nuclear plants, but instead be in the business of shutting them all down. The production of electricity via nuclear means is irrational. From the mining of the uranium to the transport of the materials to the huge amounts of water used in the energy production to the production of the dangerous waste that has no safe storage nuclear energy is unsafe, unhealthy, and dangerous to life. (**0013-20-1** [Craig, Anne])

Comment: But it is very clear to me that if democracy were to prevail in this country the forces opposed to nuclear energy would win hands down. We have heard some -- I think three proponents of nuclear energy speak up here. We have heard probably 15 opponents speak up here. So if you do the arithmetic it's very clear that for some reason the opponents come out

here and the proponents, all of whom I think have connections with the nuclear power industry or with nuclear submarines, at least, all of whom so have some kind of professional connections. And that's not to dispute what they're saying, but they do have those connections. The rest of us are here because we are passionate -- we are passionate. We are determined that we are not going to let this thing be built. We -- some of us were involved in the proposition to nuclear power plants in the seventies. I personally protested at the Seabrook Nuclear Power Plant in New Hampshire several times. We succeeded them in stopping the construction the nuclear power plants. We will do it again. (**0013-21-2** [Norris, Steve])

Comment: And I and ASHE do not believe that nuclear power is a solution to the climate change dilemma or our energy security in this country. (**0013-23-1** [Buscarino, John])

Comment: People -- well, I just am so opposed to this. I live close to this area. I just hope that I'm -- when I'm on my deathbed I don't want my grandchildren coming up to me and saying, Grandma, is this best you could do? Is this the best you could do? And what will I say? Well, you know, we had the brains, we had the innovation, but that nuclear power is so profitable. Well, it's not profitable for human health. (**0013-35-2** [Hammett, Jan])

Comment: For the NRC to state these facts and allow new nuclear plants to be built is immoral and irresponsible. (**0013-7-5** [Sorensen, Laura])

Comment: I live way too close to the southeastern nuclear power plants and I'd like to say something that touches me deeply. Nuclear power -- no thanks. Nuclear power is not the way that we want to go. When I consider the potential of the human experience and the energy that we have to create and the enormous capacity that we have for love then I do have hope for the future. But when I consider the madness of nuclear power and the deadly waste then I feel my core shaking, my heart is pounding, my eyes start watering, and my hope fades. Nuclear power -- no thanks. When I consider our current approach to nuclear power then I have a very difficult time understanding how we got to this place of denial and deceit. How could we so blatantly disregard our responsibility for ourselves and the future? What happened to the respect that we owe those that came before us and what happened to the respect for those who will inherit this place after us? Nuclear power -- no thanks. My frustration and embarrassment can take me to the deepest pits of despair only to find myself with no other choice than recharging my glimmers of hope and climb back up to the edge of sanity. It's in the world of sanity that we must get together. Let the responsibility for the future generation be our guiding principle. We must agree to take care of today's needs in a sustainable manner without jeopardizing the needs of tomorrow. Nuclear power -- no thanks. I implore you, the NRC, the enablers of madness, give us a chance to redeem ourselves as a species and seriously consider the wise guiding principle of love and respect when deciding what we leave behind from a millenia to come. I cannot look my children in the eyes and say, Well, I'm sorry. That was the best we could do. Deal with it. It is just not acceptable. Nuclear power -- no thanks. So pucker up, get your act in gear because now is the time to change course so that our legacy will not be embedded in a history as one of

the biggest downfalls of the human experience. Let us change the age of stupid into the age of courage. Be aware that your decisions will affect thousands of generations to come and that now is your big chance to make amends and let our children know that you did have a heart and that you did do your absolute best for humanity. I implore you, my dearest fearful regulators, to please reconsider your role in allowing this nuclear madness to continue and please make a stand for the people. (**0013-8-1** [Sorensen, Ole])

Comment: Please do not build another Nuclear Station! (**0014-3** [Wilson, Rev. Mason and Barbara S.])

Comment: The costs of waste disposal and numerous environmental hazards, plus the many risks just don't make it sensible. (**0027-4** [Nord, Felice])

Comment: I am writing as a citizen of Asheville NC, concerned--outraged that a nuclear power plant is being considered in this region. I would be outraged on behalf of ANY region. Nuclear power has seductive powers to persuade people of its benefits and benign nature, but, like many seductions, its reality is ugly. Why are we building plants when other countries are weaning themselves of this technology? (**0029-1** [Scott, Cathy])

Comment: I am concerned and disappointed to hear of the propsed building of a nuclear plant near Gaffney, SC. I find it quite amazing that people making environmental and life threatening decisions, want to do so with the money provided by those very same people who will be most affected should it go the same way as other nuclear plants around the world, including this country. If my money is to be spent in providing energy, then I want it to be on clean energy where people can live without the threat of someone's thoughtless mistake and the leaking of radiation. (**0032-1** [Watters, Gillian])

Comment: We cannot afford to risk polluting our rivers, releasing radiation and making people fearful of possible dangers. (**0034-1** [Gardner, Janet])

Comment: Nuclear power does not ease the petrolium and gas extraction crisis. (**0037-3** [Collins, Richard])

Comment: Please stop building any more nuclear power plants in the U.S.A. Despite the modern advanced designs offered for these new plants, the health RISKS of radiation effects from accidents is still not acceptable. The recent nuclear accident in Japan has caused Germany and other countries to shut down some of their nuclear plants, and to stop plans for building new plants. So, why does the U.S. choose to ignore world events and the decisions by other countries? We should not accept the health RISKS posed by new nuclear power plants. (**0038-2** [Burt, Rick])

Comment: We should stop all production after seeing the catastrophic problems in Russia & Japan... (**0044-1** [Bertram, Beth])

Comment: Please record my position in which I OPPOSE the proposed nuclear plant being considered at this location. In fact I OPPOSE construction of ANY NUCLEAR PLANT Based on what we now know and what we have always known About nuclear power and that which involves it's creation. (**0047-1** [Lauden, Loy])

Comment: I don't believe nuclear power is worth the kind of risk and human suffering we've seen in recent history! (**0048-11** [Skeele, Michele and Skip])

Comment: Every aspect of nuclear power is a threat to the new energy future this county and world needs to build in order to support a sustainable life for humanity on this planet, from the initial mining of uranium, to the huge amounts of water necessary to cool nuclear reactors, to the unsolved problem of dangerous radioactive waste. (**0055-2** [Schneyer, Julie])

Comment: We don't need nuclear power. It's too dangerous. I'd rather have rolling blackouts due to power shortage than radioactive waste being trucked out of the town I live near. (**0056-6** [Rhyne, Faith Rachel])

Comment: No to nuclear. There are better, safer, more sustainable, and saner solutions. (**0057-1** [DeLap, E.A.])

Comment: It is simply unconscionable to build a new nuclear plant, knowing full well the huge risk it poses to the public. (**0061-1** [Holt, Cathy])

Comment: I am opposed to building more nuclear plants anywhere and especially do not want one less than 100 miles from my home. (**0062-2** [Smith, Joy])

Comment: Need we mention the horrors of Three Mile Island, Chernobyl and Fukushima? The Fukushima disaster alone should be reason enough to put a moratorium on more new nuclear facilities... (**0063-2** [da Silva, Arjuna])

Comment: Nuclear is not the way to go as Fukyshima is one obvious example of this. (**0078-1** [Atanasoff, Mike])

Comment: Mining of uranium is deplorable and the water to cool reactors is wasteful and never anywhere to store the waste. (**0078-2** [Atanasoff, Mike])

Comment: From the information and experiential education we gained through the experience of living within twenty miles of the damaged reactor at Three Mile Island at the time of the accident there, as well as the terror and emotional trauma suffered by my husband, myself and

our family at that time, I have absolutely no doubt in my mind that producing electricity by means of nuclear energy is simply a very dangerous and unwise idea. (**0079-5** [Schmitt, Brynn])

Comment: I shouldn't have to be making this comment. Isn't it clear enough yet, or is nuclear energy still the elephant in the room? You should no longer be in the business of approving new nuclear plants, but instead be in the business of SHUTTING THEM ALL DOWN!! The production of electricity via nuclear means is irrational! (**0095-1** [Craig, Anne])

Comment: From the mining of the uranium to the transport of the materials to the huge amounts of water used in the energy production, to the production of the dangerous waste that has no safe storage, nuclear energy is unsafe, unhealthy and dangerous to life. (**0095-2** [Craig, Anne])

Comment: In conclusion, let me state that nuclear power is expensive and dangerous... (**0104-4** [Bliss, Rachel])

Comment: It's really simple: nuclear energy is dangerous, non-renewable and extremely not cost efficient! You already know this . . . if you don*t you have your heads in the sand! From the mining of the uranium which devastates Native American land and causes lung disease in the workers, to the huge amount of water, an increasingly precious resource, needed to cool the reactors, to the routine radioactive releases, to the extremely toxic waste whose storage has no solution, the production of electricity by nuclear means is not only an environmental disaster, but is morally bankrupt. I could write about the increases of cancer near nuclear plants, the degraded water and rivers, the potential of damage to nuclear plants by earthquakes, and more, but you should know all this by now. NO NEW NUCLELAR PLANTS! SHUT THE EXISTING ONES DOWN! (**0105-3** [Craig, Anne])

Comment: No more nukes, please! There are truly green solutions. There are other options. I truly believe that going forward into our future with nuclear power is horribly wrong. (**0107-4** [Acs, Deborah])

Comment: I am 100 percent opposed to any new nuclear construction anywhere in the world. (**0110-1** [Genetti, Phyllis])

Comment: There is glaring evidence against the use of nuclear facilities as a use for power and too many incidents that you are aware of that I could name. NO TO NUCLEAR ANYTHING. (**0110-3** [Genetti, Phyllis])

Comment: Nuclear power plants are dangerous to the environment and the public... (**0112-1** [Andrews, Josephine] [Anonymous] [Beattie, Kathryn E.] [Boever, Virginia] [Boyle, Ella] [Brogan Prindle, Cathleen] [Davis, John] [Flores, S.] [Hamahan, Clare] [Keil, A. Eugene] [Leverette, Will] [Peterson, Harry] [Peterson, Martha J.] [Rittenberg, David] [Rustin, K.])

Comment: Nuclear Energy is deadly, unsafe, dirty and really non-renewable. It poses potential hazards to the entire environment as well as to surrounding areas. (**0113-3** [Rose, Katherine])

Comment: The existing nuclear facilities in the USA are all in need of serious maintenance work or should be shut down. (**0114-2** [Lovinsohn, Ruth])

Comment: Nuclear power is dangerous & toxic. (**0114-4** [Lovinsohn, Ruth])

Response: *These comments express general opposition to nuclear power and do not provide any specific information relating to the environmental effects of the proposed action. No changes were made to the EIS as a result of these comments.*

Comment: A nuclear power plant can be dangerous. Why have so many countries now decided to shut down nuclear power plants over time, for sure not build new ones? (**0001-2** [Stoll, Irene])

Comment: If (when) something unfortunate happens the results can be so disastrous, as has been shown at both Chernobyl and Fukushima, that there really is no way to stop the spread of contamination from a leak, no way to protect the surrounding area from ruination and no way to clean up the resulting mess. (**0002-2** [Smy, Gayle and Allison])

Comment: I am not at all convinced that nuclear power is safe or that Duke Power knows how to manage such plants. The recent problems with the Fukushima Plant in Japan have highlighted this issue and I do not believe that any more plants should be built. (**0003-2** [Arnold, Debbie])

Comment: Nuclear power plants are dangerous to the environment and the public. After the Fukushima disaster, we learned just how devastating nuclear radiation is to the land, water, people and animals. We still don't know the long term affects of Fukushima's nuclear meltdown. After the Chernobyl fallout, victims are still suffering from debilitating diseases 124 miles from the Chernobyl nuclear plant. (**0004-1** [Cunningham, Kristine])

Comment: Have we not had ample proof in this last calendar year that nuclear power is a thing of the past? Did the ongoing disaster at Fukushima Daichi have no impact on our civic mind? (**0007-1** [Tinnaro, Heather])

Comment: After the recent Fukushima disaster, we see proof again that it can happen. Unanticipated natural disasters, human error and failings, terrorist attacks -- that have not been mentioned -- systems malfunction can happen despite all the reassurances the nuclear industry and the NRC makes. Toxic radiation knows no boundaries. Chernobyl's radiation reached California in ten days. Thousands died and continue dying today. The Three Mile Island came

very close to being worse than Chernobyl. Fukushima's radiation fallout easily reached California and even our east coast and beyond. (**0012-19-4** [Howarth, Irma])

Comment: Each time there's an accident or a mishap or whatever you want to call it, leak, you hear that lessons learned -- the nuclear industry has learned a lesson, now they're going to do better. The lesson that should have been learned from some of these things, especially the one in Japan, is we ought not to be continuing with nuclear power if we can't handle the waste and having all these problems. (**0012-3-3** [Thomas, Ruth])

Comment: Whereas Three Mile Island, Chernobyl, and Fukushima have taught everyone on our planet that radiation has no boundaries. (**0013-11-2** [Smith, Coleman])

Comment: I wish to add that the warnings of the Japanese disaster is making -- the warning of the Japanese disaster is making many nations rethink their policies. And, therefore, I'm seconding the comments of the pathologist who spoke before me. We now know that people living in the vicinity of Japan's Fukushima Daiichi facility have radioactive urine. (**0013-16-2** [Zdenek, Dr. Joe])

Comment: ...in general nuclear plants can be catastrophically dangerous, as witnessed by the recent Fukushima tragedy in Japan. (**0019-2** [Doebber, Tom])

Comment: ...in general nuclear plants can be catastrophically dangerous, as witnessed by the recent Fukushima tragedy in Japan. (**0020-2** [Klein, Art and Michelle])

Comment: In general nuclear plants can be catastrophically dangerous, as witnessed by the recent Fukushima tragedy in Japan. (**0026-1** [Doebber, Ian] [Doebber, Rachel])

Comment: I thought that [Fukashima] taught us how dangerous this form of energy can be. I know the argument is that all precautions are taken, but that can never be completely foreseen and the ramifications are too great. I especially don't like being within 60 miles of a possible disaster. There are numerous reasons these plants are not the best form of producing energy, but the Japan disaster experience should be enough to realize we would be foolish to continue to build new nuclear power plants. (**0027-3** [Nord, Felice])

Comment: Nuclear power is not safe. I'm sure I do not need to lay out the many issues that Japan is dealing with and will continue to be encumbered with for decades to come. (**0030-3** [Swing, Carol])

Comment: How many Chernobyls and Fukushimas do we need to make us fear such a facility so close to home? Even with an extremely limited danger of a similar catastrophy here, there is always the possibility of a terrorist attack and human error can and does happen all the time. (**0033-2** [Gardner, Janet])

Comment: Nuclear power is not safe. (**0037-1** [Collins, Richard])

Comment: The possibility of a Fukushima or Chernobyl-type disaster is terrifying. (**0039-2** [Whiteside, Cassie])

Comment: The possibility of a Fukushima or Chernobyl-type disaster is terrifying. (**0043-2** [Reeser, Rachel])

Comment: With the examples of Three Mile Island, Chernobyl, and Fukushima, it is CLEAR that nuclear power is NOT SAFE. (**0051-2** [Oehler, Susan])

Comment: Three Mile Island, Chernobyl, and Fukushima are glaring examples of the dangers. (**0061-2** [Holt, Cathy])

Comment: We already live in the shadow of two nuclear power plants, Mcguire and Catawba, so two more will double the risk of an accident that would affect us. We strongly object to the proliferation of nuclear facilities in general, and particularly, as you might imagine, near us. People are fallible, and so are the designers and operators of these facilities. They are disasters waiting to happen. An unexpected rupture or a faulty meter, operator error or a simple failure of equipment could set off a dangerous chain of events that we are not equipped to deal with. (**0063-4** [da Silva, Arjuna])

Comment: I suspect that potentially dangerous, unforeseen events happen on a regular basis that are not reported to the general population. (**0063-5** [da Silva, Arjuna])

Comment: Need we mention the horrors of Three Mile Island, Chernobyl and Fukushima? The Fukushima disaster alone should be reason enough to put a moratorium on more new nuclear facilities, and encourage the development of viable alternatives. We already live in the shadow of two nuclear power plants, Mcguire and Catawba, so two more will double the risk of an accident that would affect us. We strongly object to the proliferation of nuclear facilities in general, and particularly, as you might imagine, near us. People are fallible, and so are the designers and operators of these facilities. They are disasters waiting to happen. An unexpected rupture or a faulty meter, operator error or a simple failure of equipment could set off a dangerous chain of events that we are not equipped to deal with. (**0076-2** [Anonymous])

Comment: With your blinders on, you can argue that Fukushima was on the coast, hit by a tsunami, in an earthquake zone. The Frontline story led with concern about the Indian Point nuclear reactor near New York City, which could very easily, in case of an earthquake, be similar to Fukushima. You can argue that the proposed Lee Nuclear Power Plant doesn't fit into that scenario. You can argue that the General Electric reactor was poorly designed. How can you KNOW for sure that anyone else's nuclear reactor is safe? The fact is that EVERY nuclear power plant in this country and around the world is potentially devastating. Just think about the

North Anna Nuclear Power Plant in Virginia, hit by an unimagined earthquake in 2011. You can argue that this is a bullet dodged. But how can we believe that ANY of the nuclear plants are safe? (**0089-2** [Thomas, Ellen])

Comment: I would like to conclude with my final observation. The power plant in my last community was built in a rural, impoverished area, where it offered jobs, built a new school and community center. That poor community became dependent on its financial support, overlooking the increasing reports that were often initially covered up in regard to: the crumbling cooling tower; cracks in the steam dryer; ongoing valve leaks, and radioactive ground water. Sadly, people in this position cannot see the harm when they are told by their employer over and over and over.. for forty years, that things are safe. It is not until a Three Mile Island, a Chernobyl or a Fukushima happens that those who are dependent on nuclear energy start to question their belief system. It is time we stop harming our health and our planet. (**0099-3** [Greenberg, Lori])

Comment: The operators of the Fukushima Nuclear Plant were assured that plant was safe from storms and earthquakes, but no one ever thought about a tsunami that would send waves into the plant grounds above protective walls that were only a third as high as those that flooded the plant causing catastrophes so overwhelming that since then Germany has said it will eventually discontinue use of nuclear power, and PBS's Frontline predicts that Japan itself will close down all 54 of its plants. (**0104-7** [Bliss, Rachel])

Comment: Despite the rhetoric, nuclear energy is not "green" or "clean." It is a weapon that has the potential to harm and kill millions of people. (**0111-2** [Knudten, Cori])

Comment: Current nuclear power technology is not safe by any stretch of the imagination. (**0116-2** [Schmitt, Daniel])

Comment: Nuclear power is said to be safe, but we all remember Three Mile Island, Chernobyl, and Fukushima. If it were safe, then the insurance industry would offer sufficient insurance to cover the possible damages, such as the $235billion (and rising) damages from Fukushima's four melted reactors. Even cutting the damages in half, to reflect two reactors instead of four, there is $177.5 billion to be covered, but the insurance industry refuses to cover more than $11.6 billion for all nuclear plants in the U.S., which is less than 10% of the potential damages from just this pair of proposed reactors alone. Who would cover the rest, if Fukushima happened here? You and me via another public bailout. This is no time for any large corporation to be proposing another bailout. The public will not stand for it. Without insurance, nuclear power is unsafe. So, if safety is the issue, these plants should not be built. (**0117-2** [Crissey, Brian])

Comment: It is your job to ensure that no nuclear project is approved unless it is shown to be safe. There is no nuclear project that can be proven safe. Its very existence poses a risk of leaks, meltdowns, the contamination of carcinogens to the surrounding community.... (**0121-1** [Wallace, Kristine])

Comment: Nuclear power is above all DANGEROUS-to our basic human biology as well as for the concomitant diseases that have been proven by science. Its properties are carried by wind and water-there is no safe level of radiation. The so-called 10mile rule has not held true around the world. Most recently, the Fukushima fallout reached Tokyo; and Asheville, NC is three times closer to the proposed Gaffney nuclear plant.
(**0133-2** [Christopher, Lucy D.])

Response: *These comments provide general information in opposition to nuclear power. Some comments cite the Fukushima, Chernobyl, and Three Mile Island accidents as evidence that nuclear power is unsafe. They do not provide any specific information related to the environmental effects of the proposed Lee Nuclear Station. Issues related to safety are beyond the scope of the environmental review and will be evaluated in the NRC staff's FSER for the proposed Lee Nuclear Station, which is tentatively scheduled for publication in 2015.*

The following summarizes the major accidents cited by some of the commenters.
On March 28, 1979, the Three Mile Island accident occurred in Pennsylvania as a result of equipment malfunctions, design-related problems, and worker errors. The accident melted almost half the reactor core of Unit 2 and released contaminated water and radioactive material into the containment building. A very small amount of radioactive material reached the environment. It remains the most serious accident in U.S. commercial nuclear power plant operating history although no plant workers or members of the nearby community were injured or killed. A long-term follow-up study by the University of Pittsburgh that evaluated local, county, and State population data from 1979 through 1998 concluded that there is not an increase in overall cancer deaths among the people living within a 5-mile radius of Three Mile Island at the time of the accident (NRC 2012c). This accident brought about sweeping changes for nuclear power plants and heightened oversight by the NRC. NRC Fact Sheets about the Three Mile Island accident are available at: http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/3mile-isle.html.

On April 26, 1986, an accident destroyed Unit 4 of the nuclear power station at Chernobyl, Ukraine, in the former USSR. The series of events that led to this accident could not occur at U.S. commercial power reactors because U.S. reactors have different plant designs, robust containment structures, and operational controls to protect them against the combination of lapses that led to the accident at Chernobyl. Its operators ran an experiment that led to a sudden surge of power, destroying the reactor core and releasing massive amounts of radioactive material into the environment. About 30 emergency responders died in the first 4

months after the accident. The health of the evacuated population and populations in contaminated areas of Belarus, the Russian Federation, and Ukraine has been monitored since 1986. Monitoring efforts to date indicate that a lack of prompt countermeasures resulted in increased risk of thyroid cancer to members of the public, most notably among people who were children or young adults at the time of the accident. No other health effects are attributed to the radiological exposure in the general population. Chernobyl's design, which differed significantly from reactors operating in the United States, made it vulnerable to such a severe accident. The NRC Fact Sheet about the Chernobyl accident is available at: http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/chernobyl-bg.html.

In a significant difference from the Chernobyl accident, Japanese authorities enacted prompt countermeasures based on international guidance to minimize the radiological health impacts from the release of radioactive material from the Fukushima Dai-ichi site. This included sheltering-in-place, evacuation, radiation monitoring and surveys, and interdiction of contaminated food-stuff and drinking water. Not long after the emergency began, the NRC established a task force of senior NRC experts to determine lessons learned from the accident and to initiate a review of NRC regulations to determine if additional measures should be taken immediately to ensure the safety of U.S. nuclear power plants. The task force issued its report with recommendations on July 12, 2011, concluding that continued U.S. nuclear plant operation and NRC licensing activities presented no imminent risk. The task force also concluded that enhancements to safety and emergency preparedness are warranted and made several general recommendations for Commission consideration. The NRC staff (NRC 2012d) issued SECY 12-0025, detailing the proposed Orders and required actions in response to lesson learned from Japan's March 11, 2011, earthquake and tsunami. For new reactors and COLs (e.g., Lee Nuclear Station), the staff will ensure that the Commission-approved Fukushima actions are addressed prior to licensing.

On March 9, 2012, the Commission directed its staff to issue immediately effective Orders to U.S. commercial nuclear reactor licensees to begin implementation of several recommendations for enhancing safety at U.S. reactors based on lessons learned from the accident at Japan's Fukushima Dai-ichi nuclear power plant (see NRC News Release 12-023 at http://pbadupws.nrc.gov/docs/ML1206/ML120690627.pdf). Two of the Orders apply to every U.S. commercial nuclear power plant, including those under construction and the recently licensed new Vogtle and V.C. Summer reactors. The first Order requires plants to better protect safety equipment installed after the September 11, 2001 terrorist attacks and to obtain sufficient equipment to support all reactors at a given site simultaneously. The second Order requires plants to install enhanced equipment for monitoring water levels in each plant's spent fuel pool. The third Order applies only to U.S. boiling water reactors that have "Mark I" or "Mark II" containment structures. These reactors must improve venting systems (or, for the Mark II plants, install new systems) that help prevent or mitigate core damage in the event of a serious accident. Plants have until December 31, 2016, to complete modifications and requirements of

all three Orders. The NRC also issued a detailed information request to every operating U.S. commercial nuclear power plant; certain parts of the information request apply to reactors currently under construction or recently licensed.

The following NRC websites have additional information on the Fukushima accident and the NRC's response: http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/fs-japan-events.html and http://www.nrc.gov/reactors/operating/ops-experience/japan-dashboard.html.

Section 5.11, Environmental Impacts of Postulated Accidents, has been revised to include the recent Commission Orders related to the lessons learned from the accident at Japan's Fukushima Dai-ichi nuclear power plant. No other changes were made to the EIS as a result of these comments.

