Appendix J – External Process Evaluation of "Project Aim 2020"

Introduction

In October 2014, the NRC contracted with the National Academy of Public Administration (NAPA) to conduct a review of the NRC Project Aim 2020. The first task (Task 1) performed by NAPA was to attend a kick-off planning meeting. The Project Aim 2020 team provided NAPA with the Team's approach, documentation pertaining to the agency-wide assessment, and the Team's preliminary project recommendations. The second task (Task 2) performed by NAPA is the attached comprehensive review of the project entitled "*External Process Evaluation of "Project Aim 2020" for the U.S. Nuclear Regulatory Commission."*

In addition, the third task (Task 3) requires NAPA to provide the Commission with a review and recommendations on the "Achieving Exemplary Nuclear Regulation in the 21st Century - Report on Project Aim 2020," including their views on the NRC's challenges in operations.

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A Report by a Study Team of the

NATIONAL ACADEMY OF PUBLIC ADMINISTRATION

For the U.S. Nuclear Regulatory Commission

December 5, 2014 (version submitted January 9, 2015)

External Process Evaluation of "Project Aim 2020" for the U.S. Nuclear Regulatory Commission

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The views expressed in this report are those of the Study Team. They do not necessarily reflect the views of the Academy as an institution.

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Foreword

The United States Nuclear Regulatory Commission (NRC) plays a critical role in evaluating applications for new nuclear plants and reactors, ensuring the safety of existing nuclear reactors, licensing power plants, and providing oversight of materials safety, and managing high-level and low-level waste. The NRC is led by up to five Commissioners, each appointed by the President and confirmed by the Senate for five-year terms. One is designated by the President to be Chairman and official spokesperson.

Like many other federal agencies, the NRC is facing challenging times and an uncertain future given workload shifts and resource constraints. In June 2014, the Commission directed the agency to embark on a six-month project, Project Aim 2020, to improve its current and projected performance and to provide projections of the workload for the agency five years in the future under a range of different scenarios. Project Aim 2020 is an important initiative to enhance strategic planning and establish a foundation to improve NRC's operational excellence, agility, and culture, and also be a basis on which the agency can build on its strategic planning through 2020 and beyond.

The Academy commends the NRC for undertaking this critical initiative and dedicating senior-level personnel, including designating a Deputy Executive Director for Transformation, to determine how the agency needs to be transformed. In September 2014, the NRC Commissioners requested the assistance of the National Academy of Public Administration (the Academy) to conduct an independent and non-partisan external review of Project Aim 2020 processes. This report examines the Project Aim 2020 project implementation process and makes recommendations for future NRC long-range planning projects.

As a congressionally chartered non-partisan and non-profit organization with over 800 distinguished Fellows, the Academy brings seasoned experts together to help public organizations address future challenges. We are pleased to have had the opportunity to assist the NRC by conducting this study, and we appreciate the active engagement of NRC personnel who provided important insight and context needed to inform this report. I appreciate the work of the Academy's professional Study Team, as well as the insights and expertise of a Focus Group of five Academy Fellows and one non-Fellow who provided valuable input.

I trust that the Academy Study Team's report will not only contribute to the NRC and its future long-term strategic planning efforts, but also broaden awareness of effective practices in long-term futures planning that can be utilized by departments and agencies across the federal government.

Dan G. Blair
President and CEO

Executive Summary

The U.S. Nuclear Regulatory Commission (NRC) has experienced significant changes over the last five years, including responding to the nuclear accident at Fukushima Dai-ichi in Japan, reductions in construction and licensing of new nuclear facilities, and early closure of operating nuclear power plants. NRC leadership believes that the agency has been able to adjust to changes by reprioritizing work; however they are concerned that these changes took longer than desired and have had unanticipated consequences.

To better prepare its response capabilities in the future, NRC developed Project Aim 2020 (the Project) to improve the agency's planning and operational functions. The Project Aim 2020 Team (Project Team) gathered perspectives from internal and external stakeholders to forecast the future workload and operating environment for 2020. The initiative set out to identify key strategies and recommendations to transform the agency during the next five years to improve how NRC accomplishes its safety and security mission. NRC's intent for the Project was to position the agency to be more proactive rather than reactive to circumstances that may be outside NRC control. NRC plans to incorporate the forecast, strategies, and recommendations for change resulting from this effort into its performance management process and planning framework. The Project Team's report is expected to be submitted to the Commission during January 2015.

The NRC contracted with the National Academy of Public Administration (the Academy) to conduct a two-part review: (1) evaluate NRC's Project process (this report); and (2) assess the Project Team's final report to the Commission. The Academy's second report will be submitted four weeks after the Study Team receives NRC's final report.

The Academy's report, researched and prepared during a six-week period, contains the Academy Study Team's evaluation of the process used by the NRC Project Team to implement the Project. It is intended to provide specific feedback to NRC to commend salutary practices demonstrated during the course of the Project and to offer practical suggestions on how future efforts could be improved in forthcoming projects of this kind. In addition to reviewing what the NRC Project Team has done, this report includes recommended actions that NRC should adopt to enhance the probability of a successful transformation effort and maintain a long-range foresight-focused agency culture. This will ensure that the Project is the beginning of a sustained process of anticipating futures, not a one-off exercise in strategic planning.

Academy Study Team Recommendations

The specific recommendations below appear in Sections One through Three.

Project and Feedback Development

1. **Develop Formal Evaluation Plan.** NRC would benefit from developing a formal evaluation plan that includes: its goals and strategies; evaluation questions; selected evaluation approach or design for each question; data sources and collection procedures to obtain relevant, credible information; and plan to analyze data in ways that allow valid conclusions to be drawn from the evaluation questions. This will allow

NRC to ensure the quality and usefulness of the evaluation and to use its time and resources as efficiently as possible.

2. **Improve Survey Utility.** If the survey process will be repeated, NRC should pilot test the survey questions before distributing it. This will allow NRC to identify potential issues in advance.
3. **Expand Scope of Strategic Planning.** NRC should institutionalize a forward-looking, strategic planning process that focuses on the medium-term (3 to 5 years) and the longer-term.
4. **Expand External Engagement for Similar Efforts in the Future.** An external group should be brought in from the beginning to offer perspectives; the Guiding Coalition should have a greater role in the future; and external stakeholders should have been used more extensively to provide feedback on how NRC could more effectively meet their needs.
5. **Expand Role of Senior Leadership and External Stakeholders**. Senior leaders should continue to have an important role in guiding the assessment and planning process with support from NRC employees and outside experts. External stakeholders should play a more significant role in the future.

Scenario Building

1. **Use of Scenarios***.* In the future, NRC should use scenario analysis to build an agency vision, and not to solicit action recommendations. Scenarios are a tool to help participants devise a future vision of how an organization needs to be organized and operate in order to provide its services in various alternative future environments; strategies and recommendations should derive from first knowing the organization's future vision. The vision, juxtaposed against the current state, will lead to a strategic plan to move the organization to its future operating profile. As such, the vision-building step is critical to a long-term strategic planning effort.
2. **Scenario Building for Long-Term Planning.** Scenario analysis is best used for longer term strategic foresight projects; the outlook timeframe of 2020 for this project is too short to use scenario analysis and an alternative methodology might be more effective.
3. **Expand Resources.** NRC should use more extensive resources to guide use of scenario analysis; the printed source cited by the Project Team to guide its adoption of scenario analysis is inadequate.
4. **Current State Analysis.** Current state analysis should be improved and expanded when using scenarios as a means to enhance a more strategically-focused vision-building discussion.
5. **The Use and Division of Drivers.** NRC should consider using drivers that are more causal and strategic in nature in future scenario work. Drivers should be categorized based on whether or not there is a trend for that variable moving in a constant direction. Doing so will enhance an understanding of how elements present in a future operating environment might impact the agency.

Data and Feedback Analysis

1. **Develop a Formal Analysis Plan.** Analysis plans are linked to researchable questions and anticipate the message. NRC should develop an analysis plan that describes key assumptions, data elements to be analyzed, section criteria used, and potential tabulations to be presented. Data analysis is often an iterative process, but a well-

developed plan will allow the team to make the best use of the time available and get to the message with minimal revisions.

