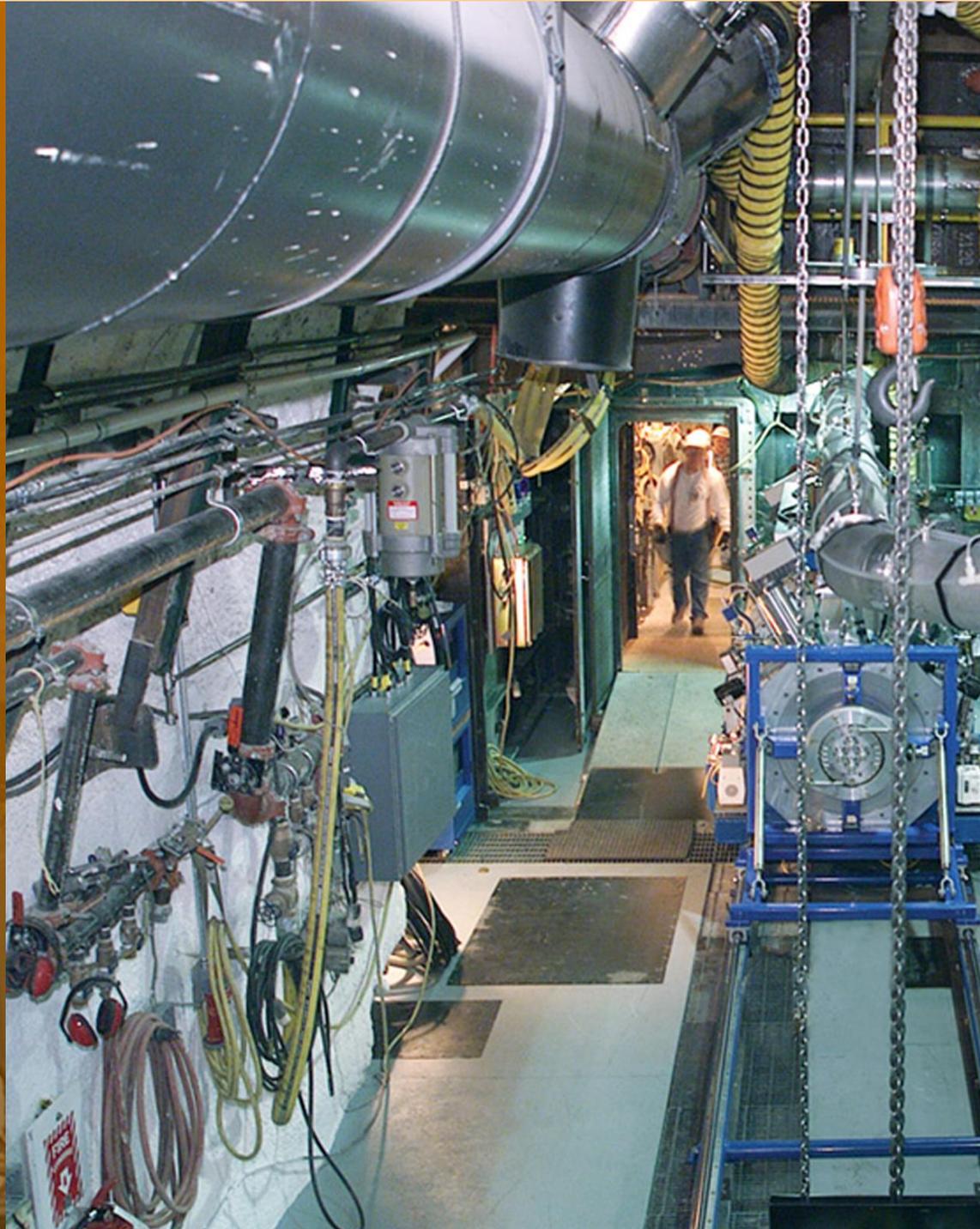


# Fiscal Year 2014 NNSA/NFO Ten-Year Site Plan

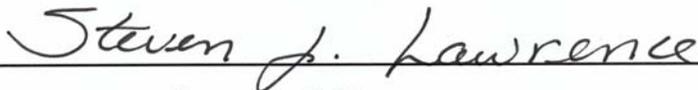


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# ***FY 2014 NNSA/NFO Ten Year Site Plan***

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## Acronyms

ARRA	American Recovery and Reinvestment Act
AM	Actual Maintenance
BEEF	Big Explosives Experimental Facility
BTU	British Thermal Unit
CAIS	Condition Assessment Information System
CAU	Corrective Action Unit
CPI	Cost Performance Index
DAF	Device Assembly Facility
DE&SS	Defense Experimentation and Stockpile Stewardship
DM	Deferred Maintenance
DOE	U.S. Department of Energy
DSW	Directed Stockpile Work
EPA	Environmental Protection Agency
ER	Environmental Restoration
FIRP	Facilities and Infrastructure Recapitalization Program
FCI	Facility Condition Index
FFACO	Federal Facility Agreement and Consent Order
ft <sup>3</sup>	cubic feet
FY	fiscal year
FYNSP	Future Years Nuclear Security Program
gsf	gross square feet
GSP	Graded Security Protection
HEF	High-Explosive Facility
JASPER	Joint Actinide Shock Physics Experimental Research
KCP	Kansas City Plant
LEED	Leadership in Energy and Environmental Design
M	million
MC	Mission Critical
MD	Mission Dependent Not Mission Critical
Mgals	Mega gallons
MtCO <sub>2</sub> e	Metric tons of carbon dioxide equivalent
NCERC	National Criticality Experiments Research Center
NCNS	National Center for Nuclear Security
NDEP	Nevada Division of Environmental Protection
NFO	Nevada Field Office
NMD	Not mission dependent
NNSA	National Nuclear Security Administration
NNSS	Nevada National Security Site
NRS	Neutron Resonance Spectroscopy
NSE	Nuclear Security Enterprise
NSTec	National Security Technologies, LLC
NvE	Nevada Enterprise
PR	Program Readiness
RM	Required Maintenance
RSL	Remote Sensing Laboratory
RTBF	Readiness in Technical Base and Facilities
RWMC	Radioactive Waste Management Complex
SF <sub>6</sub>	Sulfur hexafluoride
SNM	Special Nuclear Material
SPI	Schedule Performance Index
ST&E	Science, Testing and Engineering
TYSP	Ten-Year Site Plan
U1a	U1a Underground Complex
VERB	Visualization Examination and Repackaging Building

## 1.0 Executive Summary

### 1.1 The Current State

The Nevada Enterprise (NvE) had a very impressive year in Fiscal Year (FY) 2012, successfully managing the Nevada National Security Site (NNSS) to support Stockpile Stewardship, Nuclear Nonproliferation, Nuclear Emergency Response, Environmental Management, and Work for Others. Despite growing mission risks and increased challenges operating in the current federal budget climate, such achievement was only through careful utilization of the NNSS and its auxiliary sites' unique capabilities and infrastructure.

The following outlines current capabilities and missions at the NNSS and its auxiliary sites:

- Stockpile Stewardship and Stockpile Management:** The NNSS's primary mission is to support the National Nuclear Security Administration (NNSA) Nevada Field Office (NFO) in sustaining the safety, reliability, and performance of the nuclear stockpile by providing facilities and infrastructure in which the National Security Laboratories or other organizations can conduct nuclear and non-nuclear experiments essential to maintaining the stockpile. These facilities include the Device Assembly Facility (DAF), which also houses the National Criticality Experiments Research Center (NCERC); U1a Underground Complex (U1a); Joint Actinide Shock Physics Experimental Research (JASPER) Facility; Big Explosive Experimental Facility (BEEF); and Baker Site.

The NNSS is the primary location within the NNSA complex where high hazard experiments, with radiological and other high hazard materials are conducted. As part of the Program of Record, which is defined by the Record of Decision, the number of high priority experiments is increasing along with the need for improved science and technical capability, such as an advanced underground radiographic capability, upgrades to instrumentation, diagnostics, and imaging systems for hydrodynamic experiments. Additionally, the Program of Record intends to expand the utilization of the existing NNSS capabilities to mitigate special nuclear material storage issues and other risks throughout NNSA sites.

Implementing the NNSA Program of Record at the NNSS will require additional staffing of the right skill mix and technical and enabling infrastructure investments. These investments

must modernize, restore, and improve the program facilities and enabling infrastructure. The level of funding needed to implement the Program of Record is well above the current funding in the annual site maintenance budget. The specific required investments are discussed in Chapter 5.0.

- Defense Nuclear Nonproliferation:** The NNSS provides large scale, high-hazard experimentation, testing, and evaluation venues for non-stockpile weapons performance experiments; arms control verification research and development; advanced radiation sensors; research and development in proliferation detection technologies fielded in more representative environments and configurations; treaty verification techniques and training; and on-site arms control activities. Additional Defense Nonproliferation missions for the NNSS will utilize many of the existing facilities and infrastructure in proliferation detection and treaty verification research and development.
- Nuclear Emergency Response:** The NNSA assets located at the Remote Sensing Laboratory (RSL) in Nevada and Maryland play a critical role in responding to nuclear emergencies nationally and internationally. Responses include the Aerial Measuring System, Consequence Management, Emergency Communications Network, Joint Technical Operations Team/ACCESS, and Crisis Response.
- Environmental Management:** Environmental Management at the NNSS addresses the environmental legacy from historic nuclear weapons-related activities, while ensuring the health and safety of workers, the public, and the environment through investigation and implementation of appropriate, cost-effective corrective actions related to contaminated groundwater, facilities, and soils; permanent disposal of low-level and mixed low-level radioactive waste generated by environmental cleanup activities across the U.S. Department of Energy (DOE) complex; and environmental protection, compliance and monitoring of the air, water, plants, animals, and cultural resources at the NNSS.
- Work for Others:** The NNSS supports a variety of other national and global security activities. These include a multitude of activities which focus on nonproliferation, counter-proliferation, counterterrorism, and consequence management and response.

Radiological expertise is provided in the areas of operational training in crisis and consequence management, equipment design, engineering and testing, extreme hazard test-beds, test and evaluation of various unmanned aerial systems, activities to support treaty and verification system development and testing, and situational awareness and tracking tool development.

Work for Others projects complement NNSA activities by leveraging existing facilities and capabilities.

## 1.2 FY 2012 Accomplishments

FY 2012 was marked by major accomplishments critical to meeting many of the goals of the NNSA and of those federal agencies that rely on the NNSA and its auxiliary sites. A brief review of some of the major accomplishments includes:

### Stockpile Stewardship and Stockpile Management

In FY 2012, Defense Experimentation and Stockpile Stewardship (DE&SS) completed deliverables for all 11 Stockpile Stewardship national milestones and achieved excellent ratings on all 6 Performance Objectives in the NFO Performance Evaluation Plan. These included the execution of 11 special nuclear material experiments at JASPER and completion of the Castor confirmatory for Gemini. DE&SS also achieved a 99.4% “Highly Satisfied” ratings from Laboratory point of contacts – the voice of the customer. Other key accomplishments completed in FY 2012 included the following:

- Successfully completed the Gemini sub-critical experiment series with Pollux and collected unprecedented data.
- Designed and fielded two primary National Ignition Facility diagnostics: the Velocity Interferometer System for Any Reflector (a time-resolved Doppler velocity camera) and the Gamma Reaction History diagnostic.
- Deployed the Fisheye Probe on the Blast Pipe and Optical Dome Experiment at Los Alamos National Laboratory that evaluated the performance of the new blast hardware for Gemini experiments successfully.
- Constructed the prototype “Leapfrog” Photonic Doppler Velocimeter converter unit fielded at Sandia National Laboratory’s Z Machine on Shot z2370.
- Contributed to a successful probe dome shot at Site 300 with National Security Technologies, LLC (NSTec’s) Multiplexed Photonic Doppler, fielding a total of 76 probes in support of the system.
- Demonstrated the first use of a heat pipe for reactor cooling, as well as the first use of a Stirling engine to produce power using heat from a nuclear system at the NCERC.
- Established that the NCERC is fully operational, re-establishing vital national security capability.
- Established the DAF integration planning effort to improve planning and execution at the DAF.
- Shipped Oak Ridge National Laboratory’s <sup>233</sup>U zero power reactor fuel plates ahead of schedule and under budget.
- Successfully supported 19 Integral Experiments, conducted 2 training courses, and established the Nuclear Accident Dosimetry Laboratory in support of the Nuclear Criticality Safety Program.
- Initiated the Advanced Fielding of Dynamic Experiments at U1a – expansion of U1a to support multiple, flexible test beds.
- Continued Nuclear Material Management improvements to ensure mature capabilities are available to support various complex- and site-wide program needs.
- Supported complex-wide planning/proposals where NNSA could reduce risk/cost to program.
- Implemented Integrated Planning and Execution at DAF, expanding to U1a in support of significant increases to operational pace and Experimental Program demands.
- Implemented significant improvements to NNSA Facility Management/Operations, Engineering, and Safety Basis and Construction capabilities that are foundational to restoring effective and reliable operations.
- Executed ongoing campaign of facility/equipment repairs to address deficiencies at DAF, U1a, and JASPER.
- Completed ‘recovery’ of DAF security projects, e.g., Entry Guard Station construction and establishment of Argus line item baseline.
- Initiated design on the DAF lead-in line construction project.
- Initiated the DAF Documented Safety Analysis Project.

### Defense Nuclear Nonproliferation

The successful execution of the Source Physics Experiment, the first of its kind to be conducted at the National Center for Nuclear Security (NCNS), improved capability at the NNSS to model explosions in hard rock, an essential element in verifying a global nuclear test ban. The NNSS remains the only place in the country where this work can be done with weapons-relevant quantities of nuclear material.

### Counterterrorism and Counter-Proliferation

In FY 2012, four Joint Improvised Explosive Device Defeat Organization experiments were conducted at Port Gaston.

### Nuclear Emergency Response

The NNSS infrastructure is an essential location used on the war against terrorism for training, test and evaluation, and demonstrations of specialized technologies. Training the nation's first responders in a realistic, operational environment prior to facing a real world Weapons of Mass Destruction event is essential to the protection of our Nation and its people. Accomplishments include:

- RSL executed a broad range of emergency response activities and exceeded the emergency response work scope described in the FY 2012 Performance Execution Plans. The NA-40 work scope areas include Aerial Measuring System, Consequence Management Response Team, Search Response Team, Radiological Assistance Program Region 0, Disposition/Attribution, Nuclear/Radiological Advisory Team, and Work for Others customers.
- DOE Secretary Chu awarded 13 RSL personnel with Secretary's Achievement Honor Award for radiological emergency response to Japan Fukushima.
- Working with the Department of Homeland Security, Global Security personnel provided response and support to national nuclear emergency response activities including New Year's Eve in Las Vegas, Super Bowl, NASCAR, State of the Union, and national political conventions in FY 2012.

### Environmental Management

The Environmental Management Program includes waste management and environmental restoration activities.

The following performance objectives and Federal Facility Agreement and Consent Order (FFACO) milestones were met with acceptable quality, while ensuring compliance with environmental, safety, and health regulatory requirements:

- Forty-five corrective action sites were closed in accordance with the FFACO.
- Completed drilling three Underground Test Area wells, exceeding the target of two.
- Completed Underground Test Area well development, testing and sampling activities.
- Disposed a total of 42,585,483 cubic feet of low-level and mixed low-level waste in compliance with NNSS Waste Acceptance Criteria, as of September 30, 2012.

### Work for Others

The Department of Homeland Security continued to use the NNSS to train first-responders how to react in incidents involving nuclear materials. The NNSS was used to test the next generation of radiation detection equipment for ports and border crossings.

## 1.3 The Future State

NSTec has created a strategic framework and will be working with NFO to implement its elements to guide future capability and infrastructure planning. The focus will be to capitalize on NNSS unique capabilities, size, and locations to amplify contributions to U.S. National Security by providing a safe and secure environment and unmatched support for high-risk, high-hazard, complex experimental, and operational activities.

There will be a drive to consolidate, modernize, and move technical infrastructure from the North Las Vegas Facilities to the NNSS for more efficient and effective support of technical programs. This will enable a reduction in the administrative footprint in North Las Vegas. Recapitalization efforts will aid in configuring and changing items within enduring buildings to become more energy efficient. The NNSS will remain the center for high-hazard testing.

As new missions develop, the NNSA/NFO will focus on repurposing and/or expanding current facilities to accommodate user demands. The NNSA/NFO will also focus on developing additional realistic environments to support research and development, equipment test and evaluation, individual and team training, comprehensive exercises, and intelligence support activities.