E.2.30 Comments Concerning Issues Outside Scope - Emergency Preparedness

Comment: The NRC has not taken into consideration the safety mile radium beyond 50 miles. This EIS must be based on facts, not theory. I have -- we have the facts and lessons learned from Chernobyl and Fukushima. Hot spots of radiation have been found far from the Fukushima area, in fact as far as 180 miles of the reactor site. This follows the same trend as Chernobyl. The initial 30-kilometer evacuation zone has become known as the dead zone. But evacuations and other protective measures occurred as many locations as far as 200 miles away. (**0013-7-1** [Sorensen, Laura])

Comment: The NRC chief reported to Sen. Barbara Boxer in a recent report that 26 million potassium iodide tablets have been distributed to States. US population is 310.5 million. (**0018-3** [Vestal, Majorie])

Comment: Fukushima proves that assigning 10-mile or 50-mile evacuation zones is totally inadequate, as no one can predict how far or in what direction a plume might travel. (**0119-11** [Thomas, Ruth])

Comment: The problem of operating a nuclear station means continually being prepared for a nuclear accident, including identifying evacuations centers, keeping residents over a large area informed and trained for a nuclear emergency. (**0119-16** [Thomas, Ruth])

Response: *These comments relate to the adequacy of emergency plans, which is a safety issue outside the scope of the NRC staff's environmental review. As part of its safety review for the proposed Lee Nuclear Station, the NRC staff will determine, after consultation with the U.S. Department of Homeland Security and the Federal Emergency Management Agency, whether the emergency plans submitted by Duke are acceptable. No changes were made to the EIS in response to these comments.*

Regarding potassium iodide (KI), the Commission issued a Final Rule on KI in the Federal Register on January 19, 2001 (66 FR 5427). The NRC will not require use of KI by the general public because the NRC believes that current emergency planning and protective measures—evacuation and sheltering—are adequate and protective of public health and safety. However, the NRC recognizes the supplemental value of KI and the prerogative of the States to decide the appropriateness of distributing KI to its citizens. At this time, the NRC has made KI available to States that wish to include thyroid prophylaxis in their range of public protective actions in the event of a serious accident at a nuclear power plant.

E.2.31 Comments Concerning Issues Outside Scope - Miscellaneous

Comment: Duke and Progress said their proposed merger was the only way to build more nuclear but the Federal Government has refused the request twice in opposition to such a large monopoly. (**0048-7** [Skeele, Michele and Skip])

Response: *This comment expresses concern regarding the Duke Energy and Progress Energy merger, which was completed on July 3, 2012. The NRC is not involved in establishing anti-trust policy with regard to their licensees. Rather, it regulates the nuclear industry to protect the public health and safety and common defense and security within existing policy. No change was made to the EIS as a result of this comment.*

Comment: But "Mr. Duke," plans to build two reactors without sufficient insurance and without a political mandate for a bailout. If a Fukushima disaster were to strike this site, many persons would find their properties unreasonably seized. So building these reactors is unconstitutional. (**0117-7** [Crissey, Brian])

Comment: We are told that nuclear power is safe, but without sufficient insurance, it is much more dangerous than energy efficiency and renewables. (**0117-9** [Crissey, Brian])

Comment: The problem that one of the subsidies, the Price-Anderson Act, could in no way recompense victims of a nuclear accident. The many of billions it would cost for evacuation and relocation of families, businesses, hospitals, and schools, and for cleanup (if possible), would come once again from the taxpayers. (**0119-10** [Thomas, Ruth])

Comment: Who Pays for Nuclear Accidents?

The Price-Anderson Act protects the nuclear industry from liability claims arising from nuclear incidents. The Act establishes a no fault insurance-type system in which the first approximately $12.6 billion is industry-funded; claims above the $12.6 billion would be covered by a Congressional mandate to retroactively increase nuclear utility liability or would be covered by the federal government.

In a Fourth Circuit Court decision challenging the Price-Anderson Nuclear Industries Indemnity Act, plaintiffs raised the issue of due process. In 1978 the Supreme Court overturned the decision of the lower court. Justice John Paul Stevens concurred in the judgment but in a separate opinion said:

With some difficulty I can accept the proposition that federal subject-matter jurisdiction under 28 U.S.C. 1331 (1976 ed.) exists here, at least with respect to the suit against the Nuclear Regulatory Commission, the agency responsible for the administration of the Price-Anderson Act. The claim under federal law is to be found in the allegation that the Act, if enforced, will deprive the appellees of certain property rights, in violation of the Due Process Clause of the Fifth Amendment. One of those property rights, and perhaps the sole cognizable one, is a state-created right to recover full compensation for tort injuries. The Act impinges on that right by limiting recovery in major accidents. But there never has been such an accident, and it is sheer speculation that one will ever occur. For this reason I think there is no present justiciable controversy, and that the appellees were without standing to initiate this litigation.

Now, there have been such accidents. The Supreme Court decision occurred the year before the partial meltdown at Three Mile Island and the release of the eponymous "China Syndrome." Tokyo Electric Power Company's government bailout may reach $137 billion for the Fukushima nuclear disaster.

Justice Stevens continued:

The Court's opinion will serve the national interest in removing doubts concerning the constitutionality of the Price-Anderson Act. I cannot, therefore, criticize the statesmanship of the Court's decision to provide the country with an advisory opinion on an important subject. Nevertheless, my view of the proper function of this Court, or of any other federal court, in the structure of our Government is more limited. We are not statesmen; we are judges. When it is necessary to resolve a constitutional issue in the adjudication of an actual case or controversy, it is our duty to do so. But whenever we are persuaded by reasons of expediency to engage in the business of giving legal advice, we chip away a part of the foundation of our independence and our strength. (**0130-11** [Zeller, Lou])

Response: *These comments concern insurance for nuclear power plants and the issue of liability in the event of a severe accident. The NRC requires financial assurance for decommissioning for all applicants, which also must carry nuclear accident insurance under the Price-Anderson Act, which became law on September 2, 1957. The Price-Anderson Act was designed to ensure that adequate funds would be available to satisfy liability claims of members of the public for personal injury and property damage in the event of a catastrophic nuclear accident. The legislation helped encourage private investment in commercial nuclear power by placing a cap, or ceiling, on the total amount of liability each holder of a nuclear power plant*

license faced in the event of a catastrophic accident. Over the years, the "limit of liability" for a catastrophic nuclear accident has increased the insurance pool to over $10 billion. Under existing policy, utilities that operate nuclear power plants pay a premium each year for $300 million in private insurance for offsite liability coverage for each reactor unit. This primary insurance is supplemented by a second policy. Because virtually all property and liability insurance policies issued in the United States exclude nuclear accidents, claims resulting from nuclear accidents are covered under the Price-Anderson Act, which includes any accident (including those that come about because of theft or sabotage) in the course of transporting nuclear fuel to a reactor site, in the storage of nuclear fuel or waste at a site, in the operation of a reactor (including the discharge of radioactive effluent), or in the course of transporting irradiated nuclear fuel and nuclear waste from the reactor. The Energy Policy Act of 2005 extended the Price-Anderson Act to December 31, 2025. These comments do not provide information relevant to environmental review; therefore, no changes were made to the EIS as a result of these comments.

Comment: If the proposed power plant is truly safe, then it should be built in Downtown Charlotte, where the waste heat of cooling the reactors can be put to good use, heating homes and businesses in the winter and cooling them in summer with evaporative chillers. Unfortunately, the wide radius of the emergency planning zones outlined by the NRC makes any practical use of the waste heat impossible, as thermal losses preclude transmitting steam across a distance of so many miles. (**0129-3** [Gamble, Dan])

Response: *The Atomic Energy Act of 1954 (42 U.S.C. 2011 et seq.), as amended, and the Energy Reorganization Act of 1974, places on the NRC the responsibility for the licensing and regulation of private nuclear facilities from the standpoint of public health and safety. Part 100, "Reactor Site Criteria," of Title 10 of the Code of Federal Regulations (10 CFR Part 100) requires that the population density; use of the site environs, including proximity to man-made hazards; and the physical characteristics of the site, including seismology, meteorology, geology, and hydrology be taken into account in determining the acceptability of a site for a nuclear power reactor. Appendix A to 10 CFR Part 50 establishes minimum requirements for the principal design criteria for water-cooled nuclear power plants, and Appendix S to Part 50 provides engineering criteria for nuclear power plants. A number of these criteria are directly related to site characteristics as well as to events and conditions outside the nuclear power unit.*

Site selection involves consideration of public health and safety, engineering and design, economics, institutional requirements, environmental impacts, and other factors. The potential impacts of the construction and operation of nuclear power stations on the physical and biological environment and on social, cultural, and economic features (including environmental justice) are usually similar to the potential impacts of any major industrial facility, but nuclear power stations are unique in the degree to which potential impacts of the environment on their safety must be considered. Siting considerations are outside the scope of the environmental

review and are addressed in the NRC staff's safety review. The NRC staff's FSER is tentatively scheduled to be issued in 2015. No change was made to the EIS as a result of this comment.

Comment: Regulations limiting carcinogens in other federal agencies are set at much more protective levels. Equal protection under the law must mean that equal standards for protecting public health. The National Research Council published the following analysis:

Rather than gear criteria to an analytic technique, the agency defined its standards in terms of risk. It proposed that any assay approved for controlling a carcinogenic drug must be capable of measuring residues that present more than an insignificant risk of cancer, and specified a 10-6 lifetime risk of cancer as a quantitative criterion of insignificance. (**0130-9** [Zeller, Lou])

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. The NRC's regulatory limits for radiological protection are set to protect workers and the public from the harmful health effects of radiation on humans (i.e., cancer and other biological impacts). The limits are based on the recommendations of standards-setting organizations (e.g,. the NCRP and the ICRP). Radiation standards reflect extensive scientific study by national and international organizations. The NRC actively participates and monitors the work of other 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. The public his given the opportunity to participate in the rulemaking process that established the regulations that govern its review process. More information on NRC's roles and responsibilities is available on the NRC's website at http://www.nrc.gov/what-we-do.html. No change was made to the EIS as a result of this comment.*

E.2.32 Comments Concerning Issues Outside Scope - NRC Oversight

Comment: Last, but no means least, we have lost any confidence that we may have had in the Nuclear Regulatory Commission. I cite just a few of the reasons why: A) After the Browns Ferry fire, new regulations were put into play. As of today, 30 years later, 47 nuclear plants are not in compliance with these regs, including Browns Ferry. B) Indian Point, New York is built on an earthquake fault with 17 million people within 50 miles of this plant. C) The North Anna Plant was determined to be seismically under-designed. The NRC asked for upgrades but did not require them. The owners did not comply. (**0012-10-5** [Connolly, Mary Ellen])

Comment: I suspect that potentially dangerous, unforeseen events happen on a regular basis that are not reported to the general population. (**0076-3** [Anonymous])

Comment: A number of plants are continuing to operate beyond their scheduled decommission date, a fact that does not inspire confidence. It is obvious to anyone with a functioning brain that these facilities are too dangerous to be allowed to continue operating. (**0076-5** [Anonymous])

Comment: How many more disasters must there be before the NRC recognizes that it cannnot effectively regulate the nuclear industry? Mr. Jaczko, NRC Director, admitted that the NRC does not have the power to require the private nuclear industry to maintain safe standards--it only has the power to "request" that it do so. And abundant evidence exists that many stations do not comply with safety standards. The NRC is supposed to protect the American public. (**0111-4** [Knudten, Cori])

Comment: The problem of needing a new oversight agency which is not comprised of members of the nuclear industry or other vested interests. (**0119-14** [Thomas, Ruth])

Response: *These comments, in general, express criticism of NRC's oversight of the nuclear industry. The NRC takes seriously its statutory responsibilities to protect the health and safety of the public and the environment in regulating the U.S. nuclear power industry. More information on NRC's roles and responsibilities is available on the NRC's website at http://www.nrc.gov/about-NRC.html. While NRC oversight of the industry and operational safety are outside the scope of the environmental review, the following are examples of how the NRC addresses operational safety issues.*

- *NRC maintains resident inspectors at each reactor site. These inspectors monitor the day-to-day operations of the plant and perform inspections to ensure compliance with NRC requirements.*

- *The NRC has an operational experience program that ensures that safety issues found at one plant are properly addressed at the others, as appropriate.*

- *The design of any new reactors or storage facility will have already benefited from lessons learned at existing reactors and incorporate new safety features that would be impracticable to backfit onto existing plants. The NRC will only issue a license or permit if it can conclude that there is reasonable assurance (1) that the activities authorized by the license or permit can be conducted without endangering the health and safety of the public and (2) that such activities will be conducted in compliance with the rules and regulations of the Commission.*

- *To ensure objectivity and independence in its regulatory activities, the NRC and the Office of Government Ethics have stringent rules and procedures to ensure that employees of, and advisors to, the NRC are free of conflicts of interests and the appearance of conflicts of interest.*

The comments did not provide information relating to the environmental effects of the proposed Lee Nuclear Station and are considered outside of the scope of the environmental review. No changes were made to the EIS as a result of these comments.

Comment: $ SHOULD BE SPENT TO REDUCE RISKS at existing plants, Better handle EXISTING TOXIC WASTE CLEAN UP and SHUT DOWN or MAINTENANCE EFFORTS. (**0088-2** [Lovinsohn, Ruth])

Comment: $ should be spent to clean up / maintain & shut down aging plants & prevent more damage from radioactive waste. (**0114-13** [Lovinsohn, Ruth])

Response: *These comments express opposition to the proposed action and assert that instead money should be spent maintaining the current fleet of nuclear reactors and their nuclear waste, as well as decommissioning existing nuclear reactors. These comments provide no information related to the environmental effects of the proposed Lee Nuclear Station, and no changes were made to the EIS.*

E.2.33 Comments Concerning Issues Outside Scope - Safety

Comment: [Building the W.S. Lee Nuclear Plant will:] Use the AP1000 reactor from fast tracked technology that hasn't been built yet, makes it more dangerous to the public due to unknown variables. Rep. Ed Markey's report from scientist who have investigated the reactor shield and stated it could "shatter like a glass cup' if impacted by an earthquake or other natural or man-made impact. In addition,The independent oversight group Fairewinds Associated listed concerns that the AP1000 design could release radiation directly into the air due to containment issues. Containment issues have been reported in 5 nuclear plants in the United States. (**0004-9** [Cunningham, Kristine])

Comment: But what I really want to talk about today is the reactor which Duke Energy plans to build, and this is an AP-1000 Westinghouse reactor. The reactor that Westinghouse has designed and that Duke has selected is supposedly an inherently safe design. In order to make the reactor cheaper to build and simplify, they eliminated a lot of pumps and piping in order to bring this design to fruition. This is the containment building here that I have drawn, it's a dome-shaped structure, and this would be the power plant, the reactor vessel inside. There is also at the top of this reactor a water tank of about 800,000 gallons which weighs about 3,334 tons, suspended on top of this reactor. Now, this reactor is a modular design, it's put together in pieces, and one of the Nuclear Regulatory Commission's own people reviewing this design came to the conclusion that because of the modular construction -- again, another cost-saving measure instead of casting it in one piece -- it would shatter like glass, according to Dr. John Mott, because of the modular construction. In addition to that, I mentioned the water tank up here which is supposed to provide gravity flow in case of loss of power, which is one of the principal things that destroyed the Fukushima Nuclear Power Plant. So instead of having to pump water up from below with electric power provided by generators, you have a gravity-fed system. Well, that sounds good, but 3,300 tons of water balanced on top of a structure which itself, for example, the reactor vessel itself weighs about 400 tons compared to that over 3,000 tons of water balanced at the top of this reactor, you have an unstable situation because the

reactor itself is not only modular constructed which could shatter like glass, you also have the heavy weight at the top. This is not inherently safe, this is inherently dangerous. Another so-called safety feature, I've drawn a double shell here, and that is to, according to the design, allow air to circulate freely between the steel shell and the concrete shell on the outside. You might could see that this air circulates out and then leaves the top of the reactor. This is an annular ring, it's called, which basically surrounds the whole structure. There's a gap in here which is a departure from earlier designs which had the steel and the concrete touching. What's the problem? This so-called safety feature leads to new fundamental weaknesses which have not been addressed in the licensing and the approval of AP1000, and that is this: this steel shell inside is subject to corrosion. Dr. Rudolph Houser has pointed out that this is not a good system because paints and other corrosion protection features are only guaranteed for a period of about ten years, according to the manufacturer. Then it's up to who applies the paint to meet the regulations. So he recommended against the use of this entire construction method. What can happen here if you have an event within the reactor where there is an escape of radioactive steam filling up the building and you have a gap anywhere in this shell, it would join the normal circulation of air like a syphon effect, sucking air from inside the radioactive gases inside that building through that annular gap between the steel and the concrete, exiting out to the atmosphere. A nuclear power vessel, a containment structure is supposed to do that, it's supposed to contain it. So this is the design which Duke Energy has proposed, Westinghouse has designed, the Nuclear Regulatory Commission has proposed and which business leaders in South Carolina are apparently inviting in without question. This is the reactor, this is the danger which you are inviting in to Cherokee County. (**0012-11-2** [Zeller, Lou])

Comment: About a decade ago engineers warned that the levees would break under a Category 5 hurricane around New Orleans. No one listened and it happened. Ten years ago we were warned that terrorists may strike Twin Towers in New York. Nobody listened and it happened. There is Fukushima. You know, they built walls that would prevent waves coming in and contaminating the plant. The waves came in from a tsunami at three times the height of the walls, and you see what happened there. Now, let's go to the present time. We've had an engineer with the Nuclear Regulatory Commission who has said that the reactor could shatter like a glass cup if it's not changed. We've had Representative Markey of the Natural Resources Committee who has said the same thing. We have had the chair of the NRC say that this reactor has not -- does not stand up to his scrutiny. He changed his mind shortly thereafter when all the other commissioner voted against his suggestion. Thirteen groups at least -- probably much more -- have said that this reactor that is proposed is not up to the safety that is required. Back in 1913 Union County, just one county below Cherokee, had an earthquake, a 5.5 on the Richter scale. This -- there is no reason that that can't happen again. Too often we humans have looked at probability and written off one in a hundred, one in a thousand, even one in a million as not worth preparing for after a cost benefit analysis. Tell this to more than the 100,000 residents of Fukushima who are now unable to return to their homes. Tell this to the people near Fort Calhoun Nuclear Plant in Nebraska that came within inches of nuclear calamity

when the Missouri River flooded out of its banks for months. Many of us who are parents and grandparents say the chances of failure of this newly-designed AP1000 are just too high. (**0013-13-1** [Bliss, Rachel])

Comment: ....we do not trust the safety of this plant's untested reactor with Gaffney being just one of the nuclear sites where this reactor will be used. (**0013-13-6** [Bliss, Rachel])

Comment: Duke is proposing two new reactors designed by Westinghouse, the new AP1000 design. The U.S. Nuclear Regulatory Commission recently gave a stamp of approval to this new design against the objections of a group of independent nuclear analysts, engineers, and concerned citizens known as the AP1000 Oversight Group. This group, led by concerned citizens of the Carolinas; including NC WARN nuclear information and resource service; and many other local and regional organizations, brought forward a key concern about the design, which the Draft Environmental Impact Statement for the proposed William States Lee fails to adequately address. The one-inch thick steel containment of the AP1000 is encircled by an open-to-the-air shield building that will be vulnerable to moisture and water vapor. Over time it is possible that such a containment building could corrode, like 17 others examples of corrosion brought by the oversight group to the NRC's attention in the existing fleet of reactors. It is possible that a small hole, the diameter of a pencil, could be undetected in the wall of the relatively thin containment. If a core accident were to happen after a hole was formed, there would be a release of concentrated radioactivity to the environment. Our concern is that this release could be large and spread rapidly to the surrounding area, damaging people and our environment due to the new Westinghouse design itself. We in the oversight group find that some of the so-called passively safe features are, in fact, actively dangerous. Since Westinghouse did not design a shield building as containment, but rather as a gamma shield and an updraft cooling for the containment, it would not impede the release of radioactivity. Instead, the cooling tower updraft of the shield building would act as a chimney to suck more radioactivity out of the containment in a shorter period of time than would occur otherwise. This early failure to contain radioactivity could greatly necessitate an early emergency response and evacuation, which Westinghouse has claimed is not necessary because of the so-called passive safety features. We are also concerned that this actively dangerous design could spread more radioactivity across a wider area since the shield building updraft might result in the plume obtaining a higher altitude. This would result in a radioactive deposit on more land, on a larger watershed area, on more urban populations, affecting more species. Just where? Well, according to the vagaries of wind and rain. The Draft Environmental Impact Statement for Duke's proposed reactors fails to adequately address these concerns. (**0013-24-1** [Hearne, Ray])

Comment: Representative Markey, who's on the Natural Resource Committee, stands behind an NRC staff report from Dr. John Maw, who warned that this actual AP reactor they're talking about, if it's subjected to any kind of force it's going to break like a glass cup. So here's the NRC getting this information, questioning Westinghouse about it one month, and the next month

they're on a fast track to approve the reactor. That to me is irresponsible and it's confusing for someone who's trying to follow the facts because one minute -- I mean, it's really hard to trust what the NRC is doing. Because they haven't asked for any design changes or seen any, it seems like this new reactor we're guinea pigs to it. (**0013-7-4** [Sorensen, Laura])

Comment: AP1000 Westinghouse Reactor: Rep Ed Markey's statement: "Instead of doing all they should to protect nuclear reactors against seismically-induced ground acceleration, these Commissioners (NRC) voted to approve the acceleration of reactor construction." "They have fast-tracked construction of a reactor whose shield building could 'shatter like a glass cup' if impacted by an earthquake or other natural or man-made impact". This is a new design, never been built, that is proposed for 14 new reactors in the Southeast. (**0017-10** [Morgan, Tom and Barbara])

Comment: The reactor design to be used is a first time, never been built, thus untested in reality. As US Rep. Markey stated: "reactor shield building could shatter like a glass cup if impacted by an earthquake or other natural or man-made impact". (**0019-6** [Doebber, Tom], **0020-6** [Klein, Art and Michelle], **0026-5** [Doebber, Ian] [Doebber, Rachel])

Comment: [Before acting on this proposal, adequate AND PUBLIC review should include:] Critical review to ensure that the design has adequate fail-safe elements to avoid meltdown and release of radiation as happened recently in Japan... (**0021-7** [Rinsler, MD, Steve])

Comment: The use of novel and untested designs should be disallowed... (**0021-8** [Rinsler, MD, Steve])

Comment: The reactor that is proposed for this new site is untested and, from recent reports, unlikely to survive an earthquake. (**0030-4** [Swing, Carol])

Comment: The AP1000 design is flawed...and location dangerous. (**0049-2** [Ruthye100, You Tube Service])

Comment: Back in the US, a noted NRC engineer since the 1970's, Dr. John Ma, warned NRC commissioners that the Westinghouse AP 1000 reactor could "shatter like a glass cup," if put in stressful weather or seismic conditions. Of course, other engineers employed by Westinghouse insisted this was not the case. You can guess who was believed. (**0104-8** [Bliss, Rachel])

Comment: U. S. Rep Ed Markey, ranking member of the House Natural Resources Committee has said regarding the AP 1000 reactor: "Instead of doing all they should to protect nuclear reactors against seismically-induced ground acceleration, these Commissioners (NRC) voted to approve the acceleration of reactor construction. They have fast-tracked construction of a reactor whose shield building could 'shatter like a glass cup' if impacted by an earthquake or other natural or man-made impact." Back in May, NRC Chairman Gregory Jaczko expressed

concerns with the AP 1000. He then said that Westinghouse would need to provide information on "additional technical issues" related to the AP 1000 shield building's ability to withstand accidents. A number of organizations still are not satisfied with Westinghouse's modifications. These groups include the AP 1000 Oversight Group, Bellefonte Efficiency and Sustainability Team, Blue Ridge Environmental Defense League, Citizens Allied for Safe Energy, Friends of the Earth, Georgia Women's Action for New Directions, Green Party of Florida, Mothers Against Tennessee River Radiation, North Carolina Waste Awareness and Reduction Network, Nuclear Information and Resource Service, Nuclear Watch South, South Carolina Chapter -Sierra Club, and Southern Alliance for Clean Energy. (**0104-9** [Bliss, Rachel])

Comment: [Building the W.S. Lee Nuclear Plant will:] Use the AP1000 reactor from fast tracked technology that has been built yet, makes it more dangerous to the public due to unknown variables. Rep. Ed Markey's report from scientists who have investigated the reactor shield and stated it could "shatter like a clas cup" if impacted by an earthquake or other natural or man-made disaster. In addition, the independent oversight group Fairewinds Associated listed concerns that the AP1000 design could release radiation directly into the air due to containment issues. Containment issues have been reported in 5 nuclear plants in the United States. (**0112-9** [Andrews, Josephine] [Anonymous] [Beattie, Kathryn E.] [Boever, Virginia] [Boyle, Ella] [Brogan Prindle, Cathleen] [Davis, John] [Flores, S.] [Hamahan, Clare] [Keil, A. Eugene] [Leverette, Will] [Peterson, Harry] [Peterson, Martha J.] [Rittenberg, David] [Rustin, K.])

Comment: AP1000 Westinghouse design is FLAWED and unsafe. (**0114-11** [Lovinsohn, Ruth])

Comment: The problem that the proposed AP1000 nuclear reactor is a new, untested design. (**0119-21** [Thomas, Ruth])

Comment: The AP1000 Westinghouse Reactor - remains a fast-tracked example of construction-never yet built-but proposed for new reactors in the Southeast. Its 'shield' building has been described as one that could "shatter like a glass cup" by earthquakes or man-made impact. (**0133-6** [Christopher, Lucy D.])