2. **Incorporate Risk Assessment in Developing Strategies and Recommendations.** The Project Team should use risk information when evaluating and prioritizing potential strategies and recommendations. Enterprise risk management (ERM) principles should be incorporated.
3. **Diversity of Evaluation Experts.** Evaluation is an interdisciplinary field that encompasses many areas of expertise. Going forward NRC should leverage a diversity of disciplines external to NRC when developing its evaluation teams. While the NRC Project Team possesses technical, financial, communications, and project planning expertise, all of its members were internal to NRC. Looking ahead, NRC might consider inviting external experts in statistical analysis and critiquing evaluation results. This approach would also provide NRC with individuals who can remain neutral and independent of the outcomes. Furthermore, this approach could enhance the results of the project by eliminating the potential for actual and/or perceived bias.
4. **Multiple Analytical Strategies.** NRC should also consider incorporating multiple analytical strategies to amplify the utility of the data it collects. Because every research method has inherent limitations, it is advantageous to combine multiple measures in a program evaluation to gain a more comprehensive picture. Going forward, NRC should consider additional analytical strategies beyond the rating process in developing strategies and recommendations (e.g., cross-tabulation, log-linear analysis, etc.).
5. **Provide Process Documentation.** Given NRC's intention to institutionalize its strategic planning process, NRC should prepare and maintain documentation on its analysis process including information related to planning, conducting, and reporting on findings. Materials should contain sufficient information such that an individual with no prior connection to the project can ascertain the process and reproduce the work.

<u>Building and Sustaining a Transformational Culture</u>

1. **Identify Actions that the Organization Can Take to Facilitate Strategic Plan Implementation.** NRC should enumerate key organizational indicators critical to enhancing successful enterprise transformation.
2. **Designate Cross-Functional Project Plan Implementation Team.** NRC should form a cross-functional team to lead the agency's efforts in implementing its long-term strategic plan.
3. **Institutionalize Long-term Futures Analysis and Planning.** To achieve the capacity to pro-actively shape its rapidly changing long-term future, as well as respond to the attendant uncertainties and challenges that the long-term future holds, NRC should designate a dedicated small sets of staff to engage in long-term futures work— in scenario building, visioning, and strategic planning.

Introduction

> *"The NRC has experienced significant changes over the last five years, including the response to the nuclear accident at Fukushima Dai-ichi in Japan, reductions in construction and licensing of new nuclear facilities, early closure of operating nuclear power plants, a court order revisiting the Waste Confidence decision and associated rulemaking, and the shutdown and subsequent restart of the Yucca Mountain repository licensing review. The NRC has proven its ability to adjust to changes by reprioritizing work; however, these changes have had unanticipated consequences. Project Aim seeks to anticipate future changes and improve the agency's ability to respond more nimbly."*[1]

In recent years, the United States Nuclear Regulatory Commission (NRC) has struggled with long-term forecasts due to numerous external factors. It has also been difficult for the NRC to manage unexpected surges and shifts in workload, and to work strategically due to budget restrictions and internal processes and controls that often impede flexibility and timeliness. The NRC, through its launch of Project AIM 2020 (the Project), is developing strategies for improving its current and projected performance including its agility, efficiency and effectiveness. The Project Team will provide recommendations and an implementation roadmap to the NRC's Commission (the Commission[2]) to improve current and projected agency performance by the year 2020. The NRC Project Team's report is expected to be submitted to the Commission in January 2015. The Project is intended to allow NRC to "be more proactive rather than reactive to circumstances that may be outside NRC control."[3]

<u>The Academy Charge</u>

The NRC contracted with the National Academy of Public Administration (the Academy) to (1) evaluate NRC's Project process (this report); and (2) evaluate the Project Team's final report to the Commission. The Academy's second report will be submitted four weeks after the Study Team receives the NRC's final report.

<u>Methodology</u>

This report, researched and prepared during a six-week period, constitutes the Academy's evaluation of the process used by the Project Team to implement the Project. It is intended to provide specific feedback to NRC to commend salutary practices demonstrated during the course of the Project and to offer practical suggestions on how future efforts could be

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[1]Nuclear Regulatory Commission, August 2014 bulletin.

[2] The Commission consists of five Commissioners who are nominated by the President and confirmed by the Senate. Commissioners serve five year terms. One of the five Commissioners serves as Chairman, and is the principal executive officer of and the official spokesman for NRC. As principal executive officer, the Chairman is responsible for conducting the administrative, organizational, long-range planning, budgetary, and certain personnel functions of the agency. The Chairman has ultimate authority for all NRC functions pertaining to an emergency involving an NRC license. The Commission as a collegial body formulates policies, develops regulations governing nuclear reactor and nuclear material safety, issues orders to licensees, and adjudicates legal matters.

[3] Id.

improved in forthcoming projects of this kind. In addition to reviewing what the NRC Project Team has done, this report includes recommended actions that NRC could adopt to enhance the probability of a successful transformation effort and maintain a long-range foresight-focused agency culture so that the Project is the beginning of a sustained process of anticipating futures, rather than a one-off exercise in strategic planning.

This report was prepared by a five-member Study Team (biographical information on each team member is provided in Appendix A). Its findings stem from research drawn from: (1) an analysis of a broad set of Project-generated documents provided by the Project Team; (2) several meetings that the Study Team convened with the Project Team; (3) and other research on best practices. The Study Team also greatly benefitted from expertise provided by the Academy Focus Group composed of six experienced individuals, five of whom are Academy Fellows (biographical information about individuals who served on the Focus Group can be found in Appendix B). The Academy Focus Group met once as a group for several hours with the Study Team during the preparation of this report. Further contacts with individual Focus Group members also occurred during the time this report was prepared.

Report Organization

This report has three sections, each containing evaluative comments and recommendations divided into the following categories:

Section One: Project and Feedback Development
Section Two: Use of Data and Feedback in Developing Strategies and Recommendations
Section Three: Building and Sustaining a Transformational Culture

Section One: Project and Feedback Development

This section describes and evaluates the design of the Project and the feedback development process. An analysis of the Project Team's development of and use of scenarios is also included in this discussion.

1.1 Project Development Process

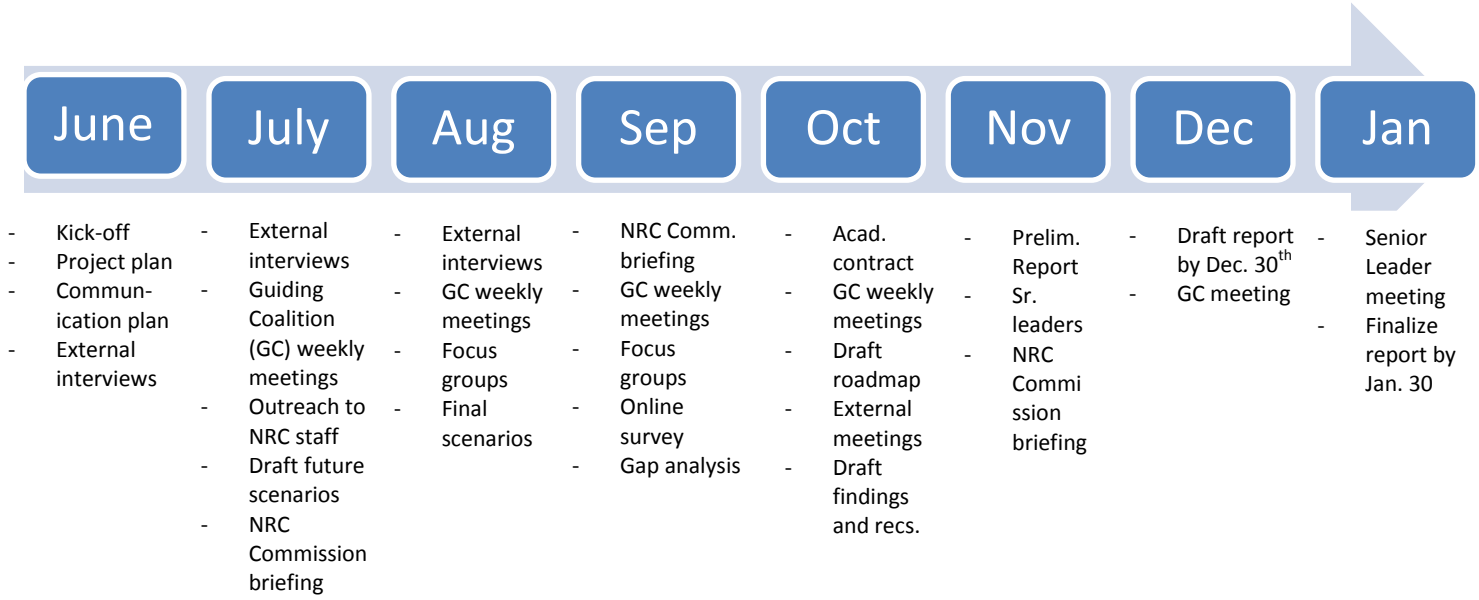
Project Team

NRC's Executive Director for Operations (EDO) appointed the Deputy Executive Director for Materials, Waste, Research, State, Tribal and Compliance Programs (DEDMRT), who reports to the EDO and Chief Financial Officer (CFO), to lead this effort. For the term of the Project, the DEDMRT's title was changed to Deputy Executive Director for Transformation. As Project Team lead, he selected the other eight team members with technical, financial, communications, and project planning expertise, who are also NRC employees, to work on the Project for its six month duration.[4] In addition to the Project Team, a Guiding Coalition was established to provide feedback and advice; it does not have a role in concurring on the report and its recommendations. The Guiding Coalition includes senior NRC leaders and supervisors, including representatives from headquarters and regional offices, regulatory, corporate, and other offices. The Deputy Director for the Office of Nuclear Security and Incident Response chairs the Guiding Coalition.