The growth of the nuclear power industry in both domestic and foreign markets will create an increasing demand for radiological emergency response capabilities. The RSL will continue to be the international leader in site background measurements (pre-event operations), emergency response operations (event characterization), and consequence management/recovery (post-event operations), both domestically and internationally.

The NCNS will continue to play a pivotal role in supporting nuclear nonproliferation objectives through research and capabilities development and demonstration. Over the next five years, the NCNS will conduct experiments designed to enhance research and development associated with geophysical characterization, modeling and simulation, infrasound, explosive performance, noble gas migration, onsite inspection, and data preservation.

The Environmental Management Program is focusing on a new initiative to dispose of classified components. This project will allow NNSA sites to dispose of classified components at Area 5, where no disposal path previously existed. The infrastructure cost savings of direct disposal are still being evaluated; however, any cost savings to the government could be re-directed towards higher mission priorities.

A Final Site-Wide Environmental Impact Statement was issued February 22, 2013. The Record of Decision is expected to be issued during the fourth quarter of FY 2013.

#### **1.4 Mission Risks**

As the nation faces great fiscal uncertainties, there is little doubt that funding pressures will continue for everyone. At NNSA, such pressures, if unresolved, could undermine past successes and create future vulnerabilities. The stage is now set where facilities are being run to failure which can lead to serious degradation in the ability to perform its required missions. The overall situation is highlighted as follows:

- Sixty-three percent of the NNSA building square footage is over 30 years old. This situation is exacerbated by a large number of temporary buildings that have been kept in operation for decades beyond their expected life.
- Thirty-five percent of the North Las Vegas Facility building square footage is over 30 years old.

- Forty-four percent of the utilities infrastructure needs major rehabilitation or replacement. Many elements in the electrical, water, and communications areas were rated as poor.
- The NNSA 138 kV wood pole transmission system is over 50 years old and 20 years past its expected useful life. The 138 kV transmission system is the backbone for providing electric power to all electric loads at the NNSA.
- A significant portion of the NNSA road system is substandard. The estimated 640 miles of NNSA roadways represent the entire spectrum of rural roadway construction. Most paved roadways were constructed prior to 1965. Approximately 195 miles of this road network is mission critical.
- Parts of the telecommunications/information technology infrastructure supporting NNSA/NFO are technologically outdated and has become seriously degraded due to age, weather, and maintenance issues.
- The trunked radio system essential for continued NNSA operations is beyond its useful life and is beginning to experience outages that impact mission accomplishment, safety, and security.
- The RSL facility on Nellis Air Force Base, the Nation's centerpiece for radiological response, has aging water tanks and aqueous foam systems for its hanger, inadequate generator power, and is forced to scavenge for parts to its fire suppression system.

Of increasing concern is the trend in the ability of the NNSA to sustain the infrastructure that maintains its unique capabilities. Risks are known in the following areas:

- Program Readiness (PR) has traditionally represented about 20% of the site's Readiness in Technical Base and Facilities (RTBF) funding; NNSA does not have a large, diverse portfolio to absorb this large of a reduction (in out-years). Yet, the planned FY 2014 budget projects a ~70% decline (\$27M to \$8M) during FY 2014-2018. Without relief, this will severely impact site stewardship work at NNSA.
- Additional infrastructure support is required to address increases in operational pace and workload underway/planned at NNSA facilities to meet NA-10/Laboratories program deliverables.

- Elimination of Capabilities Based Facilities and Infrastructure and associated commitments (and subsequent funding levels within Sustainment) impact basic operations – facility deficiencies increase operational costs, and using Site Operations funding further depletes operations and maintenance funding that does not meet Operational Capability requirements.
- Security vulnerabilities must be addressed to ensure secure operations and mission execution. A key security project will become a line item in FY 2014. Its full funding is important to the NNSA ability to meet its mission requirements.

- Projected funding levels delay critical repairs, allow facilities/equipment to continue to degrade, and infrastructure support/availability for mission activities does not advance or increase.

Due to the age of some facilities and buildings, major system replacements will be required during the plan period out year. NSTec, in consultation with NFO, will be using its strategic framework to identify future required NNSA capabilities and will submit infrastructure projects and associated funding requests in the next budget cycle and Ten-Year Site Plan (TYSP). Until such time as deficiencies are fully mitigated or eliminated, there is increased risk in the ability of the NNSA to perform all its required missions.

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## 2.0 Site Overview and Snapshot (Appendix F)

**Location:** Las Vegas, Nevada  
**Type:** Multi-Program Site  
**Web site:** <https://nv.energy.gov>

**Contractor Operator:** National Security Technologies, LLC  
**Responsible Field Office:** NNSA/NFO  
**Site Manager:** Steven J. Lawrence, Acting

The NNSA and its auxiliary sites (Livermore Operations; Los Alamos Operations; Sandia Operations; North Las Vegas Facility; RSL-Andrews; RSL-Nellis; and Special Technologies Laboratory) offer a diverse collection of unique facilities, equipment, and expertise providing an unequalled resource for many of the nation's key scientific and security projects. Work scope includes: high-hazard experiments with radiological and other high-hazard materials, development and deployment of state-of-the-art diagnostics and instrumentation, and storage of programmable materials. Activities at the NNSA and its auxiliary sites continue to be diverse, with the primary role being to help ensure that the existing United States weapons stockpile remains safe and reliable.

NvE Core Capabilities are (C1) Design, Certification, Testing, Experiments, Surveillance, and Science, Testing and Engineering (ST&E) Base; (C2) Plutonium; (C5) High Explosives; (C6) Non-nuclear; (C7) Weapons Assembly and Disassembly; (C9) Special Nuclear Material Accountability, Storage, Protection, Handling and Disposition; (C10) Enabling Infrastructure; (C11) Counterterrorism and Counter-Proliferation; (C12) Support of Other Mission/Program Capability; (C13) Federal Management and Oversight; and (C14) Reserve Real Property Assets.

The remoteness and expanse of the NNSA has enabled it to serve as the host of extremely hazardous operations and research and development activities for 60 years. These activities support the National Security Laboratories, U.S. Department of Defense, and various Work for Others customers.

NSTec is organized under a President and two Vice Presidents, with four line Programmatic Directorates, five line Operational Directorates supporting programmatic efforts of the Site, and other line Organizations. The current workforce consists of 2,341 employees specializing in scientific, technical, engineering, and administrative employee activities.

The FY 2012 Real Property Asset data below pertains to gross square footage and condition of assets, as well as, funding by source and total site operating cost.

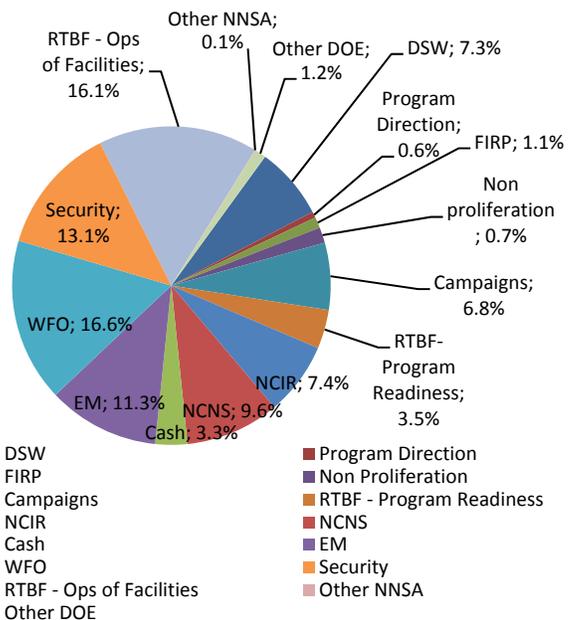
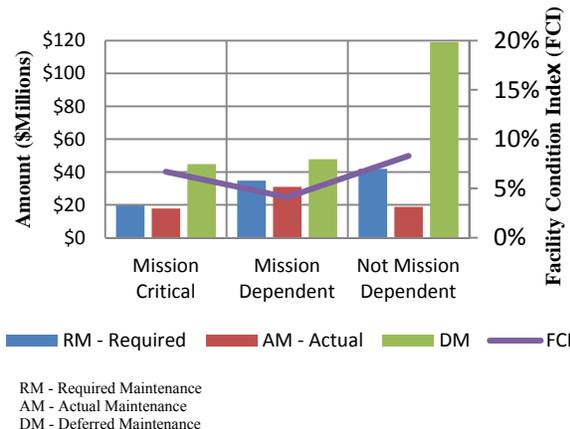
### Real Property:

- 868,492 Acres: (Leased/Owned)
- 462 Buildings/Trailers: (Leased/Owned/Permit)
  - 2,670,497 gsf Active and Operational
  - 425,242 gsf Non-Operational
  - 179,368 gsf Leased
- Replacement Plant Value: \$3,293,884,839 (total assets)
- Deferred Maintenance: \$ 211,843,438 (total assets)
- Facility Condition Index: 6.4%
  - Mission Critical: 6.7%
  - Mission Dependent: 4.1%
  - Asset Utilization Index (Overall): 82%

### FY 2012 Funding Source and Cost:

- FY 2012 Total Site Operating Cost: \$ 626 M
- FY 2012 Total NNSA Funding: \$ 404 M
- FY 2012 Total DOE (Non-NNSA) Funding: \$ 75 M
- FY 2012 Total Other Funding: \$ 119 M

Maintenance and FCI by Mission Dependency



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### 3.0 Assumptions

The out-year planning and projected programs are based on a number of assumptions regarding site operations, research and development, test and evaluation programs, customers, and facility needs. These assumptions anticipate site use, policies, regulations, and agency mandates that may affect operation over the next ten years.

The following key programmatic, budget, and planning assumptions guide NNSA/NFO planning activities and were used to develop this TYSP.

#### 3.1 Programmatic Assumptions

- Public proximity to some National Security Laboratories and defense facilities could result in the transfer of additional high-hazard experiments and activities to the NNS.
- Counterterrorism, Counter-Proliferation, Nonproliferation, and Arms Control and Treaty Verification missions will continue to be growth areas for both NNSA and other agencies to address emerging national security concerns. As new requirements/programs are initiated at the NNS and supporting operations, facilities will be repurposed, expanded, or new infrastructure constructed to accommodate the new activities.
- Nuclear Emergency Response will continue to be an important mission for the NNS and the nation. As additional programs emerge or current programs are expanded, existing facilities may be refurbished.
- The mission assignments to the NNS continue to sustain a number of, but not all, the capabilities required to resume underground testing if it becomes necessary.
- In the FY 2014 budget, NNSA has eliminated the RTBF Program and redistributed these functions. The Office of Defense Programs will

manage areas of the former RTBF Program that specifically addressed continuity of weapons-related capabilities. The new Office of Infrastructure and Operations will manage the facility operations portion of the former RTBF Program, including landlord responsibilities under the existing Site Stewardship Program. These two programs will collaborate on investments in support of the core programmatic requirements of Defense Programs at NNS.

- There will be a sustained need for continuous operations at NNS mission-critical facilities.

#### 3.2 Budget Assumptions

The projects presented in this TYSP will be performed within the budget constraints of the Future Years Nuclear Security Program. The Facilities and Infrastructure Recapitalization Program (FIRP) program final projects are being completed in FY 2013. No new funds were identified for FY 2013 FIRP.

The proposed Capabilities Based Investment Program is projected to be funded at \$1.9M in FY 2014.

The Environmental Management Program will be funded at a level consistent with the approved work scope.

For consistency, all Facilities and Infrastructure data were extracted from the year end FY 2012 Facility Information Management System.

#### 3.3 Planning Assumptions

Annual planning will be conducted following a comprehensive approach that integrates all NNS user requirements to ensure a balance between mission support and overall infrastructure sustainability.

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## **4.0 Changes from Prior Year TYSP**

This year's TYSP focuses on the tactical horizon, extending to five years past the next Future Years Nuclear Security Program. The twenty-five year time line has been replaced with a ten-year time line. This year's TYSP describes implementation of the Program of Record for all NNSA/NFO programs. This year's TYSP also communicates the alignment of real property assets with core capabilities and mission and program requirements.

The TYSP for FY 2014 is renamed the Ten-Year Site Plan.

Additions to the TYSP include the Core Capability (C14) Reserve Real Property Assets and information pertaining to "Freeze the Footprint" Policy.

A "capability based" responsive infrastructure is required for any future stockpile scenario and will be linked to NNSA Mission, Program, Core Capabilities, and Special Interest.

The proposed Capabilities Based Facilities and Infrastructure sub-program did not materialize for FY 2013 and was eliminated from the TYSP and is being replaced by the Capabilities Based Investment Program.

Spreadsheets previously associated with the TYSP were eliminated, and graphics, pictures, and tables are included within the storyboards to easily convey key points.

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## 5.0 Future Vision and Core Capabilities

The focus of the NFO is to provide a safe and secure environment and unmatched support for high-risk, high-hazard, and complex experimental and operational activities.

The NFO will accommodate an increase in user demands for realistic environments in support of research and development, equipment test and evaluation, individual and team training, comprehensive exercises, and intelligence support activities. The NFO will focus on maintaining and modernizing experiment facilities, enabling infrastructure, and essential programmatic equipment within the Mercury Corridor.

The NFO will continue to increase its role in contributing to national and international security priorities as the Department of Defense and intelligence communities recognize the unique attributes of the NNSS (e.g., geology and remoteness) and the NvE (e.g., technical capabilities).

NFO Core Capabilities are listed below and discussed in the sections that follow. Storyboards for each capability are located at the end of Chapter 5.0.

- (C1) Design, Certification, Testing, Experiments, Surveillance, and ST&E Base
- (C2) Plutonium

- (C5) High Explosives
- (C6) Non-nuclear
- (C7) Weapons Assembly/Disassembly
- (C9) Special Nuclear Material Accountability, Storage, Protection, Handling and Disposition
- (C10) Enabling Infrastructure
- (C11) Counterterrorism and Counter-Proliferation
- (C12) Support of Other Mission/Program Capability
- (C13) Federal Management and Oversight
- (C14) Reserve Real Property Assets

The NFO continuously evaluates its facilities and infrastructure to ensure assigned missions can be executed in a safe, secure, compliant, and reliable manner. A risk-based priority program of repairs, modifications, and upgrades has been established to meet that objective. As part of the planning, the continuation of or revision to current missions and/or assignment of new or future missions are reviewed to ensure appropriate alignment of facility/equipment investments, safety and security strategies, workforce capabilities, etc. In the sections that follow, current activities, proposed projects, and future initiatives are cited and tied to Core Capabilities currently assigned to NNSS. Per the aforementioned evaluation/review process, these represent a snapshot in time and are subject to change.

## 5.1 Design, Certification, Testing, Experiments, Surveillance, and ST&E Base (C1)

The NFO maintains this core capability through its unique collection of nuclear and other high hazard experimental facilities and critical skills, made possible by the expanse and remoteness of the NNS. These facilities and personnel combine to ensure the safety, reliability, and performance of the enduring nuclear weapons stockpile through experiments that examine the properties of special nuclear material under dynamic conditions. NNS facilities supporting these efforts include DAF/NCERC, the U1a, JASPER, BEEF, and other special test facilities/infrastructure. Activities in these facilities include the conduct of subcritical experiments, radiographic and neutron source development, and detector/diagnostic system development. Additional NNS facilities, including off-site research and development assets and support facilities, also contribute to this capability.

While designing and building the components and systems that go into a nuclear weapon are very important, the safety, reliability, and performance could not be assured or even modeled without a subset of properly designed programmatic experiments to be executed by the NvE. Significant investments in our technical and enabling infrastructure, beyond the projected level of funding are needed. Such investments will ensure the readiness of the NFO infrastructure to meet tactical and strategic programmatic requirements.

### Tactical Planning Horizon (FY 2014 - 2024)

The near-term vision to sustain this capability is to expand and advance the programmatic capabilities of facilities to meet the increasing needs identified in the Program of Record for ensuring the safety, reliability, and performance of nuclear weapons. Such programmatic expansion and advancement will require investments to modernize, restore, and improve both programmatic and enabling infrastructure.

**DAF/NCERC:** The DAF workload will increase substantially over the Tactical Planning Horizon. DAF will support several experimental programs under C1, and follow-on series of sub-critical experiments, JASPER target fabrication. DAF also maintains a growing inventory nuclear material. In order to more effectively manage this workload, DAF will implement an Integrated Planning Management

structure to support Task Plan execution. A campaign of facility/equipment repairs and/or upgrades and security enhancements will be implemented to support this workload, which includes the Argus security system. The Argus security system is an interconnected, computer-based personnel access system adopted by DOE and NNSA, and is the standard security technology for the Nuclear Security Enterprise.

