

INTERAGENCY WORKING GROUP ON FEDERAL SECURITY LABORATORY FACILITIES AND INFRASTRUCTURE:

Recommended Goals to Modernize and Revitalize Federal Security Laboratory Facilities and Infrastructure

PRODUCT OF THE
Committee on Homeland and National Security
OF THE NATIONAL SCIENCE AND TECHNOLOGY COUNCIL



September 2014

EXECUTIVE OFFICE OF THE PRESIDENT
NATIONAL SCIENCE AND TECHNOLOGY COUNCIL
WASHINGTON, D.C. 20502

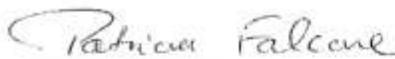
Dear Colleagues:

We are pleased to release the enclosed report, which provides a set of recommendations from the Interagency Working Group on Federal Security Laboratory Facilities and Infrastructure— under the National Science and Technology Council Committee on Homeland and National Security (CHNS) – to modernize and revitalize Federal security laboratory facilities and infrastructure.

Under its one-year charter, the Working Group explored issues related to facility operations and maintenance, modernization approaches, partnerships among agencies and work with the private sector, useful metrics for assessments, and messaging strategies. Discussions on these areas included representatives of a wide range of stakeholders in departments and agencies that support the national security enterprise. This report provides details on six recommendations to address challenges in modernizing and revitalizing facilities and infrastructure at Federal security laboratories, including enabling interagency coordination, adopting and refining methods to assess effectiveness, building awareness of national security facility capabilities to leverage resources, articulating priorities in national strategies, facilitating best practices, and addressing legislative and regulatory funding barriers. The recommendations provide valuable opportunities for the Federal departments and agencies to support state-of-the-art facilities and infrastructure that enable and enhance national security capabilities.

We thank the Working Group for all of its contributions and look forward to continuing progress on these important issues.

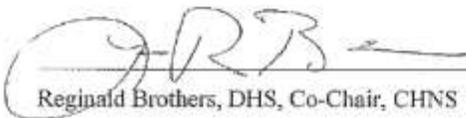
Sincerely,



Patricia Falcone, OSTP, Co-Chair, CHNS

5 August 2014

Date



Reginald Brothers, DHS, Co-Chair, CHNS

5 Aug 2017

Date



Alan Shaffer, DoD, Co-Chair, CHNS

5 Aug 14

Date

About the National Science and Technology Council

The National Science and Technology Council (NSTC) is the principal means by which the Executive Branch coordinates science and technology policy across the diverse entities that make up the Federal research and development (R&D) enterprise. One of the NSTC's primary objectives is establishing clear national goals for Federal science and technology investments. NSTC prepares R&D packages aimed at accomplishing multiple national goals. The NSTC's work is organized under five committees: Environment, Natural Resources, and Sustainability; Homeland and National Security; Science, Technology, Engineering, and Mathematics (STEM) Education; Science; and Technology. Each of these committees oversees subcommittees and working groups that are focused on different aspects of science and technology. More information is available at www.whitehouse.gov/ostp/nstc.

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The Office of Science and Technology Policy (OSTP) was established by the National Science and Technology Policy, Organization, and Priorities Act of 1976. OSTP's responsibilities include advising the President in policy formulation and budget development on questions in which science and technology are important elements; articulating the President's science and technology policy and programs; and fostering strong partnerships among Federal, state, and local governments, and the scientific communities in industry and academia. The Director of OSTP also serves as Assistant to the President for Science and Technology and manages the NSTC. More information is available at www.whitehouse.gov/ostp.

About the Interagency Working Group on Security Laboratory Facilities and Infrastructure

The Interagency Working Group on Federal Security Laboratory Facilities and Infrastructure was established by action of the National Science and Technology Council (NSTC), Committee on Homeland and National Security (CHNS). Its purpose is to advise and assist the CHNS and NSTC on policies, procedures, and processes to support facility planning and operational contributions across the U.S. national security science and technology enterprise. The Interagency Working Group on Federal Security Laboratory Facilities and Infrastructure serves as a forum or community of practice across departments and agencies for the sharing and creation of best practices for the planning, resourcing, and use of scientific and technical facilities and infrastructure in support of national security missions.

About this Document

This document was developed by Interagency Working Group on Federal Security Laboratory Facilities and Infrastructure and published by OSTP.

Acknowledgements

Contributors that provided significant support to the activities of the Interagency Working Group on Federal Security Laboratory Facilities and Infrastructure and the development of this report include Susannah V. Howieson and Vanessa Peña from the IDA Science and Technology Policy Institute.

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Printed in the United States of America, 2014.

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EXECUTIVE SUMMARY

Federal Government laboratory facilities and infrastructure (F&I) provide the assets necessary to conduct the research and development, testing, and evaluation (RDT&E) needed to fulfill national and homeland security missions. The F&I assets that support national security RDT&E enable advances in science and technology, as well as the development of skills by and training of researchers. National security F&I range from conventional laboratories, sled tracks, and wind tunnels, to large, highly sophisticated instrumented open-air firing ranges that support RDT&E of weapon systems. These unique resources can be better leveraged across the academic and private sectors to enhance the capabilities and advances necessary to meet current and emerging national and homeland security mission needs.

In recognition of the important role of Federal laboratory F&I, the National Science and Technology Council (NSTC) Committee on Homeland and National Security (CHNS) chartered an interagency Federal Security Laboratory Facilities and Infrastructure Working Group to examine the common challenges to maintaining and recapitalizing the national security F&I at Federal laboratories, centers, and agencies (collectively referred to as “Federal laboratories”). After a year-long examination, the Working Group developed six goals to bolster the national security F&I enterprise through the improvement of interagency coordination, planning, investments, communication, and assessment of national security F&I.