Project Aim 2020 Timeline

The Project adopted an aggressive schedule, beginning its process in June with an intended end date of December 2014. The timeline and key activities are shown in Figure 1.

Figure 1 Project AIM Timeline



[4] Of the eight NRC employees engaged on this Project, six were full-time and two were part-time.

Objective and Project Scope

The NRC identified the problem in its August 15, 2014 Charter as the need to improve its current and projected performance, develop more concrete and specific workload projections for the agency five years out under a range of scenarios, and establish appropriate agency resource levels and workforce staffing that align with the projected workload to ensure that NRC can excel long into the future. The NRC defined the scope of the Project as follows:

- Develop and consider a range of longer-term scenarios that may affect the workload, activities of the agency, adjustments to agency plans, and supplementing the planning process for future planning and budget cycles.
- Perform an agency-wide assessment of the business lines and product lines to identify gaps, obstacles, and opportunities for improvement.
- Enhance the agency's performance by developing agency-wide long-term strategies to overcome identified challenges and to improve the agency's ability to respond with agility, flexibility, and responsiveness to external and internal changes.
- Provide recommendations to align performance management efforts with Project Aim 2020 goals and strategies.
- Identify longer-term strategies that warrant additional focus.
- Create a roadmap for the short-term and longer-term project recommendations.
- Obtain external evaluation of the agency's approach to enhance agility, performance, efficiency, and effectiveness.

1.2 Feedback Development Process

In order for the Project Team to conduct its assessment, it established the following steps to gather data and ultimately present its recommendations:

Table 1.1 NRC's Feedback Development Process

Aim Point Development	Develop awareness of internal and external changes that may affect NRC in the future.
Current State Evaluation	Evaluate current performance to close the gap between current state Aim Point (scenarios) and future state.
Gaps and Opportunities	Prioritize the gaps, obstacles, and opportunities for improvement.
Strategies and Recommendations	Develop strategies, recommendations, and projects to overcome identified challenges and leverage opportunities.
Monitor Aim Performance	Refine approach to identifying and using performance indicators to monitor agency performance.
Adjust Plans	Revise previous year Aim Point to account for internal and external changes five years in the future and interim year adjustments.

Project Methodology

The Project Team utilized various feedback mechanisms to gather data throughout the process. It reviewed background documents, conducted internal interviews, hosted focus groups, held external stakeholder meetings, conducted an online survey, and hosted town

halls and informal meetings. Approximately 10 percent of NRC staff participated in this feedback process.[5]

With respect to external stakeholder meetings, members of the Project Team met with thirty-two external stakeholders (see Appendix D for full list), including several federal agencies, as well as other external groups who interface with NRC on a regular basis, to gather data on best practices and lessons learned. In many instances, the Project Team will be meeting again with these external stakeholders after the process has been completed. Based on meeting notes that we reviewed, it does not appear that these initial meetings involved a great deal of feedback from stakeholders on their own experience with NRC as an agency (the Project Team reported that it did discuss relationships, however we did not see such information in the written documents).

As would be expected, the internal feedback process was significantly more intensive, both with respect to the number of participants, and the process. The Project Team conducted 27 interviews of NRC Office Directors (OD) and Regional Administrators (RA), and 23 focus groups with 230 total participants, to identify gaps, obstacles, redundancies and improvements. As part of this interview process, interview participants were provided future scenarios (discussed at length later in this report) to facilitate the discussion. Internal NRC facilitators were utilized for the focus groups, with the facilitator's primary task "to identify issues and impediments that may prevent the agency from moving to the Aim Point 2020 scenarios presented."[6]

The Project Team utilized an online survey to gather additional data. Out of a staff of approximately 3,700 employees, there were only 100 responses to this five-question online survey (.026%). The Project Team reported that there were technical issues with the survey that, combined with the length of time required to answer the questions, made it more difficult for employees to complete the survey. Since the survey was not set up in a way that partial responses could be saved, whatever work was completed at the initial sitting was lost. The five survey questions are as follows:

1) NRC has been successful in accomplishing its mission to date. If the future occurred as described in one or more scenarios, are there specific actions that you believe NRC will need to take to accomplish its mission?
2) Thinking forward to 2020, would the agency have people with the skills, the right tools, and proper work processes to accomplish the mission effectively and efficiently? If not, what are we missing and why is it important for the agency's success?
3) Thinking back to 2014, what issues and impediments would we need to overcome to succeed in 2020?
4) Is there one thing you would change that would most help the NRC enhance its performance, agility, effectiveness, and efficiency?
5) If you have any additional comments not captured above, please describe them here.

[5] NRC currently employs approximately 3,735 staff working either in its Headquarters located in Rockville, MD, in its Technical Training Center in Tennessee, or one of its four regional offices.
[6] Future of the NRC Focus Group Exercise Facilitator Guide.

Informal mechanisms were also used by the team to gather information through the use of All-Hands meetings as well as informal "lobby" meetings conducted in NRC lobbies. The Project Team estimated that they spoke to 500-600 people during these informal meetings. Although interview write-ups were completed for the formal in-person interviews and focus groups, they were not completed for the informal meetings. It is uncertain how valuable the "lobby" meetings were with respect to whether they provided important strategic insights due to their informal nature and the fact that responses were not documented in a systematic way. Due to the lack of documentation of these meetings for the Study Team to review, we could not provide a detailed analysis of its use or value.

Current State Analysis

A key step in any strategic planning effort is to create a sound current state diagnosis of the agency as a starting point. In analyzing the current state, the Project Team identified potential data sources, collected data throughout the process, and analyzed such data in order to support the current state. Some of the information considered came from other work groups or projects that were in process or completed.[7] The data were organized into three affinity groups: people, planning, and process.

Communications Strategy

As the Project was implemented, team members updated NRC staff on their progress through a general newsletter, "NRC Reporter" and a one-pager sent bi-weekly to staff through October after which it was sent monthly, entitled Project Aim 2020: "Delivering our Future." NRC reported that the Project Team was not as productive in this area as it had planned.

Assessment of the Project Development and Feedback Development Processes

Table 1.2 provides an assessment of the strengths of the process, as well as concerns, and recommendations for similar efforts in the future.

Table 1.2 Project Development and Feedback Development: Strengths, Concerns and Recommendations

NRC Strengths
• **Strong Agency Commitment.** NRC demonstrated strong agency commitment by allowing the Deputy Executive Director for Materials, Waste, Research, State, Tribal, and Compliance Programs to serve as the Deputy Executive Director for Transformation to lead this effort. The NRC Commission was briefed on the Project at several points. Also, a Guiding Coalition was formed. • **Seasoned Project Team.** NRC formed a strong Project Team of seasoned employees with both NRC and other government agency experience.[8] • **High-Quality Work.** The Project Team conducted a considerable amount of high-quality work in a very short period of time (6 months).

[7] At the time of this report, current state data documentation was still being edited.

[8] The Project Team was directed by Mike Weber and chosen by him (116 years of cumulative NRC experience on the Project Team, and they have worked at multiple federal agencies throughout their careers). He also chose the members of the Guiding Coalition (over 229 years of NRC experience as well as experience in multiple agencies). The facilitators used in the focus groups were trained facilitators who are current employees of NRC.

Concerns

- **Strategic Planning Scope.** NRC focused almost entirely on the next five years rather than taking a longer-term view. The focus was more near-term tactical than strategic. Although these issues are important to address, broader strategic questions are also important to address in agency planning processes.
- **Role of Guiding Coalition.** The Guiding Coalition had a fairly limited role. It had no authority to formally approve the Project Team's findings and recommendations. Because it is being disbanded, it will have no opportunity to provide advice on how the Project Team's recommendations are implemented.
- **Survey Utility.** The Project Team missed an opportunity through the survey to obtain broader input on critical questions. Only 100 employees responded. The questions asked were all open-ended and required a review of scenarios. The survey was time consuming and difficult for employees. A more appropriate survey would have included a series of closed-ended questions in addition to a select number of carefully worded open-ended questions.
- **Use of Informal Conversations.** The 500-600 informal conversations were likely useful for communicating about the project or receiving some operational or tactical feedback; however, such conversations do not lend themselves to collecting strategically valuable insights.
- **Project Timeline.** The time allotted for the project was insufficient for conducting robust strategic planning to adequately address known, anticipated, and uncertain developments.
- **External Engagement.** Although NRC assembled a strong Project Team, more robust external involvement and engagement could have been useful. Additionally, the use of at least one external facilitator who was not closely tied to NRC's culture and way of thinking could have led to a more strategic discussion.