Additional work load at the DAF include NCERC experiments, and Work for Others experiments and training.

**U1a:** Over the tactical planning period, the Program of Record shows subcritical experiments at U1a will increase in number, complexity, and fidelity. This increase will require a greater degree of integration and advanced tools such as radiography to more thoroughly examine and delve more deeply into the material properties of special nuclear material. To meet these challenges, the NvE will implement an Advanced Fielding of Dynamic Experiments project at the NNS that will optimize and integrate the use of existing systems, structures, and components underground. This includes integrating functions of the control room and timing and firing and other systems to support experiments in both the U1a.05 and U1a.03 drifts. The project will also require modifications to existing chilled water systems and clean room structures. To meet the increasing complexity and technical requirements, the NvE will explore the feasibility to conduct flat plate experiments in a racklet configuration at the NNS. Infrastructure investments necessary to support these capabilities will include expansion of the .05 drift to accommodate larger vessels, power upgrades, and automatic fire detection and alarm systems and fire barriers for life safety.

**JASPER:** As a category III nuclear facility, JASPER will continue to conduct valuable shock physics experiments on special nuclear material. Within the tactical planning horizon, the Program of Record shows a series of experiments at JASPER that will use an advanced radiometry diagnostic system to examine plutonium phase changes.

**BEEF:** One of the more important uses of the BEEF and High Explosives Complex is as a large-scale explosive firing platform for proof-of-concept testing of experiments using surrogates prior to installation and special nuclear material testing underground. One example is the Phoenix Experiments.

**Strategic Planning Horizon (FY 2024-2040)**

The long-term vision of this capability is to improve upon the technical and enabling infrastructure, while maintaining the critical skills necessary to support programmatic plans. Part of this vision includes installation of advanced radiographic sources that will enable the capability to perform core punch experiments on special nuclear material at a larger scale than previously possible.

Development of an enhanced radiography capability is critical to ensuring the continued assurance in the stockpile. NFO is cooperating with NNSA and the National Security Laboratories to develop a compilation of proposed technical options for implementation at the NNSS. This capability could include both the radiography and experiment portions of a new facility, the radiography system, and the necessary modifications to enabling infrastructure at the NNSS.

## **5.2 Plutonium (C2)**

The NFO currently maintains this core capability through its unique collection of nuclear and other high hazard experimental facilities and critical skills for plutonium research and development and storage. The NNS facilities supporting these efforts include DAF, NCERC, U1a, and JASPER. Activities in these nuclear facilities include storage of programmatic plutonium, assembly of nuclear experiment packages, and dynamic experiments to examine the properties of plutonium.

Because of the previous discussions involving the relationship between the infrastructure goals in the Program of Record and the plutonium research and development mission at the NNS in Section 5.1 (C1), this section will focus on the plutonium storage mission at the NNS.

### **Tactical Planning Horizon (FY 2014 - 2024)**

The near-term vision for this capability is to ensure the availability and capacity of required facilities. Significant investments are needed to improve and/or modernize this capability at the DAF, as discussed in Section 5.1 (C1). Such projects will ensure the readiness of the DAF to meet current and projected operational requirements. Attainment of the tactical infrastructure goals described in Section 5.1 (C1) will ensure that the plutonium capability to meet near-term mission commitments is sustained at the NNS nuclear facilities.

DAF is the only facility on the NNS that maintains significant nuclear materials staging capabilities and active inventory. Within the tactical planning horizon, DAF will continue to store programmatic plutonium. It is anticipated that space constraints at other facilities within the complex will add more programmatic plutonium to the DAF.

The next several years will see a major campaign of facility/equipment repairs, replacement and/or upgrades at DAF in conjunction with improvements to the Safety Basis and the re-authorization of the Down Draft Table. Safety, security, operability, and reliability improvements will reduce risk and cost and increase productivity. Provided there is funding for the planned multi-year campaign of reliability improvements by FY 2023, DAF is expected to be a proven national asset-supported and sustainable within the program.

### **Strategic Planning Horizon (FY 2024-2040)**

The long-term vision for this capability is to ensure a safe, secure, and cost-effective environment necessary to meet future mission requirements through infrastructure modernization. This will facilitate this capability having the capacity and agility needed to continue this mission into the future.

Within the program of record, the long-term vision for this capability is to move plutonium staging to the proposed Materials Staging Facility to be built at Pantex by FY 2030 or other location. While it is not envisioned that all plutonium will be removed from the DAF within the strategic planning horizon, it will avail DAF for more productive missions.

### 5.3 High Explosives (C5)

The NFO maintains this core capability, consisting of unique facilities, essential skills, and a remote location, in support of the NNSA missions (Stockpile Stewardship, Counterterrorism, Counter-Proliferation, and the Explosive Ordnance Disposal Unit) and similar national/international missions within other government agencies. The NNS facilities supporting these efforts include the BEEF, Baker Site, and Port Gaston, which provide a safe, secure, and controlled environment for high-explosives experiments. High-hazard industrial and classified, large-scale explosive activities at the NNS include staging, assembly, disassembly, detonation, and storage.

#### Tactical Planning Horizon (FY 2014 - 2024)

The near-term vision for this capability is to ensure the availability and capability of High-Explosive Facilities (HEF). The BEEF and complex of HEF will continue as large-scale, high explosive firing

platforms for proof-of-concept testing of experiments, using surrogates, prior to installation and special nuclear material testing underground.

Attainment of the following infrastructure goal will ensure that this core capability is sustained and that mission commitments continue to be met.

- Rehabilitate and Repair Bunkers: Support the storage and assembly of high explosives for multiple customers.

#### Strategic Planning Horizon (FY 2024-2040)

The long-term vision for this capability is to ensure the availability and capability of the high-explosive facilities. High explosives facilities will continue to provide proof on concept and other high explosive testing in support of the core capabilities. One such use could be testing of advanced radiography systems before installation in U1a.

## 5.4 Non-Nuclear (C6)

Within the Program of Record, the NNSS and auxiliary sites are not used directly to support nuclear weapons, non-nuclear component research and development, production or storage, but do provide a place for classified non-nuclear component disposition. NvE does have the capability to indirectly support non-nuclear component work such as classified machining of components and parts and conduct of materials properties characterization experiments at multiple locations. In addition, NvE has the capability to dismantle and dispose of components that currently have no other disposal path in the NNSA complex.

### A-01 Machine Shop:

The A-01 Machine Shop fabricates precision parts from a variety of materials in support of the NNSA and Non-NNSA projects. The Shop is qualified to operate in a classified mode and has produced several classified components for Los Alamos National Laboratory in support of second-tier production needs. Most of the equipment is maintained in a run-to-failure mode. It also is one of the few shops in the NvE approved to machine lead.

### Component Dismantlement and Disposition:

The NNSS currently accepts items for disposition from other DOE sites. The NNSS can accept many types of materials/assemblies as long as they are characterized and in compliance with the NNSS Waste Acceptance Criteria.

### Arming, Fusing, and Firing/Detonator Work:

The NvE can perform Arming, Fusing, and Firing activities in the instrumentation laboratory in North Las Vegas. Tactical: These Arming, Fusing, and Firing activities could include testing and refurbishment. Detonator activities for the NNSS could include disassembly and disposition.

### Tactical Planning Horizon (FY 2014 - 2024)

#### A-01 Machine Shop:

The near-term vision for this capability is to continue to ensure the availability of the A-01 Machine Shop for operational needs. Most of the machine tools are old, making tolerances hard to achieve and maintain.

Even though no investments for this capability are identified in the Program of Record, the procurement of new machines is being solicited from customers. Machine upgrades will be requested through the Construction Working Group as a programmatically linked infrastructure need.

### Component Dismantlement and Disposition:

Dismantlement (trainer and/or subassembly) could potentially be done at the Visualization Examination and Repackaging Building (VERB). Other locations could be used as well, i.e., DAF, depending on complexity and materials/assemblies within system.

### Arming, Fusing, and Firing/Detonator Work:

Arming, Fusing, and Firing could be broken down to sub components from assemblies. Items are usually sent back to Sandia National Laboratories for evaluation/study. Detonator work/disposition could potentially be performed at Baker Site/BEEF and/or DAF. Components containing explosives can be disposed at Baker Site/BEEF.

### Strategic Planning Horizon (FY 2024 - 2040)

#### A-01 Machine Shop:

The long-term vision for this capability is to improve the capability of the A-01 Machine Shop and increase customers' base. All machining capabilities will be upgraded to the latest available equipment. The Program of Record will identify the Shop as a critical asset throughout the complex.

### Component Dismantlement and Disposition:

The VERB can be further utilized for component disassembly, training for Chain-of-Custody activities, and Beryllium projects. The VERB is in cold standby; therefore, start-up costs would have to be included in the project cost of operations.

### Arming, Fusing, and Firing/Detonator Work:

The long-term vision for Arming, Fusing, and Firing is to perform detonator testing as part of a surveillance activity.

## 5.5 Weapons Assembly/Disassembly (C7)

The DAF provides capability for the assembly and disassembly of damaged nuclear weapons. The DAF was designed and built to consolidate all nuclear explosive assembly activities at the NNSS, to provide safe structures for high explosives and nuclear explosive assembly operations, and to provide a state-of-the-art safeguard and security environment.

### **Tactical Planning Horizon: (FY 2014 - 2024)**

The near-term vision for this capability is to maintain the DAF to ensure the availability and capability to safely and securely receive, inspect, and disassemble a damaged U.S. nuclear weapon. During this period, the Argus security system will be installed at DAF. The Argus security system is an interconnected, computer-based personnel access system adopted by DOE and NNSA is the standard security technology for the Nuclear Security Enterprise.

The next several years will see a major campaign of facility/equipment repairs, replacement and/or upgrades at the DAF in conjunction with improvements to the Safety Basis and the re-authorization of the Down Draft Table. Safety, security, operability, and reliability improvements will reduce risk and cost and increase productivity. Provided there is funding for the planned multi-year campaign of reliability improvements by 2023, DAF is expected to be a proven national asset-supported and sustainable within the program.

### **Strategic Planning Horizon: (FY 2024-2040)**

The long-term vision for this capability is to ensure the availability and capability of the DAF to safely and securely receive damaged nuclear weapons and conduct necessary inspection, assembly, and disassembly operations. Infrastructure improvements to modernize, restore, and improve the existing facilities will occur when their declining condition impacts their capability to support mission requirements.

## 5.6 Special Nuclear Material Accountability, Storage, Protection, Handling and Disposition (C9)

The NFO maintains this capability to provide for the staging of special nuclear material prior to the conduct of experiments (including nuclear material handling and measurement capabilities) and for staging in support of special nuclear material de-inventory at other NNSA sites. The NFO continues to play an active role within the complex to support efforts for special nuclear material accountability. The NFO currently is a member of the Nuclear Materials Management Team sponsored through NNSA/Headquarters.

Special nuclear material from National Security Laboratories and others within the complex has been sent to the NNSS.

### **Tactical Planning Horizon: (FY 2014 - 2024)**

The near-term vision is to ensure the availability and capability to safely and securely handle special nuclear material at the NNSS. The current capability

is limited by space and equipment but will be expanded to support additional staging requirements. Significant investments are needed to restore and/or modernize this capability expenditures beyond the level of funding included in the annual site maintenance budget. Such investments will ensure the readiness of the NNSS facilities to meet current and projected operational requirements.

Attainment of the infrastructure goals described for the DAF and U1a in Section 5.1 (C1) will ensure that this core capability is sustained and that the NNSS and its auxiliary sites continue to meet mission commitments.

### **Strategic Planning Horizon: (FY 2024-2040)**

The long-term vision is to acquire some legacy components which could be used for various project(s).

The long-term vision is to also ensure the availability and capability to safely and securely handle special nuclear material at NNSS.

## 5.7 Enabling Infrastructure (C10)

The NNSA is a multi-program site and the infrastructure support facilities (i.e., roads, utility systems, support buildings) must be maintained and/or upgraded as appropriate to effectively support and accommodate all current and anticipated program activities in a safe and reliable manner.

### Tactical Planning Horizon (FY 2014 - 2024)

The near-term vision for this capability (i.e., roads, utility systems, support buildings) is to upgrade and maintain existing infrastructure support facilities to meet mission needs.

In April 2013, the following projects were submitted to the Construction Working Group to address mission gaps.

#### **New 138kV Power Transmission Mission Corridor:**

Provide a safe and operational backbone 138 kV transmission system that will reduce power outages and increase the capability to consistently handle full capacity on the NNSA power system. Due to isolation, unreliability, and failure rate of the route, it is necessary to develop and install a new 138 kV transmission line along 15 miles of the NNSA mission corridor. The new transmission line will increase the reliability of the NNSA transmission system by replacing aging wood pole structures with new steel structures.

#### **Water Supply and Distribution Systems Replacement:**

Provide safe, reliable, and operational water lines in Mercury and forward areas of the NNSA, as well as, replace a 250,000-gallon water storage tank. Reliability and stability of the water system in the event corridor is necessary to achieve mission requirements.

#### **Data Center Consolidation (Multi-Program):**

Provide a more reliable infrastructure for business continuity, information security, telecommunications, storage systems, redundant data communications connections, environmental controls, and backup power supplies. Consolidation of data centers will allow NNSA to demonstrate operating practice improvements that will lead to energy savings, reduce energy load, and increase the reliability of critical computer operations.

#### **Radio Communications Systems Modernization:**

NNSA/NNSA trunking radio infrastructure is nearing system failure due to technological obsolescence and an inability to provide overall enterprise architecture for current missions. Failure of the radio communication infrastructure would paralyze NNSA fire response, hinder emergency management operations, lose primary interoperability with local law enforcement, and endanger personnel in remote forward areas.

#### **HVAC Replacements:**

Provide upgrade of heating, ventilation, and air conditioning systems, including design and installation at the NNSA. Reliability and stability of the heating, ventilation, and air conditioning systems in the event corridor is necessary to comply and assist in achieving the goals of reducing energy intensity by no less than 30% by 2015.

Projects submitted to Construction Working Group will enhance the NNSA and its auxiliary site's availability to be ready to meet operational requirements to support program and project tasks.

The facilities supporting the national emergency response, non-proliferation, and counterterrorism, including the remote locations, will require updates and upgrades in the information technology infrastructure to support the increasing data speed rates and technology options and upgrades to networks.

#### **Remote Sensing Laboratory (RSL):**

RSL is critically dependent on DOE aircraft to support the NNSA domestic mission. Based on age and increasing maintenance costs, replacement of the aircraft fleet should commence by 2015.

As current missions expand and new missions are added, additional office and laboratory space will be needed to accommodate missions. At the RSL, the current building is nearly 25 years old, but can accommodate an addition. Construction of a second adjacent facility is also possible.

#### **National Security Laboratories:**

Laboratories will require life cycle and technology upgrades to keep up with the rapidly evolving technology needs of their customers. These laboratories need persistent investment in conventional and emerging laboratory equipment (electrical, optical, chemical, nuclear detection). Examples would include digital oscilloscopes, network analyzers, high-powered lasers, advanced cameras, etc.

**Mercury Revitalization:**

Modern facilities and infrastructure to support testing and training, as well as advanced experimentation and production at the NNSC will be required. The mission needs for this revitalization to be accomplished are as follows:

- Demolish facilities and infrastructure that are no longer economically salvageable.
- Identify a land-use concept of Mercury that will create functional zones to facilitate groupings of similar activities. Replacement and new facilities will be located to the appropriately designated land-use group.
- Replace facilities that are obsolete, but functionally necessary.
- Recapitalize selected facilities and infrastructure to extend useful life to accommodate existing and future support requirements.

**Strategic Planning Horizon (FY 2024-2040)**

The long-term vision for Infrastructure Support Facilities consists of providing a fully-functional, cost effective, and safe location for the conduct of all work conducted at the NNSC. Due to the nature of missions, new requirements beyond ten years are more difficult to predict with any degree of certainty. However, the NNSC's enabling infrastructure will be maintained and modernized in a manner that will support NNSA's Program of Record for the NNSC.

The long-term vision for missions will include continued lifecycle maintenance of both the NNSC and remote location infrastructure, which will help maintain capabilities and enable the prime contractor to keep up with technological advances in the core infrastructure of the laboratories.