GOAL 1: Establish an interagency group to enable and support coordination of national security F&I.

The Working Group recommends establishing a single interagency group within the Federal Government to facilitate coordination and information exchange and address enduring challenges in maintaining the national security F&I enterprise. The interagency group would help identify and share current capabilities across agencies and realize the improvements necessary to maximize the value of national security F&I to the Federal Government and the Nation.

GOAL 2: Adopt and refine metrics, processes, and tools to accurately capture condition, mission impact, and effectiveness of national security F&I.

The Working Group recommends improving current methods of describing the condition, usefulness, and mission criticality of national security F&I to better inform agency investment decisions. Needed methods include developing and refining accurate quantitative measures that link the condition of national security F&I to mission impact, establishing and implementing a rigorous and repeatable process for collecting and analyzing condition and capability data from assets, and adopting flexible and customizable tools and management systems for collecting and analyzing national security F&I data.

GOAL 3: Create an online catalog of national security F&I to effectively communicate the value and opportunities for shared use associated with Federal resources and capabilities.

The Working Group recommends effectively communicating the status of unclassified national security F&I at Federal laboratories by developing a comprehensive online catalog that describes uses and capabilities across the national security enterprise. The catalog should be supported by developing an Executive-level directive for agencies and laboratories to provide continuous and up-to-date information on their available national security F&I resources. The catalog could also be linked to F&I metrics, processes, and management systems developed through Goal 2.

GOAL 4: Articulate F&I priorities in national security science and technology strategies to better connect technical priorities with the necessary F&I.

The Working Group recommends including F&I priorities in Executive-level national security S&T strategies

to enable more effective strategic agency planning and investments. Language inserted into strategies could specify and encourage ways for agencies to communicate capabilities, develop partnerships, pursue effective funding mechanisms, and improve messaging of national security F&I capabilities as they relate to national security S&T priorities across private and public sectors.

GOAL 5: Facilitate the development of best practices for national security F&I partnerships among agencies based on lessons learned from past experiences across the Federal Government.

The Working Group recommends developing a best practices document to help agencies identify opportunities, develop and implement partnerships, and share lessons learned from existing national security F&I partnerships. Coordination among agencies and laboratories is necessary to identify common mission needs that can serve as the basis for developing future partnerships.

GOAL 6: Address existing legislative and regulatory barriers to funding national security F&I.

The Working Group recommends addressing legislative and regulatory barriers so as to enable strategic funding commitments to sustain national security F&I across the Federal Government. Solutions could include clarifying regulations and policies on using interagency cooperative funding and recapitalization funds and expanding current private financing mechanisms for national security F&I. These actions would create a more agile national security F&I enterprise that can effectively respond to changing mission needs.

The recommendations for achieving these six goals are interdependent and complementary. The Working Group is progressing toward their implementation by providing a foundation to improve interagency coordination and develop Federal-wide solutions that will properly address national security F&I needs.

INTRODUCTION

The Federal Security Laboratory Facilities and Infrastructure Working Group (hereinafter referred to as the “Working Group”) of the National Science and Technology Council (NSTC) Committee on Homeland and National Security (CHNS) identified the top policy challenges that are barriers to modernization and recapitalization of the national security F&I. This report describes the Working Group’s six goals for activities and policies that will permit the U.S. Government to optimize available resources for national security F&I and overcome the technological challenges of the future. This introduction provides background on the national security enterprise by describing the role of national security F&I in allowing the United States to keep pace with a twenty-first century threat environment, as well as issues that may compromise the future of national security F&I.

Role of National Security Facilities and Infrastructure

Many of the facilities used in the research and development enterprise are in poor condition or reaching the end of their design lives. The facilities and supporting infrastructure include land, buildings, and fixed capital equipment, regardless of whether the facilities are to be used by the government or by private organizations, and regardless of where title to the property rests (Office of Management and Budget Circular A-11: Preparation, Submission, and Execution of the Budget). F&I are both unclassified and classified facilities and supportive infrastructure that provide the laboratories, centers, and agencies of the Federal Government the ability to conduct research, development, test, and evaluation (RDT&E) in fulfillment of national and homeland security missions. For the purpose of this report, “national security F&I” refers to F&I that support RDT&E. Such F&I range from biodefense laboratories and high-performance computing facilities to large instrumentated facilities composed entirely of an instrument, such as an accelerator or wind tunnel. They vary in size and complexity from conventional laboratories (albeit classified in some cases), sled tracks, and wind tunnels, to large, exquisitely instrumented open-air firing ranges that support RDT&E of weapon systems. These F&I provide key capabilities to the Department of Defense, Department of Energy, Department of Homeland Security, and Intelligence Community as well as others (private sector and other departments).

National security F&I are critical to understanding basic threat phenomenology like flammability or structural strength, to developing successful countermeasures to threats related to national security missions. These F&I support the training of researchers in specialized disciplines relevant to current and emerging mission needs to enable them to best respond to changing national security threats. These researchers are world-class scientists and engineers involved in cutting-edge inquiry in areas that can be exploited for next-generation military applications. Scientists and engineers in the academic and private sectors also leverage the unique Federal capabilities and resources at national security F&I to enhance RDT&E and innovative technology application across industries and the economy at large. National security F&I have enabled and supported technological advances from developing advanced cathode technology for battery-powered vehicles to making a credit-card sized explosives detector, thereby contributing to jobs creation and economic growth.

