

Executive Summary

The course to improve the nation's nuclear security enterprise seems clear...and the National Nuclear Security Administration has not been on it.

–Testimony to the panel (unattributed)

The Congressional Advisory Panel on the Governance of the Nuclear Security Enterprise was tasked by the U.S. Congress to examine the mission, organization, and management of this enterprise and consider alternative governance models. The panel notes from the outset that there is no question as to the efficacy of the nuclear deterrent for the foreseeable future. The nuclear stockpile is safe, secure, and reliable, and the quality of science and research is undiminished. However, the panel finds that the existing governance structures and many of the practices of the enterprise are inefficient and ineffective, thereby putting the entire enterprise at risk over the long term. These problems have not occurred overnight; they are the result of decades of neglect. This is in spite of the efforts of many capable and dedicated people who must nonetheless function within the confines of a dysfunctional system.

This is no time for complacency about the U.S. nuclear deterrent. Nuclear forces provide the ultimate guarantee against major war and coercion, and America's allies depend on these forces and capabilities for extended deterrence. Other countries carefully measure U.S. resolve and technological might in making decisions on global and regional security matters, many of which are of vital concern to the United States. Hence, while the current viability of the U.S. nuclear deterrent is not in question, it will need to be sustained to meet future security needs and the long-term health of the enterprise is a critical necessity.

The panel's review has encompassed the communities with essential responsibilities for the nuclear enterprise: the national leadership in the Executive Branch and Congress; the relevant policy and oversight organizations within the Department of Energy (DOE) and the National Nuclear Security Administration (NNSA); the operating sites in the nuclear weapons complex; and NNSA's customers in the Department of Defense (DOD), the Department of State, the Intelligence Community, and the Department of Homeland Security.¹ Additionally, the panel

¹ The panel's fact finding was largely completed between October 2013 and February 2014. While the panel received updates on specific issues through July 2014, and it has sought to recognize some of the important changes currently underway by DOE/NNSA, the findings are necessarily focused on the situation as of early

examined the proven management practices of several high-performing, high-technology organizations both in the private sector and in government. The panel reviewed previous studies, conducted on-site visits across the nuclear weapons complex (laboratories, plants, and the Nevada National Security Site), and benefitted from the views of dozens of expert witnesses. The panel focused its attention largely (but not exclusively) on the nuclear weapons stockpile mission. This focus reflects the fundamental importance of the mission and its associated capabilities, and the judgment based on initial fact finding that there were major challenges associated with defining and executing this mission.

The findings and recommendations detailed in this report have the unanimous support of the panel members. The common belief is that significant and wide-reaching reform is needed to create a nuclear enterprise capable of meeting the nation's needs. While panel members differ on certain details, there is deep agreement on the overall direction—and urgency—of the reforms outlined here.

One unmistakable conclusion is that NNSA governance reform, at least as it has been implemented, has failed to provide the effective, mission-focused enterprise that Congress intended. The necessary fixes will not be simple or quick, and they must address systemic problems in both management practices and culture that exist across the nuclear enterprise:

- First, a lack of sustained national leadership focus and priority, starting with the end of the Cold War, has undermined the foundation for nuclear enterprise governance and contributes to virtually all of the observed problems;
- Second, inadequate implementation of the legislation establishing NNSA as a separately organized subelement of DOE has resulted in overlapping DOE and NNSA headquarters staffs and blurred ownership and accountability for the nuclear enterprise missions;
- Third, the lack of proven management practices, including a dysfunctional relationship between line managers and mission-support staffs, has undermined the management culture within NNSA;
- Fourth, dysfunctional relationships between the government and its Management and Operating (M&O) site operators has encouraged burdensome transactional oversight rather than management focus on mission execution;
- Fifth, insufficient collaboration between DOE/NNSA and DOD weapons customers has generated misunderstanding, distrust, and frustration.

2014. Thus, this report does not reflect on the leadership of the new NNSA Administrator, Lt. Gen. (ret) Frank G. Klotz, who took office in May 2014. The panel also recognizes that U.S. Secretary of Energy Dr. Ernest Moniz has been in his position only a limited time and has been actively pursuing initiatives to improve some of the identified problems. Several DOE management initiatives begun since the panel's interim report was issued in April 2014 are reported in the relevant sections of the report.