## 5.8 Counterterrorism and Counter-Proliferation (C11)

### Tactical Planning Horizon (FY 2014 - 2024)

Counterterrorism programs encompass non-proliferation technologies, non-stockpile related test and evaluation, and counterterrorism activities with the following near-term visions:

- Provide emergency communications systems, capabilities, and databases to additional national and international agencies.
- Provide and expand services and support for non-proliferation technology.
- Provide facilities and capabilities to test and evaluate technology in support of national security technology-related development.
- Provide facilities and capabilities for training and exercises to support national security issues and first responders.
- Provide an active program to maintain and expand NNS infrastructure to support counterterrorism activities.
- Design, fabricate, and field rapid/rugged prototype capabilities to support nuclear emergency response in counterterrorism.

Key facilities are utilized to meet these objectives. These facilities make possible a rapid increase in the capability to provide the comprehensive testing, training, and exercise platforms required by the national security community needs.

RSL-Nellis and RSL-Andrews provide Nuclear Emergency Response Teams and support, both nationally and internationally, that drives facility and infrastructure needs to support rapid response, secure operations, reach back support, laboratory demonstrations, and secure communications.

Personnel perform work for a variety of customers pertaining to Counterterrorism, Counter-Proliferation, and Non-proliferation. This work requires specialized laboratories and ranges to handle analog and digital electronics and signal processing, radiofrequency measurements, and rapid prototype development, for specialized testing and evaluation facilities.

### Strategic Planning Horizon (FY 2024-2040)

The long-term vision for Counterterrorism/Counter-Proliferation is NA-80 specific and includes the following:

- Utilize components for various training exercises.
- Leverage personnel having early and enduring stockpile weapon experience to support exercises/projects.
- Provide the NNS facilities which could support an expanded mission for both training and instrumentation development for characterization.
- Develop facilities, available materials, surrogate materials, experienced personnel, etc., to assist in developing scenarios, building test objects, and establishing measurement protocols which focus on countering nuclear devices.

The NNS will continue to play a vital role in addressing current and national security needs as emerging threats are identified and technical solutions need to be tested and evaluated in a controlled and secure location. Future activities will be defined by the NNSA, U.S. Department of Defense, other federal agencies, and the intelligence community as they require test beds and capabilities unique to the NNS and its remote locations. As current mission expand and new missions are added, additional capabilities will need to be identified and developed. Infrastructure and technology assets will need to evolve to match those emerging requirements.

## 5.9 Support of Other Mission/Program Capability (C12)

Other missions supported at the NNSC encompass Work for Others aspects under the Global Security mission and the Environmental Management Program.

### 5.9.1 Work for Others

The mission at the NNSC have expanded to include Global Security, Counterterrorism, Non-proliferation Technologies, non-stockpile related tests and evaluations, treaty verification, and arms control activities.

The NNSC continues to be used as a location to strengthen national security through the execution of:

- Technical and operational solutions in remote sensing, nuclear emergency response, non-proliferation, and security systems technologies.
- Quick turnaround science-based technical and operational solutions focused on National Security needs.
- High-hazard, high-fidelity testing and evaluation to counter the threat of chemical, biological, radiological/nuclear, and explosives attacks.
- Development and delivery of the most realistic and highest quality training using the unique assets of NNSC and NSTec's extensive radiological expertise.

Similar work is performed for various other organizations. The development, testing, and deployment of unique technologies and assets in the domestic and global war on terrorism and nuclear proliferation have made the NNSC and its associated laboratories an important and recognized member of the nuclear and intelligence communities.

#### Tactical Planning Horizon (FY 2014 - 2024)

The near-term vision for the NFO is to continue to develop additional collaborations among various governmental agencies in meeting the immediate and evolving national security challenges.

The near-term vision for Global Security is to continue to utilize the capabilities and assets developed under Work for Others, leverage activities with the NNSA activities, and create a synergistic environment. Both the NNSA and Work for Others customers benefit from this relationship. Facilities

will be repurposed and upgraded by Work for Others customers. Expanded and new technologies are utilized to create technological solutions to national security challenges.

Both the NNSA and Work for Others customers are requesting expanded chemical release activities. Upgrades to chemical/biological release equipment and new test stand structures will be required to continue to meet these mission needs.

New near-term missions are emerging for the NNSC:

- Unmanned Aerial Systems Research and Development and Test and Evaluation.
- Situational awareness software and program.
- Augmented vision and detection technologies.

#### Strategic Planning Horizon (FY 2024-2040)

The long-term vision for the NFO is to meet the ever-increasing complexity of treaty verification, proliferation detection, and post-detonation nuclear forensics challenges through continuous advancement and application of detection technologies.

The long-term vision for Global Security is to enhance and expand capabilities. As emerging threats are identified, the NNSC and its laboratories will continue to play a vital role in developing technical solutions and providing unique, secure, and controlled environments to test and evaluate technologies and technical solutions developed by Work for Others customers. Activities defined by other federal agencies will continue to require test beds and capabilities unique to the NNSC and its remote locations. As current missions expand and new missions are added, additional capabilities will need to be identified and developed. Infrastructure and technology assets will need to evolve to match those emerging requirements.

### 5.9.2 Environmental Management

Environmental Management has long been and continues to be focused on environmental restoration and waste disposal operations at NNSC.

#### Tactical Planning Horizon (FY 2014 - 2024)

The near-term vision for Environmental Management includes maintaining capabilities for environmental remediation and safe, secure, disposal of low-level

and low-level mixed waste at the NNS. A new initiative to dispose of classified components at the NNS will reduce infrastructure costs across the DOE Complex.

**Strategic Planning Horizon (FY 2024-2040)**

The long-term vision for Environmental Management is to perform environmental restoration and waste disposal operations, including Classified Component Disposal, in a cost-effective and safe manner. Environmental restoration activities in support of closure of the past Underground Test Area will continue to define the site-specific hydrologic boundaries. This data analysis is comprised of drilling, groundwater sampling, and modeling support. The Underground Test Area Project is scheduled to continue through approximately FY 2030.

The Soils Sites project, which characterizes and closes sites with near-surface soil contamination, will continue through approximately FY 2026.

Waste disposal operations will continue to support on-site waste generators and the DOE Complex waste generators. This is accomplished through the maintenance of a compliant NNS Waste Acceptance Criteria through generator coordination and supervision. The Radioactive Waste Acceptance Program will continue to perform facility evaluations that are required in order for waste generators to ship waste to the NNS. The NNS is the only facility capable of accepting low-level, mixed low-level, non-radiological, non-hazardous, and hazardous waste. This program is scheduled to continue operations through 2030.

The Radioactive Waste Program will continue to grow the “Work for Others” by assisting other sites across the complex in disposing of their low-level waste to the NNS. The Waste Generator Services organization has been very effective in certifying off-site shipments to the NNS, when it is cost prohibitive for a small site to become certified to the NNS Waste Acceptance Criteria.

## 5.10 Federal Management and Oversight (C13)

NNSA/Headquarters (NA-1) has directed each NNSA Field Office to streamline business operations and reduce operations costs to maximize mission accomplishment. NNSA/NFO continues to achieve this vision through implementation of NNSA Policy (NAP) NAP-21, *Transactional Governance and Oversight*, as demonstrated through successful Line Oversight Contractor Assurance System Affirmation declared in FY 2012. Efforts to leverage maturing federal and contractor oversight initiatives have allowed for opportunities and synergies, with limited federal staffing, focusing on the highest hazards and risk (mission and operations). NNSA/NFO continues to align its assessment and oversight tools with the primary Management and Operating Contractor (NSTec) to build and supplement communications channels and coordination in order to reduce duplication of oversight and awareness efforts.

Recent accomplishments that allow for expansion, consistency, and consolidation of performance assurance management systems include utilization of senior management reporting of NvE input to NA-00 Dashboard metrics and tracking of NFO specific metrics applicable to key federal programs or requirements. Stand-up of a Joint Issues Screening Team and process between NSTec and the NFO has demonstrated a continuous working relationship in issues definitions, requirements based resolution, and consistent application of oversight expectations in a timely manner. Recent updates to NFO and NSTec directives have clarified roles, responsibilities, and authorities pertaining to assessment and oversight mechanisms based on recent lessons learned or internal and external assessments of federal and contractor assurance systems.

### Current Initiatives

- NFO is leading in long term improvements and striving for efficiency gains in many line oversight areas including: issues management consolidation with multiple contractors, consistent issues screening across all contractors, development of federal metrics and oversight of contractor performance plans, metrics, and contractor assurance initiatives. These activities,

over multi-year timeframes should ensure streamlined and effective use of federal oversight techniques and will demonstrate integration between NFO's contractors to achieve better tracking and trending of issues or concerns.

- NFO, through Headquarters' support and direction, will initiate and become fully compliant with the requirements of International Organization for Standardization 9001 for federal staff and oversight processes.
- NFO and NSTec have fully integrated separate issues management tools (i.e., caWeb) and have begun sharing of assessment and oversight information using similar forms and requirements for data entry. These initiatives will continue and will be expanded across several other NvE entities over the TYSP window. In the near out years, the NvE community, guided by NNSA/NFO will seek to further integrate other major contractors into a consolidated issues management system and joint assessment schedule planning to allow for cross-cutting functional area analysis and trending.

### Strategic Planning Horizon (FY 2024-2040)

The long-term vision of the NFO is to continue providing the NNSA with a safe, secure, and cost-effective environment in which to accomplish mission objectives. In order to do this, the NFO will continue to work with sponsors and stakeholders to develop the appropriate technologies and supporting facilities and infrastructure. The NFO will anticipate and forecast the future long-term use of NNS facilities, develop innovative approaches, comply with new regulations, and implement designated projects to improve existing infrastructure.

The NFO will continue to strive for excellence in line oversight by improving processes and tracking federal metrics on a long-term basis allowing for consistent and forward looking senior management decisions (i.e., expansion of Line Oversight Contractor Assurance System and Affirmation).

The NFO is leading the initiative to fully integrate contractor and federal assessment programs allowing for free flow of information and for better assessment planning thereby reducing the amount of federal overlap with contractor assessment performance.

## 5.11 Reserve Real Property Assets (C14)

NNSA/Headquarters established an additional capability that will identify assets held in reserve, vacant, or retained for future use and currently being maintained i.e., not excess. This capability also links to the overall Mission through the Stockpile Mission: Design, Certification, Testing, and Surveillance and ST&E Base, as well as Enabling Infrastructure. This capability will support and accommodate all current and anticipated program activities in a safe and reliable manner.

### Current initiatives

- Ensure mission critical operations are supported.

### Tactical Planning Horizon (FY 2014 - 2024)

The near-term vision for reserve real property assets is to maintain existing support to meet mission needs.

### Proposed Initiatives

- Develop and implement plans that support missions.
- Continue to develop strategies to identify, develop and support proposals for facility and infrastructure projects.

### Strategic Planning Horizon (FY 2024-2040)

The long-term vision of this capability is to provide the NNSA with a safe, secure, and cost-effective asset in which to accomplish mission objectives.

- Work with sponsors and stakeholders to identify assets held in reserve, vacant, or retained for future use that will support future requirements.
- Anticipate and forecast the future long-term use of NNSA facilities, develop innovative approaches, comply with new regulations, and implement designated projects to improve existing infrastructure.

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## C1 Design, Certification, Testing, Experiments, Surveillance, and Science, Technology and Engineering Base

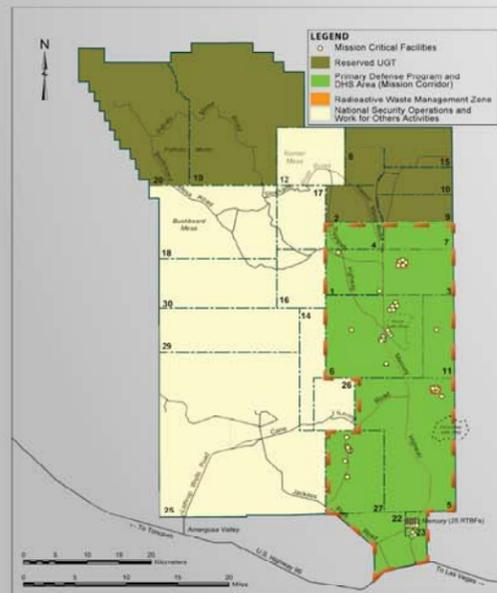


### Linkage to NSE Mission

The NvE maintains this core capability, consisting of unique nuclear and other high-hazard experiment facilities, essential skills, and a remote location, in support of NNSA Stockpile Stewardship efforts to determine various material properties which affect confidence in the nuclear weapons stockpile.

### Vision

The long-term vision of this capability is to improve upon the NvE technical and enabling infrastructure, while maintaining the critical skills necessary to support programmatic plans.



- DAF - a multiuser facility where criticality experiments are conducted as well as assembly of tests supporting the NNSA stockpile stewardship programs
- U1a Complex - Measure properties of plutonium; conduct sub-critical experiments to collect data from plutonium

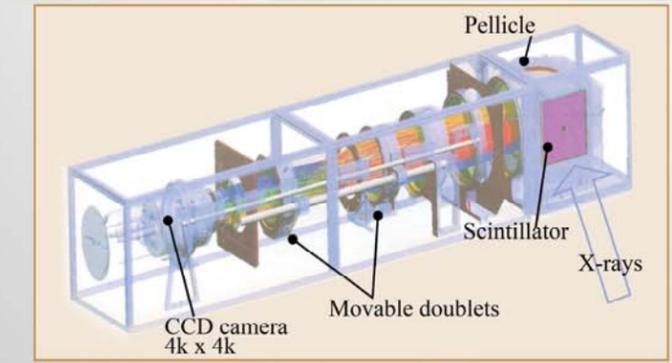
- #### Current Activities
- Conduct subcritical experiments, radiographic and neutron source development, and detector/diagnostic system development
  - Maintain the capability to resume testing of nuclear weapons, if deemed necessary by the President



- The NvE will implement projects to assure a stable, fully-functional, reliable, and efficient facility as funding becomes available
- U1a Complex - Subcritical experiments have been proposed through the next several years at the U1a complex

- #### Proposed Projects
- 8 DAF Projects
  - 5 U1a Complex Projects
  - 5 Infrastructure Projects
  - Enhanced radiography capability

### 2014 Tactical Horizon 2024



- #### Proposed Future Initiatives
- Development of an enhanced radiography capability is critical to ensuring the continued assurance in the stockpile. The NvE is cooperating with NNSA and the National Security Laboratories to develop a compilation of proposed technical options for implementation at the NNSS. This capability could include both the radiography and experiment portions of a new facility, the radiography system, and the necessary modifications to enabling infrastructure at the NNSS

### 2025 Strategic Horizon 2040

## Mercury Corridor Capability Sites





Pu  
R&D

## C2 Plutonium



### Linkage to NSE Mission

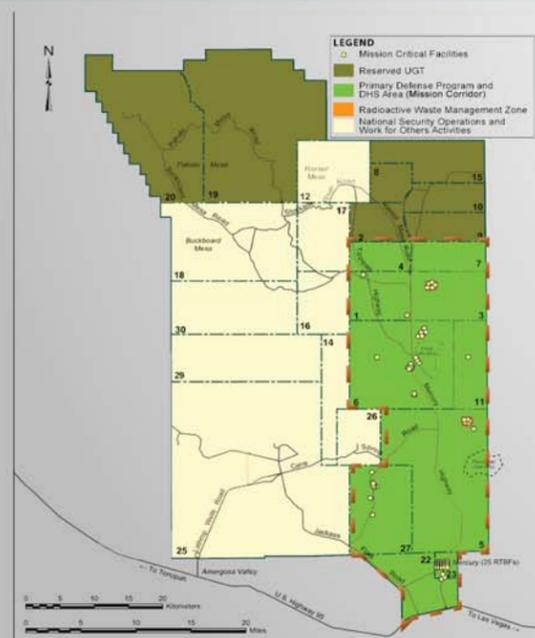
NNSA executes plutonium missions in support of U.S. National Security. They are managed as part of the Defense Programs organization (NA-10). The Defense Programs Nuclear Weapons Stewardship mission ensures the nation's nuclear weapons continue to serve their essential deterrence role by maintaining and enhancing the safety, security and reliability of the U.S. Nuclear Weapons Stockpile. Plutonium missions included in this plan are:

- Research and Development
- Storage

### Vision

The near-term vision for this capability is to ensure the availability and capacity of required facilities. The DAF will continue to store programmatic plutonium. It is anticipated that space constraints at other facilities within the complex will add more programmatic plutonium to the DAF.

The long-term vision for this capability is to ensure a safe, secure, and cost-effective environment necessary to meet future mission requirements through infrastructure modernization and to move plutonium storage to the Materials Staging Facility to be built at Pantex by 2030 or other location.