Drivers to Modernize and Revitalize Federal Security Laboratory Facilities and Infrastructure

Poor F&I conditions adversely affect the safety, cost, quality, and continuity of RDT&E and damage the ability of Federal laboratories to attract and retain highly qualified scientists and engineers to work on critical mission needs. First-class F&I helps attract scientific and technical professionals to Federal RDT&E programs, which, in turn, encourage both formal and informal multidisciplinary collaborations and

facilitates the transfer of experimental results to applications. Deteriorating national security F&I may compromise the Federal Government’s ability to develop a scientific and engineering workforce that is trained to handle, package, and transport hazardous materials and operate facilities containing such materials. Modern national security F&I enhance scientific productivity, whereas inferior F&I can disrupt RDT&E programs, reduce confidence in experimental results, and stifle innovation. These challenges threaten the ability of Federal agencies to successfully complete their security missions and respond to emerging threats.

Given reduced Federal budgets, the national security agencies must compete for resources to bolster the declining state of national security F&I. New, more creative ideas and policies are needed that support modernization of the existing national security F&I enterprise and the allocation of resources for recapitalization and maintenance necessary to sustain this enterprise.

Overview of Working Group Goals

Figure 1 displays the Working Group’s six goals, including one overarching goal that cuts across and integrates the others. Together, the goals aim to support a robust national security F&I enterprise for RDT&E that is capable of overcoming the challenges previously described.



Figure 1. Six Goals Recommended by the Working Group

If implemented, these goals will support the modernization and revitalization of national security F&I to allow Federal laboratories to perform their mission activities and improve their resiliency and sustainability. These goals will also meet the Federal Government’s needs to reduce redundancy of Federal facilities, efficiently operate national security F&I, and identify opportunities to leverage resources across the Federal national security enterprise. These goals could have applicability across all Federal F&I related to science and technology (S&T), not just F&I that support national security.

GOAL 1: ESTABLISH AN INTERAGENCY GROUP TO ENABLE AND SUPPORT COORDINATION OF NATIONAL SECURITY F&I

To address the current and future challenges in stewardship of national security F&I at Federal laboratories, the Working Group recommends establishing a single interagency group to facilitate the coordination of investments and capabilities across the Federal Government in this domain. Current interagency discussions of capital-planning processes in this area are marginal and ad hoc. Identifying interagency opportunities for national security F&I partnerships would be better facilitated by increasing participation in and sharing results from agencies' own capital plans. To help improve communication and understanding of national security F&I needs across the Federal Government, agencies should increase transparency and seek feedback from other agencies with complementary capabilities, RDT&E programs, and goals. Agencies and laboratories should improve coordination and communication with each other to identify common mission capabilities and needs that can serve as the basis for national security F&I partnerships.

These activities should be pursued through an interagency group that includes participation from leadership across agencies that support national and homeland security missions and capabilities.

Specific objectives for an interagency group should include:

- Identify and help define priorities and policies for strengthening national security F&I as a critical resource for meeting national priorities and achieving national goals.
- Facilitate efforts within and across Federal agencies to improve coordination of national security RDT&E capabilities and identify both effective investments in national security F&I and areas of possible redundancy that could be streamlined.
- Identify cross-cutting national RDT&E goals and priorities that are aligned with agency missions and would benefit from partnerships for shared or jointly funded national security F&I.
- Create a focused point of action for national security F&I that could:
 - Communicate needs and priorities to the Administration, leadership of Federal agencies, Congress, and the public, and
 - Serve as a coordination point for the academic and private sector to enhance the potential value they can realize from national security F&I.
- Support informed Federal policy development by providing technical and expert perspectives related to national security F&I.

The existing Working Group, under its one-year charter (reproduced in Appendix A), provided a valuable opportunity to discuss and learn from interagency efforts to plan, prioritize, and evaluate national security F&I. A standing interagency group should be established under the Executive Office of the President to enable continued dialogue on future Federal investments, methods for improving management practices within and across agencies, and long-term policy solutions.

Improved agency coordination of national security F&I stewardship to revitalize and modernize Federal laboratories will significantly add to the value of agencies' programs and missions, beyond what could be achieved by a single agency alone.

Among the alternatives for establishing the group are:

- Establish a committee under the NSTC, equivalent to one of five existing NSTC committees (at the level of the CHNS), to address broader Federal science and technology F&I needs and solutions. The committee could be chaired or co-chaired by Office of Management and Budget (OMB), which has responsibilities for managing Federal real property, and the Office of Science and Technology Policy (OSTP).
- Extend (or expand) the existing Working Group charter or establish a subcommittee under the NSTC/CHNS for one or more years to continue the Working Group's activities and implement the proposed goals outlined in this report. (A proposed charter is provided in Appendix B.) In this way, the Working Group or subcommittee would continue to serve an advisory role to the NSTC, Executive-level offices such as OMB and OSTP, and other Federal entities on national policies, procedures, and processes to support F&I for national and homeland security missions.
- Assess opportunities to address national security F&I using an existing interagency group's forum and structure as models. An example could be the Mission Executive Council (MEC), which is composed of leadership at the Department of Defense (DOD), National Nuclear Security Administration (NNSA), Department of Homeland Security (DHS), and Intelligence Community, which all have national security missions. For instance, a subgroup on national security F&I under MEC could be created.

The quality and advancement of U.S. scientific and technical capabilities for national and homeland security missions depend on the health of national security F&I. In order to have a robust S&T enterprise for these missions, effective stewardship of national security F&I is critical. Improved agency coordination of national security F&I stewardship activities to revitalize and modernize Federal laboratories will significantly add to the value of agencies' programs and missions, beyond what could be achieved by a single agency alone. Establishing a standing interagency group will assist Federal agencies, laboratories, and policy-makers in supporting informed policy developments that impact national security F&I. The organization will also help agencies optimize investments by providing a venue to leverage funding and share resources, which could provide major cost savings to the Federal Government by reducing redundancies and enhancing research opportunities based on common priorities.