Recommendations for the Future

1. **Develop Formal Evaluation Plan.** NRC would benefit from developing a formal evaluation plan that includes: its goals and strategies; evaluation questions; selected evaluation approach or design for each question; data sources and collection procedures to obtain relevant, credible information; and plan to analyze data in ways that allow valid conclusions to be drawn from the evaluation questions.[9] This will allow NRC to ensure the quality and usefulness of the evaluation and to use its time and resources as efficiently as possible.
2. **Improve Survey Utility.** If the survey process will be repeated, NRC should pilot test the survey questions before distributing it.[10] This will allow NRC to identify potential issues in advance.
3. **Expand Scope of Strategic Planning.** NRC should institutionalize a forward-looking, strategic planning process that focuses on the medium-term (3 to 5 years) and the longer-term.
4. **Expand External Engagement for Similar Efforts in the Future.** An external group should be brought in from the beginning to offer perspectives; the Guiding Coalition should have a greater role in the future; and external stakeholders should have been used more extensively to provide feedback on how NRC could more effectively meet their needs.
5. **Expand Role of Senior Leadership and External Stakeholders.** Senior leaders should continue to have an important role in guiding the assessment and planning process with support from NRC employees and outside experts. External stakeholders should play a more significant role in the future.

[9] Government Accountability Office, "Designing Evaluations," p. 7. 2012 Revision.
[10] Government Accountability Office, "Designing Evaluations," p. 27. 2012 Revision.

1.3 Use of Scenario Building

The Project Team used scenario building in focus group meetings and OD and RA interviews. As a general observation, it is not commonplace for federal agencies to adopt scenario analysis[11] as an instrument to enhance long-term[12] strategic planning work. The Project Team's initiative to use scenario analysis is commendable; this was the first time that NRC used scenarios in the course of a strategic planning project. The Project Team, to its credit, adopted many suggestions received during meetings with several futurists and with a handful of federal agencies that use scenarios in their long-range planning.

However, forecasting the future is an art and not a science. As such, it is not surprising that proper use of scenarios as a structured instrument to enhance future visioning is fraught with particular challenges for any first time user. The initial foray by NRC into using this instrument to imagine the future can be improved in several ways enumerated below.

The Project Team elected to use scenario analysis to identify "key strategies and recommendations to improve programs and processes during the next five years." The Project Team clearly made a strong first effort to use scenario analysis to enhance five year strategic planning. While we did not receive detailed information on all the steps the Project Team followed to prepare the scenarios, we draw attention in Table 1.3 below to several actions the agency can take in the future to enhance scenario use. The most important point to stress is that scenarios should lead to vision creation, and not directly to recommendations for change. We also note that materials received during the course of our project review thus far suggest that much of the feedback through interviews, focus groups, and the survey were, in our view, more tactical or operational in their quality, rather than strategic. To that end, and until we review the final Project Report, we will withhold any final judgment as to the effectiveness of this strategic planning project.

Assessment of Scenario Building

Table 1.3 provides an assessment of the strengths of the process, as well as concerns, and recommendations for similar efforts in the future.

Table 1.3 Assessment of Scenario Building

Strengths
• **Number and Quality of Scenarios.** Four scenarios is a good number to use and they were well written. • **Vision Building Tools.** Two of the scenarios were interestingly different and promising as vision-building tools, as they focused on distinctly different environmental features. The first considers a positive environment for nuclear energy and NRC, with challenges for growth. The second considers a more challenging time for nuclear energy, a negative environment for NRC,

[11] "Scenario" is a term used in futurology and long-range strategic planning to describe a method used by long-range futurists to imagine various operating environments that might exist in the future. Each scenario is a story, or individual narrative, that describes important features about what the world might look like in the future. Constructed in a particular manner, scenarios are intended to provoke enhanced creative thinking and discussion about possible operating environments that an organization may face in the future. They are used to break through cognitive and perceptual limitations which most people encounter when considering future environments longer than five years hence. Scenarios, thus offer a disciplined approach to address, at least to some extent, these inherent challenges.

[12] We use "long-range" and "long-term" in this report to mean 10 years or longer in the future.

and challenges of employee retention and relevance.

Concerns

- **Similarity of Scenarios.** The last two of the four scenarios represent a lost opportunity to enhance visionary thinking by being so similar to the first two. When other scenarios are very similar to previous ones, except for one or two details, they tend to be uninteresting to participants and fail to stretch people's thinking about a possible future environment. The fourth scenario is nearly verbatim to the third except with a crisis twist to cut costs (and it is difficult to evaluate whether the cost cut is realistic). Three of the scenarios end up with the same number of 39 Agreement States. It is uncertain why that is the case, and how leaving this point in the scenarios contributed to further stretch participants' thinking about a future agency vision.
- **Brevity of Current State Information.** The current state diagnostic information prepared for use in scenario analysis is too brief and consists of tactical and operational facts, such as work volume data and budget figures.
- **Strategic Nature of the Scenario Drivers.** Scenarios are most effective when they are constructed using variables that impact an organization's future operating environment. By so doing, individuals using scenarios can gain valuable insights into how operating in a future environment can be impacted by various trends in the operating environment, and also better understand how interconnected various drivers might be. Many of the 16 drivers used to construct the Project's four scenarios were straight-up work operational outcomes. Examples of drivers used in the Project include: number of operating reactors; percentage of operating plants seeking subsequent renewal; number of new operating fuel facilities; number of uranium recovery facilities; and number of material licensees/Agreement states. Causal factors that might be included in a future scenario building effort include: developments in nuclear technology; climate change research findings; public and government perception of nuclear operating risks; economic growth; development and adoption of alternative fuels; cybersecurity concerns as they impact nuclear operations; government legislation to restrict or advance nuclear power plant operations; government financial support for nuclear power plant construction; private capital market support to finance new nuclear plants; and ability of the public sector to recruit and retain competent employees with adequate nuclear expertise.
- **Lack of categorization of drivers.** Since drivers are critical elements shaping an organization's future, each driver should be divided into one of two categories based on whether there is a trend for that driver moving in a constant direction or not. If one expects a driver's forecasted trend line to be single-directional, that driver is deemed a "predetermined scenario element." If the forecasted trend for a driver is thought to be uncertain in the future, that driver is called a "critical uncertainty." After categorizing them, both types of drivers should be monitored on a periodic basis going forward. By definition, those drivers deemed critical uncertainties merit even closer monitoring in the future as to how they might impact the current organizational vision and strategic plan. Monitoring these potential impacts on the future operating environment will enhance leadership's ability to observe and anticipate major environment changes, thus providing an early warning to deliberate whether to amend an on-going vision and strategic plan. Categorizing drivers in this way, and periodically monitoring them going forward, can contribute to a more agile organizational culture where leaders actively identify material changes that impact the operating environment, affording them time to react to them appropriately to avoid negative impacts. For these reasons, breaking down drivers into these two categories yields a fuller understanding of how the organization is impacted by various elements likely to be part of its future operating environment.

Recommendations for the Future

1. **Use of Scenarios.** In the future, NRC should use scenario analysis to build an agency vision, and not to solicit action recommendations. Scenarios are a tool to help participants devise a future vision of how an organization needs to be organized and operate in order to provide its services in various alternative future environments; strategies and recommendations should derive from first knowing the organization's future vision. The vision, juxtaposed against the current state,

will lead to a strategic plan to move the organization to its future operating profile. As such, the vision-building step is critical to a long-term strategic planning effort.

2. **Scenario Building for Long-Term Planning.** Scenario analysis is best used for longer term strategic foresight projects; the outlook timeframe of 2020 for this project is too short to use scenario analysis and an alternative methodology might be more effective.
3. **Expand Resources.** NRC should use more extensive resources to guide use of scenario analysis; the printed source cited by the Project Team to guide its adoption of scenario analysis is inadequate. Suggested additional resources on the use of scenarios are noted in the footnote below.[13]
4. **Current State Analysis.** Current state analysis should be improved and expanded when using scenarios as a means to enhance a more strategically-focused vision-building discussion.
5. **The Use and Division of Drivers.** NRC should consider using drivers that are more causal and strategic in nature in future scenario work. Drivers should be categorized based on whether or not there is a trend for that variable moving in a constant direction. Doing so will enhance an understanding of how elements present in a future operating environment might impact the agency.