To achieve the conditions for success, the panel recommends fundamental reforms that touch on every component of the enterprise. The current senior leadership of the DOE has taken some important initial steps to rectify failings, but the enterprise as a whole continues to struggle to meet commitments and the underlying problems will not be fixed without major reform. Given the fact that many of these problems are attributable to cultural shortcomings, the solution will not be easy and will inevitably transcend any one leadership team.

A brief summary of the needed improvements suggests the depth of the challenges facing the enterprise. The details of the panel's findings and recommendations are provided in Chapters One to Five in the body of this report. The Table of Recommendations lists the panel's specific recommendations.

Strengthen National Leadership Focus, Direction, and Follow-Through

(Recommendations 1 and 2)

At the root of the challenges faced by the nuclear enterprise is the loss of focus on the nuclear mission across the nation and within U.S. leadership as a whole since the end of the Cold War. Every aspect of the enterprise is colored by the fact that, bluntly stated, nuclear weapons have become *orphans* in both the Executive and Legislative branches. This has been reflected by the lack of an urgent and clear mission and lack of follow-through in assuring adequate performance to modernize the nuclear stockpile on schedule and on budget. Nowhere is this more evident than among those working in the nuclear enterprise, many of whom feel that they are in a declining career field. Although the national leadership has provided high-level policy statements and substantial sums of money to the enterprise, the results achieved by the enterprise have frequently been unacceptable. Sustained and focused national commitment is required.

The panel recommends that the President and Congress adopt a number of new mechanisms designed to set enterprise priorities and program expectations, demand feasible customer-driven plans for the enterprise, assure the adequacy of assigned resources, and advance needed governance reforms. The panel believes that expanding the existing annual Office of Management and Budget (OMB)/DOD budget/program review to include the nuclear weapons portfolio would reinforce this and could help synchronize the nuclear security programs and budgets across the two Departments. The panel further recommends that Congress adopt mechanisms to strengthen committee oversight and unify support for the enterprise. Such efforts should seek improved coordination across missions as well as between authorizers and appropriators, and thus synchronize the work of the multiple cognizant subcommittees to provide a more focused jurisdiction.

Solidify Cabinet Secretary Ownership of the Mission

(Recommendations 3–5)

Despite the intent of the NNSA Act to create a *separately organized* NNSA within DOE, the Act as implemented did not achieve the intended degree of clarity in enterprise roles and mission ownership. NNSA was not provided the line-management authority necessary to integrate safety, security, and environmental concerns into the decision making for executing NNSA's missions; nor was an effective policy implementation framework established. The Act, as implemented, made organizational changes designed to insulate NNSA from DOE headquarters without specifying the Secretary's roles, without stipulating the relationships between NNSA and DOE headquarters staffs, and without requiring actions to shift the Department's culture toward a focus on mission performance. The panel concludes that the relationships among NNSA, the Secretary of Energy, and the DOE headquarters are not properly aligned with mission needs today and are therefore in need of major reform.

As directed by Congress, the panel explored a range of options for an organizational structure that would address the problems created in establishing NNSA. The panel concludes that the nuclear enterprise would be most effective in performing its missions if it were led by a knowledgeable, engaged Cabinet Secretary and if ownership of the mission were Department-wide. Hence, the solution is not to seek a higher degree of autonomy for NNSA, because that approach would only further isolate the enterprise from needed Cabinet Secretary leadership. Instead, it is recommended that Congress place the responsibility and accountability for the mission squarely on the shoulders of a qualified Secretary, supported by a strong enterprise Director with unquestioned authority to execute nuclear enterprise missions consistent with the Secretary's policy direction.