Comment: South Carolina is in an earthquake zone. Scientists have stated in a report to Rep. Ed Markey that the AP1000's reactor shield could "shatter like a glass cup" if earthquake impacted. (**0139-3** [Dailey, Debbie])

Response: *The NRC conducts a concurrent safety review of each COL application along with the environmental review; the results of the NRC's safety review of the Lee Nuclear Station will be published in an FSER, which is tentatively scheduled for publication in 2015. Regarding concerns about the viability of the AP1000 reactor design, approval of new reactor designs is contingent on the rigorous safety review of the design control document (DCD). New reactor construction is verified by inspections, tests, analyses, and acceptance criteria prior to initial startup testing and plant operation.*

The AP1000 reactor design underwent a lengthy and thorough safety review, resulting in issuance of the AP1000 Design Certification (DC) Final Rule in December 2011. The following schedule information is from the NRC's AP1000 amendment website located at http://www.nrc.gov/reactors/new-reactors/design-cert/amended-ap1000.html. This website and the AP1000 DC website (http://www.nrc.gov/reactors/new-reactors/design-cert/ap1000.html) provide links to Westinghouse's license amendment applications and the NRC's safety evaluation reports.

Comment: What about the costs of, for example, evacuating Charlotte which is within the 50-mile radius that we asked Americans in Japan to leave when Fukushima was melting down. Where are the costs for that? Oh, that won't happen because our design is safe. (**0012-8-5** [Crissey, Brian])

Comment: You know, I totally believe that you will do anything within your power to make it [nuclear power] safe. The problem is it's not safe. (**0013-26-2** [Sloan, Judie])

Comment: In addition, since South Carolina also has frequent tornadoes, what happens if the site is hit by one of those? I am not interested in discovering how far nuclear radiation can travel when borne on the winds of a hurricane or tornado. (**0030-5** [Swing, Carol])

Comment: We live just 60 miles from there and have many serious concerns about the safety of such an installation. (**0113-2** [Rose, Katherine])

Comment: The problems of human error and misconduct of workers. (**0119-3** [Thomas, Ruth])

Comment: Plainly stated, the operation of two nuclear reactors at this location would endanger over a 2.3 million people in two states living within 50 miles of the plant including the cities of Gaffney, Spartanburg, Greenville, Rock Hill, Gastonia, Charlotte and Hickory. Whatever safety measures are in place can never be sufficient because these facilities are, after all, operated by human beings. (**0130-1** [Zeller, Lou])

Comment: Although nuclear energy in supposed to be efficient, there is much evidence that it is not safe. Accidents at a nuclear plant fall within the quality improvement category of rare chance of accident, but devastating effect, if one should occur. I don't believe that our society in the US can even imagine what natural disasters could precipitate a nuclear accident. Witness the tsunami in Japan and the horrors that followed. I'm sure that there was no mention of a tsunami in the Japanese disaster plan. Similarly, US energy companies and their political partners are unlikely to look further than the next election cycle to imagine or plan for the safety impacts of accidents at a nuclear power plant. (**0132-2** [Cahill, Joanne])

Response: *In general, these comments express opposition to Lee Nuclear Station based on safety concerns, including natural disasters, human error, and terrorism. Safety issues are*

outside the scope of the Lee Nuclear Station environmental review and are not addressed in the EIS. However, the NRC conducts a concurrent safety review of each COL application along with the environmental review, and these issues are addressed in that review. The NRC is in the process of developing a safety evaluation report that analyzes all aspects of reactor and operational safety; the NRC staff's safety evaluation report for the proposed Lee Nuclear Station is anticipated to be published in 2015.

With regards to Fukushima Dai-ichi, since the nuclear accident at Fukushima began to unfold, the NRC has been working to understand the events that took place in Japan and relay important information to U.S. nuclear power plant licensees and applicants. Not long after the emergency began, the NRC established a task force of senior NRC experts to determine lessons learned from the accident and to initiate a review of NRC regulations to determine if additional measures should be taken immediately to ensure the safety of U.S. nuclear power plants. The task force issued its report on July 12, 2011, concluding that continued U.S. nuclear plant operation and NRC licensing activities presented no imminent risk. The task force also concluded that enhancements to safety and emergency preparedness are warranted and made several general recommendations for Commission consideration. The NRC issued SECY 12-0025 (NRC 2012d), detailing the proposed Orders and required actions in response to lesson learned from Japan's March 11, 2011 earthquake and tsunami. For new reactors and COLs (such as Lee Nuclear Station), the staff will ensure that the Commission-approved Fukushima actions are addressed prior to licensing.

On March 9, 2012, the Commission directed the NRC staff to issue immediately effective Orders to U.S. commercial nuclear reactors to begin implementation of several recommendations for enhancing safety at U.S. reactors, based on lessons learned from the accident at Japan's Fukushima Dai-ichi nuclear power plant (see NRC News Release 12-023 at http://pbadupws.nrc.gov/docs/ML1206/ML120690627.pdf). Two of the Orders apply to every U.S. commercial nuclear power plant, including those under construction and the recently licensed new Vogtle and V.C. Summer reactors. The first Order requires plants to better protect safety equipment installed after the September 11, 2001 terrorist attacks and to obtain sufficient equipment to support all reactors at a given site simultaneously. The second Order requires plants to install enhanced equipment for monitoring water levels in each plant's spent fuel pool. The third Order applies only to U.S. boiling water reactors that have "Mark I" or "Mark II" containment structures. These reactors must improve venting systems (or, for the Mark II plants, install new systems) that help prevent or mitigate core damage in the event of a serious accident. Plants have until December 31, 2016, to complete modifications and requirements of all three Orders. The NRC also issued a detailed information request to every operating U.S. commercial nuclear power plant, and certain parts of this request will apply to reactors currently under construction or recently licensed.

Regarding concerns about the safety of the AP1000 reactor design, approval of new reactor

designs is contingent on the rigorous safety review of the DCD. New reactor construction is verified by inspections, tests, analyses, and acceptance criteria prior to initial startup testing and plant operation. The AP1000 reactor design underwent a lengthy and thorough safety review, resulting in issuance of the Final Rule for the AP1000 DC Amendment in December 2011 (ADAMS Accession No. ML113480014).

Comment: Now, the environmental impact of the William States Lee can be summed up in one word: Fukushima, or maybe two when you add Chernobyl, or more: Three Mile Island. Actually there were 14 near misses in 2009 and 2010 in the U.S. alone, serious failures in which safety was jeopardized, the most significant being at the H.B. Robinson Plant owned by Progress Energy here in Hartville, South Carolina. (**0013-19-1** [Dailey, Debbie])

Comment: And more recently, there is Fukashima to remind us that accidents do happen in the most meticulately controlled situations. Because such a tragedy hasn't happened here yet does not mean that it can not happen here. (**0143-2** [McAfee, Patricia B.])

Comment: Today we're aware only of the occasional mishaps that make the news. There are 432 plants worldwide, and things happen all the time; there are incidents all the time. We're only aware of the ones that we hear from in the news like Browns Ferry, Davis- Besse, Fairmead, Diablo, San Onofre, Three Mile Island, Chernobyl, Indian Point, Fukushima, and very recently North Anna because of an earthquake. Imagine an earthquake in Virginia. The reports that I've read indicate that Three Mile Island was perhaps within 30 minutes of contaminating the entire northeastern part of the United States and making it unhabitable for centuries, if not forever. We know about Chernobyl that exploded to release radiation over much of Europe and eventually the entire globe. That's why we all have radioactive particles in our bodies. There's no way to control what's going on at Fukushima. It's probably already worse than Chernobyl and it's continuing as we speak. And don't talk to be me about nuclear safety. Given the cost -- well, think about Indian Point in New York. That is on an earthquake fault -- or close to an earthquake fault like the one at North Anna. there are 17 million people in the immediate environs of Indian Point and that would only be the beginning of the destruction. 17 million people are living close to Indian Point. (**0013-14-3** [Richardson, Don])

Comment: As you listen to those words think of Three Mile Island and Chernobyl and Fukushima. Ponder the possibility of the many near misses at nuclear plants the world over, the ones known only to those captains of the nuclear industry but kept hidden from public view. (**0013-15-1** [Guy, Peggy])

Comment: That [Chernobyl] was not a terrible planned event -- that was an accident of somebody flipping a switch the wrong way. This is not a benign, safe, pleasant little industry. This is something that can turn around and bite you badly. (**0013-27-1** [Fisk, Bill])

Comment: I'm concerned because should there be a breach of safety at this proposed nuclear plant -- I live 60 miles from here. If we look at what has taken place in Japan at Fukushima radiation has greatly impacted Tokyo, which is about 130 miles away from the Fukushima plant. This plant, should it have any kind of a destructive situation, would affect far more than the people in Cherokee County. It would affect the people in the entire Southeast; it would affect the people in the entire globe. The radiation from Fukushima traveled around the Earth. It affected every place in the United States, in fact to the point the radiation monitors were actually shut down to keep people from understanding what the impact would be. We have just tremendous impact from that one situation. We all hope, of course, that this would never happen at any nuclear plant. We hope that these disasters would not take place. But let's back at what has taken place in the year 2011 in this country alone. We have had tornadoes that have shut down nuclear plants, we have had flooding along the Mississippi River which greatly impact a plant -- the Fort Calhoun Plant. (**0013-5-1** [Cremer, Claudine])

Comment: Furthermore, the lessons of Chernobyl, Three-Mile Island, and now especially Fukushima must not be hidden away but rather paid attention to with extreme clarity. (**0046-4** [Southworth, Win])

Comment: The effects of the danger of radiation over time are irrefutable, as well as the danger in the event that anything goes wrong which has happened multiple times in the past in nuclear plants around the world. The danger to humans, the watershed & the ecosystem is unacceptable. (**0084-3** [Lemoing, Melissa])

Comment: After the recent Fukishima disaster we see proof again that it can happen - unanticipated natural disaster, human error & failings, terrorist threats, system malfunction can happen despite all the reassurances the nuclear industry & the NRC/Nuclear Regulatory Commission make. Toxic radiation knows no boundaries -Chernobyl radiation reached CA in 10 days. Thousands died & continue dying today. TMI came close to being worse than Chernobyl. Fukishima radiation fallout easily reached CA & our East coast. (**0092-5** [Howarth, Irma])

Comment: Those of us who have lived through the entire nuclear age are aware of the thousands of incidents, large and small, that have occurred at the world's 432 nuclear plants. (**0100-2** [Richardson, Don])

Comment: Today, we are aware of only the occasional mishap that makes the news, and we hear such names as Brown's Ferry, Davis Besse, Fermi, Diablo, San Onofre, TMI, Chernobyl, Indian Point, Fukushima, and very recently North Anna. TMI was reportedly close to a meltdown that might have made the entire NE of the US uninhabitable for centuries--or longer. Chernobyl exploded to release radiation over much of Europe and eventually the entire globe. Fukushima is now believed to be even worse than Chernobyl, with no way to control continuing releases of lethal rays and particles, now detectable in the US. (**0100-3** [Richardson, Don])

Comment: I was living in southern York County PA when the accident at Three Mile Island occurred. Later I heard numerous testimonies to negative impacts of radiation releases from 2-headed calves to misshaped vegetables to women losing their unborn babies. And now we learn about the meltdowns at Fukushima where the scale of the event ad to be raised from level 4 to level 7, the highest, the worse it can be. Children, the most vulnerable to radiation, were exposed to high levels, levels that were raised to 10 times the level causing cancer in nuclear weapons. (**0106-1** [Hearne, Ray])

Comment: The safety issue is an even bigger concern. We know that Fukushima sent fallout to Tokyo. Asheville/Candler where I live is three times closer to the proposed site in Gaffney. Research on Chernobyl shows that there are people of Belarus still suffering debilitating diseases as a Result of Contamination 124 miles away. (**0140-3** [G., Edith A.])

Response: *These comments express opposition to the proposed Lee Nuclear Station based on safety concerns. Comments primarily cite past nuclear accidents, including Chernobyl, Three Mile Island Unit 2, and Fukushima Dai-ichi. They do not provide any specific information related to the environmental effects of the proposed Lee Nuclear Station. Section 5.11 of the EIS considers the radiological consequences on the environment of potential accidents at the proposed Lee Nuclear Station. This section has been updated to include the recent Commission Orders related to the lessons learned from the accident at Japan's Fukushima Dai-ichi nuclear power plant. Issues related to safety are beyond the scope of the environmental review and will be evaluated in the Lee Nuclear Station FSER, which is tentatively scheduled to be published in 2015. Section E.2.38 in this appendix responds to similar comments against nuclear power in general that also cite the accidents at Chernobyl, Three Mile Island, and Fukushima Dai-ichi.*

Comment: Shut down could happen due to lack of water for cooling; a very dangerous occurence. (**0017-4** [Morgan, Tom and Barbara])

Response: *This comment expresses concern regarding drought conditions that could necessitate a shutdown of the proposed Lee Nuclear Station without sufficient water to safely do so. The EIS evaluates the potential effects of plant construction and operation on the environment, and does not evaluate safety impacts of the environment on the proposed plant. Therefore, these comments are not within the scope of the environmental review and no changes were made to the EIS. The staff's safety evaluation report will address the effects of drought on the plant. Nuclear power plants are extremely robust structures designed to safely shut down when necessary. If an extreme drought event causes the nuclear power plant to be shut down, the reactor can be maintained in a safe condition. Furthermore, the AP1000 reactor design does not require a water source to safely shut down the nuclear units.*

Comment: The problems associated with earthquakes, tornadoes, floods, fires, hurricanes, all weather conditions which contribute to disturbing cooling water use. (**0119-2** [Thomas, Ruth])

Response: *This comment expresses concern about the impacts of severe weather and earthquakes on the operation of the proposed Lee Nuclear Station. The EIS is concerned with the potential effects of plant construction and operation on the environment and does not evaluate safety impacts of the environment on the proposed plant. Therefore, this comment is not within the scope of the environmental review and no changes were made to the EIS as a result. The NRC staff's safety evaluation report will address the effects of weather and earthquakes on the plant. Nuclear power plants are designed to survive severe weather such as hurricanes and tornadoes. If an extreme weather event causes a nuclear power plant to be shut down, the reactor can be maintained in a safe condition. The likelihood of the maximum wind speed in a hurricane or tornado exceeding the design wind speed for a reactor and its safety-related systems is typically less than 1 in 10 million in any given year.*

With regard to the impact of earthquakes on the proposed Lee Nuclear Station, Section 2.5 of the NRC staff's FSER will provide a detailed description of the geologic features of the Lee Nuclear Station site and vicinity, and document the NRC staff's independent assessment of Duke's detailed evaluation and analysis of geological, seismological, and geotechnical data. The peak acceleration rate at the site would be evaluated as part of the design basis for siting the AP1000 reactor design at the proposed Lee Nuclear Station site.

Furthermore, if the proposed Lee Nuclear Station was forced to safely shutdown due to weather or seismic conditions, the AP1000 reactor design does not require a water source.

Comment: Corporate greed is another predictable variable that can affect safety of nuclear plants. All the regulations in the world will not prevent a corporation for skimping on safety procedures to maximize profits. There are too many examples in every industry of corporate greed trumping public interest to even list. (**0132-3** [Cahill, Joanne])

Response: *This comment addresses safety issues at nuclear facilities that could be caused by improper oversight by the licensee. Operational safety issues are outside the scope of the environmental review and will not be addressed in the EIS. The safety implications would be considered in the NRC's separate safety review of the project and described in the FSER. The NRC has an operational experience program that ensures that safety issues that are found at one plant are properly addressed at all others, as appropriate. No change was made to the EIS as a result of this comment.*

Comment: South Carolina is in one of the most active earthquake zones in the nation, and I have a USGS map showing -- and I'll leave a copy of this -- where the earthquakes have occurred in the United States in the last 200 or so years. Oddly enough, these same areas of South Carolina are where many of the nuclear plants are located. (**0012-10-2** [Connolly, Mary Ellen])

Comment: I also have on the earthquake thing, there has been an earthquake, it was January 9 of 2012, it was located near Charleston at that point, but this is the map that shows the clusters of the earthquakes, and this is a list from the USGS of the earthquake history of this area. There's been one in Pendleton, Pickens, all over. This is a dangerous plant and we need it stopped now. (**0012-10-7** [Connolly, Mary Ellen])

Comment: We have had earthquakes that affected the North Anna plant in the state of Virginia. It cracked the containment building there. We have had flooding, as I mentioned. As well intentioned as human beings are we cannot regulate or control nature. And I think that's the bottom line here. (**0013-5-2** [Cremer, Claudine])

Comment: Like Japan, we live on fault lines here in Western North Carolina and Upstate South Carolina. We are at risk for a seismic event which could cause irreparable damage to the Nuclear Power Stations in our region. (**0048-3** [Skeele, Michele and Skip])

Comment: An earthquake in Virginia has damaged the plants at North Anna, which, like Indian Point in NY, are on or close to fault lines. (**0100-4** [Richardson, Don])

Comment: Back in 1913, Union County, just one county south of Gaffney's Cherokee County, experienced a 5.5 earthquake. There is no basis to say that there won't be another. (**0104-1** [Bliss, Rachel])

Comment: I find it very disturbing that the NRC is considering allowing the construction of new nuclear stations in light of the Fukushima disaster of last year and the near catastrophe at Ft. Calhoun last summer. As the Fukushima disaster showed, the nuclear plant's core facilities were damaged and destroyed not by the tsunami, but by the earthquake. The vast majority of nuclear power plants in this country were not built with any consideration of threats from earthquakes, but just last year an earthquake shook the east coast. The Madrid Fault Zone is expected to become active in the near future. (**0111-1** [Knudten, Cori])

Comment: As the recent events in Fukishima, Japan indicate, major earth upheavals can occur anywhere, with little notice, and can devastate a nuclear plant and the communities around it. One year later Fukishima is STILL spewing radiation into the air and into the ground water, affecting all of Japan, the Pacific Ocean and eventually the entire planet. (**0113-6** [Rose, Katherine])

Comment: We all have to have concerns about safety when we look at the use of nuclear energy failed plants have contributed significant danger to communities worldwide. From Three Mile Island, Chernobyl, to Fukushima, populations have been exposed to health risk by exposure. This plant is 60 miles from Asheville, which is located along a seismological fault area. Leakage is likely to affect children as well as adults. (**0122-2** [Justice, Cynthia and Michael])

Comment: Design - Modern designs for safety must be undertaken to prevent earthquake damage. (**0122-6** [Justice, Cynthia and Michael])

Comment: South Carolina is an Active Earthquake Zone
The National Earthquake Information Center reports over 20 earthquakes of intensity V or greater (5 or more on a scale of 10 in the Modified Mercalli scale) have been centered in the state. The famous Charleston earthquake of 1886 was an intensity X which damaged building 100 miles away. The map at right indicates the magnitude and the extent of the 1886 quake.

The University of South Carolina's Seismic Network contains comprehensive data on earthquake history.

The seismic history of the southeastern United States is dominated by the 1886 earthquake that occurred in the Coastal Plain near Charleston, South Carolina. It was one of the largest historic earthquakes in eastern North America, and by far the largest earthquake in the southeastern United States. A major shock, occurred August 31, 1886 at approximately 9:50p.m. and lasted less than one minute, but resulted in about sixty deaths and extensive damage to the city of Charleston. Because the event took place before seismological instrumentation, estimates of its location and size must come from observations of the damage and effects caused by the earthquake. Most of what we know of the even and the resulting damage comes from a comprehensive report by C.E. Dutton of the U.S. Geological Survey published in 1889. The meizoseismal area (area of maximum damage) of the 1886 earthquake is an elliptical area roughly 20 by 30 miles trending northeast between Charleston and Jedburg and including Summerville and roughly centered at Middleton Place.

The 1886 earthquake was followed by a series of aftershocks. Of 435 or more earthquakes reported to have taken place in South Carolina between 1754 and 1975, more than 300 were aftershocks that occurred in the first 35 years following 1886. The 1886 earthquake and its aftershocks dominate the seismic record of the southeast.

The historic record suggests the Charleston-Summerville area had a continuum of low level seismicity prior to 1886, and a low-level activity continues in the same area today.

In 1903 a quake centered in the Savannah River area was recorded at an intensity of VI. In 1907 a quake again affected Charleston, Augusta, and Savannah. Quakes occurred in 1912, 1913 and 1914. In 1924 an earthquake affecting an area of 50,000 square miles shook most of South Carolina. In 1945 a shock centered west of Columbia was felt as far away as Georgia and Tennessee. More quakes occurred in 1952, 1959, 1960 and 1967. A magnitude 3.4 (Richter scale) earthquake centered near Orangeburg in 1971.

The map at right illustrates seismic events from 1990 to 2006. On the map, circles are

earthquakes, color represents depth range and depth is in kilometers. Purple indicates cities. Earthquake locations are from the USGS/NEIC PDE catalog.

Earthquakes are measured in terms of acceleration with respect to gravity. Gravity's acceleration is 32 feet per second per second. The peak acceleration is the largest recorded during a particular earthquake. Geologic faults are commonly considered to be active if they have moved one or more times in the last 10,000 years.

South Carolina Seismic Hazard Map

The South Carolina Geological Survey states:

When will the next strong quake occur? The ability to accurately predict when and where earthquakes will occur is not yet available. South Carolinians need to realize that South Carolina faces the possibility of the occurrence of a strong quake having its epicenter within our borders. We also need to realize that a major earthquake anywhere in the Eastern United States could adversely affect us, causing damage.

Nuclear engineers use "probabilistic" techniques to describe ground motion potential. They attempt to account for all potential seismic sources in the region around the plant. The standard is ground motion (**0130-7** [Zeller, Lou])

Comment: Section 5.11.2.4 discusses Externally Initiated Events, and should address the largest anticipated earthquake at the site, based on current data and state of the art technology. The Charleston earthquake of the 1800s should be referenced, and how this would have impacted the proposed site of the reactors. The peak acceleration rate at the site based on the Charleston earthquake should be addressed. (**0142-7** [Mueller, Heinz])

Response: *The EIS is concerned with the potential effects of plant construction and operation on the environment and does not evaluate safety impacts of the environment on the proposed plant. The safety implications would be considered in the NRC's separate safety review of the project and described in the FSER. Therefore, this comment is not within the scope of the environmental review and no changes were made to the EIS as a result. The geology of the Lee Nuclear Station site is described only briefly in the EIS. Section 2.5 of the NRC staff's FSER will provide a detailed description of geologic features of the Lee Nuclear Station site and vicinity, and will document the NRC staff's independent assessment of Duke's detailed analysis of geological, seismological, and geotechnical data, including the Charleston seismic zone source. As such, the peak acceleration rate at the Lee Nuclear Station site would be evaluated as part of the design basis for siting the AP1000 reactor design at the proposed site near Gaffney, South Carolina. The site-specific response of the certified AP1000 design must still meet the seismic conditions evaluated during the design certification process. As provided in*

Section 5.11.2.4 of the EIS, the NRC staff concluded in the Design Certification's FSER that the AP1000 reactor design is seismically acceptable. No changes were made to the EIS as a result of these comments.

E.2.34 Comments Concerning Issues Outside Scope - Security and Terrorism

Comment: Now, even if everyone were to run smoothly, as they say that it will, there is a growing risk of cyber weapon technology attacks, as shown by the computer virus Stuxnet, which infiltrated the industrial control system of an Iranian nuclear power plant, causing physical damage. (**0013-19-2** [Dailey, Debbie])

Comment: The risk of fissionable material getting into terrorists control adds greatly to these other dangers. (**0019-3** [Doebber, Tom], **0020-3** [Klein, Art and Michelle], **0026-2** [Doebber, Ian] [Doebber, Rachel])

Comment: Nuclear power generation provides a target for terrorists. (**0024-5** [Whitefield, Anne])

Comment: The problem of the expense of protecting against terrorism. (**0119-15** [Thomas, Ruth])

Comment: The problem that so long as there are nuclear power plants anywhere, nuclear weapons are possible. (**0119-24** [Thomas, Ruth])

Comment: Finally, in an age of large potential for terrorism the construction of a large central and highly vulnerable power plant rather than multiple smaller distributed power generation sources simply makes no sense. (**0124-5** [Hayes, MD, J. David])

Response: *The EIS is concerned with the potential effects of plant construction and operation on the environment and does not evaluate safety impacts of the environment on the proposed plant. Therefore, this comment is not within the scope of the environmental review and no changes were made to the EIS as a result. Security and terrorism are safety issues that are not within the scope of the staff's environmental review. Safety implications would be considered in the NRC's separate safety review of the project and described in the FSER. The NRC is devoting substantial time and attention to terrorism-related matters, including coordination with the U.S. Department of Homeland Security. As part of its mission to protect public health and safety and the common defense and security pursuant to the Atomic Energy Act of 1954, the NRC staff is conducting vulnerability assessments for the domestic utilization of radioactive material. Since the events of September 11, 2001, the NRC has identified the need for license holders to implement compensatory measures and has issued several Orders to license holders imposing enhanced security requirements. Finally, the NRC has taken actions to ensure that applicants and license holders maintain vigilance and a high degree of security awareness. The NRC will continue to consider measures to prevent and mitigate the consequences of acts of*

terrorism in fulfilling its safety mission. Additional information about the NRC staff's actions regarding physical security since September 11, 2001 can be found on the NRC's public website at http://www.nrc.gov/security.html.