GOAL 2: ADOPT AND REFINE METRICS, PROCESSES, AND TOOLS TO ACCURATELY CAPTURE CONDITION, MISSION IMPACT, AND EFFECTIVENESS OF NATIONAL SECURITY F&I

To describe the value of national security F&I within and across agencies, the Working Group recommends that agencies adopt and refine more accurate and complete metrics, processes, and tools that better capture the condition and mission criticality of national security F&I. This effort would involve:

- Developing quantitative measures that link the condition of national security F&I to mission impact;
- Establishing and implementing a rigorous and repeatable process for collecting and analyzing condition and capability data from these assets; and
- Adopting more flexible and customizable tools for storing and evaluating national security F&I data, such as the system described in the box below.

BUILDER Sustainment Management System (BSMS)

BSMS is a web-based software application developed by the U.S. Army Corps of Engineers to assist civil engineers, technicians, and managers who operate and maintain F&I. BSMS is a knowledge-based process, whereby real property data is collected and life cycles are modeled based on the age and material of certain components in the asset. A condition index measures the physical condition of assets based on their expected stage in the life cycle. Inspections verify and update the condition data. BSMS has the following benefits:

- Develops short- and long-range work plans that increase efficiency in operations
- Simulates the future impact of current operations and management decisions
- Ensures mission readiness and sustainment of F&I investments
- Lowers inspection costs through the application of knowledge-based and modeling

principles.

A new feature of BSMS is the ability to perform functionality assessments. Functionality relates to a building's suitability to function as intended and required for an agency's mission. Functionality is distinct from, and determined independently from, the asset's physical condition metrics. Although the functionality assessment is not a detailed engineering assessment, it helps inform long-range budgeting and modernization planning. Functionality provides another perspective in addition to the physical condition to assess the capability of national security F&I in meeting an agency's mission.

BSMS is currently used across the DOD and is being explored for use by the Office of the Director of National Intelligence and the DOE NNSA. Within five years, DOD is expected to evaluate the facility condition of all its real property assets using the tool.

Source: U.S. Army, 2013. "BUILDER Sustainment Management System."

The working group recommends an interagency effort to investigate adoption of BSMS and the impacts of its use across the Federal Government. This effort should evaluate management systems currently being used to determine F&I condition and functionality for agency planning and prioritization. Laboratory use of BSMS will facilitate day-to-day management of national security F&I. BSMS, if used as a standardized tool, could provide decision-makers with an accurate and complete evidence base for more effective planning of national security F&I at Federal laboratories and across an agency's real property

portfolio.

Further work can and should be done to quantify the unique characteristics and functionality provided by national security F&I. Certain Federal agency metrics, particularly the condition index, databases, and models currently used to analyze national security F&I data, for instance, do not reflect a correlation to risks to and impacts on an agency missions. The capabilities to measure function as well as translate the condition of the F&I to its scientific, technical, and mission impacts are limited. Agencies and laboratories use these inaccurate metrics and processes when making strategic investment decisions as well as for day-to-day management. Thus, to better understand the weaknesses of current metrics, processes, and tools in capturing the importance of national security F&I to accomplishing agency missions, an interagency effort should be pursued to identify national security F&I that (1) are in poor condition and (2) have had low agency prioritization in previous years. Agencies could then examine possible limitations of their metrics and processes in conveying national security F&I impact to their missions.

In addition to measuring the physical conditions and assessing the ability to meet the scientific mission, Executive Order (EO) 13423, *Strengthening Federal Environmental, Energy, and Transportation Management*,¹ and EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance*,² include sustainability goals for Federal agencies and focus on making improvements in the environmental, energy, and economic performance of a facility to include implementation of the 2030 net-zero-energy building requirement. In addition, EO 13653, *Preparing the United States for the Impacts of Climate Change*,³ orders actions to modernize Federal programs to support climate-resilient investment by reforming policies and Federal funding programs that may increase the vulnerability of natural or built systems, economic sectors, natural resources, or communities to risks related to climate change. EO 13653, for example, calls for a Federal Flood Risk Management Standard that will provide a consistent approach across agencies and will provide a greater flood risk reduction for major Federal investments in the face of a changing climate. The General Services Administration (GSA) and DHS are drafting a *Joint Strategy for Federal Facility Resilience*, which will establish priorities for enhancing security and resilience under the responsibility of GSA and DHS.

National security F&I compete directly with other construction projects for funding and national security F&I projects tend to have lower priority, partly because of ineffective communication of an asset's value to an agency's mission. The adoption and refinement of new metrics, processes, and tools would more accurately inform agency and laboratory investment decisions and increase understanding of the value of national security F&I to agencies' missions.

¹ Exec. Order No. 13423, 72 FR 3919 (January 26, 2007).

² Exec. Order No. 13514, 74 FR 52117 (October 8, 2009).

³ Exec. Order No. 13653, 78 FR 66819 (November 6, 2013).

GOAL 3: CREATE AN ONLINE CATALOG OF NATIONAL SECURITY F&I TO EFFECTIVELY COMMUNICATE THE VALUE AND OPPORTUNITIES ASSOCIATED WITH FEDERAL RESOURCES AND CAPABILITIES

To address challenges in effectively communicating the values and opportunities of national security F&I at Federal laboratories, the Working Group recommends the development of an online catalog that describes available F&I capabilities. Traditionally, Federal laboratories have communicated their national security F&I capabilities through published reports and online materials produced by the agencies, laboratories, research programs, or technology-transfer offices. This diversity of reporting sources and media has led to uncoordinated and fragmented messages and ineffective communication of national security F&I capabilities. In addition, the definition of F&I varies across information resources, and many resources are targeted solely to a particular agency's programs and are thus ineffective for use as a Federal-Government-wide resource.