Every alternative to this approach has significant weaknesses:

- The panel first considered the option of reorganizing DOE/NNSA to strengthen NNSA's autonomy within the Department of Energy (effectively, an improved status quo). This was rejected because numerous studies and the panel's own fact-finding revealed that DOE's current *separately-organized* approach is fundamentally flawed, and that adjustments would not be sufficient to correct either the structural or cultural problems.
- The panel also explored the model of NNSA as an independent agency. The panel concluded that a mission this important to U.S. national security requires Cabinet-level ownership and support.
- The panel further evaluated three variants of a greater role for the Department of Defense. In each case, given the magnitude of DOD's existing challenges, there is considerable uncertainty about DOD's willingness and ability to integrate and support an organization with a very different scientific and civilian culture.

To achieve the right leadership structure—a Cabinet Secretary who sets policy and a Director who is empowered to implement the policy—the panel recommends amending the NNSA Act to replace the “separately-organized” NNSA with a new Office of Nuclear Security (ONS) within the Department charged with performing the missions currently performed by NNSA. (Proposed statutory language is provided in Appendix C.) The proposed legislation includes new confirmation and reporting requirements to underscore the Secretary’s enterprise leadership roles and accountability and to emphasize the qualifications needed to lead the enterprise. It also assigns a new name—The Department of Energy and Nuclear Security (DOE&NS)—to highlight the prominence and importance of the Department’s nuclear security missions (over 40 percent of the Department’s budget is for nuclear security) and to stress the importance of the needed cultural change.²

Central to this reform is to establish the Director of ONS as the unquestioned line-management authority for safe, secure, and environmentally responsible mission execution. The Director’s qualifications, authorities, and accountability must be carefully stipulated. In the panel’s proposed formulation

- The Director must possess strong technical management capabilities.
- For leadership and continuity, the Director’s position should be an executive schedule II with a tenure of at least six years (subject to Presidential review).
- The Director has direct access to the President on issues critical to ONS’s missions (nuclear stockpile safety, security and reliability, non-proliferation, etc.).
- The Director has direct access to the Secretary on all ONS matters.
- The Director is assigned risk acceptance responsibility and authority on ONS matters, taking full responsibility and accountability for executing the Secretary’s policies for the nuclear security missions safely, securely, and environmentally responsibly.
 - Mission-support staffs advise the Director on risk-acceptance decisions.
 - Any disagreements between line managers and mission-support staffs are quickly raised through a clearly defined appeals process.
- The Director has full authority to shape and manage the ONS technical staff.³

² In this report, when referring to the present, the terms DOE and NNSA are used. In the panel’s recommendations and in referring to the future, the panel’s recommended names, DOE&NS and ONS, are used.

³ Recognizing the constraints of the civil service system, all nonadministrative ONS personnel should be from the Senior Executive Service or the Excepted Service in order to permit the Director this necessary authority.

The panel judged these attributes of the Director to be paramount in empowering a leader capable of executing all aspects of the mission and reforming the enterprise's culture. The panel recommends that the Director serve concurrently as a second Deputy Secretary in the Department or as an Under Secretary. While the panel did not agree on the appropriate rank, it does agree that this question of rank is less essential for success than is establishing an effective working relationship with a knowledgeable, engaged Secretary and providing the Director all the necessary authorities as described above. As a result, the panel notes the potential options but offers no recommendation on this one specific issue.

The strengthened roles of the Secretary and Director will be enhanced by the complementary and combined effects of increased focus and follow-through from the White House and Congress and the adoption of proven leadership and management processes. If for any reason the nation's leadership is not prepared to require the Secretary to possess the qualifications demanded by the nuclear security mission, or to provide the Director the necessary mission execution authorities, then only one option remains: an autonomous organization to replace some or all of the functions of NNSA. This is viewed by the panel as a clearly inferior choice.

Adopt Proven Management Practices to Build a Culture of Performance, Accountability, and Credibility

(Recommendations 6–13)

NNSA, and associated policy and oversight organizations within the Department, reflect few of the characteristics of the successful organizations benchmarked for this study. Participants at all levels report that DOE/NNSA is an organization with many pockets of talented, technically competent people operating within a culture that lacks a unifying focus on mission deliverables, is risk averse, has poorly defined chains of command, and has inadequate personnel management. A major overhaul will be needed to transform the organization into one with a mission-driven management culture.