[13] Useful sources on scenarios include Gill Ringland, *Scenarios in Public Policy*, 2002; Peter Schwartz, *Art of the Long View*, 1991; and Peter Bishop, Andy Hines and Terry Collins, *The Current State of Scenario Development: An Overview of Techniques*, 2007.

Section Two: Use of Data and Feedback in Developing Strategies and Recommendations

The Project Team used data and feedback collected from external/internal stakeholder interviews, focus groups, benchmarking, and an online survey tool in order to accomplish the following tasks:

1. Conduct an assessment of business lines and product lines to identify gaps between current state and future state, obstacles, and opportunities for improvement,
2. Provide recommendations to align performance management efforts with Project goals and strategies, and
3. Shape recommendations and the implementation roadmap for short-term and longer-term project recommendations.

2.1 Analysis Process

The goal of the Project Team's analytical process was to develop strategies, recommendations, and projects to overcome identified challenges and leverage opportunities from the data and feedback collected from interviews (external/internal), and focus groups. The Project Team first reviewed the data for accuracy, relevance and sufficiency and followed up with subject matter experts (SMEs) and other groups where more information or clarification was needed. Data that were relevant to the project were then sorted into five main affinity groups: mission, organizational structure and budget/FTE, workforce, communication, and process improvement. Irrelevant data were added to a project parking lot for further review.

Strategy Development

Strategy development was guided, in part, as a response to the concerns, needs, and suggestions that were shared by the staff in the focus groups, senior leader interviews, and online survey. The strategies developed were primarily tactical and operational rather than strategic. Designated data were organized into the five affinity groups and analyzed. The Project Team then reviewed each item to determine potential recommendations or whether additional expertise was needed. SMEs were then consulted on items that were identified as requiring additional expertise. The Project Team then formulated and prioritized recommendations through comparative analysis which resulted in 84 potential strategies.

Strategy Rating Process

Following the gap analysis, the Project Team rated "good ideas, strategies, and suggested improvements" using the scoring and guideline criteria they developed for this process (see Tables 2.1 and 2.2 below). The NRC Commission, leadership, and Guiding coalition were briefed on the use of the rating criteria and given an opportunity to provide input. Senior leaders and the Guiding Coalition provided feedback to the Project Team. To test the ranking system, the Project Team rated two example strategies using the guidance to test consistency in their approaches to evaluating and rating the strategies.

However, the Project Team did not include risk assessment in its strategy rating process—a critical measurement for informing decisions so that management can consider which risks should be managed immediately and which risks can be addressed at a later time.

Enterprise risk management (ERM) principles offer a holistic approach to managing an agency's performance by leveraging risk-enabled methods and tools.[14] Adopting this approach would provide NRC with a line of sight at the highest levels of management to facilitate a better understanding of issues and uncertainties. The NRC could leverage these guidelines to integrate risk assessment into its rating process going forward.[15]

Table 2.1 Strategy Rating Scale

NRC Rating Scale		
Relevancy		5 (high) – 1 (low)
Mission Value		10 (high) – 1 (low)*
Feasibility		5 (high) – 1 (low)
Complexity		1 (high) – 5 (low)
Program Risk		1 (high) – 5 (low)
Timing		Quick Hit, Short-term (4 weeks), Long-term

* Note that this rating is double weighted

Table 2.2 Strategy Rating Guidelines

NRC Strategy Rating Guidelines
1. **Relevancy** – Relevancy pertains to how well the strategy or suggested improvement contributes to making NRC a more effective, efficient, agile, proactive, and higher performing organization. 2. **Mission Value** – "Mission Value," refers to how much the suggestion or strategy, if implemented successfully, would help the agency in accomplishing our safety and security mission. 3. **Feasibility** – Feasibility pertains to how easily, pragmatically, and readily the suggestion could be implemented. 4. **Complexity** – This criterion pertains to the breadth, scope, and interconnectedness of the strategy to other elements of NRC's regulatory framework and infrastructure. 5. **Program Risk** – Risk as used in this criterion pertains to the risk of failure of implementation of the strategy. It does not directly relate to the mission risk of safety or security. A low risk strategy would be one that has a high likelihood of successful implementation based on NRC experience. A high risk strategy would have a high risk of failure of implementation. Any moderate to high risk strategies that are included in the roadmap recommended for Commission consideration would include a risk mitigation strategy, including indicators to monitor for early warning of problems with implementation and other measures that would be taken to maximize the likelihood of successful implementation. 6. **Timing** – Timing is not a criterion that is used for rating strategies. Instead timing is used to group the strategies based on the projected time required to successfully implement the strategy following Commission review.

The Project Team assigned tentative ratings for each strategy based on individual assessment. The Project Team considered each of the strategies, discussed each of the

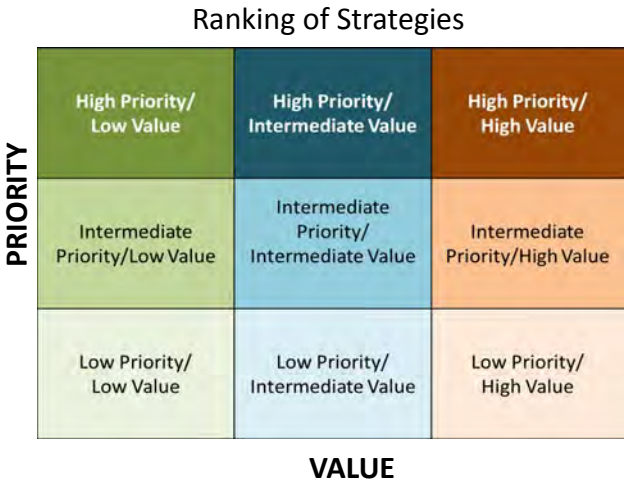
[14] U.S. Government Accountability Office, *Enhanced Stakeholder Consultation and Use of Risk Information Could Strengthen Future Reviews* GAO-11-873 (Washington, D.C.: September 2011).
[15] National Academy of Public Administration/Ernst & Young LLP Panel,"From Enterprise Risk Management to Risk-Enabled Performance – a Conversation with Leaders."May 7, 2014. http://www.ey.com/Publication/vwLUAssets/EY-performance%E2%80%93a-conversation-with-leaders/$FILE/EY-performance%E2%80%93a-conversation-with-leaders.pdf

tentative ratings as a team, and agreed on final ratings based on team consensus. The Project Team prioritized consistency throughout the rating process and tested periodically throughout the rating process by comparing and contrasting ratings given to different strategies. Discussion was encouraged in order to improve understanding, support individual ratings for recommendations, and provide feedback if there were any apparent inconsistencies in the ratings. The Project Team also received some additional feedback from the Guiding Coalition on the draft and final ratings.

2.2 Roadmap Development

After the final ratings were assigned to each strategy, the Project Team tested the logic again in developing the draft roadmap through the development of the Priority-Value matrix (see Figure 2).

Figure 2 Priority-Value Matrix



2.3 Socializing Strategies

The Project Team conducted outreach in order to develop buy-in for proposed strategies and recommendations. The Project Team discussed the approach and preliminary strategies with staff in the Nuclear Safety Professional Development Program, as well as with participants in the Leadership Orientation class conducted by NRC. Strategy sheets, a draft roadmap with recommended strategies, and a draft Project report, were shared with the ODs, RAs, Executive Director for Operations and Deputies (EDO/DEDOs), and the Guiding Coalition. The Project Team discussed strategies with leaders in the Senior Leadership Meeting and with the Guiding Coalition. Based on their review and input, the team refined the roadmap and strategies and discussed the strategies with subject matter experts among the staff. The Project Team also planned to share a revised version of the roadmap and recommendations in early December. Throughout the process, The Project Team worked with the National Treasury Employees Union (NTEU).

<u>Assessment of Data and Feedback Analysis</u>

Table 2.3 provides an assessment of the strengths of the process, as well as concerns, and recommendations for similar efforts in the future.