E.2.35 General Editorial Comments

Comment: Section 4.9.2, Page 4-108, Line 34: The DEIS states "...to compute doses to persons at the proposed Unit 2 protected area fence." This should be "...at the proposed Unit 1 protected area fence." (**0134-48** [Fallon, Chris])

Response: *The text in Section 4.9.2 was corrected.*

Comment: Section 5.9.5.2, Page 5-80, Lines 3-5: Since the Ninety-Nine Islands dam is located to the southeast of the station, the reference of "southwest" should be "southeast." (**0134-56** [Fallon, Chris])

Response: *The text in Section 5.9.5.2 was corrected.*

Comment: Section 6.3, Page 6-41, Line 25: GEIS-DECON should be GEIS-DECOM. (**0134-57** [Fallon, Chris])

Response: *The text in Section 6.3 was corrected.*

E.3 References

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10 CFR Part 51. *Code of Federal Regulations*, Title 10, *Energy*, Part 51, “Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions.”

10 CFR Part 52. *Code of Federal Regulations*, Title 10, *Energy*, Part 52, “Licenses, Certifications, and Approvals for Nuclear Power Plants.”

10 CFR Part 63. *Code of Federal Regulations*, Title 10, *Energy*, Part 63. “Disposal of High-Level Radioactive Wastes in a Geological Repository at Yucca Mountain, Nevada.”

10 CFR Part 71. *Code of Federal Regulations*, Title 10, *Energy*, Part 71, “Packaging and Transportation of Radioactive Material.”

10 CFR Part 100. *Code of Federal Regulations*, Title 10, *Energy*, Part 100, "Reactor Site Criteria".

33 CFR Part 332. *Code of Federal Regulations*, Title 33, *Navigation and Navigable Waters,* Part 332, "Compensatory Mitigation for Losses of Aquatic Resources."

40 CFR Part 125. *Code of Federal Regulations*, Title 40, *Protection of Environment*, Part 125, "Criteria and Standards for the National Pollutant Discharge Elimination System."

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Duke Energy Carolinas, LLC (Duke). 2012a. Letter from Christopher Fallon, Duke, to NRC dated March 29, 2012, "Duke Energy Carolinas, LLC, William States Lee III Nuclear Station--Docket Nos. 52-018 and 52-019, AP1000 Combined License Application for the William States Lee III Nuclear Station Units 1 and 2, Supplemental Information to the Environmental Report (Revision 1) Ltr#WLG2012.03-10." Accession Number ML12093A005.

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Duke Energy Carolinas, LLC (Duke) 2012e Letter from Robert Wylie, Duke, to South Carolina Department of Health and Environmental Control Water Quality Certification and Wetlands Section dated August 30, 2012, "William States Lee III Nuclear Station Public Notice No.: 2009-122-SIR Request for Additional Information." Accession Number ML12255A448).

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Appendix F

Key Consultation Correspondence

Appendix F

Key Consultation Correspondence

Correspondence sent and received during the environmental review of the combined licenses application for the William States Lee III Nuclear Station, Units 1 and 2 is identified in Table F-1. The correspondence can be found in NRC's Agencywide Document Access and Management System (ADAMS), which is accessible from the NRC website at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room) (note that the URL is case-sensitive). ADAMS accession numbers are also provided in Table F-1.

Table F-1. Key Consultation Correspondence

Source	Recipient	Date of Letter and ADAMS Accession Number
U.S. Nuclear Regulatory Commission (Mr. Richard Raione)	Advisory Council on Historic Preservation (Mr. Don Klima)	April 9, 2008 ML080840472
U.S. Nuclear Regulatory Commission (Mr. Richard Raione)	South Carolina Archives and History Center, State Historic Preservation Office (Ms. Elizabeth Johnson)	April 9, 2008 ML080840533
U.S. Nuclear Regulatory Commission (Mr. Richard Raione)	U.S. Fish and Wildlife Service (Mr. Sam Hamilton)	April 9, 2008 ML080840475
U.S. Nuclear Regulatory Commission (Mr. Richard Raione)	National Oceanic and Atmospheric Administration–National Marine Fisheries Service (Mr. David M. Bernhart)	April 9, 2008 ML080850962
U.S. Nuclear Regulatory Commission (Mr. Richard Raione)	Catawba Indian Nation, Tribal Historic Preservation Office (Dr. Wenonah Haire)	April 9, 2008 ML080840506
U.S. Nuclear Regulatory Commission (Mr. Richard Raione)	Eastern Band of the Cherokee Indians, Tribal Historic Preservation Office (Mr. Russell Townsend)	April 9, 2008 ML080840513
U.S. Nuclear Regulatory Commission (Mr. Richard Raione)	Carolina Indian Heritage Association (Ms. Michelle Pounds)	April 9, 2008 ML080840519

Table F-1. (contd)

Source	Recipient	Date of Letter and ADAMS Accession Number
U.S. Nuclear Regulatory Commission (Mr. Richard Raione)	Eastern Shawnee Tribe of Oklahoma (Chief Glenna J. Wallace)	April 9, 2008 ML080840520
U.S. Nuclear Regulatory Commission (Mr. Richard Raione)	United South and Eastern Federation of Tribes (Mr. Michael Cook)	April 9, 2008 ML080840538
U.S. Nuclear Regulatory Commission (Mr. Richard Raione)	Piedmont American Indian Association, Lower Eastern Cherokee Nation South Carolina (Chief Gene Norris)	April 9, 2008 ML080840540
U.S. Nuclear Regulatory Commission (Mr. Richard Raione)	Pine Hill Indian Community (Ms. Michelle Pounds)	April 9, 2008 ML080840545
U.S. Nuclear Regulatory Commission (Mr. Richard Raione)	North Carolina Wildlife Resources Commission, Habitat Conservation Program (Mr. Ron Linville)	April 11, 2008 ML080880253
National Oceanic and Atmospheric Administration–National Marine Fisheries Service (Mr. David M. Bernhart)	U.S. Nuclear Regulatory Commission	May 5, 2008 ML081400585
South Carolina Department of Archives and History, State Historic Preservation Office (Ms. Rebekah Dobrasko)	U.S. Nuclear Regulatory Commission (Mr. Richard Raione and Ms. Linda Tello)	May 12, 2008 ML081510939
U.S. Fish and Wildlife Service (Mr. Timothy Hall)	U.S. Nuclear Regulatory Commission	May 13, 2008 ML081430228
North Carolina Wildlife Resources Commission (Mr. Christopher Goudreau)	U.S. Nuclear Regulatory Commission	May 20, 2008 ML081430390
South Carolina Department of Natural Resources, Office of Environmental Programs (Mr. Robert D. Perry)	U.S. Nuclear Regulatory Commission	May 20, 2008 ML081430553
U.S. Fish and Wildlife Service (Mr. Timothy Hall)	U.S. Nuclear Regulatory Commission	May 21, 2008 ML081540399
South Carolina Department of Archives and History, State Historic Preservation Office (Ms. Rebekah Dobrasko)	U.S. Nuclear Regulatory Commission (Ms. Linda Tello)	May 30, 2008 ML081510453

Table F-1. (contd)

Source	Recipient	Date of Letter and ADAMS Accession Number
U.S. Nuclear Regulatory Commission (Mr. Richard Raione)	Seminole Tribe of Florida, Tribal Historic Preservation Office (Mr. Willard Steele)	June 4, 2008 ML081430691
Catawba Indian Nation, Tribal Historic Preservation Office (Dr. Wenonah Haire)	U.S. Nuclear Regulatory Commission	June 11, 2008 ML081750079
U.S. Nuclear Regulatory Commission (Mr. Richard Raione)	South Carolina Department of Natural Resources, Heritage Trust Program (Ms. Julie Holling)	June 19, 2008 ML081420749
South Carolina Department of Natural Resources, Heritage Trust Program (Ms. Julie Holling)	U.S. Nuclear Regulatory Commission	July 8, 2008 ML081990424
Eastern Band of Cherokee Indians, Tribal Historic Preservation Office (Mr. Tyler B. Howe)	U.S. Nuclear Regulatory Commission	November 20, 2008 ML083370297
U.S. Army Corps of Engineers, Charleston District (LTC J. Richard Jordan III)	U.S. Nuclear Regulatory Commission	February 10, 2009 ML090690283
Catawba Indian Nation, Tribal Historic Preservation Office (Dr. Wenonah Haire)	U.S. Nuclear Regulatory Commission	February 19, 2009 ML090840061
U.S. Nuclear Regulatory Commission (Mr. Scott Flanders)	U.S. Army Corps of Engineers, Charleston District (LTC J. Richard Jordan III)	March 30, 2009 ML090700384
U.S. Nuclear Regulatory Commission (Mr. Robert Schaaf)	South Carolina Archives and History Center, State Historic Preservation Office (Ms. Caroline Dover Wilson)	May 24, 2010 ML093480445
U.S. Nuclear Regulatory Commission (Mr. Robert Schaaf)	Advisory Council on Historic Preservation (Mr. Don Klima)	May 24, 2010 ML093560024
U.S. Nuclear Regulatory Commission (Mr. Robert Schaaf)	South Carolina Department of Natural Resources, Office of Environmental Programs (Mr. Robert D. Perry)	May 24, 2010 ML093570175
U.S. Nuclear Regulatory Commission (Mr. Robert Schaaf)	U.S. Fish and Wildlife Service, Southeast Region (Mr. Jay B. Herrington)	May 24, 2010 ML093580019

Table F-1. (contd)

Source	Recipient	Date of Letter and ADAMS Accession Number
U.S. Nuclear Regulatory Commission (Mr. Robert Schaaf)	North Carolina Wildlife Resources Commission, Habitat Conservation Program (Mr. Ron Linville)	May 24, 2010 ML101190491
U.S. Nuclear Regulatory Commission (Mr. Robert Schaaf)	South Carolina Department of Health and Environmental Control (Ms. Susan Turner)	May 24, 2010 ML101190500
U.S. Nuclear Regulatory Commission (Mr. Robert Schaaf)	U.S. Environmental Protection Agency, Region 4, National Environmental Policy Act Program Office	May 24, 2010 ML101200120
U.S. Nuclear Regulatory Commission (Mr. Robert Schaaf)	Catawba Indian Nation, Tribal Historic Preservation Office (Dr. Wenonah Haire)	May 24, 2010 ML101200150
U.S. Nuclear Regulatory Commission (Mr. Robert Schaaf)	Seminole Tribe of Florida, Tribal Historic Preservation Office (Mr. Willard Steele)	May 24, 2010 ML101200368
U.S. Nuclear Regulatory Commission (Mr. Robert Schaaf)	Eastern Band of the Cherokee Indians, Tribal Historic Preservation Office (Mr. Russell Townsend)	May 24, 2010 ML101200371
U.S. Nuclear Regulatory Commission (Mr. Robert Schaaf)	Eastern Shawnee Tribe of Oklahoma (Chief Glenna J. Wallace)	May 24, 2010 ML101200375
U.S. Nuclear Regulatory Commission (Mr. Robert Schaaf)	Carolina Indian Heritage Association (Ms. Michelle Pounds)	May 24, 2010 ML101200416
U.S. Nuclear Regulatory Commission (Mr. Robert Schaaf)	United South and Eastern Federation of Tribes (Mr. Michael Cook)	May 24, 2010 ML101200435
U.S. Nuclear Regulatory Commission (Mr. Robert Schaaf)	Piedmont American Indian Association, Lower Eastern Cherokee Nation South Carolina (Chief Gene Norris)	May 24, 2010 ML101200443
U.S. Nuclear Regulatory Commission (Mr. Robert Schaaf)	Pine Hill Indian Community (Ms. Michelle Pounds)	May 24, 2010 ML101200452
South Carolina Archives and History Center, State Historic Preservation Office (Ms. Caroline Dover Wilson)	U.S. Nuclear Regulatory Commission (Ms. Sarah Lopas)	June 21, 2010 ML101720651

Table F-1. (contd)

Source	Recipient	Date of Letter and ADAMS Accession Number
Catawba Indian Nation, Tribal Historic Preservation Office (Dr. Wenonah Haire)	U.S. Nuclear Regulatory Commission (Mr. Scott Flanders)	July 22, 2010 ML102110494
South Carolina Department of Natural Resources (Ms. Vivianne Vejdani)	U.S. Nuclear Regulatory Commission	July 27, 2010 ML102160393
U.S. Nuclear Regulatory Commission (Mr. Brian Hughes)	Bureau of Land and Waste Management, South Carolina Department of Health and Environmental Control (Ms. Sandra J. Threatt)	November 19, 2010 ML103150012
U.S. Nuclear Regulatory Commission (Mr. Allen Fetter)	Catawba Indian Nation (Dr. Wenonah Haire)	March 14, 2011 ML103000023
South Carolina Department of Natural Resources (Mr. Bob Perry)	U.S. Nuclear Regulatory Commission (Ms. Sarah Lopas)	May 2, 2011 ML111220594
Pacific Northwest National Laboratory (Mr. Jim Becker, for the U.S. Nuclear Regulatory Commission)	South Carolina Department of Natural Resources, Heritage Trust Program (Ms. Julie Holling)	May 25, 2011 ML111470774
Pacific Northwest National Laboratory (Mr. Jim Becker, for the U.S. Nuclear Regulatory Commission)	North Carolina Department of Environment and Natural Resources, Natural Heritage Program (Mr. Harry LeGrand)	May 25, 2011 ML114470794
South Carolina Department of Natural Resources, Heritage Trust Program (Ms. Julie Holling)	U.S. Nuclear Regulatory Commission	June 8, 2011 ML111741378
North Carolina Department of Environment and Natural Resources, Natural Heritage Program (Mr. John Finnegan)	U.S. Nuclear Regulatory Commission	June 23, 2011 ML111741383
Eastern Band of Cherokee Indians, Tribal Historic Preservation Office (Mr. Tyler B. Howe)	U.S. Nuclear Regulatory Commission (Ms. Sarah Lopas)	September 13, 2011 ML112570445
U.S. Nuclear Regulatory Commission (Ms. Sarah Lopas)	U.S. Federal Energy Regulatory Commission (Mr. Thomas J. LoVullo)	October 4, 2011 ML112790295
U.S. Federal Energy Regulatory Commission (Mr. Thomas J. LoVullo)	U.S. Nuclear Regulatory Commission (Mr. Allen H. Fetter)	October 5, 2011 ML112790296

Table F-1. (contd)

Source	Recipient	Date of Letter and ADAMS Accession Number
U.S Nuclear Regulatory Commission (Mr. William F. Burton)	U.S. Environmental Protection Agency (Office of Federal Activities)	December 12, 2011 ML112940260
U.S Nuclear Regulatory Commission (Mr. William F. Burton)	U.S. Environmental Protection Agency (Ms. Ramona McConney)	December 12, 2011 ML11319A023
U.S Nuclear Regulatory Commission (Mr. William F. Burton)	Advisory Council on Historic Preservation (Mr. Reid Nelson)	December 12, 2011 ML11332A003
U.S Nuclear Regulatory Commission (Mr. William F. Burton)	U.S. Fish and Wildlife Service (Mr. Jay B. Herrington)	December 12, 2011 ML11332A001
U.S Nuclear Regulatory Commission (Mr. William F. Burton)	Eastern Band of Cherokee Indians, Tribal Historic Preservation Office (Mr. Russell Townsend)	December 12, 2011 ML11332A006
U.S Nuclear Regulatory Commission (Mr. William F. Burton)	Catawba Indian Nation, Tribal Historic Preservation Office (Dr. Wenonah G. Haire)	December 12, 2011 ML11332A005
U.S Nuclear Regulatory Commission (Mr. William F. Burton)	United South and Eastern Federation of Tribes (Mr. Michael Cook)	December 12, 2011 ML11332A061
U.S Nuclear Regulatory Commission (Mr. William F. Burton)	Carolina Indian Heritage Association (Ms. Michelle Pounds)	December 12, 2011 ML11332A004
U.S Nuclear Regulatory Commission (Mr. William F. Burton)	Seminole Tribe of Florida, Tribal Historic Preservation Office (Mr. Willard Steele)	December 12, 2011 ML11332A104
U.S Nuclear Regulatory Commission (Mr. William F. Burton)	Eastern Shawnee Tribe of Oklahoma (Chief Glenna J. Wallace)	December 12, 2011 ML11332A007
U.S Nuclear Regulatory Commission (Mr. William F. Burton)	Piedmont American Indian Association (Chief Gene Norris)	December 12, 2011 ML11332A008
U.S Nuclear Regulatory Commission (Mr. William F. Burton)	Pine Hill Indian Community (Ms. Michelle Pounds)	December 12, 2011 ML11332A011
U.S Nuclear Regulatory Commission (Mr. William F. Burton)	South Carolina Department of Archives and History, State Historic Preservation Office (Ms. Rebekah Dobrasko)	December 12, 2011 ML11332A002
U.S Nuclear Regulatory Commission (Mr. William F. Burton)	South Carolina Department of Natural Resources, Office of Environmental Programs (Mr. Robert D. Perry)	December 12, 2011 ML11314A229

Table F-1. (contd)

Source	Recipient	Date of Letter and ADAMS Accession Number
U.S Nuclear Regulatory Commission (Mr. William F. Burton)	South Carolina Department of Health and Environmental Control (Ms. Susan Turner)	December 12, 2011 ML11313A167
U.S Nuclear Regulatory Commission (Mr. William F. Burton)	North Carolina Wildlife Resources Commission, Division of Inland Fisheries (Mr. Christopher Goudreau)	December 12, 2011 ML11319A017
South Carolina Archives and History Center, State Historic Preservation Office (Ms. Rebekah Dobrasko)	U.S. Nuclear Regulatory Commission (Ms. Cindy Bladey)	January 20, 2012 ML12048A6711
U.S. Department of Interior, Office of Environmental Policy and Compliance (Ms. Joyce Stanley)	U.S. Nuclear Regulatory Commission (Ms. Cindy Bladey)	February 29, 2012 ML12083A060
U.S. Fish and Wildlife Service (Mr. Jay B. Herrington)	U.S. Nuclear Regulatory Commission	March 5, 2012 ML12083A064
South Carolina Department of Natural Resources, Office of Environmental Programs (Mr. Robert D. Perry)	U.S. Nuclear Regulatory Commission	March 6, 2012 ML12083A059
U.S. Fish and Wildlife Service (Mr. Jay B. Herrington)	U.S. Army Corps of Engineers, Charleston District (LTC Edward P Chamberlayne)	March 6, 2012 ML13317B884
National Oceanic and Atmospheric Administration–National Marine Fisheries Service (Ms. Virginia M Fay)	U.S. Army Corps of Engineers, Charleston District (LTC Edward P Chamberlayne)	March 6, 2012 ML13317A347
South Carolina Department of Natural Resources (Mr. Bob Perry)	U.S. Army Corps of Engineers (Dr. Richard Darden) and South Carolina Department of Health and Environmental Control (Ms. Alicia Rowe)	March 6, 2012 ML13319A630
U.S Environmental Protection Agency, National Environmental Policy Act Program Office (Mr. Heinz J. Mueller)	U.S. Nuclear Regulatory Commission	March 16, 2012 ML120790121
U.S. Fish and Wildlife Service (Mr. Jay B. Herrington)	U.S. Nuclear Regulatory Commission (Ms. Sarah Lopas)	June 13, 2012 ML12221A475
U.S. Nuclear Regulatory Commission (Mr. William F. Burton)	National Oceanic and Atmospheric Administration–National Marine Fisheries Service (Mr. David M. Bernhart)	August 14, 2012 ML12173A383

Table F-1. (contd)

Source	Recipient	Date of Letter and ADAMS Accession Number
U.S. Army Corps of Engineers (Dr. Richard Darden)	Duke Energy (Mr. Robert Wylie), South Carolina State Historic Preservation Officer (Ms. Rebekah Dobrasko), Catawba Indian Nation (Ms. Wenonah Haire), U.S. Nuclear Regulatory Commission (Ms. Patricia Vokoun) and Ms. Laura Boos	January 10, 2013 ML13213A408
South Carolina Archives and History Center, State Historic Preservation Office (Ms. Rebekah Dobrasko)	U.S. Army Corps of Engineers (Dr. Richard Darden)	April 3, 2013 ML13220A505
North Carolina Natural Heritage Program, Office of Conservation, Planning and Community Affairs (John Finnegan)	Pacific Northwest National Laboratory, Jim Becker	August 1, 2013 ML13213A439; ML13213A450
U.S. Fish and Wildlife Service, Georgia Ecological Services Field Offices (Pete Pattavina)	Pacific Northwest National Laboratory, Jim Becker	September 25, 2013 ML13317B647

Appendix G

Supporting Documentation on Radiological Dose Assessment and Historic and Cultural Resources

Appendix G

Supporting Documentation on Radiological Dose Assessment and Historic and Cultural Resources

The U.S. Nuclear Regulatory Commission (NRC) performed an independent dose assessment of the radiological impacts resulting from normal operation of the proposed new nuclear units at the William States Lee III Nuclear Station (Lee Nuclear Station) site. The results of this assessment are presented in this appendix and are compared to the results from Duke Energy Carolinas, LLC (Duke) found in Section 5.9, Radiological Impacts of Normal Operations. The appendix is divided into five sections: (1) dose estimates to the public from liquid effluents, (2) dose estimates to the public from gaseous effluents, (3) cumulative dose estimates, (4) dose estimates to the biota from liquid and gaseous effluents, and (5) historic and cultural resources at the Lee Nuclear Station, Make-Up Pond C, and ancillary facility sites.

G.1 Dose Estimates to the Public from Liquid Effluents

The NRC staff used the dose assessment approach specified in Regulatory Guide 1.109 (NRC 1977) and the LADTAP II computer code (Strenge et al. 1986) to estimate doses to the maximally exposed individual (MEI) and population from the liquid effluent pathway of the proposed Lee Nuclear Station Units 1 and 2. The NRC staff used the projected radioactive effluent release values for the Westinghouse Advanced Passive 1000 (AP1000) reactor to estimate doses to the MEI and population from liquid effluent releases from the proposed Lee Nuclear Station Units 1 and 2 (Westinghouse 2011).

G.1.1 Scope

Doses from the proposed Lee Nuclear Station Units 1 and 2 to the MEI were calculated and compared to regulatory criteria for the following:

- Total Body – Dose was the total for all pathways (i.e., drinking water, fish consumption, shoreline usage, swimming exposure, and boating) with the highest value for the adult, teen, child, or infant compared to the 3 mrem/yr per reactor design objective in Title 10 of the *Code of Federal Regulations* (CFR), Part 50, Appendix I.
- Organ – Dose was the total for each organ for all pathways (i.e., drinking water, fish consumption, shoreline usage, swimming exposure, and boating) with the highest value for the adult, teen, child, or infant compared to the 10 mrem/yr per reactor design objective specified in 10 CFR Part 50, Appendix I.

The NRC staff reviewed the assumed exposure pathways and the input parameters and values used by Duke (Duke 2009a, b, 2013a) for appropriateness, including references made to the Design Certification Document for the AP1000 (Westinghouse 2011). Default values from Regulatory Guide 1.109 (NRC 1977) were used when input parameters were not available. The NRC staff concluded that the assumed exposure pathways were appropriate; drinking water withdrawal from the Broad River does not occur before approximately 21 river miles downstream of the site. In addition, the input parameters and values used by Duke were generally appropriate.

G.1.2 Resources Used

To calculate doses to the public from liquid effluents, the NRC staff used a personal computer version of the LADTAP II code entitled NRCDOSE, Version 2.3.13 (Chesapeake Nuclear Services, Inc. 2006) obtained through the Oak Ridge Radiation Safety Information Computational Center (RSICC) with updates to the user interface obtained directly from Chesapeake Nuclear Services.

G.1.3 Input Parameters

Table G-1 provides a listing of the major parameters used in calculating dose to the public from liquid effluent releases during normal operation.

G.1.4 Comparison of Results

The results documented in the environmental report (ER) submitted by Duke (Duke 2009a) and the Final Safety Analysis Report (FSAR) (Duke 2013a) for doses from liquid effluent releases are compared in Table G-2 with the results calculated by the NRC staff. The doses calculated by the NRC staff are uniformly a factor of 1.37 times larger than doses calculated by Duke.

This is a direct result of the selection by the NRC staff of a smaller mean average flow rate of the Broad River than that used by Duke. The NRC staff used a value of 1858 cfs for the water years 2000 to 2010 measured at the U.S. Geological Survey gage at Ninety-Nine Islands Dam (USGS 2010); Duke used a longer-term average of 2538 cfs in its estimates (Duke 2009a).

For calculating the population dose from liquid effluents, Duke used the population distribution for 2036. However, Section 5.4.1 of the NRC's Environmental Standard Review Plan (ESRP) (NRC 2000) requires use of "... projected population for 5 years from the time of the licensing action under consideration." Because the population is increasing, the use of the year 2036 is conservative as long as operations at the site begin before then, so the NRC staff also used the year 2036 for comparisons.