The panel identifies a number of management best practices, based on high-performing benchmarked organizations that, if implemented effectively, would bring about the needed reforms. Prominent among them are a capable, empowered leadership with well-defined roles and responsibilities; clear plans with careful analysis of the resources needed to succeed; a clear line-management structure; strong program managers focused on mission deliverables; effective communications; a focus on conveying effective incentives to suppliers; and clear accountability. The panel's recommendations would establish proven practices in each of these areas. Aggressive implementation would significantly improve performance in the near term, thus addressing well-known morale issues and, in time, reshaping the management culture.

Maximize the Contributions of the Management and Operating (M&O) Organizations to the Safe, Secure Execution of the Mission

(Recommendations 14–17)

The open communication and collaboration on program and technical matters that historically existed between the M&Os and Federal officials has eroded over the past two decades to an arm’s length, customer-to-contractor and, occasionally, adversarial relationship. In the case of the laboratories, this has led to a significant loss in their contributions historically stemming from the special Federally Funded Research and Development Center (FFRDC) relationship. The erosion of trust—a critical element in the FFRDC relationship—observed by the panel was also highlighted by a recent National Research Council of the National Academies study.⁴ The panel concurs that the special relationship of trust between the government and the three NNSA laboratories has been eroded by unclear accountability for risk and a fee structure and contract approach that invites detailed, tactical, and transactional oversight rather than a strategic, performance-based management approach. Excessive and fragmented budget control lines also confound effective and efficient programmatic management, erode flexibility, and undermine the sense of trust.

The panel recommends a major reform of existing incentives and relationships, building on steps already begun by the current leadership. Award fees have diverted substantial energy and resources from mission execution; these fees should be replaced by fixed fees that fairly compensate the M&O organizations for their investments in the enterprise and their risks (both financial and reputational). Contract term extensions should be the main vehicle used to encourage M&O performance. DOE must define a collaborative relationship that attracts the best performers and emphasizes taking full advantage of the M&Os’ ability to provide skilled personnel and strong management cultures, as well as proven systems, processes, and practices for effective and efficient mission execution.

Strengthen Customer Collaboration to Build Trust and a Shared View of Mission Success

(Recommendations 18 and 19)

The nuclear enterprise cannot succeed if participants are distrustful of one another and are seen to be divided on major goals and priorities. The trust issues identified by the panel are mainly with the Department of Defense nuclear weapons customers who have repeatedly seen NNSA over-promise and under-deliver. These DOD customers lack confidence in NNSA’s ability to execute warhead life extension programs (LEPs) and major nuclear facility

⁴ National Research Council, *The Quality of Science and Engineering at the NNSA National Security Laboratories* (Washington, DC: National Academies Press, 2013), 72.

modernization projects. This is both a cultural and communications divide. A fundamental void is the lack of an affordable, executable joint DOD-DOE vision, plan, or program for the future of nuclear deterrence capabilities. Although the customers in other mission areas from DOD, the Intelligence Community and elsewhere appear to be satisfied, here, too, a more strategic approach would strengthen both capabilities and the services provided.

The Secretary and Director must take a strong lead in building a culture focused on meeting customer needs. The panel recommends steps to strengthen DOE-DOD collaboration at the level of the Secretaries to align the planning, programming and execution of sustainment and modernization programs for nuclear weapons and their delivery platforms. More generally, the process for NNSA *Interagency Work* should be simplified and streamlined to enhance efficiency.

Conclusion

The panel concludes that the needed leadership for executing this mission is best provided by an engaged Cabinet Secretary with national security qualifications, and with effective execution led by a qualified, empowered Director focused on mission deliverables. After an extended gap in the permanent leadership team, the NNSA now has two very experienced top executives in place. The panel's report outlines a vision and reform agenda for the Secretary and this new team. Given that the disorders observed are more cultural than structural, organizational reform and revision of the NNSA Act, while essential, are only a first step in the actions needed to achieve success. Even with an effective Departmental team in place, success is imaginable only with the strong and active support of the White House and Congress. The panel, therefore, attaches great importance to sustained White House and Congressional focus in ensuring successful implementation of these reforms.