The proposed catalog should be comprehensive, covering the unique unclassified research resources available at national security F&I, and easily accessible by key stakeholders (e.g., other agencies, laboratories, academic and private sectors, and Congress) and the public. It should also describe variables, attributes, and unique unclassified functions across the Federal laboratory enterprise, possibly through a discipline-agnostic cataloging system (as proposed below). Selection criteria for inclusion in the catalog should be developed. Any identified security risks should also be managed with the creation of the catalog.

The Working Group recommends developing the catalog in a discipline- and laboratory-agnostic manner and in partnership with managers of existing resources, such as those managed by OMB and the Federal Laboratory Consortium (FLC).

- OMB, through the Federal Real Property Council (FRPC), maintains a Federal real property database that classifies F&I at Federal laboratories using unique identifiers. However, the database is not comprehensive since it captures the dominant use rather than all capabilities the F&I supports.
- FLC maintains an online list of 314 F&I resources and capabilities across Federal laboratories. The FLC list is based on web-search data and a voluntary data call, and it is incomplete and inconsistent in its current state.

The new catalog should employ identifiers used by the FLC and OMB to enable consistent tracking of assets across existing databases. Details are provided in the box on the next page.

Discipline-Agnostic Cataloging System

To maintain a discipline-agnostic categorization, the Working Group developed a cataloging

system composed of two dimensions: scale and capability. This cataloging system was piloted at the Department of Energy's Oak Ridge National Laboratory High Temperature Materials Laboratory and the National Institutes of Health's Integrated Research Facility at the National Interagency Biodefense Campus. These pilot studies demonstrated that unique research capabilities exist at all scales, validating that the *small-, medium-, large-, reliant-, and facility* scale categories are relevant to the catalog.

First Dimension: Scale

- Small-scale instruments have unique functionality that cannot be obtained directly through off-the-shelf purchase but can be readily relocated or adapted for different applications.
- Medium-scale instruments have a unique functionality but may not be readily relocated or adapted for different applications.
- Large-scale instruments have unique functionality and may be transportable, but are not readily portable. A large-scale instrument may be made up of many smaller units that are themselves significant items of inventory. Regardless of whether the smaller units can be used separately, they form an integral part of the larger instrument.
- Reliant instruments have the same characteristics as small- or medium-scale instruments, but they require functional input from a large or infrastructure-class resource (e.g. a set of testing equipment that requires a particle beam from a reactor or accelerator).
- Facilities are all the research resources that form a distinct and discrete part of a laboratory.

Second Dimension: Capability

- Physical process equipment produces a sample, component, or specimen through physical or mechanical means or chemical routes (excluding biochemical and biomolecular processes).
 - Biological process equipment produces a sample, material, or specimen through biological means and associated non-biological techniques to refine and isolate.
 - Biotic material and living subject resources/repositories study human and animal subjects and repositories for biological samples and organisms.
 - Sample characterization and analysis research carry out specific measurements and analysis techniques on samples and specimens.
 - System/component characterization and analysis provide generic techniques to characterize systems or components and to extract physical parameters from components and systems that are required to perform simulations.
 - Modeling/simulation characterization and analysis simulate the performance of systems or components.
-

An Executive-level directive should be issued to guide agencies in the development of a catalog and facilitate maintenance of the online information by individual agencies and laboratories. Periodic updates will ensure continued relevance, use, and success of the resource. Opportunities to link the catalog and information provided by agencies with the adoption of F&I management metrics, such as condition and utilization, processes, and management systems, are described under Goal 2.

Agencies should also use the catalog to create informational products of their national security F&I capabilities. Coordinated and well-structured informational products can successfully showcase the value of national security F&I investments and inform decision-makers of the criticality of maintaining a robust national security F&I enterprise. Agencies should develop a set of harmonized messages with information from the catalog, which could be updated periodically to communicate significant accomplishments and advances to stakeholders.

The catalog will support new collaborations and partnerships among Federal laboratories and across sectors and raise awareness of national security S&T directions and priorities.

The development of an online F&I catalog will provide consolidated information on the resources and capabilities available through national security F&I. The catalog would be an easy-to-access search tool for the public and private sectors to identify national security F&I based on capabilities, availability, location, and other attributes. The catalog would support new collaborations and partnerships among Federal laboratories and across sectors and raise awareness of national security S&T directions and priorities. It would also help inform Federal and agency-level prioritization and decision-making on current and future national security F&I investments.

GOAL 4: ARTICULATE F&I PRIORITIES IN NATIONAL SECURITY SCIENCE AND TECHNOLOGY STRATEGIES TO BETTER CONNECT TECHNICAL PRIORITIES WITH THE NECESSARY F&I

National security F&I priorities should be clearly identified in national security S&T strategies developed by the Executive Office of the President, Federal agencies, laboratories, and research centers and institutes. To better align national security S&T priorities with agency national security F&I planning, future national security S&T strategies should do the following:

- *Identify clear national security S&T priorities to ensure national security F&I capabilities.* Executive-level strategies for national security S&T should define the areas in which the United States will aim to be a leader, adapter, or adopter. Agencies should use this prioritization scheme to identify key national security F&I capabilities that align with the acknowledged national security S&T priorities. Agencies should consider coordinating and aligning national security F&I capabilities with other agencies when evaluating future needs and determining agency-level priorities.