Table 2.3 Assessment of Data and Feedback Analysis

Strengths
• **Development of Strategy Categories.** The Project Team based the five main strategy categories on data, versus establishing categories first and trying to fit data into them. • **Soliciting Feedback from NRC Leadership.** The Project Team solicited input from the NRC Commission, NRC leadership, and the Guiding Coalition in developing its guidelines for ranking potential strategies and recommendations. • **Strategy Ranking Process.** The Project Team ranked each identified strategy independently before trying to reach consensus as a group.
Concerns
• **Lack of Data Analysis Plan.** The Project Team appeared to lack a formal data analysis plan documenting its planned approach. In order to review the process, it was necessary to reconcile multiple documents to determine the Project Team's activities. • **Facilitation of Strategy Ranking Process.** Once the Project Team conducted its individual rankings for each of the recommendations, an NRC facilitator external to the Project Team might have been used to facilitate discussion and scoring discrepancies among team members. • **Nature of Strategies Evaluated**. Many of the strategies focused on by the Project Team were not strategic-based, but rather tactical and operational. • **Number of Strategies Evaluated.** The Project Team did not narrow down the number of strategies it considered in the ranking process. Prioritizing a smaller number of rankings would have allowed for more thorough consideration of individual recommendations, especially given the short window for the process. • **Evaluation Team and Methods.** Ideally, critiquing evaluation results should be done by professionals with appropriate skills in a range of expertise areas.[16] While the Project Team solicited feedback on its evaluation process for ranking strategies and recommendations, it is not clear whether they represented the appropriate diversity of expertise needed for the selected approach.
Recommendations for the Future
1. **Develop a Formal Analysis Plan.** Analysis plans are linked to researchable questions and anticipate the message. NRC should develop an analysis plan that describes key assumptions, data elements to be analyzed, section criteria used, and potential tabulations to be presented. Data analysis is often an iterative process, but a well-developed plan will allow the team to make the best use of the time available and get to the message with minimal revisions.[17] 2. **Incorporate Risk Assessment in Developing Strategies and Recommendations.** The Project Team should use risk information when evaluating and prioritizing potential strategies and recommendations. Enterprise risk management (ERM) principles should be incorporated. 3. **Diversity of Evaluation Experts.** Evaluation is an interdisciplinary field that encompasses many areas of expertise.[18,19] Going forward NRC should leverage a diversity of disciplines external to NRC when developing its evaluation teams. While the NRC Project Team possesses technical, financial, communications, and project planning expertise, all of its members were

[16] American Evaluation Association. An Evaluation Roadmap for a More Effective Government. N.p.: Revised October 2013. Accessed September 22, 2014. http://www.eval.org/d/do/472.
[17] Government Accountability Office, "Data Analysis Plans," pg. 1: Revised September 2009.
[18] American Evaluation Association. An Evaluation Roadmap for a More Effective Government. N.p.: Revised October 2013. Accessed September 22, 2014. http://www.eval.org/d/do/472.
[19] Id. Many evaluators have advanced degrees in economics, political science, applied social research, sociology, anthropology, psychology, policy analysis, statistics, and operations research and often work collaboratively with colleagues in allied fields.

internal to NRC. Looking ahead, NRC might consider inviting external experts in statistical analysis and critiquing evaluation results. This approach would also provide NRC with individuals who can remain neutral and independent of the outcomes. Furthermore, this approach could enhance the results of the project by eliminating the potential for actual and/or perceived bias.

4. **Multiple Analytical Strategies.** NRC should also consider incorporating multiple analytical strategies to amplify the utility of the data it collects. Because every research method has inherent limitations, it is advantageous to combine multiple measures in a program evaluation to gain a more comprehensive picture.[20] Going forward, NRC should consider additional analytical strategies beyond the rating process in developing strategies and recommendations (e.g., cross-tabulation, log-linear analysis, etc.)
5. **Provide Process Documentation.** Given NRC's intention to institutionalize its strategic planning process, NRC should prepare and maintain documentation on its analysis process including information related to planning, conducting, and reporting on findings. Materials should contain sufficient information such that an individual with no prior connection to the project can ascertain the process and reproduce the work.

[20] U.S. Government Accountability Office, *A Variety of Rigorous Methods Can Help Identify Effective Interventions* GAO-10-30 (Washington, D.C.: November 2009).

Section Three: Building and Sustaining a Transformational Culture

The Academy was advised by the Project Team at the outset of this review that NRC's leadership is fully committed to this strategic planning effort, and that it intends to continue with similar projects on a sustained basis in the future. Such focus from the Commission and agency leaders bodes well for NRC's successful implementation of the final report recommendations, which is a critical outcome for a project such as this. This commitment is further demonstrated by NRC's request that this report include treatment of how an agency can build and sustain a transformational culture.

This section of the report is intended to be a best practice review of actions that an organization should take to build and sustain a transformational culture. Therefore, the recommendations in this section are not the result of a review of the NRC Project. Instead, they are intended to contribute to NRC's decision-making on how to enhance successful implementation of the roadmap and recommendations from the Project report, and how NRC might institutionalize a long-range foresight function in the agency to sustain these efforts. Many of the points in this section are based on prior Academy research, including for the Social Security Administration.[21]

NRC cites use of the 8-Step Process for Leading Change posited by Dr. John Kotter, a Harvard professor with extensive experience helping organizations successfully lead and implement major transformation efforts. We endorse NRC's adoption of the Kotter principles (these principles are listed in Appendix C).

With the intent to add further value to NRC's thinking, we provide additional principles in this section that can guide NRC's efforts to complement and reinforce its adoption of the Kotter change principles. We address three key topics that will not only enhance NRC's planning and execution of its Project strategic plan, but also will enhance its efforts to institutionalize and sustain a disciplined approach to long-range visioning and planning going forward. The three segments in this section are:

- Transformation and Organizational Dynamics
- Coordination and Accountability
- On-Going Futures Research and Long-Range Planning

3.1 Transformation and Organizational Dynamics

NRC's implementation of its important safety and security mission will face inevitable challenges in the long-range future, some may be anticipated, and others are currently difficult to imagine. NRC's culture will need to be flexible to rapidly adjust to future exigent circumstances as well as material, social, technological, political, economic, and other changes that will ensue over time. The Project's focus is salutary in all respects. It is

[21] "Anticipating the Future: Developing a Vision and Strategic Plan for The Social Security Administration for 2025-2030," NAPA Panel report dated July 2014; link to the report http://www.napawash.org/images/reports/2014/2014_AnticipatingTheFutureSSA.pdf

intended to support and embrace the paradigm of an agency focused on innovation and willing to take thoughtful, managed risk in order to improve performance.

Agency culture needs to support the pursuit of an agreed-upon mission. It is evident from our research, and from survey information, that the NRC appears to have a strategic focus and effective leadership. This observation is supported by agency ratings found in the survey, "The Best Places to Work in the Federal Government" released by the Partnership for Public Service.[22] In the latest survey report, NRC ranks very high: 6th out of 25, in the mid-size agency category as a Best Place to Work, second with respect to both Effective Leadership, and fourth with respect to Strategic Management. These rankings suggest that the agency has a healthy environment in which to build a transformational culture. While all organizations face a variety of challenges in implementing transformation plans due to varied goals and opinions on vision and the means to build toward it, these rankings suggest that NRC is at a good starting point to build toward an effective implementation of the Project recommendations.

While we have not yet seen the recommendations that will appear in the Project report, it will be important for NRC to coalesce around one, unified position as it looks to develop and implement an organizational transformation plan to prepare for 2020 and beyond. Recognizing that the leadership's selected transformation plan may not receive universal support or agreement, both within and outside of the NRC, the plan must be employed as a consistent foundational element to make progress and chart a course toward ensuring that specific projects identified to change the agency in order to reach its 2020 vision are well planned and successfully implemented in time, and with the resources available.

As NRC's leadership finalizes its long-range vision and high-level strategic plan, the agency will need to identify the elements of organizational transformation that will facilitate the achievement of these goals. Paramount to moving forward is a clear understanding of the agency's change readiness. After researching best practices for organizational transformations and narrowing them down to the most reputable sources[23] reflecting the most common best practices for organizational transformation, we have identified eight common areas or Key Success Indicators (KSIs) for successful organizational change (Table 3.1). These are quite similar to Dr. Kotter's principles.

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[22] The latest survey results are for 2014 released in December 2014.

[23] *Transforming Organizations*, by Mark A. Abramson and Paul R Lawrence; *The Heart of Change,* by John Kotter and Dan Cohen; and A Government Accountability Office (GAO) report GAO-03-669 to Congressional Subcommittees, *Results Oriented Cultures: Implementation Steps to Assist Mergers and Organizational Transformations*.

Table 3.1 Key Success Indicators[24]

Organizational Transformation Key Success Indicators
1. Ensure top leadership drives the transformation. **2.** Establish a clear vision and integrated strategic transformation goals. **3.** Design the organizational structure that will enable the vision. **4.** Create a sense of urgency, implement a timeline, and show progress from day one. **5.** Communicate frequently through multiple channels to multiple stakeholders. **6.** Dedicate a powerful implementation guidance team to manage the transformation process. **7.** Engage employees to seek their improvement ideas, build momentum, and gain their ownership for the transformation. **8.** Sustain the effort by nurturing a new culture, rewarding risk, and measuring progress.

The NRC is developing key foundational elements that support organizational change, recognizing the need for leadership support, structural realignments and a clear long-range vision. The major challenges for NRC as it looks to transform the organization should be centered on parts of the organization that may adopt an inconsistent approach to sustaining the efforts to drive change, including creating urgency and sustaining the effort. The incremental and at times, piecemeal approaches to effecting progress can result in a largely static environment, struggling to demonstrate capacity for long-term strategic thinking. The KSIs can serve as guidance for establishing a comprehensive change management plan.