If action is reasonably prompt, measurable progress should be observed very quickly—in a matter of a few months. The panel's final recommendation, as described in Chapter 6, is that a follow-on review be conducted two years from now to assess the status of reform. This review should focus on certain concrete indicators of change such as the following:

- Presidential guidance is in place addressing an executable, funded long-term plan for modernizing the nuclear deterrent capabilities, aligned with DOE&NS and DOD and updated annually, for platform modernization, warhead life extension, and infrastructure recapitalization; DOE&NS and DOD programs are in place to execute this plan
- Highly qualified experts from the National Security Council staff are routinely engaged in policy development and nuclear enterprise oversight and strategic direction
- Congress supports the panel's approach by amending the NNSA Act to clarify the roles of the Secretary, and provide the Director, ONS with the authorities needed to succeed
- Congressional committees and associated staffs are well versed and routinely engage in matters pertaining to the nuclear security enterprise and they are working in a

collaborative manner that ensures consistent, efficient, and effective authorization, appropriation, and oversight

- A strong DOE&NS and ONS leadership team is in place; Congress agrees that political appointments for the Secretary and Director be confirmed by both the Senate Energy and Natural Resources and Armed Services Committees
- The DOE&NS has clearly delineated and documented the authorities of the Director, ONS and his or her relationship with other senior DOE&NS officials, including managers responsible for mission-support functions
- A *risk management* culture has replaced the existing *risk aversion* culture; technical competence is restored within the workforce to address safety issues raised by the Defense Nuclear Facilities Safety Board (DNFSB)
- Internal management reforms have substantially reduced excessively burdensome budgeting detail and transactional oversight, and have led to substantial staff realignments and a performance-based approach; a Federal staff right-sizing plan is in place and being executed
- Warhead Life Extension Program and Infrastructure Modernization Program Managers are established in ONS with control over program resources and accountability for delivering on agreed schedules
- Cost-estimating and resource management staffs are in place, and work is underway to develop needed management tools and data
- The Director, ONS has developed an executable plan to build needed new facilities, reduce maintenance backlogs, and eliminate outmoded facilities
- Mechanisms for strategic dialogue have been instituted and the government-M&O/FFRDC relationships have been restored
- Laboratory Directors, plant managers, and M&O leadership have developed, and are executing, plans that provide for clear identification of required technical work and infrastructure sustainment, accurate and transparent cost accounting, and initiatives to continuously improve value performance
- Contracts with the M&Os have been revised to provide incentives focused on mission success, replacing large award fees with fixed fees and the potential for contract extensions
- ONS customers express satisfaction with collaboration, information sharing, and business practices, as well as performance in delivering on their needs

Demonstrated performance is the ultimate measure of success and the foundation for credibility and trust. The panel believes that its recommendations, as summarized in the Table of Recommendations, if fully and effectively implemented, provide the best chance for a reformed Department and new Office of Nuclear Security to be able to carry out its mission and thus restore trust and credibility with customers and national leaders. If, based on independent oversight, attention to implementation is lacking, and significant progress is not made within the next two years, then the panel believes the only course of action—and a clearly inferior one—is to remove ONS from the Department and make it an independent, autonomous agency.

Table of Recommendations

Strengthen National Leadership Focus, Direction, and Follow-Through

1. **The President should provide guidance and oversight sufficient to direct and align nuclear security policies, plans, programs, and budgets across Departments.**
 - 1.1 The President should reaffirm the importance of the mission and align DOE&NS and DOD priorities through an expanded President's annual stockpile guidance.
 - 1.2 The President should require annual OMB joint budget reviews to shape and align DOE&NS and DOD programs and budgets.
 - 1.3 The President should require annual NSC joint program reviews to shape and align DOE&NS and DOD programs and policies.
2. **Congress should establish new mechanisms to strengthen and unify its leadership and oversight of the nuclear enterprise and its missions.**
 - 2.1 Congress should add Senate Armed Services Committee approval to the confirmation and reporting requirements for the Secretary and Deputy Secretary of DOE&NS (and continue to have the Director, ONS be approved by the Senate Armed Services Committee).
 - 2.2 Congress should require the Secretary to testify annually on the health of the enterprise, and on progress in reforming its governance, to the Senate Energy and Natural Resources and Senate Armed Services Committees, and to the House Energy and Commerce and House Armed Services Committees.
 - 2.3 Congress should implement information sharing and collaboration mechanisms to unify and strengthen its mission-focused oversight across cognizant committees and to better harmonize direction and oversight across the enterprise's mission areas.