Table G-1. Parameters Used in Calculating Dose to the Public from Liquid Effluent Releases

Parameter	NRC Values		Comments
New unit liquid effluent source term (Ci/yr)[(a)]	H-3	1.01×10^{3}	Values from Westinghouse AP1000 Design Control Document Table 11.2-7 for a single unit (Westinghouse 2011).
	Na-24	1.63×10^{-3}	
	Cr-51	1.85×10^{-3}	
	Mn-54	1.30×10^{-3}	
	Fe-55	1.00×10^{-3}	
	Fe-59	2.00×10^{-4}	
	Co-58	3.36×10^{-3}	
	Co-60	4.40×10^{-4}	
	Zn-65	4.10×10^{-4}	
	Br-84	2.00×10^{-5}	
	Rb-88	2.70×10^{-4}	
	Sr-89	1.00×10^{-4}	
	Sr-90	1.00×10^{-5}	
	Sr-91	2.00×10^{-5}	
	Y-91m	1.00×10^{-5}	
	Y-93	9.00×10^{-5}	
	Zr-95	2.30×10^{-4}	
	Nb-95	2.10×10^{-4}	
	Mo-99	5.70×10^{-4}	
	Tc-99m	5.50×10^{-4}	
	Ru-103	4.93×10^{-3}	
	Ru-106	7.35×10^{-2}	
	Ag-110m	1.05×10^{-3}	
	Te-129m	1.20×10^{-4}	
	Te-129	1.50×10^{-4}	
	Te-131m	9.00×10^{-5}	
	Te-131	3.00×10^{-5}	
	Te-132	2.40×10^{-4}	
	I-131	1.41×10^{-2}	
	I-132	1.64×10^{-3}	
	I-133	6.70×10^{-3}	
	I-134	8.10×10^{-4}	
	I-135	4.97×10^{-3}	
	Cs-134	9.93×10^{-3}	
	Cs-136	6.30×10^{-4}	
	Cs-137	1.33×10^{-2}	
	Ba-140	5.52×10^{-3}	
	La-140	7.43×10^{-3}	
	Ce-141	9.00×10^{-5}	
	Ce-143	1.90×10^{-4}	
	Ce-144	3.16×10^{-3}	
	Pr-143	1.30×10^{-4}	
	Pr-144	3.16×10^{-3}	
	W-187	1.30×10^{-4}	
	Np-239	2.40×10^{-4}	

Table G-1. (contd)

Parameter	NRC Values	Comments
Discharge flow rate (ft^3/s)	13.4	Site-specific value from Table 5.4-2 of the ER (Duke 2009a) and Table 11.2-202 of the FSAR (Duke 2013a).
Source term multiplier	2	To convert single-unit source term to two units.
Site type	Fresh water	Discharge is to the freshwater Broad River.
Reconcentration model	Fully Mixed	Site-specific value from Table 5.4-2 of the ER (Duke 2009a) and Table 11.2-202 of the FSAR (Duke 2013a).
Effluent discharge rate from impoundment system to receiving water body (ft^3/s)	1858	Annual average flow of Broad River over Ninety-Nine Islands Dam (USGS 2010).
Impoundment total volume (ft^3)	1,746,300	The volume of Ninety-Nine Islands Dam forebay (Khan 2007)
Shore width factor	0.2	Suggested value for river shoreline (NRC 1977; Strenge et al. 1986)
Dilution factors for aquatic food and boating, shoreline and swimming, and drinking water	1	Site-specific value from Table 5.4-2 of the ER (Duke 2009a) and Table 11.2-202 of the FSAR (Duke 2013a). The value of "1" indicates complete mixing.
Transit time (hr)	14.2 (drinking water) 0 (all other uses)	Site-specific values from Table 5.4-2 of the ER (Duke 2009a) and Table 11.2-202 of the FSAR (Duke 2013a).
Consumption and usage factors for adults, teens, children, and infants	Shoreline usage (hr/yr) 12 (adult) 67 (teen) 14 (child) 0 (infant) Water usage (L/yr) 730 (adult) 510 (teen) 510 (child) 330 (infant) Fish consumption (kg/yr) 21 (adult) 16 (teen) 6.9 (child) 0 (infant)	LADTAP II code default values (NRC 1977; Strenge et al. 1986).

Table G-1. (contd)

Parameter	NRC Values	Comments
Total 50-mi population	3,455,395	Site-specific value from Table 5.4-2 of the ER (Duke 2009a). Full population data located in Table 2.1-203 and 2.1-204 in Duke's FSAR (Part 2 of the combined license (COL) application) (Duke 2013a). Population distribution used by Duke and the NRC staff was for year 2036. Note that ESRP Section 5.4.1 requires use of "projected population for 5 years from the time of the licensing action under consideration." Assuming the combined license application licensing action occurs in year 2010 and adding 5 years yields year 2015. See discussion of population dose in Section G.1.4.
Population drinking river water	24,725	Site-specific value from the ER (Duke 2009a) and FSAR (Duke 2013a).
Total 50-mi sport fishing (kg/yr)	15,000	Site-specific value from Table 5.4-2 of the ER (Duke 2009a) and FSAR (Duke 2013a).
Total 50-mi shoreline usage (person-hr/yr)	6,620,364	Site-specific value from Table 5.4-2 of the ER (Duke 2009a) and FSAR (Duke 2013a).
Total 50-mi swimming usage (person-hr/yr)	6,620,364	Site-specific value from Table 5.4-2 of the ER (Duke 2009a) and FSAR (Duke 2013a).
Total 50-mi boating usage (person-hr/yr)	6,620,364	Site-specific value from Table 5.4-2 of the ER (Duke 2009a) and FSAR (Duke 2013a).

(a) Only radionuclides included in Regulatory Guide 1.109 are considered (NRC 1977).

Table G-2. Comparison of Doses to the Public from Liquid Effluent Releases for a New Unit

Type of Dose	Duke ER or FSAR[(a)]	NRC Staff Calculation	Percent Difference
Total body (mrem/yr)	0.0609 (adult)	0.0831 (adult)	37
Organ dose (mrem/yr)	0.0775 (child liver)	0.106 (adult GI tract)	37
Thyroid (mrem/yr)	0.0532 (infant)	0.0727 (child)	37
Total body population dose from liquid pathway (person-rem/yr)	0.296	0.404	37

(a) Results from Duke ER Tables 5.4-4 and 5.4-9 (Duke 2009a) or FSAR Tables 11.2-204, 11.2-207 and 11.2-208 (Duke 2013a).

G.2 Dose Estimates to the Public from Gaseous Effluents

The NRC staff used the dose assessment approach specified in Regulatory Guide 1.109 (NRC 1977), and the XOQDOQ and GASPAR II computer code (Sagendorf et al. 1982; Strenge et al. 1987) to estimate doses to the MEI and to the population within an 80-km (50-mi) radius of the Lee Nuclear Station site from the gaseous effluent pathway.

G.2.1 Scope

The NRC staff and Duke calculated the maximum gamma air dose, beta air dose, total body dose, and skin dose from noble gases at the exclusion area boundary (EAB) location (0.81 mi SE of the Lee Nuclear Station site). Dose to the MEI was calculated as the sum of the pathway doses estimated for the locations of the largest pathway doses for the following exposure pathways. The pathways included in the estimates are listed below:

- plume immersion (site boundary at 0.27 mi northwest)
- direct shine from deposited radionuclides (site boundary at 0.27 mi northwest)
- inhalation (site boundary at 0.27 mi northwest)
- ingestion of local farm or garden vegetables (garden 1 mi south-southeast)
- ingestion of locally produced beef (1.65 mi southeast), cow milk (1.65 mi southeast), and goat milk (1.05 mi south-southwest) (Duke 2013a, b).

Since the draft EIS was issued, Duke has revised the gaseous effluent analysis within the COL application (Duke 2013a, b) to (1) adjust the nuclear island footprint (see Section 3.1 of this EIS); (2) incorporate 2 years of meteorological data (years 2007 and 2008); and (3) update the land-use survey data.[(a)]

The NRC staff reviewed the input parameters and values that Duke (2013a) used for appropriateness, including references made to the AP1000 Design Control Document (Westinghouse 2011). Default values from Regulatory Guide 1.109 (NRC 1977) were used when input parameters were not available. The NRC staff concluded that the assumed

(a) In response to an NRC staff request for additional information (RAI), Duke reevaluated its air dispersion modeling and revised its calculations (Duke 2013b). At the time of publication of this final EIS, the NRC staff review of the applicant's RAI response to assure that the applicant meets all applicable regulatory requirements is ongoing. NRC's evaluation of Duke's response will be addressed in the NRC's Final Safety Evaluation Report and any changes to the COL application that are deemed necessary will be incorporated into the applicant's FSAR.

exposure pathways and input parameters and values used by Duke were appropriate. These pathways and parameters were used by the NRC staff in its independent calculations using GASPAR II.

Joint frequency distribution data of wind speed and wind direction by atmospheric stability class for the Lee Nuclear Station site provided in joint frequency distribution Tables 2.3-235, 2.3-236, 2.3-237, 2.3-238, 2.3-239, 2.3-240, and 2.3-241 of the FSAR (Duke 2013a) were used as input to the XOQDOQ code (Sagendorf et al. 1982) to calculate long-term average χ/Q and D/Q values for routine releases. The NRC staff's independent results confirmed those reported by Duke in Tables 2.3-287 to 2.3-292 of the FSAR (Duke 2013a).

Population doses were calculated for all types of releases (i.e., noble gases, iodine and particulates, and H-3 and C-14) using the GASPAR II code for the following exposure pathways: plume immersion, direct shine from deposited radionuclides, ingestion of vegetables, and ingestion of milk and meat.

G.2.2 Resources Used

To calculate doses to the public from gaseous effluents, the NRC staff used personal computer versions of the XOQDOQ and GASPAR II codes entitled NRCDOSE Version 2.3.13 (Chesapeake Nuclear Services, Inc. 2006) obtained through the Oak Ridge RSICC with updates to the user interface obtained directly from Chesapeake Nuclear Services.

G.2.3 Input Parameters

Table G-3 provides a listing of the major parameters used in calculating dose to the public from gaseous effluent releases during normal operation.

G.2.4 Comparison of Doses to the Public from Gaseous Effluent Releases

The NRC staff compared results documented in the FSAR and request for information responses (Duke 2013a, b) for doses from noble gases at the site boundary and the EAB with the results calculated by the NRC staff. The doses calculated by the NRC staff confirmed the doses calculated by Duke.

The NRC staff compared its estimates of doses to the MEI calculated by Duke. Doses to the MEI estimated by Duke were calculated by summing doses from the maximum locations of each exposure pathway. The doses calculated by the NRC staff confirmed the doses calculated by Duke.

Table G-3. Parameters Used in Calculating Dose to Public from Gaseous Effluent Releases

Parameter	NRC Values		Comments
New unit gaseous effluent source term (Ci/yr)	Ar-41	3.4×10^{1}	Values from Westinghouse AP1000 Design Control Document Table 11.3-3 for a single unit (Westinghouse 2011).
	Kr-85m	3.6×10^{1}	
	Kr-85	4.1×10^{3}	
	Kr-87	1.5×10^{1}	
	Kr-88	4.6×10^{1}	
	Xe-131m	1.8×10^{3}	
	Xe-133m	8.7×10^{1}	
	Xe-133	4.6×10^{3}	
	Xe-135m	7.0×10^{0}	
	Xe-135	3.3×10^{2}	
	Xe-138	6.0×10^{0}	
	I-131	1.2×10^{-1}	
	I-133	4.0×10^{-1}	
	H-3	3.5×10^{2}	
	C-14	7.3×10^{0}	
	Cr-51	6.1×10^{-4}	
	Mn-54	4.3×10^{-4}	
	Co-57	8.2×10^{-6}	
	Co-58	2.3×10^{-2}	
	Co-60	8.7×10^{-3}	
	Fe-59	7.9×10^{-5}	
	Sr-89	3.0×10^{-3}	
	Sr-90	1.2×10^{-3}	
	Zr-95	1.0×10^{-3}	
	Nb-95	2.5×10^{-3}	
	Ru-103	8.0×10^{-5}	
	Ru-106	7.8×10^{-5}	
	Sb-125	6.1×10^{-5}	
	Cs-134	2.3×10^{-3}	
	Cs-136	8.5×10^{-5}	
	Cs-137	3.6×10^{-3}	
	Ba-140	4.2×10^{-4}	
	Ce-141	4.2×10^{-5}	
Population distribution	Table 2.1-203 and Table 2.1-204, of the FSAR (Duke 2013a)		Population distribution used by Duke and the NRC staff was for year 2056. Note that ESRP Section 5.4.1 requires use of "… projected population for 5 years from the time of the licensing action under consideration." Assuming the early site permit licensing action occurs in year 2010 and adding 5 years yields year 2015. See discussion of population dose in Section G.2.5.

Table G-3. (contd)

Parameter	NRC Values	Comments
Atmospheric dispersion factors (sec/m^3)	Tables 2.3-287 to 2.3-291 of the FSAR (Duke 2013a)	Site-specific data provided by Duke for 1-year period from December 2005 through November 2006 (Duke 2013a).
Ground deposition factors (m^{-2})	Table 2.3-292 of the FSAR (Duke 2013a)	Site-specific data provided by Duke for 1-year period from December 2005 through November 2006 (Duke 2013a).
Milk production rate within an 80-km (50-mi) radius of the Lee Nuclear Station site (L/yr)	84,765,807	Site-specific data provided by Duke (Duke 2009a, 2013a).
Vegetable/fruit production rate within an 80-km (50-mi) radius of the Lee Nuclear Station site (kg/yr)	151,333,289	Site-specific data provided by Duke (Duke 2009a, 2013a).
Meat production rate within an 80-km (50-mi) radius of the Lee Nuclear Station site (kg/yr)	354,508,878	Site-specific data provided by Duke (Duke 2009a, 2013a).
Pathway receptor locations (direction, distance, and atmospheric dispersion factors) - nearest site boundary, vegetable garden, residence, meat animal	Table 2.3-286 and Table 2.3-289 of the FSAR (Duke 2013a)	Site-specific data provided by Duke (Duke 2013a).
Consumption factors for milk, meat, leafy vegetables, and vegetables	Milk (L/yr) 310 (adult) 400 (teen) 330 (child) 330 (infant) Meat (kg/yr) 110 (adult) 65 (teen) 41 (child) 0 (infant) Leafy vegetables (kg/yr) 64 (adult) 42 (teen) 26 (child) 0 (infant) Vegetables (kg/yr) 520 (adult) 630 (teen) 520 (child) 0 (infant)	Table 5.4-3 of the ER (Duke 2009a) and Regulatory Guide 1.109 (NRC 1977).

Table G-3. (contd)

Parameter	NRC Values	Comments
Fraction of year leafy vegetables are grown	0.58	Site-specific value from Table 5.4-6 of the ER (Duke 2009b) and Table 11.3-301 of the FSAR (Duke 2013a).
Fraction of year that milk cows are on pasture	0.75	Site-specific value from Table 5.4-6 of the ER (Duke 2009b) and Table 11.3-301 of the FSAR (Duke 2013a).
Fraction of MEI vegetable intake from own garden	0.76	Default value of GASPAR II code (Strenge et al. 1987) and Table 11.3-301 of the FSAR (Duke 2013a).
Fraction of milk-cow intake that is from pasture while on pasture	1	Default value of GASPAR II code (Strenge et al. 1987) and Table 11.3-301 of the FSAR (Duke 2013a).
Average absolute humidity over the growing season (g/m^3)	8.0	Default value of GASPAR II code (Strenge et al. 1987).
Average temperature over the growing season (°F)	None	Default value of GASPAR II code (Strenge et al. 1987).
Fraction of year beef cattle are on pasture	0.75	Site-specific value from Table 5.4-6 of the ER (Duke 2009b) and Table 11.3-301 of the FSAR (Duke 2013a).
Fraction of beef cattle intake from pasture when on pasture	1	Default value of GASPAR II code (Strenge et al. 1987) and Table 11.3-301 of the FSAR (Duke 2013a).
Fraction of year goats are on pasture	0.83	Site-specific value from Table 5.4-6 of the ER (Duke 2009b) and Table 11.3-301 of the FSAR (Duke 2013a).
Fraction of goats' intake that is from pasture while on pasture	1	Default value of GASPAR II code (Strenge et al. 1987) and Table 11.3-301 of the FSAR (Duke 2013a).

G.2.5 Comparison of Results – Population Doses

The NRC staff performed a comparison of the Duke population-dose estimates taken from Table 11.3-204 of the FSAR (Duke 2013a) with the staff estimates for a single new unit. The staff's independent calculation for population dose yielded results that were comparable to the Duke FSAR estimates (Duke 2013a) for a new unit. For calculating the population dose from gaseous effluents, the population distribution used by Duke and the NRC staff was for year 2056. However, ESRP Section 5.4.1 (NRC 2000) requires use of "... projected population for 5 years from the time of the licensing action under consideration." Assuming the COL licensing action occurs in year 2010 and adding 5 years yields year 2015. Because the population is

increasing, the use of the Year 2056 is more conservative than required by the rule, and has been used herein. The NRC staff estimates confirmed the estimates by Duke (2013a) to two significant digits.

G.3 Cumulative Dose Estimates

The staff compared Duke's results for cumulative dose estimates to the MEI with those calculated by the NRC staff. Cumulative dose estimates include doses from all pathways (i.e., external, liquid effluent, and gaseous effluent) for the proposed Lee Nuclear Stations Units 1 and 2.

Cumulative doses are based upon the sum of doses from liquid and gaseous releases. As noted above, the NRC staff's estimates of dose from the liquid release pathways are based on a mean average flow rate of the Broad River of 1858 cfs for the water years 2000 to 2010 as measured at the U.S. Geological Survey gage at Ninety-Nine Islands Dam; Duke used a longer-term average of 2538 cfs in its estimates. As a result, the NRC staff's liquid pathway doses are about 37 percent greater than those in Duke's FSAR (Duke 2013a). The cumulative doses are shown in Table G-4. The increase in the liquid pathway doses has only a minimal impact on the total doses because the dominant exposure pathways are related to gaseous releases.

Table G-4. Comparison of Cumulative Doses to the MEI

Dose	Duke (2013a, b)[(a)(b)]	NRC Estimates[(c)]	Percent Difference
Whole body (child, mrem/yr)[(d)]	3.74	3.74	0.0
Thyroid dose (infant, mrem/yr)	20.00	20.00	0.0
Dose to other organ (child bone, mrem/yr)	9.05	9.12	0.8

(a) Doses from direct radiation were determined to be negligible (Duke 2009a).
(b) Sum of doses from liquid and gaseous effluent releases for proposed Lee Nuclear Station Units 1 and 2 from Duke (2013a, b).
(c) The NRC staff calculation included the sum of doses from liquid and gaseous effluent releases from the two proposed units.
(d) The whole body doses were conservatively calculated by summing the maximum individual doses from normal liquid releases (to an adult) and the maximum individual doses from normal gaseous releases (to a child).

G.4 Dose Estimates to the Biota from Liquid and Gaseous Effluents

To estimate doses to the biota from the liquid and gaseous effluent pathways, the NRC staff used the LADTAP II code (Strenge et al. 1986), the GASPAR II code (Strenge et al. 1987), and input parameters supplied by Duke in its ER (Duke 2009a).

G.4.1 Scope

Doses to both terrestrial and aquatic biota were calculated using the LADTAP II code. Aquatic biota includes fish, algae, and invertebrate species. Terrestrial biota includes muskrats, raccoons, herons, and ducks. The LADTAP II code calculates an internal dose component and an external dose component and sums them for a total body dose. The NRC staff reviewed the input parameters used by Duke for appropriateness. Duke estimated doses to biota in the well-mixed flow of the Broad River below the Ninety-Nine Islands Dam outfall. Default values from Regulatory Guide 1.109 (NRC 1977) were used when input parameters were not available. Most of these parameters were used by the NRC staff in its independent calculations using LADTAP II.

The LADTAP II code calculates only biota dose from the liquid effluent pathway. Terrestrial biota could also be exposed via the gaseous effluent pathway. These values would be the same as those for the MEI calculated using the GASPAR II code. Duke (20013b) used the MEI doses at the site boundary (0.27 mi northwest from the proposed Unit 1) to estimate these doses. To account for the greater proximity of the main body mass of animals to the ground compared to humans, Duke's MEI calculation for the biota ground exposures were increased by a ratio of the height at which ground exposure is calculated by GASPAR II (1 m) to the height of the surrogate biota (Duke 2009a). The height of each biota was assumed to be equal to half the length of the animal.

G.4.2 Resources Used

To calculate doses to the biota, the NRC staff used personal computer versions of the LADTAP II and GASPAR II computer codes entitled NRCDOSE Version 2.3.13 (Chesapeake Nuclear Services, Inc. 2006). NRCDOSE was obtained through the Oak Ridge RSICC.

G.4.3 Input Parameters

Most of the LADTAP II input parameters are specified in Section G.1.3 to include the source term, the discharge flow rate to the receiving fresh water system, and the shore width factor. However, the parameters in Section G.1.3 are for regions below the Ninety-Nine Islands Dam spillway, and the NRC staff's biota dose calculations are for the zone in the forebay of the dam just before the spillway. To estimate the concentration of radionuclides in the lake water near the plant outfall diffuser, which will be placed in the forebay, the NRC staff used a 5:1 mixing of the effluent with uncontaminated water. To estimate biota doses from atmospheric releases, the NRC staff used the same assumptions as Duke.

G.4.4 Comparison of Results

Table G-5 compares Duke's biota dose estimates from liquid effluents taken from Table 5.4-17 of the ER (Duke 2009a) with the NRC staff's estimates. The NRC staff's estimates of biota dose via the liquid pathways are larger than Duke's estimates because of the location chosen for the analysis. Doses in the area below the dam are lower than in the small, more-concentrated zone above the forebay of the dam into which the effluent is discharged. For the gaseous pathways, the NRC staff's analysis confirmed Duke's results. The NRC staff's total combined dose estimates of liquid and gaseous pathways are still well below the applicable criteria for evaluation of potential impacts.

Table G-5. Comparison of Dose Estimates to Biota from Liquid Effluents for Two Units

Biota	Duke ER (2009a) (mrad/yr)	NRC Calculations (mrad/yr)
Fish	0.57	22
Muskrat	1.71	64.8
Raccoon	0.67	25.5
Heron	7.82	297
Duck	1.64	62.0
Algae	4.64	180
Invertebrate	1.61	62.1

G.5 Historic and Cultural Resources at the Lee Nuclear Station Site, Make-Up Pond C, and Offsite Developments

Historic and cultural resources at the Lee Nuclear Station site, Make-Up Pond C, and offsite developments are identified in Table G-6 through Table G-13.