3.2 Coordination and Accountability

The NRC should form a cross-functional team to lead the agency's efforts in implementing its long-term strategic plan. One key practice of successful organizational transformation identified by GAO is establishing a strong implementation team to manage the transformation process. Many government agencies, such as the Department of Defense (DoD), Department of Homeland Security (DHS), and U.S. Citizenship and Immigration Services (USCIS),[25] established business transformation offices dedicated to implementing their transformations efforts. In its previous separate studies with the U.S. Coast Guard and Social Security Administration, an Academy Panel also recommended establishing a modernization implementation guidance team to manage transformation processes.

An implementation team, with sufficient rank and visibility, should be responsible for overseeing the day-to-day activities associated with the implementation effort. The

[24] "Anticipating the Future: Developing a Vision and Strategic Plan for The Social Security Administration for 2025-2030," Academy Panel report dated July 2014; link to the report http://www.napawash.org/images/reports/2014/2014_AnticipatingTheFutureSSA.pdf

[25] U.S. Government Accountability Office, *Organizational Transformation: Implementing Chief Operating Officer/Chief Management Officer Positions in Federal Agencies* GAO-08-34 (Washington, D.C.: November 2007). http://www.gao.gov/assets/270/268886.pdf

implementation team should be held accountable for carrying out all change initiatives in a coherent, coordinated way with a focus on high priority areas. The team should be vested with necessary authority to allocate resources and make decisions.

The "people" element—the qualifications of team members—is critical to the success of the implementation. Best practice research suggests that a transformation implementation team should be a "cadre of champions."[26] A number of factors should be taken into consideration when selecting team members, including their titles, expertise, skillsets, reputations, and relationship with senior leadership and key stakeholders. Each member of the implementation team should have the ability to achieve results in a rapidly-changing environment, an adequate knowledge of the organization's operations and services, a thorough understanding of the overall goals of the transformation, and trust and confidence of the top leadership. Additionally, team members are often selected from the organization's top performers (e.g., using individual performance ratings as a selection criterion).

The implementation team should be cross-functional. All components (both headquarters and field offices) should be represented on the team to ensure accounting for a wide variety of perspectives in the implementation process. Team members are not necessarily those with top titles, but should have the authority (e.g., hold senior-level positions and be deputized with authority by superiors) and knowledge required to represent their components. Literature highlights the importance of including key line managers in the implementation team.

Large-scale transformation requires focused, full-time attention from implementation team members (as opposed to collateral duty assignments). The performance of the implementation team members should be measured based on agreed results and outcomes that support the agency's overall mission.

While it is not necessary to include senior executives of an organization in the implementation team, team members should have visible support from and full access to the top leadership. Change management literature emphasizes that visible commitment from organizational leadership plays a vital role in sustaining momentum. It is also important to identify a senior executive sponsor to ensure leadership accountability and the success of the implementation team. The team should engage in regular communications with the leadership to review implementation plans, report progress, address issues, and resolve conflicts. In short: "you get out what you put into it."

[26] Ibid. p.26

3.3 Ongoing Futures Research and Long-Range Planning

To achieve the capacity to pro-actively shape its rapidly changing future, as well as respond to the attendant uncertainties and challenges that the long-term future[27] holds, NRC should designate a dedicated small set of staff to engage in long-term futures work— in scenario building, visioning and strategic planning. Among key characteristics, the team might:

1. Be embedded within the Office of the Executive Director of Operations (rather than taking the form of an external consultant) to ensure that the team understands agency-specific programs, operational issues, and culture;
2. Include individuals with knowledge of, and/or experience in scenario building and analysis, and other aspects of futurology;
3. Include individuals who have strong communication and research skills;
4. Build quality relationships with other federal agencies and external organizations focusing on nuclear regulatory issues (e.g., International Atomic Energy Agency) that have similar long-term strategy teams in order to exchange best practices and build knowledge transfer networks (this has already been quite well demonstrated in initial steps taken by the Project Team);
5. Build quality relationships with both public and private sector long-term futurists and consultants in order to remain abreast of current research, methodology, and trends;
6. Identify and monitor key issues and variables (the critical uncertainties noted in the Section on scenarios) that may significantly affect NRC's long-term future operational environment so that pro-active, anticipatory actions may be considered by agency leadership and implemented if deemed appropriate;
7. Actively communicate with all agency components with periodic updates and analyses that can be used for distribution across the agency, underscoring the forward-thinking posture;
8. Work closely with short-term strategic planners (five years or less) to ensure consistency between long-term and annual strategic plan content across time periods.

A dedicated, long-term futures team should periodically update the agency's leadership with analysis of major trends and key issues that have an impact on previously adopted visions and strategic plans, particularly in the case when the observations might merit a leadership decision to adjust vision and/or strategic plans.[28]

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[27] Long-range futures are longer than five years; usually ten or more years in outlook. We believe that federal agencies need to institutionalize this range of anticipatory focus because of the rapid technological and other changes that the world is experiencing in the 21st century.

[28] Even though federal agencies in large part lack systematic long-range visioning and strategic planning at the present time, we recommend that there be a greater focus on this topic by federal agencies and Congress in the coming years. An effort has been made to informally bring those staff responsible for long-term strategic planning together periodically to exchange best practices. NRC is currently in a position to join this group of federal agencies in an effort to enhance a disciplined and methodical addressing of long-range visioning and planning within NRC, and even across government. To that end, NRC is poised to contribute demonstrably not only to its own operating future, but also to the federal government as a whole.

Recommendations for Building and Sustaining a Transformational Culture

Table 3.1 provides recommendations on building and sustaining a transformational culture at NRC.

Table 3.1 Recommendations for Building and Sustaining a Transformational Culture

Recommendations for the Future
1. **Identify Actions that the Organization Can Take to Facilitate Strategic Plan Implementation.** NRC should enumerate key organizational indicators critical to enhancing successful enterprise transformation. 2. **Designate Cross-Functional Project Plan Implementation Team.** NRC should form a cross-functional team to lead the agency's efforts in implementing its long-term strategic plan. 3. **Institutionalize Long-term Futures Analysis and Planning.** To achieve the capacity to pro-actively shape its rapidly changing long-term future, as well as respond to the attendant uncertainties and challenges that the long-term future holds, NRC should designate a dedicated small set of staff to engage in long-term futures work— in scenario building, visioning, and strategic planning.

Conclusion

Longer-term planning in the federal government is a challenging and complex task. We commend the NRC Commission for establishing the Project AIM 2020 effort and the Project Team for its diligent work. The NRC Commissioners and Executive Director for Operations demonstrated a strong leadership commitment by assembling a seasoned project team that conducted high-quality work in a short period of time. The Project Team's efforts provided a valuable foundation for NRC to continue improving the agency's planning and operational functions.

Over the course of the Academy's review, we identified a number of strengths of the process. We also identified some concerns and recommendations for how such a process should be structured in the future. By implementing these suggestions in future efforts, NRC can not only improve future planning and operations, but also serve as a model for other federal agencies as they conduct similar efforts.

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Appendix A: Study Team Members

Joseph P. Mitchell, III, Director of Project Development and Senior Project Advisor, National Academy of Public Administration. Dr. Mitchell leads and manages the Academy's studies program and serves as a senior advisor to the Academy's President and CEO. He has served as Project Director for past Academy studies for the Government Printing Office, the U.S. Senate Sergeant at Arms, USAID/Management Systems International, the National Park Service's Natural Resource Stewardship and Science Directorate, and the USDA Natural Resources Conservation Service. During his more than 10 years at the Academy, Dr. Mitchell has worked with a wide range of federal cabinet departments and agencies to identify changes to improve public policy and program management, as well as to develop practical tools that strengthen organizational performance and assessment capabilities. He holds a PhD from the Virginia Polytechnic Institute and State University, a Master of Public Administration from the University of North Carolina at Charlotte, and a BA in History from the University of North Carolina at Wilmington. He is a current Master of International Public Policy candidate at the Johns Hopkins University School of Advanced International Studies. He is a member of Phi Kappa Phi, the national academic honor society, and Pi Alpha Alpha, the national honor society for public affairs and administration.

Roger Kodat, Project Director, National Academy of Public Administration. Mr. Kodat has led eight projects as a consultant to the Academy, several focusing on long-term strategic visioning and planning. He brings 20 years of commercial and investment banking experience with JPMorganChase, and six years of senior level federal government experience at the Department of the Treasury. He was appointed by President George W. Bush in 2001 to serve as Deputy Assistant Secretary of Treasury, responsible for Federal Financial Policy. Some of his tasks at Treasury included: policy formulation for the 2006 Postal Accountability and Enhancement Act; rule-making and oversight of Federal loan and loan guarantee programs; and managing the Federal Financing Bank (a $32 billion bank at that time). Mr. Kodat holds a BS in Education from Northwestern University and both an MBA in Finance and MA in Political Science from Indiana University.