### Current Activities

- Conduct subcritical experiments
- Radiographic and neutron source development
- Detector/diagnostic system development
- Off-site research and development assets
- Maintain the capability to resume testing of nuclear weapons, if deemed necessary by the President
- Nuclear explosive operations and Special Nuclear Material (SNM) assemblies
- Underground test readiness
- Testing of plutonium properties for annual assessments and stockpile certification

- JASPER - Two stage light gas gun used to study the behavior of plutonium and other materials under high pressures, temperatures, and strain rates
- DAF - Support of experiments for Stockpile Stewardship and other programs. Perform nuclear weapon operations such as alterations, modifications, and dismantlement. DAF is secured by a 24 hour guard force and state-of-the-art security alarm systems for this 100,000 square-foot complex
- U1a Complex - Underground laboratory and tunnel complex, experiments range from measuring the properties of plutonium under weapon-like conditions to state-of-the-art diagnostic development and X-ray radiography

### Current



### Proposed Projects

- 8 DAF Projects
- 5 U1a Complex Projects

- Upgrade existing systems to required security standards
- Expand current staging capability to support SNM de-inventory at other NNSA sites
- Acquire and install power equipment to provide clean and backed-up power
- Upgrades are designed to address hardware/equipment reaching the end-of-life timeframe, to expand capabilities with new technology, to implement process improvements, or to update the safety basis/management procedures or approaches

2014

### Tactical Horizon

2024



2025

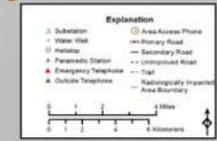
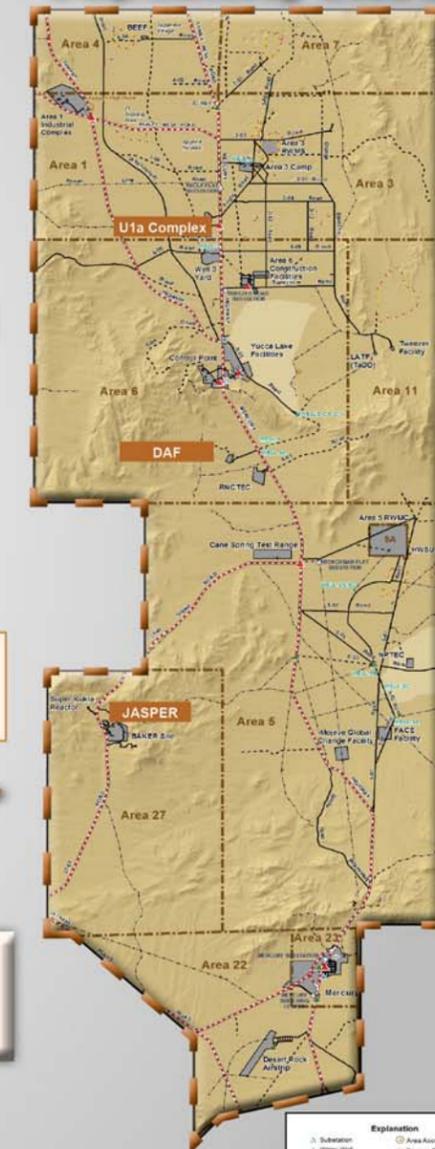
### Strategic Horizon

2040

### Proposed Future Initiatives

- Move plutonium storage to the Materials Staging Facility to be built at Pantex by 2030 or other location

## Mercury Corridor Capability Sites





## C5 High Explosives



### Linkage to NSE Mission

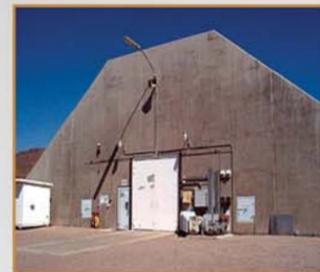
The NNSA HEP supporting the efforts of this capability include the BEEF, Baker site, and Port Gaston, which provide a safe, secure, and controlled environment for high-explosives experiments. High-hazard industrial and classified, large-scale explosive activities at the NNSA include:

- Staging
- Assembly
- Disassembly
- Detonation
- Storage

### Vision

The near-term vision for this capability is to ensure the availability and capability of HEP.

The long-term vision for this capability is to ensure the availability and capability of HEP. These facilities will be required throughout the life of high explosives research and development programs for national security.

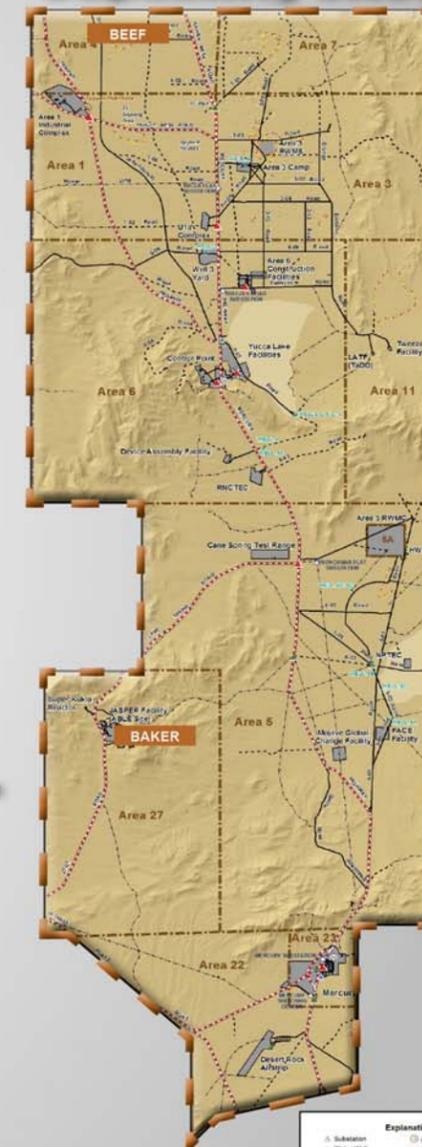


- Experiments were conducted by the RSL for the Department of Homeland Security to test methods for defeating vehicle bombs
- BEEF – A remote 10 acre fenced compound capable of classified work and is certified for up to 78,000 pounds of high explosives

### Current Activities

- Environment for high explosives experiments
- High-hazard industrial and classified, large-scale explosives activities including staging, assembly, disassembly, detonation, and storage
- Hand-packing or forming of uncased plastic explosives
- Disassembly/disposition of energetic components, test assemblies, and nuclear explosive-like assemblies

## Mercury Corridor Capability Sites



### Current



### Proposed Projects

- 1 HEP Project

- Provide additional firing table to support increased workload
- Support the storage and assembly of HEPs for multiple customers
- Provide proper configuration management, generate electrical drawings for BEEF
- Purchase/Install New Camera: The current system is outdated and requires replacement with new equipment
- Provide enhanced safety and communication capabilities for facility occupants. This system is needed for better implementation of any Emergency Response or Alert

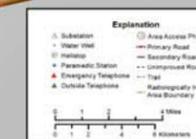
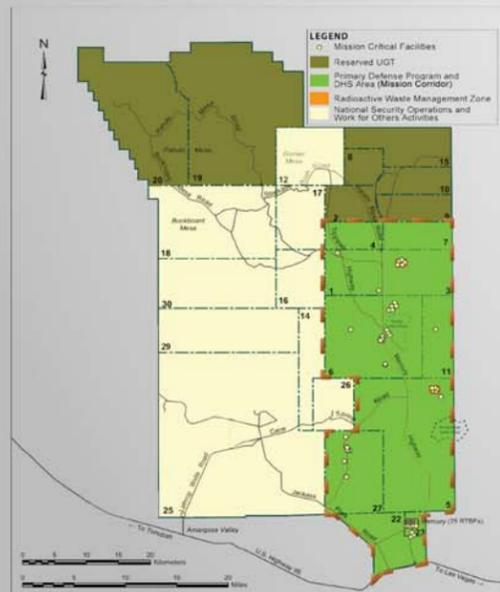
### 2014 Tactical Horizon 2024



### Proposed Future Initiatives

- No proposed future initiatives

### 2025 Strategic Horizon 2040





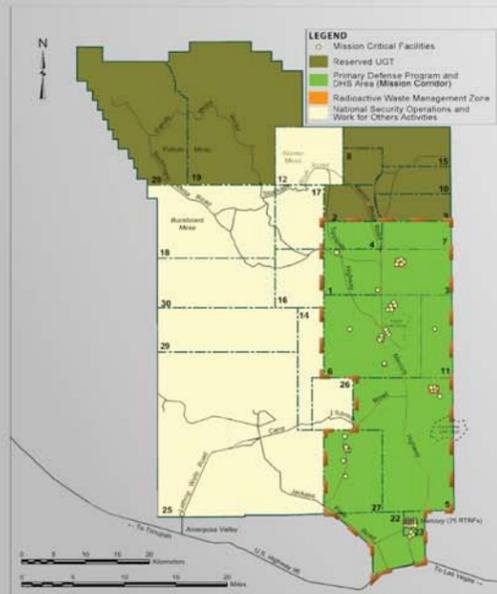
### Linkage to NSE Mission

The NvE provides the capability to indirectly support non-nuclear component research and development and to supplement the production of classified components. The A-01 Machine Shop supports numerous NNSA and non-NNSA projects with the fabrication of precision parts from a variety of materials.

### Vision

The near-term vision for this capability is to continue to ensure the availability of the A-01 Machine Shop for operational needs. This capability will also utilize the Visualization Examination and Repackaging Building (VERB) for dismantlement.

The long-term for this capability is to improve the capability of the A-01 Machine Shop and also, utilize the VERB for component disassembly, training for Chain of Custody, and Beryllium projects.



## C6 Non-Nuclear



#### Current Activities

- Light/heavy, unclassified/classified part fabrication
- Development, characterization, fielding, and analysis
- Intense Dense Plasma Focus (DPF) pulsed neutron source (user facility)

- The A-01 Machine Shop received authorization in 2012 for the A-01 Machine Shop to begin the fabrication of classified hardware and shortly thereafter began the production of classified hardware for an NvE experiments program

### Current



#### Proposed Projects

- Dismantlement (trainer and/or subassembly) done at the Visualization Examination and repackaging Building (VERB). Other locations could be used as well, i.e., Baker Site or DAF

- Los Alamos Operations plays a major role supporting projects in fielding diagnostic suites developed by the Labs and NSTec outlying locations
- The NNSA currently accepts items for disposition from other DOE sites. The NNSA can accept many types of materials/assemblies as long as they are characterized and in compliance with the NNSA Waste Acceptance Criteria

### 2014 Tactical Horizon 2024

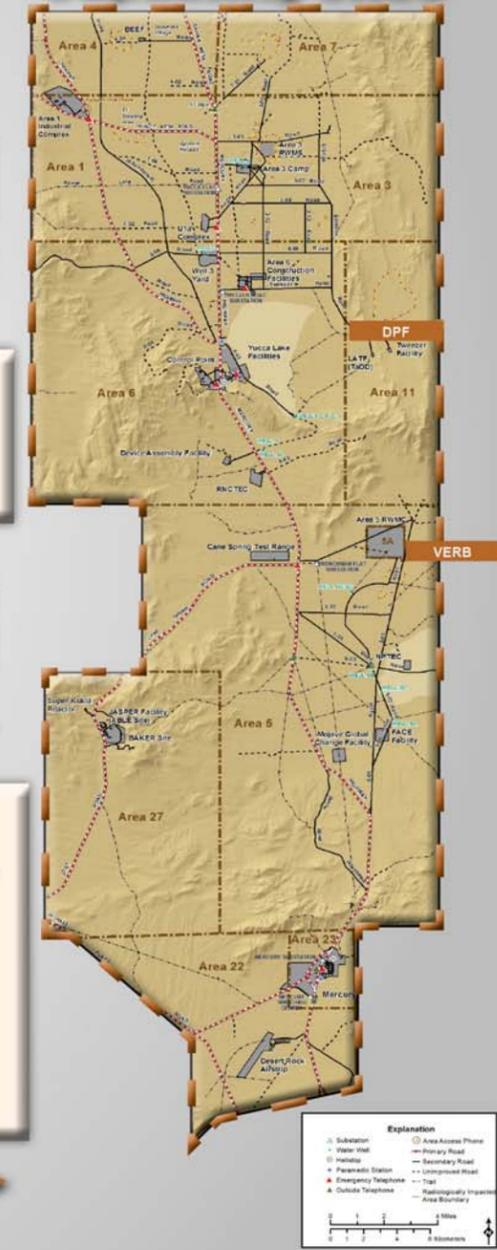


#### Proposed Future Initiatives

- Mercury (Area 23) - A large, geographically diverse outdoor laboratory, the NNSA is free from encroachment, secure, and remote. With the small town of Mercury as the primary support base for all programs, the redevelopment of Mercury is critical to the following programs: BEEF, Control Point (CP), DAF, JASPER, Nonproliferation Test and Evaluation Complex (NPTEC), Radiological/Nuclear Countermeasures Test and Evaluation Complex (RNCTEC), U1a Complex, NCERC, and Counter Terrorism Activities

### 2025 Strategic Horizon 2040

## Mercury Corridor Capability Sites





## C7 Weapons Assembly/Disassembly



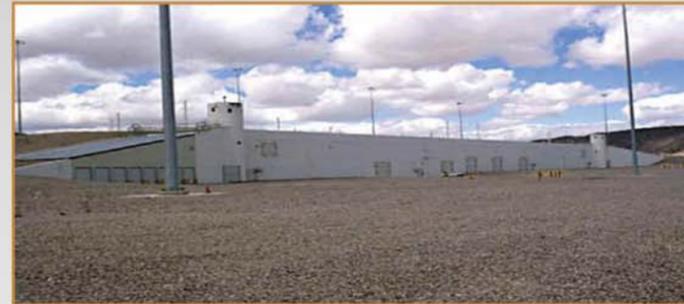
### Linkage to NSE Mission

DAF's isolated location on the NNSS provides a safe, secure, and controlled facility in support of U.S. National Security, NNSA Stockpile Stewardship, and missions of the National Security Laboratories. The NNSS is the only site to provide an isolated controlled outdoor and underground laboratory to conduct unique high explosives and SNM experiments.

### Vision

The near-term vision for this capability is to maintain the DAF to ensure the availability and capability to safely and securely receive, inspect, and disassemble a damaged U.S. nuclear weapon.

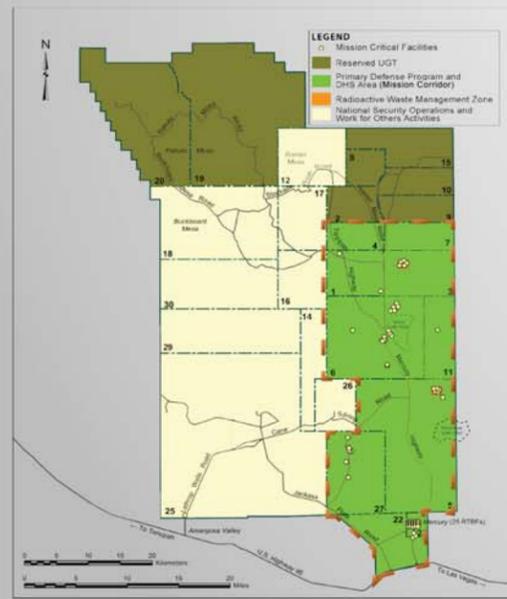
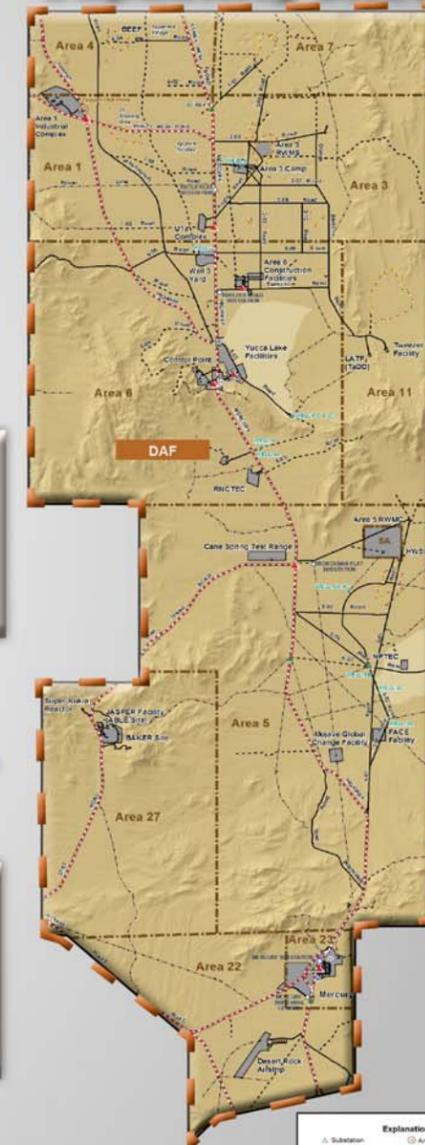
The long-term vision for this capability is to ensure the availability and capability of the DAF to safely and securely receive damaged nuclear weapons and conduct necessary inspection, assembly, and disassembly operations.