Solidify Cabinet Secretary Ownership of the Mission

3. **Congress should amend the NNSA Act and related legislation to clarify Departmental leadership roles.**
 - **The Secretary “owns” the nuclear enterprise missions, sets Departmental policy for the nuclear enterprise, and is accountable to the President and Congress for the enterprise.**
 - **The Director, Office of Nuclear Security (ONS) has full authority to execute the nuclear enterprise missions consistent with the Secretary's policy.**
 - **Departmental mission-support staffs advise and assist the Director in executing enterprise missions.**
 - 3.1 The amended legislation should specify the Secretary's leadership responsibilities and define duties that underscore the Secretary's accountability for the nuclear enterprise and its missions.
 - 3.2 The amended legislation should create the Office of Nuclear Security (ONS) within the Department to perform the missions currently assigned to NNSA.
 - 3.3 The amended legislation should designate a Director, Office of Nuclear Security with full authority to execute nuclear enterprise missions under the policy direction of the Secretary. The

<p>Director should have tenure of at least six years, be compensated at the rate of Executive Schedule Level II, and hold the Departmental rank of a Deputy Secretary or Under Secretary.⁵</p> <p>3.4 The amended legislation should assign risk acceptance authority and accountability to the Director for ONS mission execution.</p> <p>3.5 The amended legislation should grant the Director authority to appoint senior officials in ONS, including the conversion of three Senate-confirmed direct-report positions (Principal Deputy, Assistant Secretary for Defense Programs, and Assistant Secretary for Non-Proliferation Programs) to Senior Executive Service or Excepted Service positions.</p> <p>3.6 The amended legislation should emphasize the importance of the nuclear enterprise missions, by changing the name of the Department to the “Department of Energy and Nuclear Security.”</p>
<p>4. The Secretary should implement Departmental management processes that specify the Director’s authorities for executing nuclear enterprise missions. These authorities include:</p> <ul style="list-style-type: none"> • Line management authority for the safe, secure, and environmentally responsible execution of nuclear security missions • Management authority for mission-support staffs assigned to the Office of Nuclear Security • Concurrence authority for Departmental rulemaking on ONS matters <p>4.1 The Secretary should establish decision-making practices among the senior headquarters staffs that codify the Director’s authority to execute the nuclear security missions consistent with the Secretary’s policies.</p> <p>4.2 The Secretary should establish a matrix management structure that</p> <ul style="list-style-type: none"> • Aligns and codifies roles, responsibilities, authority, and accountability • Specifies the Director’s leadership authority over line-management and mission-support (“functional”) staffs assigned to ONS • Eliminates overlapping headquarters staffs <p>4.3 The Secretary should adopt processes defining the Director’s role in ensuring applicable DOE&NS policies, rules, and orders are compatible with the operating circumstances of the nuclear security enterprise.</p> <p>4.4 The Secretary should designate those senior headquarters positions that have line-management decision authorities and those that are responsible for mission-support functions.</p>
<p>5. The Secretary and Director should reform DOE regulation to strengthen risk management.</p> <p>5.1 The Secretary should strengthen the Department’s analytical expertise and processes for assessing risks, especially for nuclear and other high-hazard functions.</p> <p>5.2 The Secretary should direct a comprehensive review and reform of the Department’s ES&H and Security Orders and Directives to reflect best industry practices.</p> <p>5.3 The Secretary (with Congressional concurrence) should establish a mechanism to improve the Department’s ability to respond to inquiries, findings, and recommendations of the Defense Nuclear Facilities Safety Board.</p>

⁵ The panel recommends the Director hold either the rank of Deputy Secretary or Under Secretary, but did not agree on a specific rank.

Adopt Proven Management Practices to Build a Culture of Performance, Accountability, and Credibility

6. To begin reforming the DOE&NS culture, the Secretary and Director should develop within six months a plan for continuous management learning and improvement, including an implementation plan for the panel's recommendations with milestone target dates.