Allison Brigati, Senior Project Advisor, National Academy of Public Administration. Allison Brigati is the General Counsel for the National Academy of Public Administration. An attorney since 1990, Allison has experience in legal analysis, investigative functions, and organization and management issues. She started with the National Academy as a Senior Advisor in 2008, and served in that role for studies relating to the Office of National Drug Control Policy, Federal Emergency Management Agency, General Accountability Office, and the Department of Commerce's Office of Inspector General. She became the National Academy's Legal Counsel in late 2008, and manages all legal issues relating to the Academy and its daily operations, as well as serving as an advisor to the President, Directors and CFO. Prior to joining the Academy, Allison served in a variety of legal, investigative and management roles, including various posts at the World Bank, as Senior Advisor to the Director, Senior Quality Assurance Officer, and Senior Institutional Integrity Officer for the Department of Institutional Integrity, as well as Senior Counselor for U.S. Affairs in the Department of External Affairs. Prior to the World Bank, Allison served as Deputy Counsel for the Republican National Committee, and as Acting Chief Legal Counsel for the Committee on Arrangements for the 1996 Republican National Convention. Allison began her legal career as an associate at Baker and Hostetler, specializing in corporate law.

Allison received her BA from the University of Notre Dame (1987), and a JD from Boston University School of Law (1990).

Nicole Camarillo, Project Advisor, National Academy of Public Administration. Nicole Camarillo is the Associate General Counsel and Project Development Advisor for the Academy. She has a legal background in regulatory compliance and employment law issues. She has extensive experience working for nonprofits on a variety of advocacy issues and has federal campaign experience. At the Academy, Nicole assists the General Counsel on all employment law and policy matters affecting the organization. Nicole also serves as a legal advisor on Academy studies, particularly those involving legislative and regulatory matters. She assists the Director of Project Development with the development of Academy proposals and studies. Nicole received her BA from Stanford University and her JD from the University of California, Berkeley School of Law.

Eric Christensen, Research Associate, National Academy of Public Administration. Eric graduated from State University of New York at Albany with a BA in Political Science. During this time period he served as a Campaign Manager in a Mayoral Election; interned for US Senator Charles Schumer and volunteered on voter outreach for City Councilman Vincent Gentile in Brooklyn. Eric received his MPA from Cornell University, Cornell Institute for Public Affairs. He is a member of Pi Alpha Alpha national honor society for public affairs and administration. Eric served as a consultant on Rural Regeneration in Haiti while at Cornell University. Eric also interned for Public Policy Solutions, Inc., in San Luis Obispo, CA and was a consultant for Tompkins County Government while at Cornell University. He co-authored and co-edited a report on budgetary priority setting, performance measurement, shared services and charter revision for Tompkins County.

Appendix B: Academy Focus Group Members

Dan Blair,* President and CEO, National Academy of Public Administration. Former positions with the U.S. Postal Regulatory Commission: Chairman, Commissioner; former positions with the U.S. Office of Personnel Management: Deputy Director, Acting Director; Senior Counsel to Senator Fred Thompson, U.S. Senate Committee on Governmental Affairs; Staff Director for Representative John McHugh, House of Representatives, Subcommittee on the Postal Service; Minority General Counsel, House of Representatives, Committee on Post Office and Civil Service.

Jonathan Breul,* Adjunct Professor, Georgetown University. Former Executive Director, IBM Center for The Business of Government, and Partner, IBM Global Business Services; Former positions with U.S. Office of Management and Budget: Senior Advisor to the Deputy Director for Management; Chief, Evaluation and Planning Branch, General Management Division; Senior Management Analyst. Former Senior Grants Policy Specialist, Office of the Assistant Secretary for Management and Budget, U.S. Department of Health and Human Services.

Chris Mihm,* Managing Director, Strategic Issues, U.S. Government Accountability Office. Former positions with U.S. General Accounting Office: Director, Strategic Issues; Assistant Director, Federal Management Issues; Evaluator.

Rusty Mikel, Expertise in applying scenario thinking and strategic planning to global issues; programmer and systems analyst before joining NSA as a cryptanalyst; Booz Allen & Hamilton supporting NSA; IIT Research Institute; TASC supporting intelligence agencies and the Director of National Intelligence on alternative analysis and strategic thinking.

Nancy Potok,* Deputy Director, Census Bureau, U.S. Department of Commerce. Former Associate Director, Demographic Programs, U.S. Census Bureau, U.S. Department of Commerce; Deputy Undersecretary for Economic Affairs, Economics and Statistics Administration, U.S Department of Commerce; Chief Operating Officer, McManis & Monsalve Associates. Former Senior Vice President and Director, Economics, Labor and Population Department, National Opinion Research Center (NORC); Former positions with the U.S. Census Bureau: Principal Associate Director and Chief Financial Officer, Associate Director for Administration/Controller. Former Deputy Assistant Director for Finance and Budget, Administrative Office of the U.S. Courts; Budget Examiner, U.S. Office of Management and Budget; Presidential Management Intern, U.S. Department of Transportation; Staff Intern, Senate Transportation Appropriation Subcommittee, U.S. Senate.

Myra Shiplett,* Distinguished Fellow, Project on National Security Reform and President, RandolphMorgan Consulting, LLC; Senior Consultant, Bluelaw International; Senior Consultant, KnowledgeBank, Inc. Former Project Director and Senior Consultant, National Academy of Public Administration; Director, Center for Human Resources Management, National Academy of Public Administration; Director, Administrative Office of the U.S. Courts; Director of Administration, Federal Housing Finance Board; Associate Director for Passport Services and Associate Director for Human Resources, Department of State; Assistant Director for National Security and International Affairs, Office of Personnel

Management; Director of Personnel; Federal Trade Commission; Staff member, Norfolk Naval Shipyard in Portsmouth, VA, U.S. Department of the Navy.

***Academy Fellow**

Appendix C: Dr. John Kotter's 8 Step Process for Leading Change

Source: http://www.kotterinternational.com/the-8-step-process-for-leading-change/

Step 1: Create a sense of urgency. Craft and use a significant opportunity as a means for exciting people to sign up and change their organization.

Step 2: Building a coalition. Assemble a group with the power and energy to lead and support a collaborative change effort.

Step 3: Form a strategic vision and initiatives. Shape a vision to help steer the change effort and develop strategic initiatives to achieve that vision.

Step 4: Enlist a volunteer army. Raise a large force of people who are ready, willing and urgent to drive change.

Step 5: Enable action by removing barriers. Remove obstacles to change, change systems or structures that pose threats to the achievement of the vision.

Step 6: Generate short-term wins. Consistently produce, track, evaluate and celebrate volumes of small and large accomplishments – and correlate them to results.

Step 7: Sustain acceleration. Use increasing credibility to change systems, structures and policies that don't align with the vision; hire, promote and develop employees who can implement the vision; reinvigorate the process with new projects, themes and volunteers.

Step 8: Institute change. Articulate the connections between the new behaviors and organizational success, and develop the means to ensure leadership development and succession.

John P. Kotter is the Konosuke Matsushita Professor of Leadership (Emeritus) at Harvard Business School.

Appendix D: NRC Informational Meetings with External Stakeholders

Federal Agencies
DOE/EIA – Department of Energy/Energy Information Administration
NNSA – National Nuclear Security Administration
FDA – Food and Drug Administration, Facilities Management Office
National Defense University
EPA – Environmental Protection Agency
USCG – US Coast Guard
VA – Department of Veterans Affairs
GAO – Government Accountability Office
Federal Foresight Roundtable
OPM – Office of Personnel Management

States
OAS – Organization of American States
CRCPD – Conference of Radiation Control Program Directors, Inc.

International
IAEA – International Atomic Energy Agency
NEA – Nuclear Energy Agency

Government Operations
IBM Center for the Business of Government
PPS – Partnership for Public Service
NAPA – National Academy of Public Administration

Nuclear Industry
NEI – Nuclear Energy Institute
INPO – Institute of Nuclear Power Operations, CEO
Arizona Public Service
PSEG – Public Service Enterprise Group
Exelon (Leading Leadership Institute for Industry and IPO)
First Energy
TVA – Tennessee Valley Authority
NuScale Power

Non-Government Organizations
UCS – Union of Concerned Scientists
National Mining Association
World Nuclear Industry Status Report
Institute of Nuclear Materials Management
Federation of American Scientists
Futurists Society

Other
Monitor 360