National security F&I priorities should be clearly identified in national security S&T strategies.

- *Embrace a whole-of-government approach to developing and sustaining national security F&I.* Interagency efforts should be encouraged to promote partnerships for shared investments in national security F&I that support cross-cutting national initiatives. Agencies with F&I that support national and homeland security missions should identify common national security science and technology priorities and articulate a clear and compelling mission need across agencies to support the joint development of national security F&I. These agencies should be encouraged to identify national security centers of excellence and develop effective mechanisms to share access to these centers across agencies. To facilitate national security F&I partnerships and a more cooperative culture, agencies should develop effective methods to share life-cycle management strategies that will facilitate coordination and cradle-to-grave management of shared national security F&I across the Federal Government.
- *Develop effective policies and mechanisms to encourage the development and coordination of national security F&I.* Agencies should be encouraged to establish policies, including proposals for legislation, regulations, financing mechanisms, interagency working groups, and task forces, that address and coordinate national security F&I needs across the Federal Government.
- *Ensure constructive communication and coordination that effectively leverages national security F&I resources across sectors.* Such communication and coordination means recognizing the role of multiple Federal agencies, industry, and academia in the national security S&T ecosystem. Agencies should be encouraged to coordinate and develop consistent and clear messages and strategies to communicate the accomplishments as well as future needs of national security F&I across the Federal Government. Effective messages should also reflect the role and opportunities

of national security F&I in developing a national security workforce and strengthening industry and the economy.

Previous national security S&T strategies and priorities have not adequately considered the F&I necessary to achieve specified goals. In practice, Federal investments in national security F&I are balanced with investments in S&T endeavors themselves. Including the above considerations in the development of future national security S&T strategies would help agencies prioritize F&I, communicate necessary resource priorities to financial officials, and navigate the cross-cutting issues involved in coordinating, planning, partnering, financing, and budgeting for F&I.

GOAL 5: FACILITATE THE DEVELOPMENT OF BEST PRACTICES FOR NATIONAL SECURITY F&I PARTNERSHIPS AMONG AGENCIES BASED ON LESSONS LEARNED FROM PAST EXPERIENCES ACROSS THE FEDERAL GOVERNMENT

Collaborations can help revitalize national security F&I by leveraging resources across agencies, industry, and other entities. National security F&I partnerships among agencies can reduce costs, increase efficiency of operations and maintenance, enhance research capabilities, and heighten S&T collaborations to meet the diverse objectives of multiple organizations.

To facilitate national security F&I partnerships among agencies, the Working Group recommends that OMB and OSTP, in coordination with the interagency group proposed under Goal 1, develop and publish a best practices document that describes options for agencies to identify opportunities, plan, implement, and share lessons learned from existing national security F&I partnerships.

The best practices document should inform agencies and laboratories, and other interested stakeholders, about lessons learned and strategies that encourage and help facilitate national security F&I partnerships to optimize resources, address common challenges, and reduce duplication. Given that different Federal partners are funded from different congressional appropriations and committees, leveraging resources between multiple agencies seeking to share costs for the construction or operation and maintenance of F&I is not straightforward. (Historically, it has required case-by-case legislative approval from Congress.

The best practices document should include both successful and unsuccessful examples of partnerships that secured sustainable funding. A successful example that the Working Group reviewed was the joint-Treasury fund for the Captain James A. Lovell Federal Health Care Center, a partnership between DOD and the Department of Veterans Affairs (VA). Through extensive planning and communication, DOD and VA obtained Congressional approval for a Treasury fund that supports joint operations and management of their F&I. National security F&I partnerships should also consider combining multiple sources of funding. The Capabilities Replacement Laboratory project at Pacific Northwest National Laboratory incorporated financing from three Federal agencies, State partners, and private organizations.

The best practices document would enable agencies and laboratories to consider leveraged resources from across the Federal Government when making national security F&I investment decisions. It would also support agencies in effectively sharing, utilizing, and leasing F&I and research equipment resources.

GOAL 6: ADDRESS EXISTING LEGISLATIVE AND REGULATORY BARRIERS TO FUNDING NATIONAL SECURITY FACILITIES AND INFRASTRUCTURE

Future demands for modern and advanced national security F&I are likely to increase as national security S&T missions evolve and existing assets approach the end of their life cycles. Strategic agency funding investments for national security F&I are critical. To facilitate this goal, Federal agencies, Executive offices, and Congress should address the legislative and regulatory barriers present in funding national security F&I.

Several funding options to develop national security F&I exist, including agency recapitalization programs and private financing, but agencies find it difficult to employ these options because they can complicate approval processes and delay projects. As such, the Working Group recommends that:

- Federal agencies propose legislation to clarify policies on the use of agency funds for recapitalization programs for national security F&I, and
- The Administration consider working with relevant legislative-branch entities to expand current private financing and support mechanisms for national security F&I.

These actions would help address the challenges Federal agencies face when funding national security F&I and would create efficiencies in planning and investments without compromising congressional oversight of agencies' appropriated funds.

Clarify Policies on Using Agency Funds for Recapitalization Programs

One mechanism to revitalize and recapitalize national security F&I is through real property programs, such as those funded by minor construction authorities. (See the box on the next page). Current agency interpretations of statutory minor construction limits require that all construction for a single asset be considered as one project. Project requests are typically independent, making it difficult to develop a cohesive proposal below the funding threshold.