- Provides capability for the assembly and disassembly of damaged nuclear weapons
- Designed and built to consolidate all nuclear explosive assembly activities at the NNSS
- Provides safe structures for high explosives and nuclear explosive assembly operations
- Provides a state-of-the-art safeguards and security environment

- ### Current Activities
- Scientist work on special nuclear material (SNM), radiation test objects and high-explosives in support in support of experiments for Stockpile Stewardship and other programs
  - Poised to perform nuclear weapon operations such as alterations, modifications, and dismantlement

### Mercury Corridor Capability Sites



### Current



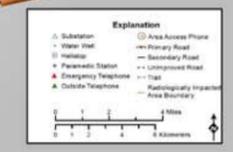
- ### Proposed Projects
- 8 DAF Projects
  - Complete upgrades to the lightning protection system/ Faraday Cage
  - Complete compliance testing on the HEPA filter ventilation system

### 2014 Tactical Horizon 2024



- ### Proposed Future Initiatives
- DAF – Critical System Upgrade: Upgrades are designed to address hardware/equipment reaching the end-of-life timeframe, to expand capabilities with new technology, to implement process improvements, or to update the safety basis/management procedures or approaches
  - Replacement of existing radiography machine
  - A new support building outside Material Access Area

### 2025 Strategic Horizon 2040





SNM

## C9 Special Nuclear Material Accountability, Storage, Protection, Handling and Disposition



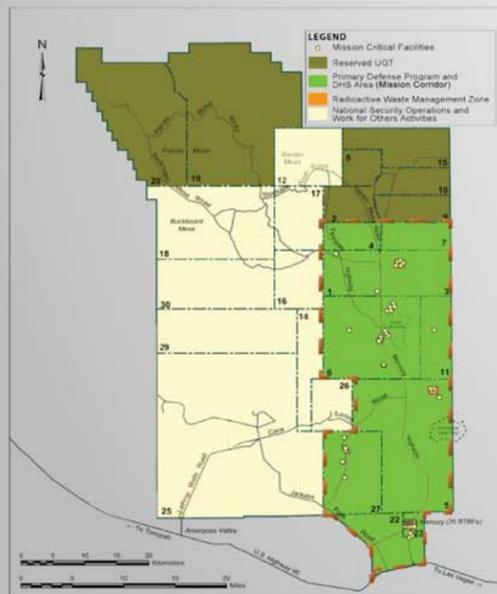
### Linkage to NSE Mission

The NvE maintains this core capability to provide for the staging of SNM prior to the conduct of experiments (including nuclear material handling and measurement capabilities) and for staging in support of SNM de-inventory at other DOE sites. The current capability is currently limited by space and equipment but will be expanded to support additional staging requirements.

### Vision

The near-term vision is to ensure the availability and capability to safely and securely receive, stage, store, and handle SNM at the NNSS. Significant investments are needed to restore and/or modernize this capability, expenditures beyond the level of funding included in the annual site maintenance budget.

The long-term vision is to ensure the availability and capability to safely and securely receive, stage, store, and handle SNM at NNSS.



### Current Activities

- Conduct subcritical experiments
- Radiographic and neutron source development
- Detector/diagnostic system development
- Off-site research and development assets
- Maintains the capability to resume testing of nuclear weapons, if deemed necessary by the President
- Nuclear explosive operations and SNM assemblies
- Underground test readiness, and subcritical experiment programs
- Testing of plutonium properties for annual assessments and stockpile certification

- DAF- houses the NCERC. NCERC conducts research and training in three primary areas: supporting the Stockpile Stewardship Program, Emergency Response to Support Counter-Terrorism, and Arms Control and Non-proliferation
- NCERC- Conduct research and training using Category I level nuclear materials. DAF stores National Security Laboratories special nuclear materials
- Two assembly bays have been modified to support unique project requirements (Glovebox and Downdraft table)

### Current



### Proposed Projects

- 8 DAF Projects
- 5 U1a Complex Projects

- RNCTEC and Baker provide additional capabilities for the staging and handling of Special Nuclear Material in support of NNSA and Work for Others programs

2014

### Tactical Horizon

2024



### Proposed Future Initiatives

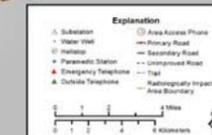
- U1a will provide additional safe and secure capacity for SNM staging and handling in order to balance the priorities on DAF capabilities

2025

### Strategic Horizon

2040

### Mercury Corridor Capability Sites





## C10 Enabling Infrastructure



### Linkage to NSE Mission

The NNSA is a multi-program site and the infrastructure support facilities (i.e., roads, utility systems, support buildings) must be maintained and/or upgraded as appropriate to effectively support and accommodate all current and anticipated program activities in a safe and reliable manner.

### Vision

The near-term vision for infrastructure support facilities (i.e., roads, utility systems, support buildings) is to upgrade and maintain existing infrastructure support facilities to meet mission needs of the NvE.

The long-term vision for Infrastructure Support Facilities consists of providing a fully-functional, cost effective, and safe location for the conduct of all work conducted at NNSA. Due to the nature of missions conducted by the NvE, new requirements beyond ten years are more difficult to predict with any degree of certainty. However, the NNSA enabling infrastructure will be maintained and modernized in a manner that will support NNSA's Program of Record for the NNSA.



- #### Current Activities
- Maintaining and upgrading existing infrastructure support facilities
  - Requirements of the proposed Capabilities Based Investments (CBI) subprogram have been reviewed
  - Proposed projects have been identified and submitted for CBI consideration

- NNSA-A large, geographically diverse outdoor laboratory, 1,375 square miles
- Access to the site is controlled
- Experimental areas more than 65 miles from the nearest major population center
- Projects submitted to CBI will enhance the NvE availability to be ready to meet operational requirements to support program and project tasks
- The only place in the country where weapons quantities of nuclear material can be brought outside a facility

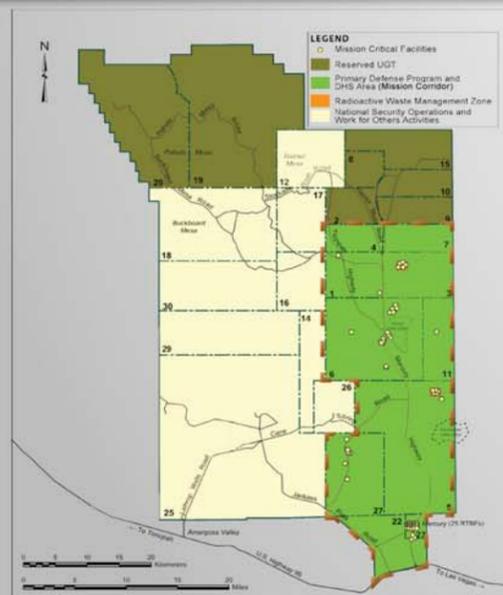
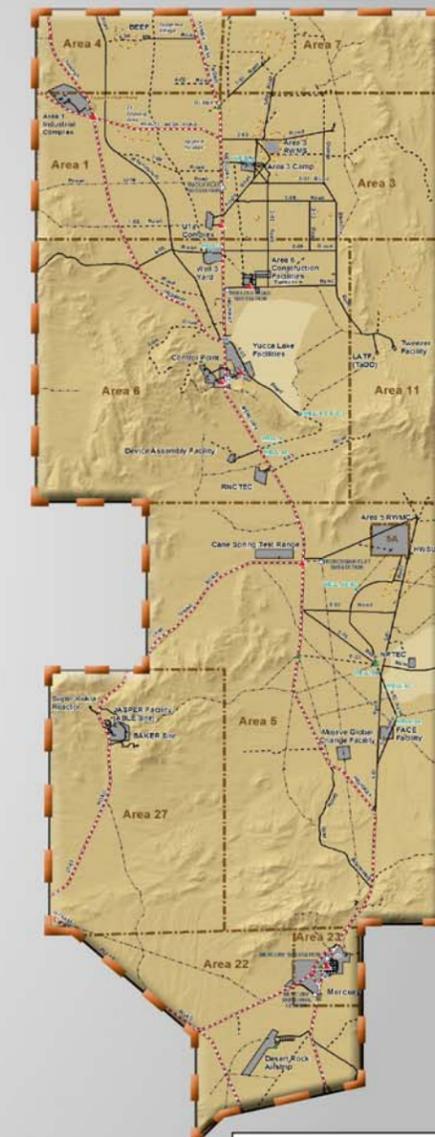
### Current



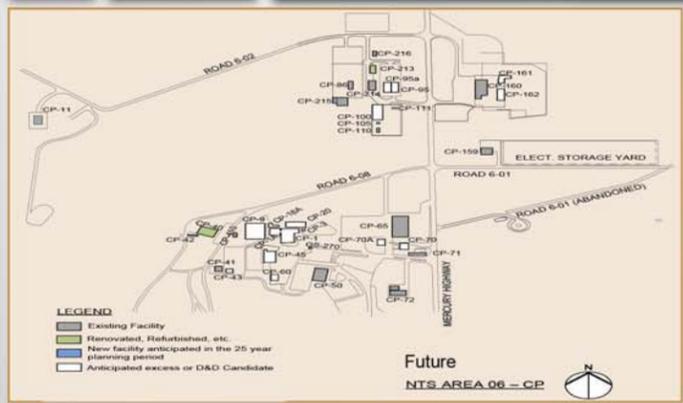
- #### Proposed Projects
- 11 Facility Projects
  - 7 Electrical Projects
  - 3 Communications Projects
  - 6 Road Projects
  - 3 Water Projects

- Recapitalization is necessary to extend the useful life of facilities and infrastructure while upgrades are essential to ensure continued availability of information technology and communication capabilities

## Mercury Corridor Infrastructure



### 2014 Tactical Horizon 2024



- #### Proposed Future Initiatives
- The vision for Facilities and Infrastructure (i.e., roads, utility systems, support buildings) is to upgrade and maintain existing infrastructure support facilities to meet mission needs

### 2025 Strategic Horizon 2040

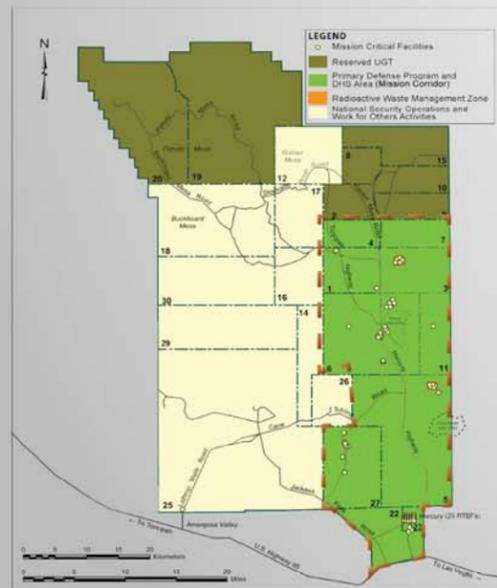


### Linkage to NSE Mission

The NNSA and facilities provide a safe, secure, and controlled environment that provides an isolated controlled outdoor and underground laboratory to conduct unique high explosive and SNM experiments to support of nuclear counterterrorism activities. Nuclear counterterrorism activities support the Department of Homeland Security Domestic Nuclear Detection Office and Science and Technology Directorate, the Department of Energy National Security Laboratories testing and evaluating detection systems for international global nuclear detection, Customs and Border Protection, U.S. Coast Guard, Transportation Security Administration, and over U.S. government entities.

### Vision

Near-term vision for this capability encompasses non-proliferation technologies, non-stockpile related test and evaluation, and counterterrorism activities. Long-term visions for Counterterrorism and Counterproliferation are NA-80 specific. Future activities will be defined by NNSA, DOD, other federal agencies and the intelligence community as they require test beds and capabilities unique to NNSA and its remote locations. As current mission expand and new missions are added, additional capabilities will need to be identified and developed.



## C11 Counterterrorism and Counterproliferation



- #### Current Activities
- Warfighter Support
  - Nonproliferation R&D
  - Test & Evaluation Radiological/Nuclear Countermeasures
  - International Nonproliferation and Arms Control

The Nevada National Security Site (NNSS) offers the ideal location to support nuclear counterterrorism and counterproliferation activities. The NNSS consists of a 1,375 square mile facility and is approximately 65 miles away from a major populated area. NNSA facilities offer physical buildings, appropriate safety systems, and infrastructure to conduct open-air unique and hazardous (High Explosive and Special Nuclear Material) experiments. Nuclear counterterrorism activities are supported by the Nonproliferation Test and Evaluation Complex (NPTEC), DAF, and G Tunnel located on the NNSS.

### Current



- #### Proposed Projects
- 3 T-1 Projects
  - 3 NPTEC Projects
  - 1 RNCTEC Project
  - 1 Port Gaston Project

- Provide emergency communications systems, capabilities, and databases to additional national and international agencies
- Provide and expand services and support for non-proliferation technology
- Provide facilities and capabilities to test and evaluate technology in support of national security technology-related development
- Provide facilities and capabilities for training and exercises to support national security issues and first responders
- Provide an active program to maintain and expand NNSS infrastructure to support counterterrorism activities
- Design, fabricate, and field rapid/rugged prototype capabilities to support emergency response in counterterrorism

### 2014 Tactical Horizon 2024



- #### Proposed Future Initiatives
- T-1 Training Complex- Replacement of triple-wide, manufactured classroom (NLI 2035)
  - Utilize the dismantled pits for various sensor development and testing
  - Leverage personnel having early and enduring stockpile weapon experience to support exercises/projects
  - Provide the NNSS facilities which could support an expanded mission for both training and instrumentation development for characterization
  - NSTec could provide a venue with materials for staging an exercise using a "lost nuke" scenario(s)
  - Use the NSTec developed facilities, available SNM materials, surrogate materials, experienced personnel, etc. to assist in developing scenarios, building test objects, and establishing measurement protocols which focus on improvised nuclear devices

### 2025 Strategic Horizon 2040

## Mercury Corridor Capability Sites





**Linkage to NSE Mission**

Other missions supported at the NNSS encompass the Environmental Management (EM) program, and Work for Others aspects under Global Security.

Global Security personnel train and enable our nation's first responders who would be among the first to confront a radiological or nuclear emergency.

EM has long been and continues to be focused on environmental restoration and waste disposal operations at NNSS.

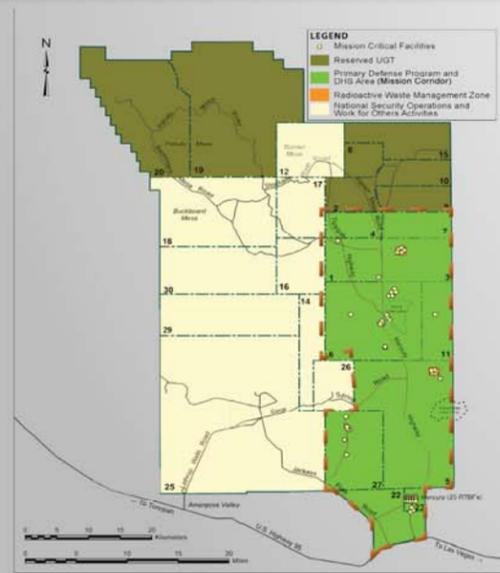
**Vision**

The near-term vision for Global Security is to continue to utilize the capabilities and assets developed under Work for Others, to leverage activities with the NNSA activities, to create a synergistic environment.

The near-term vision for Environmental Management includes maintaining capabilities for environmental remediation and safe, secure, disposal of low-level and low-level mixed waste at the NNSS.

The long-term vision for Global Security is to enhance and expand capabilities.

The long-term vision for Environmental Management is to perform environmental restoration and waste disposal operations, including Classified Component Disposal.