Table G-6. Historic and Cultural Resources Identified at the Lee Nuclear Station Site

Site	Site Type	Location (APE)	Status	NRHP Eligibility	SHPO, Tribes Comments
38CK8	Middle -Late Archaic - Woodland lithic/ceramic scatter	Lee Nuclear Station (1900 ac)	Not revisited in 2007, 2009, or 2013	Further investigation warranted (SCIAA 1974); Not eligible (Duke 2009a); Unassessed (Brockington 2009)	South Carolina State Historic Preservation Officer (SHPO) concurs no impacts to historic properties in 1975 (Duke 2009a) and 2012 (SCDAH 2012a); Eastern Band of the Cherokee Indians concurs that the site is not important (EBCI 2011)
38CK9	Isolated Archaic lithic	Lee Nuclear Station (1900 ac)	Not revisited in 2007, 2009, or 2013	No further investigation warranted (SCIAA 1974); Not eligible (Duke 2009a)	SHPO concurs no impacts to historic properties in 1975 (Duke 2009a) and 2012 (SCDAH 2012a); Eastern Band of the Cherokee Indians concurs that the site is not important (EBCI 2011)
38CK10	Two Isolated Archaic lithics	Onsite direct (750 ac)	Not intact – Disturbed by preparation for the Cherokee Nuclear Station	No further investigation recommended (SCIAA 1974); Not eligible (Duke 2009a)	SHPO concurs no impacts to historic properties in 1975 (Duke 2009a) and 2012 (SCDAH 2012a); Eastern Band of the Cherokee Indians concurs that the site is not important (EBCI 2011)
38CK11	Two Isolated Archaic lithics	Onsite direct (750 ac)	Not intact – Disturbed by preparation for the Cherokee Nuclear Station	No further investigation recommended (SCIAA 1974); Not eligible (Duke 2009a)	SHPO concurs no impacts to historic properties in 1975 (Duke 2009a) and 2012 (SCDAH 2012a); Eastern Band of the Cherokee Indians concurs that the site is not important (EBCI 2011)
38CK12	19th century homesite	Onsite direct (750 ac)	Not intact – Disturbed by preparation for the Cherokee Nuclear Station	No further investigation recommended (SCIAA 1974); Not eligible (Duke 2009a)	SHPO concurs no impacts to historic properties in 1975 (Duke 2009a) and 2012 (SCDAH 2012a)

Table G-6. (contd)

Site	Site Type	Location (APE)	Status	NRHP Eligibility	SHPO Comment
38CK13	Middle Archaic lithic scatter	Onsite direct (750 ac)	Not intact – Disturbed by preparation for the Cherokee Nuclear Station	No further investigation recommended (SCIAA 1974); Not eligible (Duke 2009a)	SHPO concurs no impacts to historic properties in 1975 (Duke 2009a) and 2012 (SCDAH 2012a); Eastern Band of the Cherokee Indians concurs that the site is not important (EBCI 2011)
38CK14	Middle Archaic lithic scatter and 19th century - homesite	Onsite direct (spoil area)	No evidence found in 2009 (Brockington 2009)	No further investigation recommended (SCIAA 1974); Unassessed (Brockington 2009), but no evidence found during survey/testing in 2009	SHPO concurs no impacts to historic properties in 1975 (Duke 2009a) and 2012 (SCDAH 2012a); Eastern Band of the Cherokee Indians concurs that the site is not important (EBCI 2011)
38CK15	Middle Archaic lithic scatter and 19th century ceramic sherd	Onsite direct (rebar laydown area)	No evidence found in 2009 (Brockington 2009)	No further investigation recommended (SCIAA 1974); Unassessed (Brockington 2009), but no evidence found during survey/testing in 2009	SHPO concurs no impacts to historic properties in 1975 (Duke 2009a) and 2012 (SCDAH 2012a); Eastern Band of the Cherokee Indians concurs that the site is not important (EBCI 2011)
Borden's Ferry (38CK16)	Historic ferry over Broad River at County Road 13	Lee Nuclear Station (1900 ac)	Not revisited in 2007, 2009, or 2013	Further investigation; warranted (SCIAA 1974) Not eligible (Duke 2009a)	SHPO concurs no impacts to historic properties in 1975 (Duke 2009a) and 2012 (SCDAH 2012a)
38CK17	19th century homesite	Onsite direct (750 ac)	Not intact - Disturbed by preparation for the Cherokee Nuclear Station	No further investigation recommended (SCIAA 1974); Not eligible (Duke 2009a)	SHPO concurs no impacts to historic properties in 1975 (Duke 2009a) and 2012 (SCDAH 2012a)
38CK18	19th century homesite	Onsite direct (750 ac)	Not intact - Disturbed by preparation for the Cherokee Nuclear Station	No further investigation recommended (SCIAA 1974); Not eligible (Duke 2009a)	SHPO concurs no impacts to historic properties in 1975 (Duke 2009a) and 2012 (SCDAH 2012a)

Table G-6. (contd)

Site	Site Type	Location (APE)	Status	NRHP Eligibility	SHPO Comment
Stroup Family Cemetery (38CK19)	Historic cemetery	Onsite direct (wastewater line, grading and spoil areas)	Intact	Further documentation and preservation recommended (SCIAA 1974); Not eligible but protected under State law (Brockington 2007); 50-ft protective buffer recommended (Brockington 2013)	SHPO concurs not eligible but protection warranted (SCDAH 2012a, USACE et al. 2013)
Moss Cemetery (38CK141)	Historic cemetery	Lee Nuclear Station (1900 ac)	Intact	Not eligible but protected under State law (Brockington 2007)	SHPO concurs not eligible but protection warranted (SCDAH 2012a, USACE et al. 2013)
McKown Family Cemetery	Historic cemetery	Onsite direct (grading and spoil areas)	Intact	Not eligible but protected under State law (Brockington 2007); 50-ft protective buffer recommended (Brockington 2013)	SHPO concurs not eligible but protection warranted (SCDAH 2012a, USACE et al. 2013)
Unnamed cemetery	Historic cemetery	Lee Nuclear Station (1900 ac)	Intact	Not eligible but protected under State law (Brockington 2007)	SHPO concurs not eligible but protection warranted (SCDAH 2012a, USACE et al. 2013)
38CK138	Prehistoric lithic scatter and three 19th century glass and ceramic artifacts	Onsite direct (wastewater line)	Intact	Not eligible (Brockington 2009)	SHPO concurs not eligible (SCDAH 2009) and no impacts to historic properties (SCDAH 2012a); Eastern Band of the Cherokee Indians concurs that the site is not important (EBCI 2011)
38CK139	19th century homesite or dumpsite	Onsite direct (750 ac)	Intact	Not eligible (Brockington 2009)	SHPO concurs not eligible (SCDAH 2009) and no impacts to historic properties (SCDAH 2012a)
38CK143	19th - 20th century homesite	Onsite direct (spoil area)	Intact	Not eligible (Brockington 2009)	SHPO concurs not eligible (SCDAH 2009) and no impacts to historic properties (SCDAH 2012a)

Table G-6. (contd)

Site	Site Type	Location (APE)	Status	NRHP Eligibility	SHPO Comment
38CK185	19th - 20th century homesite	Onsite direct (grading and spoil areas)	Intact	Not eligible (Brockington 2013)	SHPO concurs not eligible (SCDAH 2013)
38CK186	19th century ceramic artifacts	Onsite direct (grading and spoil areas)	Intact	Not eligible (Brockington 2013)	SHPO concurs not eligible (SCDAH 2013)
38CK187	Prehistoric lithic scatter	Onsite direct (grading and spoil areas)	Intact	Not eligible (Brockington 2013)	SHPO concurs not eligible (SCDAH 2013)
38CK188	Middle Archaic lithic scatter	Onsite direct (grading and spoil areas)	Intact	Not eligible (Brockington 2013)	SHPO concurs not eligible (SCDAH 2013)

Table G-7. Historic and Cultural Resources Identified Within Indirect Areas of Potential Effect (APEs) at the Lee Nuclear Station Site

Site	Site Type	Location (APE)	Status	NRHP Eligibility	SHPO Comment
Ninety-Nine Islands Dam and Hydro Plant (269-0042)	20th century regional hydropower developments	Onsite indirect (1-mi zone from tallest structures)	Intact	Eligible (Brockington 2007, 2009)	SHPO concurs National Register eligible (SCDAH 2007, 2009) and no adverse effect (SCDAH 2012a)
040-0061 and 040-0061.01	1930s residence (house and shed)	Onsite indirect (1-mi zone from tallest structures)	Intact	Not eligible (Brockington 2007)	SHPO concurs not eligible (SCDAH 2007, 2009) and no impacts to historic properties (SCDAH 2012a)
040-0062	1880s - 1930s residence (Miss Minnie Strap House, relocated from original location)	Onsite indirect (1-mi zone from tallest structures)	Relocated from original location (Brockington 2007)	Not eligible (Brockington 2007)	SHPO concurs not eligible (SCDAH 2007, 2009) and no impacts to historic properties (SCDAH 2012a)
040-0063	1930s residence	Onsite indirect (1-mi zone from tallest structures)	Not intact (ACC 2009:97)	Not eligible (Brockington 2007)	SHPO concurs not eligible (SCDAH 2007, 2009) and no impacts to historic properties (SCDAH 2012a)
040-0064	1940s residence	Onsite indirect (1-mi zone from tallest structures)	Intact	Not eligible (Brockington 2007)	SHPO concurs not eligible (SCDAH 2007, 2009) and no impacts to historic properties (SCDAH 2012a)
040-0065	1940s residence	Onsite indirect (1-mi zone from tallest structures)	Intact	Not eligible (Brockington 2007)	SHPO concurs not eligible (SCDAH 2007, 2009) and no impacts to historic properties (SCDAH 2012a)
040-0066	1940s residence	Onsite indirect (1-mi zone from tallest structures)	Intact	Not eligible (Brockington 2007)	SHPO concurs not eligible (SCDAH 2007, 2009) and no impacts to historic properties (SCDAH 2012a)
040-0067	1940s residence	Onsite indirect (1-mi zone from tallest structures)	Intact	Not eligible (Brockington 2007)	SHPO concurs not eligible (SCDAH 2007, 2009) and no impacts to historic properties (SCDAH 2012a)
McKowns Mountain Baptist Church complex (040-0068)	20th century church, outbuildings, and cemetery	Onsite indirect (1-mi zone from tallest structures)	Intact	Not eligible but cemetery protected under State law (Brockington 2007)	SHPO concurs not eligible (SCDAH 2007, 2009) and no impacts to historic properties (SCDAH 2012a)

Table G-8. Historic and Cultural Resources Identified Within Direct APEs for Make-Up Pond C

Site #	Site Type	Location (APE)	Status	NRHP Eligibility	SHPO Comment
38CK31	Prehistoric lithic scatter	Make-Up Pond C (spoil area)	No evidence found in 2010 (Brockington 2010)	Unlikely to reveal any important information (SCIAA 1977); Not eligible (Brockington 2010)	SHPO provides no specific comment but concurs with no historic properties affected (SCDAH 2009, 2010, 2012a); Eastern Band Cherokee Indians concur not important (EBCI 2011)
38CK32	Prehistoric lithic scatter	Make-Up Pond C (spoil area)	No evidence found in 2010 (Brockington 2010)	Unlikely to reveal any important information (SCIAA 1977); Not eligible (Brockington 2010)	SHPO provides no specific comment but concurs with no historic properties affected (SCDAH 2009, 2010, 2012a); Eastern Band of the Cherokee Indians concurs that the site is not important (EBCI 2011)
38CK58	Prehistoric lithic scatter	Make-Up Pond C (spoil area)	No evidence found in 2010 (Brockington 2010)	Disturbed by modern activities (SCIAA 1981); Not assessed (Brockington 2010)	SHPO provides no specific comment but concurs with no historic properties affected (SCDAH 2009, 2010, 2012a); Eastern Band of the Cherokee Indians concurs that the site is not important (EBCI 2011)
Service Family Cemetery 38CK142	Historic cemetery	Make-Up Pond C (borrow pit and reservoir)	Intact	Not eligible but protected under State law (Brockington 2010)	SHPO concurs not eligible but protection warranted (SCDAH 2012a, USACE et al. 2013)
McKown Family Cemetery	Historic cemetery	Make-Up Pond C (water pipeline)	Intact	Not eligible (Brockington 2011) but protected under State law; 50-ft protective buffer recommended (Brockington 2013)	SHPO concurs not eligible but protection warranted (SCDAH 2012a, USACE et al. 2013)
38CK144	19th - 20th century homesite	Make-Up Pond C (reservoir)	Intact	Not eligible (Brockington 2010)	SHPO concurs not eligible (SCDAH 2009, 2010) and no historic properties affected (SCDAH 2012a)

Table G-8 (contd)

Site #	Site Type	Location (APE)	Status	NRHP Eligibility	SHPO Comment
38CK145	Prehistoric lithic scatter	Make-Up Pond C (reservoir)	Intact	Not eligible (Brockington 2010)	SHPO concurs not eligible (SCDAH 2009, 2010) and no historic properties affected (SCDAH 2012a); Eastern Band of the Cherokee Indians concurs that the site is not important (EBCI 2011)
38CK146	Middle Archaic lithic scatter and 19th century homesite	Make-Up Pond C (water pipeline)	Intact	Not eligible (Brockington 2010)	SHPO concurs not eligible (SCDAH 2009, 2010) and no historic properties affected (SCDAH 2012a); Eastern Band of the Cherokee Indians concurs that the site is not important (EBCI 2011)
38CK147	Middle Archaic lithic scatter	Make-Up Pond C (water pipeline)	Intact	Not eligible (Brockington 2010)	SHPO concurs not eligible (SCDAH 2009, 2010) and no historic properties affected (SCDAH 2012a); Eastern Band of the Cherokee Indians concurs that the site is not important (EBCI 2011)
38CK148	19th - 20th century road and bridge	Make-Up Pond C (reservoir)	Intact	Not eligible (Brockington 2010)	SHPO concurs not eligible (SCDAH 2009, 2010) and no historic properties affected (SCDAH 2012a)
38CK152	19th - 20th century still	Make-Up Pond C (reservoir)	Intact	Not eligible (Brockington 2010)	SHPO concurs not eligible (SCDAH 2009, 2010) and no historic properties affected (SCDAH 2012a)
38CK153	19th - 20th century still	Make-Up Pond C (reservoir)	Intact	Not eligible (Brockington 2010)	SHPO concurs not eligible (SCDAH 2009, 2010) and no historic properties affected (SCDAH 2012a)
38CK182	20th century homesite	Make-Up Pond C (spoil area)	Intact	Not eligible (Brockington 2010)	SHPO concurs not eligible (SCDAH 2009, 2010) and no historic properties affected (SCDAH 2012a)
38CK183	20th century homesite	Make-Up Pond C (spoil area)	Intact	Not eligible (Brockington 2010)	SHPO concurs not eligible (SCDAH 2009, 2010) and no historic properties affected (2012a)
38CK184	19th - 20th century homesite	Make-Up Pond C (spoil area)	Intact	Not eligible (Brockington 2010)	SHPO concurs not eligible (SCDAH 2009, 2010) and no historic properties affected (2012a)

Table G-9. Historic and Cultural Resources Identified Within the Indirect APEs for Make-Up Pond C

Site #	Site Type	Location (APE)	Status	NRHP Eligibility	SHPO Comment
0072	1920s residence	Make-Up Pond C indirect (1.25-mi zone from reservoir)	Intact	Not eligible (Brockington 2010)	SHPO concurs not eligible (SCDAH 2009, 2010) and no historic properties affected (SCDAH 2012a)
0073	1930s residence	Make-Up Pond C indirect (1.25-mi zone from reservoir)	Intact	Not eligible (Brockington 2010)	SHPO concurs not eligible (SCDAH 2009, 2010) and no historic properties affected (SCDAH 2012a)
0074	1930s residence	Make-Up Pond C indirect (1.25-mi zone from reservoir)	Intact	Not eligible (Brockington 2010)	SHPO concurs not eligible (SCDAH 2009, 2010) and no historic properties affected (SCDAH 2012a)
0075	1930s residence	Make-Up Pond C indirect (1.25-mi zone from reservoir)	Intact	Not eligible (Brockington 2010)	SHPO concurs not eligible (SCDAH 2009, 2010) and no historic properties affected (SCDAH 2012a)
0076	1940s residence	Make-Up Pond C indirect (1.25-mi zone from reservoir)	Intact	Not eligible (Brockington 2010)	SHPO concurs not eligible (SCDAH 2009, 2010) and no historic properties affected (SCDAH 2012a)
0077 and 0077.01	1930s residence and outbuilding	Make-Up Pond C indirect (1.25-mi zone from reservoir)	Intact	Not eligible (Brockington 2010)	SHPO concurs not eligible (SCDAH 2009, 2010) and no historic properties affected (SCDAH 2012a)
0078	1930s residence	Make-Up Pond C indirect (1.25-mi zone from reservoir)	Intact	Not eligible (Brockington 2010)	SHPO concurs not eligible (SCDAH 2009, 2010) and no historic properties affected (SCDAH 2012a)

Table G-9. (contd)

Site #	Site Type	Location (APE)	Status	NRHP Eligibility	SHPO Comment
0079	1950s Draytonville Elementary School	Make-Up Pond C indirect (1.25-mi zone from reservoir)	Intact	Not eligible (Brockington 2010)	SHPO concurs not eligible (SCDAH 2009, 2010) and no historic properties affected (SCDAH 2012a)
0080	1930s residence	Make-Up Pond C indirect (1.25-mi zone from reservoir)	Intact	Not eligible (Brockington 2010)	SHPO concurs not eligible (SCDAH 2009, 2010) and no historic properties affected (SCDAH 2012a)
0081 and 0081.01	1950s Mount Ararat Baptist Church and cemetery	Make-Up Pond C indirect (1.25-mi zone from reservoir)	Intact	Not eligible (Brockington 2010)	SHPO concurs not eligible (SCDAH 2009, 2010) and no historic properties affected (SCDAH 2012a)
0082	1910s residence	Make-Up Pond C indirect (1.25-mi zone from reservoir)	Intact	Not eligible (Brockington 2010)	SHPO concurs not eligible (SCDAH 2009, 2010) and no historic properties affected (SCDAH 2012a)
0110	1920s residence	Make-Up Pond C indirect (1.25-mi zone from reservoir)	Intact	Not eligible (Brockington 2010)	SHPO concurs not eligible (SCDAH 2009, 2010) and no historic properties affected (SCDAH 2012a)
0124	1920s residence	Make-Up Pond C indirect (1.25-mi zone from reservoir)	Intact	Not eligible (Brockington 2010)	SHPO concurs not eligible (SCDAH 2009, 2010) and no historic properties affected (SCDAH 2012a)
0125	1940s Hambright Cemetery	Make-Up Pond C indirect (1.25-mi zone from reservoir)	Intact	Not eligible (Brockington 2010)	SHPO concurs not eligible (SCDAH 2009, 2010) and no historic properties affected (SCDAH 2012a)
0126	1910s residence	Make-Up Pond C indirect (1.25-mi zone from reservoir)	Intact	Not eligible (Brockington 2010)	SHPO concurs not eligible (SCDAH 2009, 2010) and no historic properties affected (SCDAH 2012a)

Table G-9. (contd)

Site #	Site Type	Location (APE)	Status	NRHP Eligibility	SHPO Comment
0127	1920s residence	Make-Up Pond C indirect (1.25-mi zone from reservoir)	Intact	Not eligible (Brockington 2010)	SHPO concurs not eligible (SCDAH 2009, 2010) and no historic properties affected (SCDAH 2012a)
0128, 0128.01, 0128.02, 0128.03, 0128.04, and 0128.05	Early 20th century farm buildings	Make-Up Pond C indirect (1.25 mi zone from reservoir)	Intact	Not eligible (Brockington 2010)	SHPO concurs not eligible (SCDAH 2009, 2010) and no historic properties affected (SCDAH 2012a)
0129	1940s residence	Make-Up Pond C indirect (1.25-mi zone from reservoir)	Intact	Not eligible (Brockington 2010)	SHPO concurs not eligible (SCDAH 2009, 2010) and no historic properties affected (SCDAH 2012a)
0130 and 0130.01	1890s residence and outbuilding	Make-Up Pond C indirect (1.25-mi zone from reservoir)	Intact	Not eligible (Brockington 2010)	SHPO concurs not eligible (SCDAH 2009, 2010) and no historic properties affected (SCDAH 2012a)
0131	1950s barn	Make-Up Pond C indirect (1.25-mi zone from reservoir)	Intact	Not eligible (Brockington 2010)	SHPO concurs not eligible (SCDAH 2009, 2010) and no historic properties affected (SCDAH 2012a)
Cherokee Falls Mill and Village (52 resources)	Early 20th century industrial, institutional, and residential buildings	Make-Up Pond C indirect (1.25-mi zone from reservoir)	Intact	Unevaluated (Brockington 2010); Not eligible (SCDAH 2010)	SHPO evaluates not eligible (SCDAH 2009, 2010) and concurs no historic properties affected (SCDAH 2012a)

Table G-10. Historic and Cultural Resources Identified Within Direct and Indirect APEs for the Railroad Corridor

Site #	Site Type	Location (APE)	Status	NRHP Eligibility	SHPO Comment
38CK38	Prehistoric lithic scatter	Offsite indirect railroad line	Not revisited	Unlikely to reveal any important information (SCIAA 1977)	SHPO no specific comment but concurs with no historic properties affected (SCDAH 2008, 2012a); Eastern Band of the Cherokee Indians concurs that the site is not important (EBCI 2011)
38CK68 Ellen Furnace Works	19th century ironworks	Offsite direct railroad line	Intact outside railroad corridor	Eligible – Listed	SHPO concurs National Register eligible (SCDAH 2008) and no adverse effect (SCDAH 2012a)

Table G-11. Historic and Cultural Resources Identified Within Direct APEs For Transmission-Line Routes K and O

Site #	Site Type	Location (APE)	Status	NRHP Eligibility	SHPO Comment
38CK52	Three isolated Prehistoric lithics	Offsite direct transmission-lines Route K	No evidence found in 2009 (ACC 2009)	Unassessed (ACC 2009)	SHPO provides no specific comment but concurs with no historic properties affected (SCDAH 2009, 2012a); Eastern Band of the Cherokee Indians concurs that the site is not important (EBCI 2011)
38CK174	19th - 20th century homesite	Offsite direct transmission-lines Route K	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a); Eastern Band of the Cherokee Indians concurs that the site is not important (EBCI 2011)
38CK175	Prehistoric lithic scatter	Offsite direct transmission-lines Route K	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a); Eastern Band of the Cherokee Indians concurs that the site is not important (EBCI 2011)
38CK176	Prehistoric lithic scatter	Offsite direct transmission-lines Route K	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a); Eastern Band of the Cherokee Indians concurs that the site is not important (EBCI 2011)

Table G-11. (contd)

Site #	Site Type	Location (APE)	Status	NRHP Eligibility	SHPO Comment
38CK177	19th - 20th century homesite	Offsite direct transmission-lines Route K	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a)
38CK178	Prehistoric lithic scatter	Offsite direct transmission-lines Route K	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a); Eastern Band of the Cherokee Indians concurs that the site is not important (EBCI 2011)
38CK179	Prehistoric lithic scatter and 19th century ceramic sherd	Offsite direct transmission-lines Route K	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a); Eastern Band of the Cherokee Indians concurs that the site is not important (EBCI 2011)
38CK180	Prehistoric lithic scatter and 19th century - homesite	Offsite direct transmission-lines Route K	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a); Eastern Band of the Cherokee Indians concurs that the site is not important (EBCI 2011)
38CK181	19th - 20th century homesite	Offsite direct transmission-lines Route K	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a)
38UN1443	Prehistoric lithic scatter	Offsite direct transmission-lines Route K	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a); Eastern Band of the Cherokee Indians concurs that the site is not important (EBCI 2011)
38UN1444	19th - 20th century homesite	Offsite direct transmission-lines Route K	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a)
38UN1445	Prehistoric lithic scatter	Offsite direct transmission-lines Route K	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a); Eastern Band of the Cherokee Indians concurs that the site is not important (EBCI 2011)
38UN1446	Prehistoric lithic scatter	Offsite direct transmission-lines Route K	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a); Eastern Band of the Cherokee Indians concurs that the site is not important (EBCI 2011)

Table G-11. (contd)

Site #	Site Type	Location (APE)	Status	NRHP Eligibility	SHPO Comment
38CK149	Mississippian lithic scatter	Offsite direct transmission-lines Route O	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a); Eastern Band of the Cherokee Indians concurs that the site is not important (EBCI 2011)
38CK150	Prehistoric lithic scatter	Offsite direct transmission-lines Route O	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a); Eastern Band of the Cherokee Indians concurs that the site is not important (EBCI 2011)
38CK151	Prehistoric lithic scatter	Offsite direct transmission-lines Route O	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a); Eastern Band of the Cherokee Indians concurs that the site is not important (EBCI 2011)
38CK154	19th - 20th century homesite	Offsite direct transmission-lines Route O	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a)
38CK155	Middle-Late Archaic lithic scatter	Offsite direct transmission-lines Route O	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a); Eastern Band of the Cherokee Indians concurs that the site is not important (EBCI)
38CK156	Prehistoric lithic scatter	Offsite direct transmission-lines Route O	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a); Eastern Band of the Cherokee Indians concurs that the site is not important (EBCI)
38CK157	Middle Archaic lithic scatter	Offsite direct transmission-lines Route O	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a); Eastern Band of the Cherokee Indians concurs that the site is not important (EBCI 2011)
38CK158	19th - 20th century prospecting pit	Offsite direct transmission-lines Route O	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a)
38CK159	Prehistoric lithic scatter	Offsite direct transmission-lines Route O	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a); Eastern Band of the Cherokee Indians concurs that the site is not important (EBCI 2011)

Table G-11. (contd)

Site #	Site Type	Location (APE)	Status	NRHP Eligibility	SHPO Comment
38CK160	Middle Archaic lithic scatter	Offsite direct transmission-lines Route O	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a); Eastern Band of the Cherokee Indians concurs that the site is not important (EBCI 2011)
38CK161	Prehistoric lithic scatter and 19th - 20th century homesite	Offsite direct transmission-lines Route O	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a); Eastern Band of the Cherokee Indians concurs that the site is not important (EBCI 2011)
38CK162	Middle Archaic lithic scatter and 19th - 20th century homesite	Offsite direct transmission-lines Route O	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a); Eastern Band of the Cherokee Indians concurs that the site is not important (EBCI 2011)
38CK163	Prehistoric lithic scatter and 19th - 20th century homesite	Offsite direct transmission-lines Route O	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a); Eastern Band of the Cherokee Indians concurs that the site is not important (EBCI 2011)
38CK164	Prehistoric lithic scatter	Offsite direct transmission-lines Route O	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a); Eastern Band of the Cherokee Indians concurs that the site is not important (EBCI 2011)
38CK165	Prehistoric lithic scatter and 19th - 20th century homesite	Offsite direct transmission-lines Route O	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a); Eastern Band of the Cherokee Indians concurs that the site is not important (EBCI 2011)
38CK166	Prehistoric lithic scatter and 19th century ceramic sherd	Offsite direct transmission-lines Route O	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a); Eastern Band of the Cherokee Indians concurs that the site is not important (EBCI 2011)
38CK167	Prehistoric lithic scatter	Offsite direct transmission-lines Route O	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a); Eastern Band of the Cherokee Indians concurs that the site is not important (EBCI 2011)

Table G-11. (contd)

Site #	Site Type	Location (APE)	Status	NRHP Eligibility	SHPO Comment
38CK168	Prehistoric lithic scatter	Offsite direct transmission-lines Route O	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a); Eastern Band of the Cherokee Indians concurs that the site is not important (EBCI 2011)
38CK169	Prehistoric lithic scatter and 19th century ceramic sherds	Offsite direct transmission-lines Route O	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a); Eastern Band of the Cherokee Indians concurs that the site is not important (EBCI 2011)
38CK170	Prehistoric lithic scatter and 19th century ceramic sherd	Offsite direct transmission-lines Route O	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a); Eastern Band of the Cherokee Indians concurs that the site is not important (EBCI 2011)
38CK171	Prehistoric lithic scatter	Offsite direct transmission-lines Route O	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a); Eastern Band of the Cherokee Indians concurs that the site is not important (EBCI 2011)
38CK172	Possible gravesite	Offsite direct transmission-lines Route O	Intact	Not eligible (ACC 2009) but protected under State law and potentially subject to Federal requirements of NAGPRA	SHPO concurs not eligible (SCDAH 2009) but protection warranted (SCDAH 2012a, USACE et al. 2013); Eastern Band of the Cherokee Indians recommends protection (EBCI 2009)
38CK173	Prehistoric lithic scatter	Offsite direct transmission-lines Route O	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a); Eastern Band of the Cherokee Indians concurs that the site is not important (EBCI 2011)
38UN1441	Prehistoric lithic scatter	Offsite direct transmission-lines Route O	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a); Eastern Band of the Cherokee Indians concurs that the site is not important (EBCI 2011)
38UN1442	Archaic lithic scatter	Offsite direct transmission-lines Route O	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a); Eastern Band of the Cherokee Indians concurs that the site is not important (EBCI 2011)