The Working Group identified the following clarifications that Federal agencies should make through legislative proposals on the minor construction limit authorities for Federal laboratories, centers, and agencies with national security F&I:

- The independence of renovation and modernization projects is determined solely by the project's scope. Projects are considered to be independent if (1) their only relationship is overlapping in time or they are being conducted within the same asset; and (2) the F&I is complete and useable if any single project is completed.
- "Betterments" (work that improves an asset) to restore the condition of an asset to comply with statutory, regulatory, or other mandatory requirements or to improve functionality, for example, are considered "repairs" (work that restores an asset) and not bound by minor construction limits.

Minor Construction Statutes across Federal Agencies

DOD laboratories can recapitalize their facilities through the Laboratory Revitalization Demonstration Program (LRDP) or through discretionary funding authorized under Section 219 of the National Defense Authorization Act (NDAA) for Fiscal Year (FY) 2009. These authorities were extended in the NDAA for FY 2014. Title 10 U.S.C. § 2805(d) authorizes the Secretaries of the Air Force, Army, and Navy to approve the use of (1) Operation and Maintenance appropriations or (2) appropriations available for military construction not otherwise authorized by law, or (3) funds authorized under Section 219(a) of the NDAA for FY 2009 for unspecified minor military construction projects costing no more than \$4 million. Otherwise, unspecified minor construction projects are funded at a cost equal to or less than \$2 million, or equal to or less than \$3 million for deficiencies that threaten life, health, or safety. Section 219 of the NDAA for FY 2009 authorizes laboratory directors to use up to 3% of the laboratory's budget towards revitalizing and recapitalizing F&I.

Other agencies also have minor construction limits. At the VA, for example, minor construction projects are standalone projects on land owned by the Federal Government that expand the existing square footage of the asset by more than 1,000 gross square feet and are less than \$10 million (from FY 2012). Minor construction limits for the Department of Energy and NASA are also \$10 million.

Legislative proposals to clarify policies for Federal funding would provide the flexibility to integrate renovation plans into targeted projects executed in sequence that are optimized according to the asset's needs and funding availability rather than meeting the requirement to complete all work as a single, large project. If enacted, the legislation would minimize facility downtime and therefore impact to an agency's mission. Clarifying minor construction policies would facilitate compliance with changing statutes, regulations, and other requirements, such as seismic upgrades and energy efficiency measures.

Expand Private Financing Mechanisms

Agencies and laboratories across the national security enterprise are not pursuing beneficial and mutually desired private financing as regulated by OMB to develop national security F&I due to unclear approval processes, lack of leadership support, bureaucracy, and varied interpretations of requirements for existing Federal leasing mechanisms.

Current regulations, codified by OMB Circular A-11 Appendix B, prevent the use of private financing to invest in public buildings, facility improvements on public lands, or facilities that will be retained by the government at the end of a lease term.⁴ The rules were designed after the Budget Enforcement Act of 1990 to maintain budgetary transparency and reduce the risk of agencies making irreversible budget commitments, particularly those with substantial operations and maintenance liabilities. Strict interpretation of the rules has discouraged public-private partnerships by requiring that agencies budget the full net present value necessary to develop or construct the F&I in the first year of the program activity if ownership of the facility is transferred to the government at the end of the lease. One impact of this requirement is that some agencies use costly short-term leases to meet long-term property needs, choosing not to own the facility when ownership would be a less-costly option.

The Working Group recommends that the Administration consider working with relevant legislative branch entities to develop policies, guidelines, and procedures for innovative alternative financing mechanisms to share construction and maintenance costs with the private sector that will reduce the Federal Government's obligations and risks, provide greater flexibility, and generate cost savings. Another

⁴ OMB. 2013. OMB Circular A-11, http://www.whitehouse.gov/omb/circulars_a11_current_year_a11_toc.

possible policy position could be to encourage agencies to outlease existing property on Federal land to the private sector. This would create a revenue stream that benefits the U.S. Government by supplying funding through in-kind payments or other contributions that can be used to address national security F&I needs.

Expanding options for private financing would complement the current mix of funding strategies for national security F&I. It would broaden opportunities for Federal security laboratory F&I investments from non-Federal sources while protecting the government's interest in sound budgetary planning.

CONCLUSION

The Nation's national security S&T enterprise maintains a diverse array of unique F&I that are impractical or impossible for the private sector to replicate. These assets range in size and complexity from conventional (and sometimes classified) laboratories, sled tracks, and wind tunnels to large, highly sophisticated instrumented open-air firing ranges that support the research, development, testing, and evaluation of weapon systems.

In addition to the technical capabilities that modern, well-equipped facilities and infrastructure deliver, they can also increase safety and, by minimizing down time, increase research, development, testing, and evaluation program continuity, as well as decrease long-term costs. State-of-the-art national security F&I maximize opportunities for hands-on engagement, discovery, and practical application, promote invention and innovation, and speed the scaling and commercial development of new ideas. Equally important, such F&I and the research experiences they enable benefit the Federal workforce by attracting new talent, building commitment and loyalty, encouraging creative output, and increasing retention. Moreover, high-quality F&I can be invaluable for attracting academic and private sector engagement and catalyzing multidisciplinary collaborations. Advanced F&I are necessary to provide the next generation of scientists and engineers with training and skills in handling, packaging, and transporting hazardous materials.

To address the needs of the national security F&I enterprise, the National Science and Technology Council's Committee on Homeland and National Security established an interagency Working Group that served as a community of practice for Federal laboratories with national-security missions and capabilities. The Working Group concluded its one-year charter with the writing of this report that describes six goals necessary to support and modernize national security F&I in an era of reduced budgets.