**C12 Support of Other Mission/Program Capability**



**Current Activities**

- Technical and operational solutions in remote sensing, nuclear emergency response, nonproliferation, and security systems technologies
- Quick turnaround science-based technical and operational solutions focused on National Security needs
- High-hazard high-fidelity testing and evaluation to counter the threat of chemical, biological, radiological/nuclear, and explosives attacks
- Development and delivery of realistic and high quality training using the unique assets of NNSS and NSTec's extensive radiological expertise
- Classified component disposition activities continue to be pursued

- Global Security characterizes the threat environment, produces specialized radiological/nuclear detection equipment, trains personnel, tests and evaluates the equipment, and develops high-tech equipment to defeat terrorists
- Major customers include the U.S. Department of Defense, the U.S. Department of Homeland Security, the Intelligence Community, and various other government agencies
- Portal systems undergo testing to find a way to detect radiation without He<sup>3</sup> gas

**Current**



**Proposed Projects**

- Upgrades to chemical/bio release equipment and new test stand structures
- Unmanned Aerial Systems R&D and test and evaluation
- Situational awareness software and program
- Augmented vision and detection technologies

- Both NNSA and WFO customers are requesting expanded chemical release activities
- Facilities have been repurposed and upgraded by WFO customers
- Equipment has been purchased by WFO customers that can be utilized for all missions
- Expanded and new technologies are utilized to create technological solutions to national security challenges

**2014 Tactical Horizon 2024**

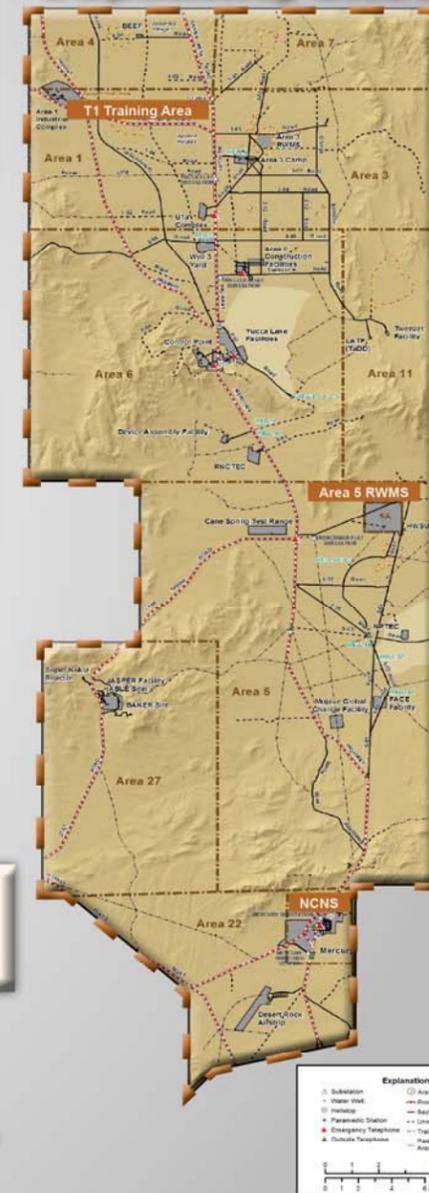


**Proposed Future Initiatives**

- The National Center for Nuclear Security (NCNS) will play a pivotal role in supporting nuclear nonproliferation objectives through research and capabilities development and demonstration

**2025 Strategic Horizon 2040**

**Mercury Corridor Capability Sites**





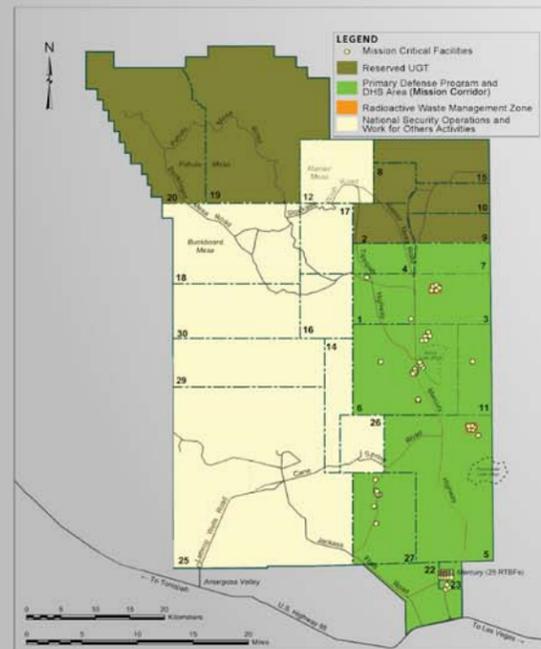
### Linkage to NSE Mission

NNSA/HQ (NA-1) has directed each NNSA Field Office to streamline business operations and reduce operations costs to maximize mission accomplishment. Achieving this vision has been codified in NAP-21, *Transformational Governance and Oversight*, which further states that the NNSA shall leverage scientific and technical capabilities of the workforce by leveraging upon a strong Federal and Contractor Assurance System for improved performance and accountability.

### Vision

The near-term vision is to deliver technical solutions to national security challenges.

The long-term vision of the NFO is to continue providing the NNSA with a safe, secure, and cost-effective environment in which to accomplish mission objectives.



## C13 Federal Management and Oversight



 Stephen A. Mellington Manager	 Steven J. Lawrence Deputy Manager	 Sharon A. Hejazi Site Counsel	 Laura M. Tomlinson Assistant Manager National Security	 Scott Wade Assistant Manager Environmental Management
 Eric J. Amorescu Senior Nuclear Safety Advisor	 Raeford L. Phifer, Jr. Assistant Manager Safety and Security	 Angela P. Colarussa Assistant Manager Site Operations	 Kathleen M. Lynn Assistant Manager Business and Contract Management	 Dorwin J. Margan Director Office of Public Affairs

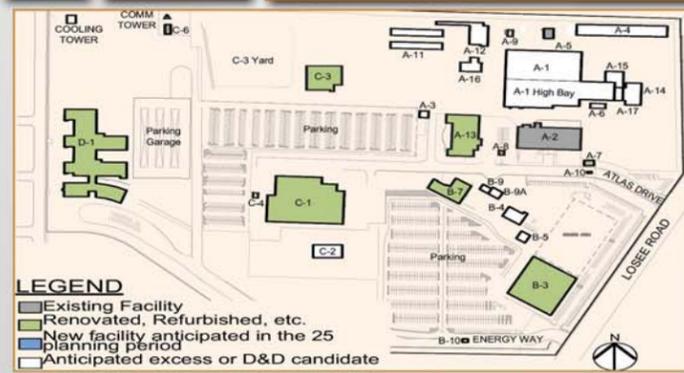
- #### Current Activities
- Upgrade, modernize, and consolidate facilities and infrastructure to ensure mission critical operations are supported
  - Continue to strive for long term improvements and efficiency gains in contractor oversight
  - Implement a streamlined issues management system

#### Current

- #### Proposed Projects
- Upgrade facilities and infrastructure and improve capabilities through development and implementation of plans that efficiently and effectively supports critical missions

- NFO continues to develop strategies to identify, develop and support proposals for facility and infrastructure projects

### 2014 Tactical Horizon 2024

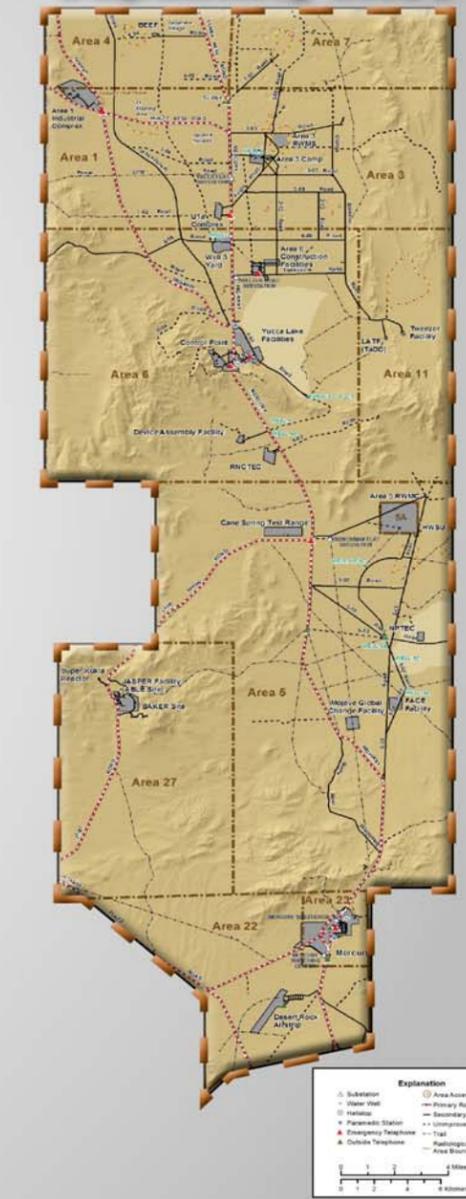


- #### Proposed Future Initiatives
- Continue to work with sponsors and stakeholders to develop the appropriate technologies and supporting facilities
  - Modernize NFO Facilities to enhance the accomplishment of site missions, reduce operating cost, advance stewardship of energy and the environment
  - Consolidate and relocate personnel and operations in various facilities at NLVF and NNSS

- NFO will continue to anticipate and forecast the future long-term use of facilities and infrastructure, develop innovative approaches, comply with new regulations, and implement designated projects to improve existing facilities and infrastructure

### 2025 Strategic Horizon 2040

## Mercury Corridor Capability Sites





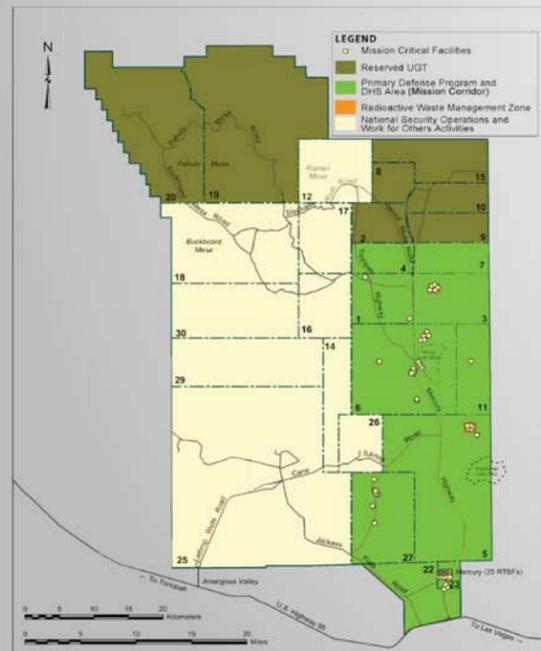
**Linkage to NSE Mission**

The NvE manages the real property assets in support of the Stockpile Missions, Design, Certification, Testing, and Surveillance and ST&E Base; and Enabling Infrastructure in order to support and accommodate all current and anticipated program activities in a safe and reliable manner.

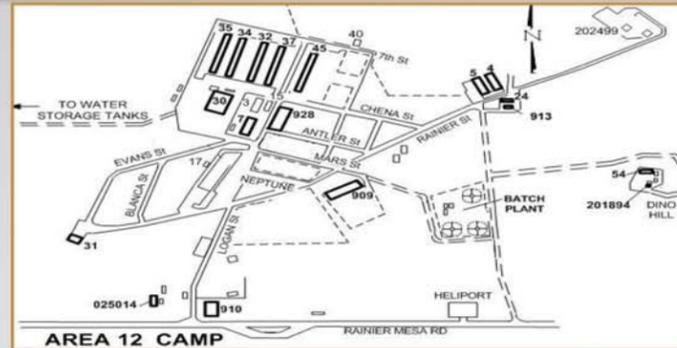
**Vision**

The near-term vision for reserve real property assets is to maintain existing support to meet mission needs for NvE.

The long-term vision consists of providing a fully-functional, cost effective asset for the conduct of work at the NNSA. Assets held in reserve may be utilized by Work for Others, as required.



**C14 Reserve Real Property Assets**



**Current Activities**

- Ensure mission critical operations are supported

**Current**



**Proposed Projects**

- Develop and implement plans that support missions

- Continue to develop strategies to identify, develop and support proposals for facility and infrastructure projects

2014

**Tactical Horizon**

2024



**Proposed Future Initiatives**

- Work with sponsors and stakeholders to identify assets held in reserve, vacant or retained for future use that will assist in their future requirements

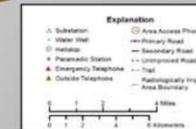
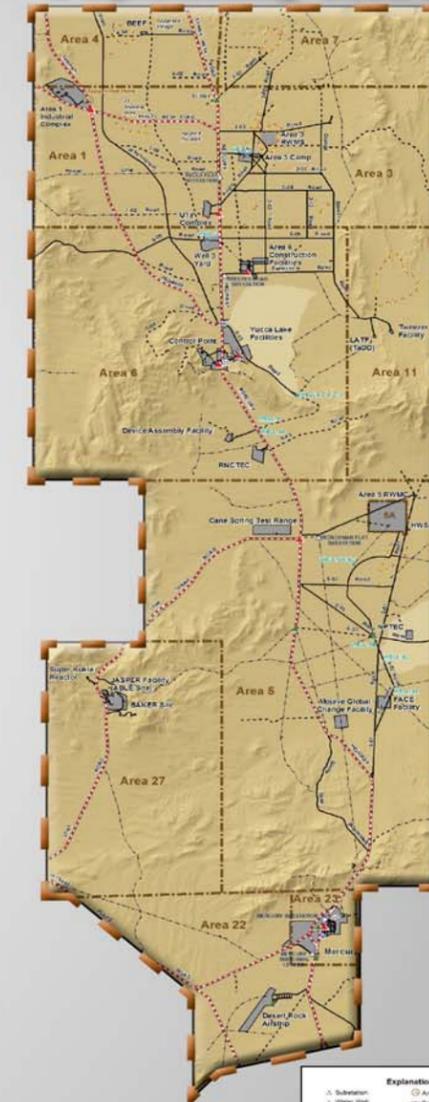
- Continue to anticipate and forecast the future long-term use of facilities and infrastructure, develop innovative approaches, comply with new regulations, and implement designated projects to improve existing facilities and infrastructure

2025

**Strategic Horizon**

2040

**Mercury Corridor Capability Sites**



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## 6.0 Real Property and Asset Management (Appendix G)

The key element in the NvE’s ability to meet current and future program needs is ensuring a flexible and reliable facility and infrastructure mix. The facilities must be able to support a return to underground nuclear testing, accept new campaigns and/or missions, and be cost effective. Target conditions for facilities and infrastructure over the next ten years are based on Readiness in Technical Base Facilities requirements, Maintenance Summits, and the resulting DOE/NNSA corporate goals to reduce deferred maintenance on all facilities and infrastructure to industry standards and to reduce deferred maintenance on all mission-critical facilities and infrastructure to less than 5% of replacement plant value.

Despite the vigorous program to excess aged, unusable buildings, the Facilities and Infrastructure Management System indicates 63% of the owned NNS building square footage is over 30 years old. The North Las Vegas Facility has 35% of its buildings over 30 years old. This situation is exacerbated by a large number of temporary buildings that have been kept in operation for decades beyond their intended useful life.

Having a full understanding of the current condition of its facilities and infrastructure enables NvE to direct reinvestment decisions to accomplish the deferred maintenance goals.

Facility optimization will be realized through a combination of activities, including footprint reduction and consolidation as funding becomes available.

Currently, NvE is meeting all NNSA performance goals as related to the facility condition index (FCI), except for the mission-critical category. Recent Condition Assessments Surveys identified deferred maintenance for mission-critical facilities resulting in a FCI increase. The overall FCI corporate goals for all mission statuses are:

- Mission Critical: FCI < 5% by 2015
- Mission Dependent: FCI < 8% by 2015
- Not Mission Dependent: Active: FCI < 10% by 2015.

The overall sustainment is in line with the NNSA performance goal. If the overall FCI >5%, maintenance should be 3-5% of Replacement Plant Value or approximately \$96M.

### Real Property Asset Management

Replacement Plant Value		\$3,294	M			
Total Deferred Maintenance		\$ 212	M			
Site Wide FCI		6.4%				
		Facility Condition Index	Asset Condition Index	Asset Utilization Index	# of Assets	Gross Square Feet (GSF) Buildings and Trailers (000s)
Mission Dependency	Mission Critical	6.7%	.91	88.0	29	372
	Mission Dependent	4.1%	.96	87.0	436	1,250
	Not Mission Dependent	8.3%	.92	64.0	784	1,283
Facility Use	Office	3.9%	.96	86.0	74	809
	Warehouse	13.5%	.87	89.0	113	409
	Laboratory	6.7%	.93	54.0	36	600
	Housing	4.8%	.95	86.0	43	221

Data represents FY 2012 Facility and Information System Year-End Snapshot Data (Template A) for five sites: Albuquerque, New Mexico; Mt. Brock, Nevada; North Las Vegas, Nevada; Nevada National Security Site, Nevada; and Santa Barbara, California

### 6.1 Site Footprint-Current and Future (Appendix H)

NvE does not anticipate any major impacts to office, laboratory, or warehouse space as a result of ongoing transformation.