- 6.1 The Secretary and Director should urgently develop a more robust, integrated DOE&NS/ONS-wide process to provide accountability and follow-up on findings and recommendations from studies and reviews, both internal and external.
- 6.2 The Secretary and Director should establish management metrics for assessing and improving enterprise management.
- 6.3 The Secretary and Director should routinely survey personnel to gauge morale, assess cultural changes, and identify the results of efforts to change management practices.
- 6.4 The Secretary and Director should aggressively communicate reform plans and objectives.

7. The Secretary and Director should implement industry best practices for shaping and building the enterprise workforce.

- 7.1 The Secretary and Director should establish strong career and leadership development programs, require rotational assignments, and place greater emphasis on continuing education and professional certifications.
- 7.2 The Secretary and Director should reshape staffs as needed to implement governance reforms.
- 7.3 The Secretary and Director should conduct a zero-based personnel review to right-size government staffs consistent with recommended reforms and changing workload since the end of the Cold War; this review should include the consolidation of headquarters activities across DOE&NS's Forrestal headquarters, the Germantown campus, and the Albuquerque complex.

8. The Secretary should establish trusted Cost Analysis and Resource Management staffs, tools, and data; the Director should be responsible for this process in ONS.

- 8.1 The Secretary and Director should strengthen the Department's efforts to develop independent cost and resource analysis capabilities.
- 8.2 The Secretary and Director should employ a rigorous Analyses of Alternatives process during program formulation as the basis for assessing and validating program requirements.
- 8.3 The Secretary and Director should take advantage of established DOD resource analysis capabilities in establishing DOE's cost analysis and resource management capabilities.

9. The Director should establish a simple, clear line-management operating structure that both synchronizes activities across programs, mission-support functions, and operating sites and provides leadership focus for key programs.

- 9.1 The Director should create operational mechanisms to perform the key synchronization functions that used to be performed by the Albuquerque Operations Office.
- 9.2 Deputy Directors should be designated to lead in the integrated planning and execution of programs in their mission areas of responsibility.
- 9.3 The Deputy Director responsible for Life Extension Programs, working with DOD, should create a long-term operating plan to support the nation's warhead modernization strategy; this plan should be designed to create a relatively stable, long-term workload.

10. The Director should establish program managers who are provided necessary authorities and resources, and who are held accountable for major mission deliverables.

- 10.1 The Director, in coordination with the responsible Deputy Director, should designate program managers for each Life Extension Program and major construction project.
- 10.2 Program managers should be held accountable to employ effective management practices.
- 10.3 The Director should delegate to the program managers control of any funds identified as uniquely required to execute their programs.
- 10.4 The Director should delegate control over personnel assigned to their programs to the program managers.

11. The Congress, Secretary, and Director should adopt a simplified budget and accounting structure (by reducing budget control lines) that aligns resources to achieve efficient mission execution while providing sufficient visibility to enable effective management oversight.

- 11.1 Congress should reduce the number of Congressional budget control lines to the number of major programs plus major mission-support functions.
- 11.2 The Director should reduce ONS's internal budget control lines to the minimum number needed to assign funding for major programs and mission-support activities across the sites.
- 11.3 Infrastructure funding that is uniquely required for the execution of Life Extension Programs should be integrated into the portfolio of the Deputy Director for Defense Programs.

12. The Director should develop a strategy and plan to reshape the weapons complex to meet future needs.

- 12.1 The Director should ensure that the strategy and plan identify and address the deferred maintenance backlog.
- 12.2 The Director should ensure that the strategy and plan match (and, in many cases, reduce) the infrastructure needed to meet requirements.
- 12.3 The Director should ensure that the strategy and plan identify investments in the needed skills in the workforce.
- 12.4 The Director should ensure that the strategy and plan specify investments in capabilities, including the sites' use of internally directed research and development. The panel recommends Laboratory Directed Research and Development (LDRD) funding of no less than 6 percent, which is needed to sustain leadership in nuclear science, engineering, and manufacturing.