Table G-12. Historic and Cultural Resources Identified Within Indirect APEs For Transmission-Line Routes K and O

Site #	Site Type	Location (APE)	Status	NRHP Eligibility	SHPO Comment
040-0061	1930s residence and outbuilding	Offsite indirect transmission-lines Route K (0.5-mi zone from towers) Onsite indirect (1-mi zone from tallest structures)	Intact	Not eligible (ACC 2009; Brockington 2007)	SHPO concurs not eligible (SCDAH 2007, 2009) and no historic properties affected (SCDAH 2012a)
040-0065	1930s - 1940s residence	Offsite indirect transmission-lines Route K (0.5-mi zone from towers) Onsite indirect (1-mi zone from tallest structures)	Intact	Not eligible (ACC 2009; Brockington 2007)	SHPO concurs not eligible (SCDAH 2007, 2009) and no historic properties affected (SCDAH 2012a)
040-0066	1930s - 1940s residence	Offsite indirect transmission-lines Route K (0.5-mi zone from towers) Onsite indirect (1-mi zone from tallest structures)	Intact	Not eligible (ACC 2009; Brockington 2007)	SHPO concurs not eligible (SCDAH 2007, 2009) and no historic properties affected (SCDAH 2012a)
040-0067	1930s - 1940s residence	Offsite indirect transmission-lines Route K (0.5-mi zone from towers) Onsite indirect (1-mi zone from tallest structures)	Intact	Not eligible (ACC 2009; Brockington 2007)	SHPO concurs not eligible (SCDAH 2007, 2009) and no historic properties affected (SCDAH 2012a)
McKowns Mountain Baptist Church (040-0068)	20th century church, outbuildings, and cemetery	Offsite indirect transmission-lines Route K (0.5-mi zone from towers) Onsite indirect (1-mi zone from tallest structures)	Intact	Not eligible but cemetery protected under State law (ACC 2009; Brockington 2007)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a)
556-0142	1910s residence	Offsite indirect transmission-lines Route K (0.5-mi zone from towers)	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a)

Table G-12. (contd)

Site #	Site Type	Location (APE)	Status	NRHP Eligibility	SHPO Comment
556-0143	1920s residence	Offsite indirect transmission-lines Route K (0.5-mi zone from towers)	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a)
556-0144	1930s residence	Offsite indirect transmission-lines Route K (0.5-mi zone from towers)	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a)
556-0145	1930s residence	Offsite indirect transmission-lines Route K (0.5-mi zone from towers)	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a)
556-0146	1930s residence	Offsite indirect transmission-lines Route K (0.5-mi zone from towers)	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a)
556-0147	1940s residence	Offsite indirect transmission-lines Route K (0.5-mi zone from towers)	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a)
556-0148	1940s residence	Offsite indirect transmission-lines Route K (0.5-mi zone from towers)	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a)
556-0149	1930s residence	Offsite indirect transmission-lines Route K (0.5-mi zone from towers)	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a)
556-0154	1940s residence	Offsite indirect transmission-lines Route K (0.5-mi zone from towers)	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a)
264-0171	1910s residence	Offsite indirect transmission-lines Route K (0.5-mi zone	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH

Table G-12. (contd)

Site #	Site Type	Location (APE)	Status	NRHP Eligibility	SHPO Comment
		from towers)			2012a)
264-0199	1910s residence	Offsite indirect transmission-lines Route K (0.5-mi zone from towers)	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a)
264-0200	1900s residence	Offsite indirect transmission-lines Route K (0.5-mi zone from towers)	Intact	Ineligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a)
264-0241	1900s residence	Offsite indirect transmission-lines Route K (0.5-mi zone from towers)	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a)
264-0242	1910s residence	Offsite indirect transmission-lines Route K (0.5-mi zone from towers)	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a)
264-0243	1890s residence	Offsite indirect transmission-lines Route K (0.5-mi zone from towers)	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a)
264-0244	1920s residence	Offsite indirect transmission-lines Route K (0.5-mi zone from towers)	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a)
264-1378	1940s residence	Offsite indirect transmission-lines Route K (0.5-mi zone from towers)	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a)
264-1377	1930s residence	Offsite indirect transmission-lines Route K (0.5-mi zone from towers)	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a)

Table G-12. (contd)

Site #	Site Type	Location (APE)	Status	NRHP Eligibility	SHPO Comment
Ninety-Nine Islands Dam and Hydro Plant (269-0042)	20th century regional hydropower development	Offsite indirect transmission-lines Route O (0.5-mi zone from towers)	Intact	Eligible (ACC, Inc. 2009; Brockington 2007, 2009)	SHPO concurs National Register eligible (SCDAH 2007, 2009) and no adverse effect (SCDAH 2012a)
		Onsite indirect (1-mi zone from tallest structures)			
040-0062	1880s - 1930s residence (Miss Minnie Strap House)	Offsite indirect transmission-lines Route O (0.5-mi zone from towers)	Relocated from original location (Brockington 2007)	Not eligible (ACC 2009; Brockington 2007)	SHPO concurs not eligible (SCDAH 2007, 2009) and no historic properties affected (SCDAH 2012aSCDAH 2012a)
		Onsite indirect (1-mi zone from tallest structures)			
040-0063	1900s - 1930s residence	Offsite indirect transmission-lines Route O (0.5-mi zone from towers)	Not Intact	Not eligible (ACC 2009; Brockington 2007)	SHPO concurs not eligible (SCDAH 2007, 2009) and no historic properties affected (SCDAH 2012a)
		Onsite indirect (1-mi zone from tallest structures)			
040-0064	1930s - 1940s residence	Offsite indirect transmission-lines Route O (0.5-mi zone from towers)	Intact	Not eligible (ACC 2009; Brockington 2007)	SHPO concurs not eligible (SCDAH 2007, 2009) and no historic properties affected (SCDAH 2012a)
		Onsite indirect (1-mi zone from tallest structures)			
229-0135	1900s store	Offsite indirect transmission-lines Route O	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a)

Table G-12. (contd)

Site #	Site Type	Location (APE)	Status	NRHP Eligibility	SHPO Comment
229-0136	1900s residence	Offsite indirect transmission-lines Route O (0.5-mi zone from towers)	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a)
229-0137	1940s residence	Offsite indirect transmission-lines Route O (0.5-mi zone from towers)	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a)
556-0139	1900s residence	Offsite indirect transmission-lines Route O (0.5-mi zone from towers)	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a)
229-0141	1900s residence	Offsite indirect transmission-lines Route O (0.5-mi zone from towers)	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a)
229-0150	1900s residence	Offsite indirect transmission-lines Route O (0.5-mi zone from towers)	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a)
229-0151	1900s residence	Offsite indirect transmission-lines Route O (0.5-mi zone from towers)	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a)
040-0152	1910s residence	Offsite indirect transmission-lines Route O (0.5-mi zone from towers)	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a)
269-0153	1900s residence	Offsite indirect transmission-lines Route O (0.5-mi zone from towers)	Intact	Not eligible (ACC 2009)	SHPO concurs not eligible (SCDAH 2009) and no historic properties affected (SCDAH 2012a)
Reid-Walker-Johnson Farm (229-0138 and	Early 20th century farm complex and historic cemetery	Offsite indirect transmission-lines Route O (0.5-mi zone	Intact	Eligible (ACC 2009; Pike Electric 2009)	SHPO concurs National Register eligible (SCDAH 2009, 2010) and no adverse effect (SCDAH

Table G-12. (contd)

Site #	Site Type	Location (APE)	Status	NRHP Eligibility	SHPO Comment
229-140)		from towers)			2012a)
Smith's Ford Farm (229-1018)	Mid-18th century farm complex	Offsite indirect transmission-lines Route O (0.5-mi zone from towers)	Intact	Eligible (ACC 2009; Pike Electric 2010)	SHPO concurs National Register eligible (SCDAH 2009, 2010) and no adverse effect (SCDAH 2012a)

Table G-13. Historic and Cultural Resources Identified Within Direct APEs For Transportation Improvements

Site #	Site Type	Location (APE)	Status	NRHP Eligibility	SHPO Comment
38CK48	Archaeological site	Offsite direct transportation improvements (SC 329 and McKowns Mountain Road)	No evidence found in 2012	Not eligible (Duke 2012)	SHPO concurs not eligible (SCDAH 2012b)
38CK49	Archaeological site	Offsite direct transportation improvements (SC 329 and McKowns Mountain Road)	No evidence found in 2012	Not eligible (Duke 2012)	SHPO concurs not eligible (SCDAH 2012b)
38CK29	Archaeological site	Offsite direct transportation improvements (SC 329 and US-29)	No evidence found in 2012	Not eligible (Duke 2012)	SHPO concurs not eligible (SCDAH 2012b)
38CK132	Archaeological site	Offsite direct transportation improvements (SC 329 and US-29)	No evidence found in 2012	Not eligible (Duke 2012)	SHPO concurs not eligible (SCDAH 2012b)
38CK133	Archaeological site	Offsite direct transportation improvements (SC 329 and US-29)	No evidence found in 2012	Not eligible (Duke 2012)	SHPO concurs not eligible (SCDAH 2012b)

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Appendix H

Authorizations, Permits, and Certifications

Appendix H

Authorizations, Permits, and Certifications

This appendix contains a list of the environmental-related authorizations, permits, and certifications potentially required by Federal, State, regional, local, and affected Native American Tribal agencies related to the combined construction permit and operating licenses (COLs) for the proposed William States Lee III Nuclear Station (Lee Nuclear Station) Units 1 and 2. Table H-1 is based on Table 1.2-1 of Revision 1 of the environmental report submitted to the U.S. Nuclear Regulatory Commission (NRC) by Duke Energy Carolinas, LLC (Duke 2009), and an update to that table provided in a letter dated March 13, 2013 (Duke 2013).

Table H-1. Federal, State, and Local Environmental Permits and Authorizations

Agency	Authority	Requirement	Activity Covered	Status
Radioactive Materials				
NRC	Title 10 of the *Code of Federal Regulations* (CFR) Part 30	Byproduct license	Approval to receive, possess, and use byproduct material.	To be issued as part of COLs.
NRC	10 CFR Part 40	Source materials license	Approval to receive, possess, and use source material.	To be issued as part of COLs.
NRC	10 CFR Part 52, Subpart Part C	Combined licenses	Construction and operation of two new nuclear units.	Application submitted in December 2007.
NRC	10 CFR Part 70	Special nuclear materials license	Approval to receive, possess, and use special nuclear material.	To be issued as part of COLs.
NRC	10 CFR Part 61	Licensing requirements for land disposal of radioactive wastes	Procedures, criteria, and terms and conditions for the licensing of land disposal facilities intended to contain byproduct, source, and special nuclear materials.	If required.
NRC	10 CFR Part 71	Packaging and transportation of radioactive material	The regulations in this part provide requirements, procedures, and standards for packaging, preparation for shipment, and transportation of licensed material.	If required.
NRC	10 CFR Part 72	Licensing requirements for the independent storage of spent nuclear fuel and high-level radioactive waste	The issuance of licenses to receive, transfer, and possess power reactor spent fuel and other associated radioactive materials in an independent spent fuel storage installation and the terms under which the Commission will issue such a license.	If required.
South Carolina Department of Health and Environmental Control (SCDHEC)	SC R. 61-63	South Carolina radioactive material license	Bringing any radioactive source on the Lee Nuclear Station site.	This license will be received by the contractors owning the radioactive material.

Table H-1. (contd)

Agency	Authority	Requirement	Activity Covered	Status
Air				
SCDHEC	SC R. 61-62	Construction permit (emissions)	Duke-operated permanent air-emitting sources.	Application has not been submitted.
SCDHEC	SC R. 61-62	Title V air operating permit or conditional major source permit	Air emissions operating permit for all operating sources post-construction. Facility-wide emissions will be evaluated for applicability of Title V permit (100 T or greater of any one criteria pollutant) or a conditional major permit. A regulatory analysis with appropriate calculations will be performed to determine whether New Source Review/Prevention of Significant Deterioration is applicable.	Application has not been submitted.
SCDHEC	SC R. 61-62	Title V Construction Air Permit (third-party construction sources)	Third-party contracted stationary fuel-driven engine, concrete batch plant, fuel storage tanks, etc.	Application has not been submitted.
Cherokee County	Fire Marshall	Approval	Open burning for vegetation/right-of-way clearing.	Permit received July 7, 2007.
Groundwater				
SCDHEC	SC R. 61-71	Well permits	Installation and abandonment of wells.	Permits have been received. • Permit 2596 received February 2, 2006. • Permit 2736 received July 3, 2006.
Historic Properties				
South Carolina State Historic Preservation Officer (SHPO) at South Carolina Department of Archives and History Federally recognized American Indian Tribes	36 CFR Part 800	Consultation	Identification and evaluation of historic properties.	Surveys of the Lee Nuclear Station site, the railroad-spur corridor, transmission-line corridors, transportation improvements, and Make-Up Pond C have been completed in coordination with the South Carolina SHPO and interested Tribes and no adverse effects to historic properties have been identified. A Memorandum of Agreement (including a Cultural Resources Management Plan) has been signed by Duke, the USACE, SHPO, and the Catawba Indian Nation (USACE et al. 2013).

Table H-1. (contd)

Agency	Authority	Requirement	Activity Covered	Status
Surface Water				
U.S. Army Corps of Engineers (USACE)	33 CFR 322, 323, 328, and 330	Section 404 dredge and fill permit	Construction of cooling-water intake structure, dredging in pond/river, and construction in waters of the United States.	Application submitted in November 2011 (Duke 2011).
Federal Energy Regulatory Commission (FERC)	18 CFR Part 4	FERC Order for Non-Project Use of Project Lands and Water	Construction of intake and discharge structures in, and water withdrawal and discharge from, Ninety-Nine Islands Reservoir.	Application has not been submitted.
SCDHEC	SC Code, Title 49, Chapter 4 SC R, 61-119	Water withdrawal registration and permit	Water withdrawal from Ninety-Nine Islands Reservoir (Broad River).	Application has not been submitted.
SCDHEC	SC R. 61-9	National Pollutant Discharge Elimination System (NPDES) permit	Discharge of wastewater to surface waters (contractor concrete batch plant, cooling-water blowdown, and process waste discharge).	Application submitted in August 2011. SCDHEC public notice of a draft NPDES permit issued in March 2013 (SCDHEC 2013a). Permit SC0049140 issued July 17, 2013 (SCDHEC 2013b).
SCDHEC	SC R. 61-9 SC R. 72-300	NPDES storm water construction permit	Stormwater to surface-water discharges associated with land disturbance and industrial activity. Requires notice of intent, grading permit, erosion control plan prior to excavation, and Stormwater Pollution Prevention Plan.	Permits received for site activities completed prior to 2013. All activities are now stable and permits have been terminated. Permit applications for future phases will be submitted prior to excavation activities as required by the SCDHEC.
SCDHEC	SC R. 61-67	NPDES permit to construct	Construction of a wastewater treatment plant.	Application has not been submitted.
SCDHEC	Clean Water Act, Section 401, SC R. 61-101	Water quality certification	Federally permitted activities that may result in a discharge to State waters; State certifies water quality standards will not be violated.	Application has not been submitted.
SCDHEC	SC R. 61-58	Permit	Construction and operation of a public water distribution system.	Application has not been submitted.
SCDHEC	SC R. 72-1 to 72-9	Dam repair permit	Required before making repairs to an existing dam.	Permit approved 1/15/2007.
SCDHEC	SC R. 72-1 to 72-9	Dam construction permit	Required to construct dam for Make-Up Pond C.	Application has not been submitted.

Table H-1. (contd)

Agency	Authority	Requirement	Activity Covered	Status
Threatened And Endangered Species				
U.S. Fish and Wildlife Service	Endangered Species Act (50 CFR Parts 13, 17, 222, 226, 227, 402, 424, 450-453)	Consultation	Consultation concerning potential impacts to Federal threatened and endangered species.	Consultation process complete for the Lee Nuclear Station site, railroad-spur corridor, transmission-line corridors, any necessary road work, and Make-Up Pond C.
U.S. Fish and Wildlife Service	Migratory Bird Treaty Act Migratory Bird Treaty Act (50 CFR 10.13, 21)	Consultation	Consultation concerning potential impacts to migratory birds. Federal permit MB000257-0.	Consultation process complete for the Lee Nuclear Station site, railroad-spur corridor, transmission-line corridors, any necessary road work, and Make-Up Pond C.
South Carolina Department of Natural Resources	Nongame and Endangered Species Conservation Act (SC Code, Title 50, Chapter 15, Sections 10-90).	Consultation	Consultation concerning potential impacts to State threatened and endangered wildlife species.	Consultation process is ongoing for the Lee Nuclear Station site, railroad-spur corridor, Make-Up Pond C, and transmission-line corridors.
South Carolina Department of Natural Resources	Nongame and Endangered Species Conservation Act (SC Code, Title 50, Chapter 11, Section 10, and Chapter 9, Section 535).	Consultation	Consultation concerning potential impacts to migratory birds. State permit MD-19-10.	Consultation process complete for the Lee Nuclear Station site, railroad-spur corridor, transmission-line corridors, any necessary road work, and Make-Up Pond C.
South Carolina Department of Natural Resources	South Carolina has no law or regulation for protection of State-ranked plant species	Consultation	Consultation concerning potential impacts to state-ranked plant species.	Consultation process will continue for Make-Up Pond C.
Transportation				
Federal Aviation Administration	Federal Aviation Act, 14 CFR 77	§ 77.15 Permit	Permit for structures over 200 ft. in height (construction cranes, reactor buildings).	Application has not been submitted.
South Carolina Department of Transportation	SC Code Annotated § 57-5-1080	Highway encroachment permit	Building an alternate construction entrance to the Lee Nuclear Station site.	Application has not been submitted.
Waste Management				
SCDHEC	SC R. 61-79 and 61-104	Resource Conservation and Recovery Act (RCRA) ID number	90-day accumulation of hazardous waste.	RCRA generator ID number has been received.

Table H-1. (contd)

Agency	Authority	Requirement	Activity Covered	Status
Miscellaneous				
South Carolina Public Service Commission	SC Code Annotated § 58-33-110	Certificate of Environmental Compatibility and Public Convenience and Necessity	Construction and operation of a generating station of more than 75 megawatts.	Application has not been submitted.
South Carolina Public Service Commission	SC Code Annotated § 58-33-110	Certificate of Environmental Compatibility and Public Convenience and Necessity	Construction and operation of any transmission line with a designed voltage of 125 kV or more.	Application has not been submitted.
South Carolina Fire Marshall Office	Chapter 71, 1976 Code Section 23-36-80, as amended	Blasting permit	Magazine storage and use of high explosives on the Lee Nuclear Station site.	Application has not been submitted.
SCDHEC	SC R. 61-107.11, Part III	Temporary construction and demolition debris permit	Storing of engineered fill. Part III permit-by-rule through notification of the SCDHEC.	Permit received 7/3/2007 as a result of notification to the SCDHEC.
Cherokee County	Building Safety	Building permit	Construction of offices and warehouses only. Buildings subject to inspection.	Application has not been submitted.

H.1 References

Duke Energy Carolinas, LLC (Duke). 2009. *William States Lee III Nuclear Station COL Application, Part 3, Applicant's Environmental Report – Combined License Stage, (Environmental Report*). Revision 1. Charlotte, North Carolina. Accession No. ML090990348.

Duke Energy Carolinas, LLC (Duke). 2011. "William S. Lee III Nuclear Station Joint Application for Activities Affecting Waters of the United States." Submitted by Duke Energy Carolinas, LLC, to United States Army Corps of Engineers. November 2011. Charlotte, North Carolina. Accession Number ML13320A708.

Duke Energy Carolinas, LLC (Duke). 2013. Letter from Christopher Fallon, Duke, to NRC dated March 13, 2013, "Duke Energy Carolinas, LLC, William States Lee III Nuclear Station--Docket Nos. 52-018 and 52-019, AP1000 Combined License Application for the William States Lee III Nuclear Station Units 1 and 2, Supplemental Information Regarding Environmental Review, Ltr#WLG2013.03-01." Accession Number ML13087A299.

South Carolina Department of Health and Environmental Control (SCDHEC). 2013a. *Public Hearing Notice: Proposal to issue new NPDES Permit (Permit# SC0049140)*. March 4, 2013. Columbia, South Carolina.

South Carolina Department of Health and Environmental Control (SCDHEC). 2013b. *Duke Energy Carolina/Lee Nuclear Station Permit Issuance; NPDES Permit: SC0049140 – Department Decision*. July 17, 2013. Columbia, South Carolina.

U.S. Army Corps of Engineers, South Carolina Department of Archives and History State Historic Preservation Office, Catawba Indian Nation, and Duke Energy Carolinas, LLC (USACE, SCSHPO, Catawba, and Duke). 2013. *Cultural Resources Management Plan and Agreement regarding William States Lee III Nuclear Station, Units 1 and 2 and New 230 kV and 525 kV Transmission Lines*. Accession No. ML13213A399.

Appendix I

U.S. Army Corps of Engineers
Public Interest Review Factors

Appendix I

U.S. Army Corps of Engineers Public Interest Review Factors

A public interest review must be completed prior to any U.S. Army Corps of Engineers (USACE) permit decision for the proposed William States Lee III Nuclear Station (Lee Nuclear Station) Units 1 and 2 combined construction permits and operating licenses (COLs) project. The emphasis of each public interest review factor (PIRF) (described below) is determined by its importance and relevance to this proposed project. Some PIRFs may warrant greater emphasis, while other PIRFs may not be present or as important based on their relevance. However, full consideration and appropriate emphasis will be given to all comments received by the USACE, including those of Federal, State, and local agencies, and other experts on matters within their expertise. A Department of the Army permit will generally be issued for Federal and Federally authorized activities; another Federal agency's determination to proceed is entitled to substantial consideration in the USACE's public interest review. Mitigation should be developed and incorporated within the public interest review process to the extent that the mitigation is found by the USACE to be reasonable and justified. However, only those measures required to ensure that the project is not contrary to the public interest may be required in this specific context. A Record of Decision prepared for this project will rely on information in this environmental impact statement (EIS) and additional information that will be obtained from Duke's final compensatory mitigation plan when it is sufficiently complete to support a permit decision.

I.1 Conservation

Conservation is the efficient use of resources where that use is significant and/or could significantly affect the availability of the resources for alternative uses. Construction and operation of the proposed Lee Nuclear Station Units 1 and 2 – Duke's proposed project alternative – has been identified as the alternative that has the least impact to the environment and therefore minimizes the adverse effects to conservation of natural resources. The site design avoids and minimizes impacts to waters of the United States to the greatest extent possible given the project purpose. Impacts will occur to 67,285 linear ft of streams, 5.43 ac of wetlands, and 29.63 ac of open water.

I.2 Economics

When private enterprise applies for a permit, it will generally be assumed that appropriate economic evaluations have been completed, the proposal is economically viable, and is needed in the marketplace. However, in appropriate cases, the USACE may conduct an independent review of the need for the project from the perspective of the overall public interest. The economic benefits of many projects are important to the local community and contribute to needed improvements in the local economic base, affecting such factors as employment, tax revenue, community cohesion, community services, and property values. Many projects also contribute to the national economic development (i.e., the increase in the net value of the national output of goods and services).

The proposed project is expected to improve economic conditions in the project area. Increased employment, tax revenues, and business growth should result from construction of the proposed project. During construction, increased jobs and retail activity should combine to provide short-term economic benefits to the region.

I.3 Aesthetics

Construction of the proposed project will create temporary adverse impacts to the aesthetics of the project area. These impacts will be related to vegetation grubbing and clearing, material stockpiling, storage of construction equipment and trailers, forest clear-cutting, and earthmoving activities. The proposed Lee Nuclear Station would be 0.99 mi from the nearest residence, 0.8 mi from the nearest business, and would not be readily visible to motorists from McKowns Mountain Road. As described in Chapter 3, there will be 31.29 mi of transmission-line corridors and 6.8 mi of railroad corridor associated with this project. The transmission lines and railroad corridor would be located in rural areas and would pose long-term minor adverse impacts to residential and agricultural/commercial properties.

I.4 General Environmental Concerns

Reference is made to other sections in this EIS that address concerns regarding wetlands, historic and cultural resources, fish and wildlife resources, and socioeconomic issues. To address and minimize general environmental concerns, project-specific special conditions will be attached to any permit and decision document issued for this project. Specific permit conditions will be included to ensure the project is constructed as designed, and that impacts to the aquatic environment are confined to areas addressed by the permit.

I.5 Wetlands and Waters of the United States

Most wetlands constitute a productive and valuable public resource, the unnecessary alteration or destruction of which should be discouraged as contrary to the public interest. Wetlands considered to perform functions important to the public interest include the following:

- Wetlands that serve significant natural biological functions, including food chain production, general habitat, and nesting, spawning, rearing, and resting sites for aquatic or terrestrial species.
- Wetlands set aside for study of the aquatic environment or as sanctuaries or refuges.
- Wetlands that, if destroyed or altered, would negatively affect natural drainage characteristics, sedimentation patterns, salinity distribution, flushing characteristics, current patterns, or other environmental characteristics.
- Wetlands significant in shielding other areas from wave action, erosion, or storm damage. Such wetlands are often associated with barrier beaches, islands, reefs, and bars.
- Wetlands that serve as valuable storage areas for stormwaters and floodwaters.
- Wetlands that are groundwater discharge areas and maintain minimum base flows important to aquatic resources and those that are prime natural recharge areas.
- Wetlands that serve significant water purification functions.
- Wetlands unique in nature or scarce in quantity to the region or local area.