APPENDIX A

NSTC CHARTER FOR THE INTERAGENCY WORKING GROUP ON FEDERAL SECURITY LABORATORY FACILITIES AND INFRASTRUCTURE



CHARTER
of the

**INTERAGENCY WORKING GROUP ON FEDERAL SECURITY LABORATORY
FACILITIES AND INFRASTRUCTURE**

COMMITTEE ON HOMELAND & NATIONAL SECURITY
NATIONAL SCIENCE AND TECHNOLOGY COUNCIL

A. Official Designation

The Interagency Working Group on Federal Security Laboratory Facilities and Infrastructure is hereby established by action of the National Science and Technology Council (NSTC), Committee on Homeland and National Security (CHNS). Federal Security Laboratory Facilities and Infrastructure include unclassified and classified laboratory spaces, buildings, special purpose facilities, and test ranges that enable laboratories, centers, and agencies of the federal government to conduct research, development, testing, and evaluation in fulfillment of their national security missions.

B. Purpose and Scope

The purpose of the Working Group is to advise and assist the CHNS and NSTC on policies, procedures, and processes to support facility planning and operational contributions across the U.S. national security science and technology enterprise. The Working Group will serve as a forum or Community of Practice across departments and agencies for the sharing and creation of best practices for the planning, resourcing, and use of scientific and technical facilities and infrastructure in support of national security missions. Issues related to operations and maintenance, modernization approaches, partnerships between agencies as well as with private sector partners to build and maintain infrastructure, useful metrics for assessments, and messaging strategies are all of interest.

The Working Group will provide insights and recommend actions to the CHNS.

C. Functions

The Working Group will:

1. Share perspectives on practices for planning, resourcing, and use of facilities that support research and development activities in support of national security missions.

2. Consider actions that address key challenges identified in the Science and Technology Policy Institute (STPI)'s 2012 report: *A Study of Facilities and Infrastructure Planning, Prioritization, and Assessment at Federal Security Laboratories*. Identify the most salient, urgent or important "challenges" listed in Table 6 of the referenced report which might be amenable to improvement through policy initiatives or changes. Identify and describe "case studies" based on real world infrastructure issues currently besetting federal laboratory facilities which illustrate such challenges
3. Review and assess innovative approaches that could cost-effectively enhance capabilities to support missions including, for example, projects that enable shared facilities and infrastructure between different government departments and agencies, employ public-private partnerships, or exploit cost-saving approaches for operation and revitalization.
4. Consider beneficial assessment approaches that adequately capture mission impact and scientific value of facilities and infrastructure for the purpose of informing prioritization, resource allocation, policy making, and other management and decision-making processes.
5. Assess the use of long-term modeling tools for evaluating the state of facilities and for scheduling facility and infrastructure maintenance.
6. Perform other functions as tasked by CHNS.

D. Membership

All CHNS member agencies and departments are invited to participate in the Working Group.

The following organizations in the Executive Office of the President shall also be represented:

National Security Staff;
Office of Management and Budget; and
Office of Science and Technology Policy (Chair).

Cooperating departments and agencies shall also include such other Executive organizations, departments and agencies as the Chairs may designate.

Once the Working Group is chartered and organized, based on input from the Working Group the CHNS Co-chairs may designate other Working Group Co-chairs.

E. Private-Sector Interface

The Working Group may work with the President's Council of Advisors on Science and Technology to secure appropriate private-sector¹ advice, and will recommend to the CHNS and/or the Director of the Office of Science and Technology Policy the nature of additional private sector advice needed to accomplish its mission. The Working Group may also interact with and receive *ad hoc* advice from various private-sector groups as consistent with the Federal Advisory Committee Act.

¹ The Federal Advisory Committee Act, 5 U.S.C. App., as amended, does not explicitly define "private sector," but the phrase is generally understood to include individuals or entities outside the Federal government such as, but not limited to, the following: non-Federal sources, academia, State, local or Tribal governments, individual citizens, the public, non-governmental organizations, industry associations, international bodies, etc.

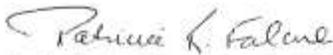
F. Termination Date

Unless renewed by the Co-chairs of the CHNS prior to its expiration, the Working Group shall terminate no later than January 31, 2014.

G. Determination

We hereby determine that the establishment of the Interagency Working Group on Federal Security Laboratory Facilities and Infrastructure is in the public interest in connection with the performance of duties imposed on the Executive Branch by law, and that such duties can best be performed through the advice and counsel of such a group.

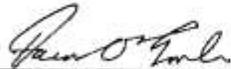
Approved:



Patricia K. Falcone
Co-chair, Committee on Homeland and National Security and
Associate Director for National Security and International Affairs,
Office of Science and Technology Policy

11 July 13

Date



Tara O'Toole
Co-chair, Committee on Homeland and National Security and
Under Secretary for Science & Technology,
Department of Homeland Security

11/28/13

Date



Alan R. "Al" Shaffer
Co-chair, Committee on Homeland and National Security and
Acting Assistant Secretary for Research & Engineering,
Department of Defense

11 July 13

Date

ABBREVIATIONS AND ACRONYMS LIST

BSMS	BUILDER Sustainment Management System
CHNS	Committee on Homeland and National Security
DHS	Department of Homeland Security
DOD	Department of Defense
DOE	Department of Energy
EO	Executive Order
F&I	facilities and infrastructure
FLC	Federal Laboratory Consortium
FRPC	Federal Real Property Council
GSA	General Services Administration
LRDP	Laboratory Revitalization Demonstration Program
MEC	Mission Executive Council
NDAA	National Defense Authorization Act
NNSA	National Nuclear Security Administration
NSLFI	National Security Laboratory Facilities and Infrastructure
NSTC	National Science and Technology Council
OMB	Office of Management and Budget
OSTP	Office of Science and Technology Policy
RDT&E	research, development, test, and evaluation
S&T	science and technology
VA	Department of Veterans Affairs