13. The Secretary and Director should continue ongoing efforts to improve construction project management capabilities (at all levels) by introducing disciplined management practices in order to recapitalize infrastructure on time and on budget.

- 13.1 The Director should strengthen infrastructure project management skills, tools, and the collection and analysis of data.
- 13.2 The Director should build on recent efforts to adopt best practices for managing infrastructure projects, especially the use of external peer review.
- 13.3 The Secretary and Director should hold managers accountable for adopting the effective practices detailed in the Department's directive on project management (Order 413), consistent with the principles provided in OMB Circular A-11 in infrastructure projects.

Maximize the Contributions of the Management and Operating (M&O) Organizations to the Safe, Secure Execution of the Mission

14. The Director should reform M&O contracts, replacing the award fee structure with fixed fees for longer (multi-year) award terms and linking performance incentives to the contractual period of performance.

- 14.1 The Director should adopt market-based fixed fees for new M&O contracts commensurate with M&O-borne risks, M&O investments in the enterprise, and the scale of the undertaking.
- 14.2 Where practicable, the Director should convert existing contracts to similar fixed fee arrangements.
- 14.3 The Director should base decisions to extend an M&O contract's period of performance primarily on contributions to mission performance; unsatisfactory performance should lead to early termination.
- 14.4 The Director should seek greater standardization of contract provisions across similar entities.

15. The Secretary and Director should reinforce the M&O parent organizations' obligations to contribute to enterprise management improvement initiatives.

- 15.1 The Director should create collaborative mechanisms to strengthen the joint contributions of the M&O organizations in improving the effectiveness and efficiency of enterprise operations.
- 15.2 The Director should task M&O organizations to identify and assess management improvement opportunities, both for mission execution and for mission-support functions.

16. The Secretary and Director should eliminate wasteful and ineffective transactional oversight.

- 16.1 The Secretary and Director should direct a reduction in the number of audits, inspections, and formal data calls, and better synchronize those that remain.
- 16.2 The Secretary and Director should eliminate transactional oversight in areas where there are better mechanisms for certifying contractor performance, to include reform of the field office's staffing levels and performance criteria.

17. The Secretary, Director, and the National Laboratory Directors should adopt management practices that serve to rebuild the strategic Government-FFRDC relationship.

- 17.1 The Secretary and Director should continue to reinvigorate the strategic dialog with the Laboratory Directors.
- 17.2 Leaders in both the government and M&Os should prescribe and enforce behaviors that rebuild credibility and trust.
- 17.3 The appropriate government officials (e.g., Deputy Directors, program managers) should meet at least monthly with the M&O leadership, and preferably have daily informal interactions.

Strengthen Customer Collaboration to Build Trust and a Shared View of Mission Success

18. The Secretary should collaborate with the Secretary of Defense to better align the planning, resourcing, and execution of sustainment and modernization programs for nuclear weapons and their supporting infrastructure with DOD's delivery platforms.

- 18.1 The Department Secretaries should direct activities that foster collaboration and communications among the principals and staffs supporting the Nuclear Weapons Council (NWC).
- 18.2 The Department Secretaries, supported by the chairman and members of the NWC, should reinvigorate its working-level elements.
- 18.3 The Department Secretaries should establish transparent information sharing mechanisms and increase direct staff collaboration on a daily basis to address persistent communications and trust issues.
- 18.4 The Department Secretaries should confer on each Department's proposed co-chair to the Standing and Safety Committee (SSC), which reports to the NWC.
- 18.5 The Department Secretaries should involve the NWC in drafting and reviewing the annual assessment to the NSC of progress on meeting Presidential guidance.
- 18.6 The Director should strengthen the roles, responsibilities, and accountability of the senior military officer assigned to ONS in order to improve DOE&NS-DOD collaboration.

19. The Secretary and Director should align and streamline processes for collaboration with Interagency customers.

- 19.1 The Secretary, working through the Mission Executive Council, should improve coordination for planning and executing Interagency Work.
- 19.2 The Mission Executive Council should annually conduct a review of the execution of Interagency Work across the nuclear security enterprise to identify improvement opportunities in working relationships, collaborative mechanisms, and management practices.