In FY 2012, consolidation for the North Las Vegas Facility included the closing of four buildings (A-8, a-16, B-4 and B-9) for a total of 9,572 gsf. Mission-related activities in Building A-12 precluded closure of that facility in FY 2012. Planned consolidation for the North Las Vegas Facility in FY 2013 will continue.

There are 412 NNSA/NFO owned buildings and 36 trailers that total more than 2,906,000 gsf at the NNS and auxiliary sites listed in the Facilities Information Management System (as of the end of FY 2012 accounting).

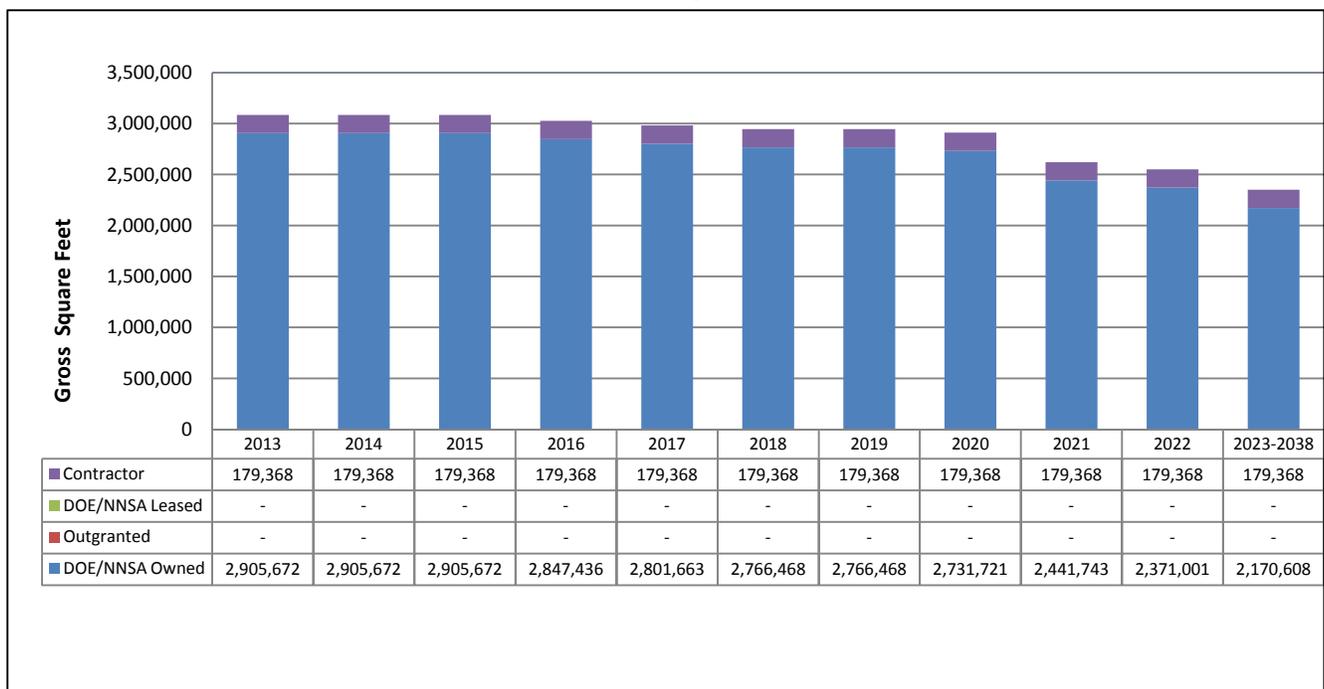
The NNSA/NFO owns or leases buildings at the North Las Vegas Facility, Livermore Operations, Los Alamos Operations, and the Special Technologies Laboratory. The respective owners of the leased facilities at Livermore Operations and Los Alamos Operations are responsible for all facilities and infrastructure repairs. Buildings leased at the Special Technologies Laboratory are maintained by a sub-contractor.

Buildings at the RSL-Nellis and RSL-Andrews are permitted and total 190,067 gsf. Buildings at RSL-Nellis are maintained by NSTec, and maintenance for buildings at RSL-Andrews is sub-contracted.

NSTec currently has six leases in outlying locations totaling approximately 179,368 gsf of building space. All leases were determined to be cost-effective at the time of execution. Prior to exercising any options for renewal, NSTec completes new market surveys and verifies that the pricing is still fair and reasonable. If a market survey identifies pricing that is not advantageous to the Government, alternative measures, such as a competitive proposal process, are considered with the participation of NSTec and NFO Management.

Currently, NNSA/Headquarters is looking at funding a Disposition Program, under NA-00, across the complex. If funding is received, the NNS footprint (see chart below) is expected to decrease over the next 5 to 10 years by approximately 475,000 gsf.

**NNS Footprint Projection (Buildings and Trailers)**



In response to the new “Freeze the Footprint” policy, the NNSA has identified a FY 2012 baseline of 1,250,784 gsf for Facilities Information Management System usage codes as identified in the chart below. No new office or warehouse footprint is anticipated in the next few years. No new disposal is anticipated unless funding is received.

In accordance with the Office of Management and Budget M-12-12, *Promoting Efficient Spending to Support Agency Operations*, agencies shall not increase the total square footage of their domestic office and warehouse inventory compared to the FY 2012 baseline. This “Freeze the Footprint” policy will be calculated based on the FY 2012 Federal Real Property Profile Data, FY 2012 General Services Administration Occupancy Agreements, and FY 2012 Agency Leasing Agreements.

**Requirements for offsets:** An agency must offset any growth in total office and warehouse space with other corresponding reductions in total office or warehouse space, so as to ensure that there is no net increase in the size of these real property assets, compared against the FY 2012 baseline.

A disposal creates an offset in the amount of the square footage of the office or warehouse space disposed. The agency’s declaration of a property as “excess” to General Services Administration will count as an offset. Additionally, office and warehouse properties located at military installations closed or realigned as part of a Defense Base Realignment and Closure process will count as an offset.

**Freeze the Footprint  
DOE Owned FY 2012  
NNSA\* Baseline**

Usage Code	GSF
100 Office	841,897
400 Warehouse	408,887
<b>Total GSF (baseline)</b>	<b>1,250,784</b>

\*includes all sites and one occupancy agreement

## 6.2 Deferred Maintenance and Facility Condition Index (Appendix I)

NSTec performs condition assessments on a five-year schedule. Due to reduced resources, facilities previously assessed on a three-year schedule have had their schedules extended to five years, the minimum requirement of the DOE Order 430.1B, *Real Property Asset Management*. A graded approach is applied according to the mission criticality of buildings to be assessed and the rigor of assessments based on the operational status of the building. NSTec uses the DOE/Headquarters' endorsed process based on the DOE Condition Assessment Survey manuals and the Headquarters-managed Condition Assessment Information System (CAIS) database. By using CAIS, NSTec is compliant by definition.

Facilities at North Las Vegas Facility, if regularly maintained, should remain fully functional to support current missions, but due to the age of some facilities and buildings, major system replacements will be required during the plan period out years. Eight of the facilities were built in the late 1970s – mid 1980s, 13 in the late 1980s, and 3 after 1990

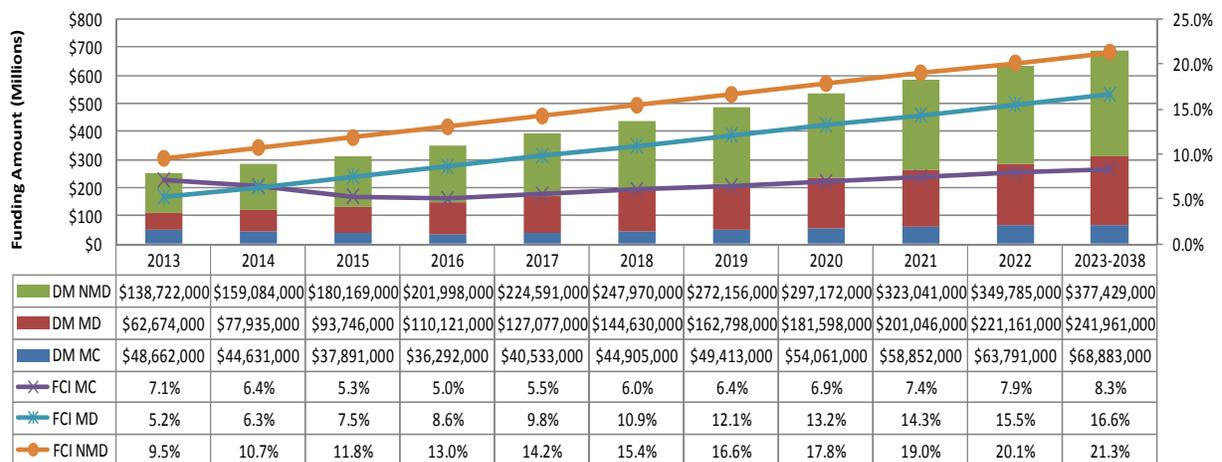
Many of the facilities at the NNSA have already reached the end of their useful lives, both structurally and technologically.

In FY 2012, the deferred maintenance reduction was \$8.4 M (approximately \$5.6 M buydown was associated with the Facilities and Infrastructure Recapitalization Program). At the end of FY 2012, deferred maintenance was \$212 M.

Deferred maintenance will continue to increase as the Facilities and Infrastructure Recapitalization Program sunsets in 2013, and no demolition funds are received. In the next five to ten years, electrical, heating, ventilation, and air conditioning systems in major facilities will have exceeded their design life and will be classified as failed in the CAIS. These classifications will cause the deferred maintenance to increase substantially within 10 years. Maintenance funding will remain within the 2% performance goal and continue to support operating facilities (mission critical, mission dependent not critical, and not mission dependent).

The Capabilities Based Investment will have minimal effect on the deferred maintenance reduction (20%) and FCI stabilization. Disposition will have a higher percentage impact on deferred maintenance reduction and FCI stabilization with over \$65 M required for disposition. The reduction of square footage will also contribute to the Sustainability/Energy goals of reducing energy intensity.

Planned Real Property Expenditure by Mission Dependency



### 6.3 Space Utilization and Consolidation

NvE is committed to providing a smaller, safer, more secure, and less expensive enterprise that leverages the scientific and technical capabilities of the workforce and meets national security requirements. Over the next ten years, the NNSA Complex will meet current DOE requirements and national security needs and eliminate redundancies and dramatically reduce footprint based on facility disposition funding.

### 6.4 Sustainability/Energy

Sustaining facilities and infrastructure is critical to providing the foundation for accomplishing NvE's primary mission to support Stockpile Stewardship and related multi-program activities for the NNSA. Significant progress towards consolidation has been achieved.

NvE is committed to implementing the requirements of the DOE Strategic Sustainability Performance Plan through reducing the use of energy and water in NvE facilities by advancing energy efficiency, water conservation, employee awareness, and the use of solar and other renewable energy sources. The Energy Management Program is performance oriented and strives to ensure continuous life cycle cost-effective improvements to increase energy efficiency and effective management of energy, water, and transportation fleets, while increasing the use of clean energy sources. Cost-effective improvements implemented in FY 2012 are discussed below.

The Nevada Support Facility at the North Las Vegas Facility achieved Leadership in Energy and Environmental Design (LEED) Gold certification in August 2012. Extensive support was provided by NSTec personnel to obtain the U.S. Environmental Protection Agency (EPA) Energy Star and the U.S. Green Building Council LEED Gold certifications. NSTec's staff contributions and knowledge of the EPA Energy Star and LEED processes were invaluable during the rigorous documentation process, for ensuring that the Nevada Support Facility certification application was submitted by the due date.

A rebate in the amount of \$159,880 was received from NV Energy for work performed by the Energy Saving Performance Contractor. The funds were used to reinvest in four used-oil burning furnaces,

low-speed/high-volume circulation fans for two warehouses, closure of four sumps at the NNSS, offsite transport of excess sulfur hexafluoride (SF<sub>6</sub>) gas, and a Green Reaper costume.

The largest sources of water usage at the NNSS were five water sumps, which used approximately 28 million gallons of water per year. These sumps provided water for site work activities and wildlife use. The potential impact of eliminating these sumps was studied. The goal was to achieve a responsible approach to the elimination of the sumps while limiting the impact to site activities and dependent wildlife. The water available in these sumps was pumped from potable wells. Once placed in an open sump the water could no longer be used for human consumption. Less than 40% (11 mega gallons [Mgals]) of the quantity supplied to the sumps was used for construction operations or dust control. The rest (17 Mgals) was lost to evaporation, infiltration, and plant growth. The extensive growth of the plants at each sump contributed to water loss by breaching the compacted soil lining. Four of the sumps were closed at the NNSS and replaced by water troughs for wildlife utilization and construction-fill stands to support construction activities. The water pumped to the remaining sump was reduced by approximately 50%, while maintaining the natural appearance for the dependent wildlife.

All excess sulfur hexafluoride (SF<sub>6</sub>) was recycled and transported offsite. This endeavor reduced the amount of onsite gasses by 80% when measured in metric tons carbon dioxide equivalent (MtCO<sub>2e</sub>). The goal was to reduce inventory so the risk of emission was also reduced.

The NNSS was one of only five locations across the nation to be selected to participate in the Plug-in Electric Vehicle Pilot Program, the first of its kind sponsored by General Services Administration and vehicle manufacturers. Its purpose is to demonstrate plug-in electric vehicle technology for possible wider use in Federal fleets nationwide.

Funding (indirect) for meter installation in the amount of \$600,000 was provided as part of the Energy Management Improvement Program. The goal was to use the funding to install 18 advanced electrical meters and 12 British Thermal Unit (BTU) meters. Efficiencies were sought and several meters were installed as part of a Mercury switch project. In FY 2012, 32 advanced meters and 19 BTU meters were installed.

A costume was developed for the character icon – The Green Reaper – and is being used as part of the behavior-based energy program. The program targets reduction of energy usage. The character is also used as part of a community outreach program to teach elementary school children what they can do to save energy and water at home.



Most goals are being met or exceeded. For detailed information pertaining to the Energy Program refer to the FY 2013 NNSA/NFO Site Sustainability Plan.

## 6.5 Security

Several programmatic initiatives were implemented to strengthen the safety and security at all facilities in the NFO complex. They include permanent implementation of an increased security posture and several cumulative increases in defined adversary capabilities as reflected in the revisions to the Design Basis Threat policy and its successor the Graded Security Protection (GSP) policy. The NNS was certified compliant with the GSP policy in October 2010.

The NvE has demonstrated a strong commitment in support of Operations Security. Changing missions reduced funding and staffing, as well as, global economic, technological, and terrorist threat calls for new ways of doing business to remain effective in the Operations Security arena. The NvE continues to meet the challenge of protecting national security programs and its personnel. The NFO Operations Security program remains at the forefront of innovation and service and has become a cornerstone of the NNSA and DOE Operations Security programs and an ardent supporter of the National Operations Security community. The NFO Operations Security program continues to be recognized as a leader in the NNSA, as it has been since 1994.

### 6.5.1 Security Infrastructure

Three buildings make up a small complex adjacent to the NNS main entrance. One building serves as the Headquarters for NNS protective force activities and includes a “muster” room, male and female locker rooms, and logistics support functions. The other two buildings house administrative protective force activities and the NNS Badge Office. A building located within Mercury is the primary administrative office, training operations coordination center, and general instruction facility for the NNSA/NFO Protective Force Training Academy complex. Other facilities include a shoot house for Special Response Team training, an Elevated Shoot Tower and a Special Response Team obstacle course. Two double-wide trailers previously placed in operation for use as administrative offices have been retired from use, effective FY 2012.

In Area 6, several buildings support security activities in the forward areas. An ongoing project, scheduled for completion in FY 2017, will expand the DAF Entry Guard Station to support the additional throughput anticipated with the startup of the NCERC. This project will also install four new access control portals that are compatible with the ARGUS alarm and access control system, which is being installed in FY 2012-2017.

WSI has also proposed a Radio Communication System Replacement project which is necessary to provide reliable NNS fire response, emergency management operations, primary interoperability with local law enforcement, and personnel safety in remote forward areas.

The proposed WSI Facility Consolidation project, which will be designed to be a Leadership in Energy and Environmental Design compliant facility, will provide for the consolidation of security facilities’ operations and functions in an effort to ensure strong security and nuclear safety programs.

This project is necessary to integrate security and safety, maximize collaboration of related organizations and functions, reduce the recurring carbon footprint associated with security operations, and develop and employ new strategies and technologies for the 21st century.