Although a particular alteration of a wetland may constitute a minor change, the cumulative effect of numerous piecemeal changes can result in a major impairment of wetland resources. Thus, one or more particular wetland sites for which an application is made are evaluated with the recognition that they may be part of a complete and interrelated wetland area.

The proposed project will impact 5.43 ac of wetlands, 67,285 linear ft of tributaries, and 29.63 ac of open water, including all project area components. As described in Chapter 4, these impacts will be the combined result of fill placement, excavation, inundation, and conversion from forested to non-forested condition, and thus will involve permanent losses and temporary changes in wetland and stream functions. Proposed wetland and stream compensatory mitigation (Section 4.3.1.7) would be included in any Department of the Army permit decision and, on this basis, would be expected to offset these losses.

I.6 Fish and Wildlife Values

In accordance with the Fish and Wildlife Coordination Act, the USACE must consult with the Regional Director of the U.S. Fish and Wildlife Service (FWS), the Regional Director of the National Marine Fisheries Service (NMFS), and the Director of the South Carolina Department

of Natural Resources (SCDNR) regarding the conservation of fish and wildlife resources by preventing their direct and indirect loss due to a proposed project. The USACE will give full consideration to the views of those agencies on fish and wildlife matters in deciding on the issuance, denial, or conditioning of individual or general Department of the Army permits.

By letter dated March 6, 2012 (FWS 2012), the FWS indicated concurrence with the USACE determination that the proposed project is not likely to adversely affect Federally protected species within the proposed transmission-line corridors, the railroad corridor, Make-Up Pond C, or the Lee Nuclear Station, and that the project will not result in the adverse modification of proposed or designated critical habitat.

By letter dated March 6, 2012 (NMFS 2012), the NMFS indicated their concurrence that the project will have no effect on essential fish habitat or Federally managed fishery species, and offered no recommendations under the Magnuson-Stevens Fishery Conservation and Management Act.

By letters dated March 6, 2012 (SCDNR 2012a), and October 23, 2012 (SCDNR 2012b), the SCDNR offered recommendations for revisions to proposed construction methods, property management for wildlife benefit, and mitigation design with the intent of minimizing the project's overall effects on fish and wildlife. These recommendations will be considered by the USACE as the project design becomes final and in any Department of the Army permit decision.

I.7 Historic, Cultural, Scenic, and Recreational Values

Applications for Department of the Army permits may involve areas that possess recognized historic, cultural, scenic, conservation, recreational, or similar values. In such cases, full evaluation of the general public interest requires that due consideration be given to the effect that the proposed structure or activity may have on historic, cultural, scenic, and recreational values. Such values include those associated with wild and scenic rivers, historic properties and National Landmarks, National Rivers, National Wilderness Areas, National Seashores, National Recreation Areas, National Lakeshores, National Parks, National Monuments, estuarine and marine sanctuaries, archaeological resources, including Indian religious or cultural sites, and such other areas as may be established under Federal or State law for similar and related purposes. Recognition of these values often is reflected by State, regional, or local land-use classifications, or by similar Federal controls or policies. Decisions based on permit applications should, to the extent possible, be consistent with and avoid significant adverse effects on the values or purposes for which the classifications, controls, or policies were established.

By letter dated January 20, 2012 (SCDAH 2012), the State Historic Preservation Office (SHPO) provided their opinion that the proposed project will have "no adverse effect" on any known historic or archaeological resources; however, archaeological sites and historic cemeteries fall

within the project boundary. The “no adverse effect” determination is conditioned upon Duke adhering to the protective measures detailed in a Cultural Resource Management Plan and Memorandum of Agreement executed on January 9, 2013, among Duke, the SHPO, the Catawba Indian Nation, and the USACE (USACE et al. 2013).

I.8 Floodplains and Flood Hazards

Floodplains possess significant natural values and carry out numerous functions important to the public interest. These include (1) water resources values (natural moderation of flooding, water-quality maintenance, and groundwater recharge), (2) living resource values (fish, wildlife, and plant resources), (3) cultural resource values (open space, natural beauty, scientific study, outdoor education, and recreation), and (4) cultivated resource values (agriculture, aquaculture, and forestry). Although a particular alteration to a floodplain may constitute a minor change, the cumulative impact of such changes may result in a significant degradation of floodplain values and functions and in increased potential for harm to upstream and downstream activities. In accordance with the requirements of Executive Order 11988 (42 FR 26951), the USACE, as part of its public interest review, should avoid, to the extent practicable, long- and short-term significant adverse impacts associated with the occupancy and modification of floodplains, as well as the direct and indirect support of floodplain development whenever there is a practicable alternative. For those activities that, in the public interest, must occur in or impact upon floodplains, the USACE will verify, to the maximum extent practicable, that the impacts of potential flooding on human health, safety, and welfare are minimized, the risks of flood losses are minimized, and whenever practicable, the natural and beneficial values served by floodplains are restored and preserved. In accordance with Executive Order 11988, the USACE avoids authorizing floodplain developments whenever practicable alternatives exist outside the floodplain. If there are no such practicable alternatives, the USACE considers, as a means of mitigation, alternatives within the floodplain that will lessen any significant adverse impact on the floodplain.

A floodplain evaluation was conducted in accordance with Executive Order 11988 “Floodplain Management.” Building activities for the cooling-water intake structure and discharge structure would be located within the Broad River floodplain and would comply with all applicable regulatory requirements under the Clean Water Act (CWA). Specifically, however, the proposed project will not involve placement of fill material into the 100-year floodplain to construct the water intake and discharge structures and, thus, will not affect 100-year floodplain elevations. While approximately 66 ac of transmission-line corridors are within the 100-year floodplain, construction of transmission lines will not require placement of fill material and, thus, will not affect the 100-year floodplain. The embankment dam for Make-Up Pond C will be located within the 100-year floodplain for the Broad River and would require placement of fill material within that area for its construction. There is no regulated floodway within the proposed project area; therefore, no encroachments or modifications to such a floodway would occur. The proposed

project is not expected to contribute to conditions that would either increase or decrease flooding within the project area. Impervious areas will route storm water to treatment areas designed to provide adequate storage volumes as required by Section 402 of the CWA. Structures to be placed within the open waters of the Ninety Nine Islands Reservoir (Broad River) will result in negligible displacement of water volume storage and will have no effect on flood hazards.

I.9 Land Use

The proposed project area is approximately 5129 ac in size (the Lee Nuclear Station site encompasses 1885 ac, Make-Up Pond C encompasses 2116 ac, transmission-line corridors encompass 987 ac, the railroad corridor encompasses 41.2 ac; see Section 2.4.1). The Lee Nuclear Station site is the site of the previously proposed Cherokee Nuclear Station and, as such, was cleared prior to submittal of Duke's application for a Department of the Army permit. As discussed in Chapter 2, the direct effects of the project would not substantially change land uses, except for construction of Make-Up Pond C, which will permanently inundate approximately 620 ac of forest and pasture land. The proposed transmission lines would have a total length of 31.29 mi and, except for permanent forest clearing within the corridors, would not appreciably change surrounding land uses or influence future growth and development. Transmission-line corridors traverse primarily rural lands that are forested or cleared for agriculture/grazing. The proposed railroad corridor exists, although it must be rehabilitated and 1300 ft of it must be re-routed for rail use. These land uses will not change because of the proposed project.

I.10 Navigation

Section 11 of the Rivers and Harbors and Appropriations Act of 1899 authorized establishment of harbor lines shoreward of which no individual permits were required. Because harbor lines were established on the basis of navigation impacts only, the USACE published a regulation on May 27, 1970 (33 CFR 209.150), which declared that permits would thereafter be required for activities shoreward of the harbor lines. Review of applications is based on a full public interest evaluation, and harbor lines would serve as guidance for assessing navigation impacts. Accordingly, activities constructed shoreward of harbor lines prior to May 27, 1970, do not require specific authorization. Protection of navigation in all navigable waters of the United States continues to be a primary concern of the Federal government.

I.11 Intake and Discharge Structures

While not Rivers and Harbors Act Section 10 waters, the Ninety Nine Islands Reservoir (Broad River) is accessible to boaters in small craft. Intake and discharge structures proposed for placement in Ninety Nine Islands Reservoir have been designed to be located near the

shoreline and away from portions of the reservoir and/or channels where navigation would be most likely. These structures will be well-marked, large-diameter piping that is clearly visible above the water line and should not pose any hazards to watercraft.

I.12 Shore Erosion and Accretion

There are no tidally influenced shorelines involved with this project. Work associated with intake and discharge structures to be placed in Ninety Nine Islands Reservoir (Broad River) is not expected to result in any conditions that would increase or decrease shore erosion or accretion. Impacts related to shore erosion and accretion will be negligible.

I.13 Recreation

No parks or recreational facilities within the project area will be impacted by the proposed project. In addition, the Lee Nuclear Station site would be access-controlled by trained security at all times as required by U.S. Department of Homeland Security regulations.

I.14 Water Supply and Conservation

Water is an essential resource, basic to human survival, economic growth, and the natural environment. Water conservation requires the efficient use of water resources in all actions that involve the significant use of water or that significantly affect the availability of water for alternative uses, including opportunities to reduce demand and improve efficiency to minimize new supply requirements. Actions affecting water quantity are subject to Congressional policy as stated in Section 101(g) of the CWA, which authorizes States to allocate water quantities in a way that shall not be superseded, abrogated, or otherwise impaired. This project will affect surface or groundwater supplies by consumptive use for reactor cooling and other operational uses. Based on information detailed in Chapters 4 and 5 regarding surface and groundwater use and quality, the USACE expects that this project will result in long-term adverse but minimal impacts to water supply.

I.15 Water Quality

Project activities that may adversely affect the quality of waters of the United States will be evaluated for compliance with applicable effluent limitations and water-quality standards, during the construction and subsequent operation of the proposed activity, and will consider both point and non-point sources of pollution. It should be noted, however, that the CWA assigns responsibility for control of non-point sources of pollution to the States. Certification of compliance with applicable effluent limitations and water-quality standards required under provisions of Section 401 of the CWA will be considered conclusive with respect to water-quality

considerations unless the Regional Administrator of the U.S. Environmental Protection Agency (EPA) advises that other water-quality aspects be taken into consideration.

Duke's construction activities may have temporary impacts on water quality in areas of active work. Impacts will be minimized through appropriate use of Best Management Practices, including appropriate placement and use of erosion and sedimentation control measures which will be required as special conditions of any Department of the Army permit decision proposed in Duke's Stormwater Pollution Prevention Plan. It is expected that there will be no appreciable negative effect on water quality provided Duke complies with conditions typically included in a Water Quality Certification issued by South Carolina Department of Health and Environmental Control and referenced by conditions included in any forthcoming Department of the Army permit.

I.16 Energy Needs

This project is to provide additional baseload electric generating capacity by a public utility provider for its service area. Construction activities for the proposed project will use energy resources. Although construction activities will require an initial consumption of energy that would not otherwise be used if the project were not undertaken, completion of the entire project will provide an estimated full capacity of 2234 MW(e).

I.17 Safety

As a PIRF, safety is most closely reviewed in association with impoundment structures. To ensure that all impoundment structures are designed for safety, Duke will be required to demonstrate that the structures comply with established State dam safety criteria or have been designed by qualified persons and that the design has been independently reviewed (and modified as the review would indicate) by similarly qualified persons. This project is not expected to result in significant safety concerns. A full nuclear safety review of the proposed project will be completed by the U.S. Nuclear Regulatory Commission (NRC). The NRC's safety review will be documented in a Safety Evaluation Report to support its Record of Decision, under the provisions of 10 CFR Part 52, whether or not to issue COLs to Duke authorizing construction and operation of the proposed Lee Nuclear Station Units 1 and 2.

I.18 Food and Fiber Production

The proposed project is not expected to have any noticeable effect on the production of food and fiber. The proposed transmission-line corridors will traverse some grassland/pasture (see Section 2.2.3.1). These areas will remain suitable as grassland/pasture. The USACE has concluded that project-related impacts to food and fiber production will be negligible.

I.19 Mineral Needs

Not applicable.

I.20 Consideration of Property Ownership

Authorization of work or structures by the USACE neither conveys a property right nor authorizes any injury to property or invasion of other rights. An inherent aspect of property ownership is a right to reasonable private use. However, this right is subject to the rights and interests of the public in the navigable and other waters of the United States, including the Federal navigation servitude and Federal regulation for environmental protection. Because a landowner has the general right to protect property from erosion, applications to erect protective structures will usually receive favorable consideration. However, if the protective structure may cause damage to the property of others, adversely affect public health and safety, adversely affect floodplain or wetland values, or otherwise appears contrary to the public interest, the USACE will advise the applicant and inform them of possible alternative methods of protecting the property. Any USACE permit decision will not require the displacement of any residences or businesses. Considerations of property ownership are not applicable.

I.21 References

10 CFR Part 52. *Code of Federal Regulations*, Title 10, *Energy*, Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants."

33 CFR Part 209. *Code of Federal Regulations*. Title 33, *Navigation and Navigable Waters,* Part 209, "Administrative Procedure."

42 FR 26951. May 24, 1977. "Executive Order 11988 of May 24, 1977, Floodplain Management." Office of the President.

Clean Water Act. 33 U.S.C. 1251 et seq. (also referred to as the Federal Water Pollution Control Act [FWPCA]).

Fish and Wildlife Coordination Act. 16 U.S.C. 661-667(e) et seq.

U.S. Fish and Wildlife Service (FWS). 2012. Letter from Jay B. Herrington, Field Supervisor to Lt. Col. Edward P. Chamberlayne, USACE Charleston District Commander. Dated March 6, 2012. FWS Log No. 2012-CPA-0036.

National Marine Fisheries Service (NMFS). 2012. Letter from Virginia M. Fay, Assistant Regional Administrator, Habitat Conservation Division to Lt. Col. Edward P. Chamberlayne, USACE dated March 6, 2012. Charleston District Commander.

Rivers and Harbors Appropriation Act of 1899, 33 U.S.C. 403, as amended (also referred to as the Rivers and Harbors Act of 1899).

South Carolina Department of Archives and History (SCDAH). 2012. Letter from Rebekah Dobrasko, SCDAH, to Cindy Blady, NRC, dated January 20, 2012, "William States Lee III Nuclear Station Units 1 and 2, Draft Environmental Impact Statement, Cherokee County, South Carolina, SHPO No. 06-RD163." Accession No. ML12048A671.

South Carolina Department of Natural Resources (SCDNR). 2012a. Letter from Bob Perry, Director Office of Environmental Resources to Dr. Richard Darden, USACE, and Ms. Alicia Rowe, South Carolina Department of Health and Environmental Control, dated March 6, 2012. Bureau of Water.

South Carolina Department of Natural Resources (SCDNR). 2012b. Letter from Bob Perry, Director Office of Environmental Resources, to Ms. Alicia Rowe dated October 23, 2012, South Carolina Department of Health and Environmental Control, Bureau of Water.

U.S. Army Corps of Engineers, South Carolina Department of Archives and History State Historic Preservation Office, Catawba Indian Nation, and Duke Energy Carolinas, LLC. 2013. *Cultural Resources Management Plan and Agreement regarding William States Lee III Nuclear Station, Units 1 and 2 and New 230 kV and 525 kV Transmission Lines*. Accession No. ML13213A399.

Appendix J

Carbon Dioxide Footprint Estimates for a 1000-MW(e) Reference Reactor

Appendix J

Carbon Dioxide Footprint Estimates for a 1000-MW(e) Reference Reactor

The review team has estimated the carbon dioxide (CO_2) footprint of various activities associated with nuclear power plants. These activities include building, operating, and decommissioning the plant. The estimates include direct emissions from the nuclear facility and indirect emissions from workforce transportation and the uranium fuel cycle.

Construction equipment estimates listed in Table J-1 are based on hours of equipment use estimated for a single nuclear power plant at a site requiring a moderate amount of terrain modification. Equipment usage for a multiple unit facility would be larger, but it is likely that it would not be a factor of 2 or larger. A reasonable set of emissions factors used to convert the hours of equipment use to CO_2 emissions are based on carbon monoxide (CO) emissions (UniStar 2007) scaled to CO_2 using a scaling factor of 165 tons of CO_2 per ton of CO. This scaling factor is based on emissions factors in Table 3.3-1 of AP-42 (EPA 1995). Equipment emissions estimates for decommissioning are one-half of those for construction.

Table J-1. Construction Equipment CO_2 Emissions (metric tons equivalent)

Equipment	Construction Total[(a)]	Decommissioning Total[(b)]
Earthwork and dewatering	1.1×10^4	5.4×10^3
Batch plant operations	3.3×10^3	1.6×10^3
Concrete	4.0×10^3	2.0×10^3
Lifting and rigging	5.4×10^3	2.7×10^3
Shop fabrication	9.2×10^2	4.6×10^2
Warehouse operations	1.4×10^3	6.8×10^2
Equipment maintenance	9.6×10^3	4.8×10^3
TOTAL[(c)]	**3.5×10^4**	**1.8×10^4**

(a) Based on hours of equipment usage over 7-yr period.
(b) Based on equipment usage over 10-yr period.
(c) Total not equal to the sum due to rounding.

Workforce estimates are typical workforce numbers for new plant construction and operation based on estimates in various combined license (COL) applications, and decommissioning workforce emissions estimates are based on decommissioning workforce estimates in the *Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities, Supplement 1 Regarding the Decommissioning of Nuclear Power Reactors* (NRC 2002). A

typical construction workforce averages about 2500 for a 7-year period with a peak workforce of about 4000. A typical operations workforce for the 40-year life of the plant is assumed to be about 400, and the decommissioning workforce during a decontamination and dismantling period of 10 years is assumed to be 200 to 400. In all cases, the daily commute is assumed to involve a 100-mi roundtrip with two individuals per vehicle. Considering shifts, holidays, and vacations, 1250 roundtrips per day are assumed each day of the year during construction, 200 roundtrips per day are assumed each day during operations, and 150 roundtrips per day are assumed 250 days per year for the decontamination and dismantling portion of decommissioning. If the SAFSTOR decommissioning option is included in decommissioning, 20 roundtrips each day of the year are assumed for the caretaker workforce.

Table J-2 lists the review team's estimates of the CO_2 equivalent emissions associated with workforce transport. The table lists the assumptions used to estimate total miles traveled by each workforce and the factors used to convert total miles to metric tons CO_2 equivalent. CO_2 equivalent accounts for other greenhouse gases, such as methane and nitrous oxide, that are emitted by internal combustion engines. The workers are assumed to travel in gasoline-powered passenger vehicles (e.g., cars, trucks, and vans) that consume an average of 19.7 mi/gal (FHWA 2006). Conversion from gallons of gasoline burned to CO_2 equivalent is based on U.S. Environmental Protection Agency (EPA) emissions factors (EPA 2007a, b).

Table J-2. Workforce CO_2 Footprint Estimates

	Construction Workforce	Operational Workforce	Decommissioning Workforce	SAFSTOR Workforce
Roundtrips per day	1250	200	150	20
Miles per roundtrip	100	100	100	100
Days per year	365	365	250	365
Years	7	40	10	40
Miles traveled	3.2×10^8	2.9×10^8	3.8×10^7	2.92×10^7
Miles per gallon[(a)]	19.7	19.7	19.7	19.7
Gallons fuel burned	1.6×10^7	1.5×10^7	1.9×10^6	1.58×10^6
Metric tons CO_2 per gallon[(b)]	8.81×10^{-3}	8.81×10^{-3}	8.81×10^{-3}	8.81×10^{-3}
Metric tons CO_2	1.4×10^5	1.3×10^5	1.7×10^4	1.3×10^4
CO_2 equivalent factor[(c)]	0.971	0.971	0.971	0.971
Metric tons CO_2 equivalent	1.5×10^5	1.3×10^5	1.7×10^4	1.3×10^4

(a) FHWA 2006
(b) EPA 2007b
(c) EPA 2007a

Published estimates of uranium fuel cycle CO_2 emissions required to support a nuclear power plant range from about 1 percent to about 5 percent of the CO_2 emissions from a comparably

sized coal-fired plant (Sovacool 2008). A coal-fired power plant emits about 1 metric ton of CO_2 for each megawatt hour generated (Miller and Van Atten 2004). Therefore, for consistency with Table S–3 of Title 10 of the *Code of Federal Regulations* (CFR) Part 51.51, the NRC staff estimated the uranium fuel cycle CO_2 emissions as 0.05 metric ton of CO_2 per MWh generated and assumed a 80 percent capacity factor. Finally, the review team estimated the CO_2 emissions directly related to plant operations from the typical usage of various diesel generators on site using EPA emissions factors (EPA 1995). The review team assumed an average of 600 hours of emergency diesel generator operation per year (total for four generators) and 200 hours of station blackout diesel generator operation (total for two generators).

Given the various sources of CO_2 emissions discussed above, the review team estimates the total life CO_2 footprint for a reference 1000-MW(e) nuclear power plant to be about 18,000,000 metric tons. The components of the footprint are summarized in Table J-3. The uranium fuel cycle component of the footprint dominates all other components. It is directly related to power generated. As a result, it is reasonable to use reactor power to scale the footprint to larger reactors.

Table J-3. Reference Reactor Lifetime CO_2 Footprint

Source	Activity Duration (yr)	Total Emissions (metric tons)
Construction equipment	7	3.5×10^4
Construction workforce	7	1.5×10^5
Plant operations	40	1.9×10^5
Operations workforce	40	1.3×10^5
Uranium fuel cycle	40	1.7×10^7
Decommissioning equipment	10	1.8×10^4
Decommissioning workforce	10	1.7×10^4
SAFSTOR workforce	40	1.3×10^4
TOTAL		**1.8×10^7**

In closing, the review team considers the footprint estimated in Table J-3 to be appropriately conservative. The CO_2 emissions estimates for the dominant component (uranium fuel cycle) are based on 30-year-old enrichment technology, assuming that the energy required for enrichment is provided by coal-fired generation. Different assumptions related to the source of energy used for enrichment or the enrichment technology that would be just as reasonable could lead to a significantly reduced footprint.

Emissions estimates presented in the body of this environmental impact statement have been scaled to values that are appropriate for the proposed project. The uranium fuel cycle emissions have been scaled by reactor power using the scaling factor determined in Chapter 6 of this environmental impact statement and by the number of reactors to be built. For the

proposed William States Lee III Nuclear Station, the scaling factor is 2.68 rounded to 3 for added conservatism, and two AP1000 reactors are proposed to be built. Plant operations emissions have been adjusted to represent the number of large CO_2 emissions sources (e.g., diesel generators, boilers, etc.) associated with the project. The workforce emissions estimates have been scaled to account for differences in workforce numbers and commuting distance. Finally, equipment emissions estimates have been scaled by estimated equipment usage. As shown in Table J-3, only the scaling of the uranium fuel cycle emissions estimates makes a significant difference in the total carbon footprint of the project.

For comparison, Sovacool (2008) also calculated emission factors during the life cycle of nuclear power plants based on the statistical analysis from 19 qualified studies examined. Estimated emission factors ranged from 1.4 g CO_2-equivalent per kWh to 288 g CO_2-equivalent per kWh, with a mean value of 66 g CO_2-equivalent per kWh (equivalent to 0.066 MT of CO_2-equivalent per kWh). The emission factor of 0.05 MT of CO_2 per MWh used in this analysis is about three-fourths the mean emission factor of 0.066 MT of CO_2-equivalent per MWh, but is considered comparable, considering the wide range of emission factors (0.0014 to 0.288) estimated in that study.

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11. ABSTRACT (200 words or less)

This environmental impact statement (EIS) has been prepared in response to an application submitted to the U.S. NRC by Duke Energy Carolinas, LLC (Duke) for two combined construction permits and operating licenses (combined licenses or COLs). The proposed actions requested in Duke's application are (1) NRC issuance of COLs for two nuclear power reactors at the William States Lee III Nuclear Station (Lee Nuclear Station) site in Cherokee County, South Carolina, and (2) U.S. Army Corps of Engineers (USACE) permit action on a Department of the Army individual permit application to perform certain construction activities on the site. The USACE is participating with the NRC in preparing this EIS as a cooperating agency and participates collaboratively on the review team.

This EIS includes the review team's analysis that considers and weighs the environmental impacts of building and operating two new nuclear units at the proposed Lee Nuclear Station site and at alternative sites, and mitigation measures available for reducing or avoiding adverse impacts. The EIS includes the evaluation of the proposed project's impacts on waters of the United States pursuant to Section 404 of the Clean Water Act.

12. KEY WORDS/DESCRIPTORS (List words or phrases that will assist researchers in locating the report.)

environmental impact statement, EIS, Duke, combined construction permits and operating licenses, combined licenses, COLs, nuclear power reactors, William States Lee III Nuclear Station, Lee Nuclear Station, Cherokee County, South Carolina, U.S. Army Corps of Engineers, USACE, Department of the Army individual permit application, cooperating agency, least environmentally damaging practicable alternative, U.S. Environmental Protection Agency, Section 404(b) of the Clean Water Act, tribes

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