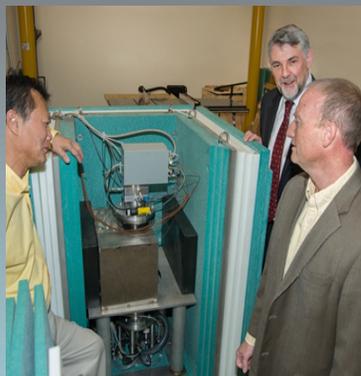




Fiscal Year 2016

National Nuclear Security Administration
Nevada Field Office

Ten-Year Site Plan



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Front Cover Photo Descriptions



The USGS introduced 15 adult tortoises into 3 fenced plots at the Rock Valley area of the NNSS to understand contact networks among groups of tortoises.



The RSL helicopter hovers above the NNSS during the WINGS emergency response exercise.



NNSA Principal Deputy Administrator Madelyn Creedon visited the NNSS, where she observed many areas critical to the mission.



The Multiplexed Photon Doppler Velocimetry machine at the NNSS.



Emergency Responders tend to a "victim" during the Tremor exercise.



Confinement vessel for Leda subcritical experiment.

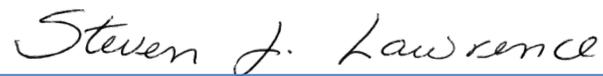


Scientists performing target bonding operations inside the glovebox at the Device Assembly Facility.

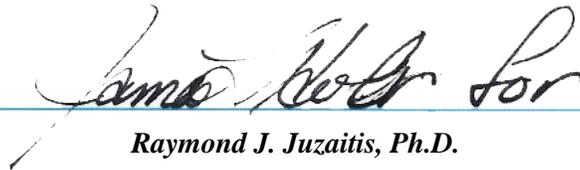


A five-year cooperative research and development agreement will enable production of an essential radioactive isotope for medical diagnostic imaging procedures.

Approvals



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National Security Technologies: SNAPSHOT

Location:

Las Vegas, Nevada

Type:

Multi-Program Site

Contractor:

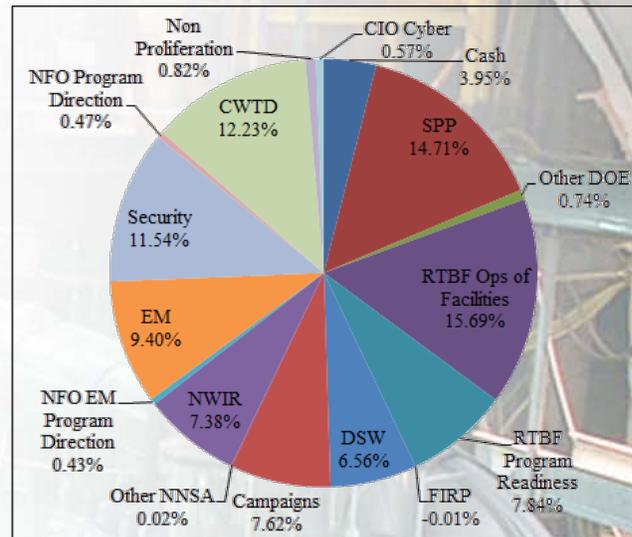
National Security Technologies, LLC

Responsible Site Office:

U.S. Department of Energy/Nevada Field Office

Website:

<http://www.nstec.com>



FY 2015 Funding

Real Property:

- Acres: 867,103 (Leased/Owned)
- Buildings/Trailers: 466 buildings/Trailers: (Leased/Owned/Permit)
 - Gross Square Feet (Active and Operational): 2,889,321
 - Gross Square Feet (Non-Operational): 305,750
 - Gross Square Feet Leased: 179,368
- Replacement Plant Value: \$3,516,294,304 (Total Assets)
- Deferred Maintenance: \$257,927,347 (Total Assets)
- Facility Condition Index: 7.3%
 - Mission Critical: 5.4%
 - Mission Dependent: 4.4%
 - Asset Utilization Index (Overall): 75%

Employee Capital:

- Full-Time Equivalent Employees 2,218

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Acronyms

BEEF	Big Explosives Experimental Facility
BTU	British Thermal Unit
CAIS	Condition Assessment Information System
CMP	Consolidated Maintenance Program
CTOS	Counter Terrorism Operations Support
CWTD	Countering Weapons of Mass Destruction Testing Division
DAF	Device Assembly Facility
DE&SS	Defense Experimentation and Stockpile Stewardship
DM	Deferred Maintenance
DOE	U.S. Department of Energy
EMSS	Emergency Management, Safeguards, and Security
ERM	Enterprise Risk Management
FIRP	Facilities and Infrastructure Recapitalization Program
FCI	Facility Condition Index
FFACO	Federal Facility Agreement and Consent Order
ft ³	cubic feet
FY	fiscal year
FYNSP	Future Years Nuclear Security Program
gsf	gross square feet
JASPER	Joint Actinide Shock Physics Experimental Research
LANL	Los Alamos National Laboratory
LLNL	Lawrence Livermore National Laboratory
LED	light emitting diode
LEED	Leadership in Energy and Environmental Design
M	million
MC	Mission Critical
MD	Mission Dependent
MPDV	Multiplexed Photon Doppler Velocimetry
NCERC	National Criticality Experiments Research Center
NCNS	National Center for Nuclear Security
NFO	Nevada Field Office
NIF	National Ignition Facility
NMD	Not Mission Dependent
NNSA	National Nuclear Security Administration
NNSS	Nevada National Security Site
NSE	Nuclear Security Enterprise
NSTec	National Security Technologies, LLC
NvE	Nevada Enterprise
RSL	Remote Sensing Laboratory
RTBF	Readiness in Technical Base and Facilities
SCE	Sub-critical Experiment
SEES	Singularity, Efficiency, Effectiveness, and Sustainability
SNM	Special Nuclear Material
SPP	Strategic Partnership Projects
TYSP	Ten-Year Site Plan
U1a	U1a Underground Complex
VERB	Visualization Examination and Repackaging Building
WMD	Weapons of Mass Destruction

1.0 Executive Summary

1.1 The Current State

The Nevada Enterprise (NvE) had a very impressive year in Fiscal Year (FY) 2014, successfully managing the Nevada National Security Site (NNSS) to support Stockpile Stewardship, Nuclear Nonproliferation, Nuclear Emergency Response, Environmental Management, and Strategic Partnership Projects (SPP). Despite 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:

Defense Experimentation and Stockpile Stewardship (DE&SS)

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 skilled personnel and facilities and infrastructure in which the National Security Laboratories or other organizations can conduct nuclear and non-nuclear experiments essential to maintaining and certifying 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. It is the only location in the U.S. authorized to conduct sub-critical experiments (SCEs) with both high-explosives and weapons-relevant quantities of plutonium. 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 throughout NNSA sites.

Implementing the NNSA Program of Record at the NNSS will require additional staffing of personnel with 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.

Emergency Management, Safeguards, and Security

Emergency Management, Safeguards and Security (EMSS) administers the Material Control and Accountability program, Emergency Services and Operations Support, Emergency Planning and Preparedness, a Classification program office, Personnel Security, Information Security, Facility Operations, and a Security Operations section. EMSS provides security management for NNSS facilities supporting national security, auxiliary sites, and North Las Vegas facilities.

The Safeguards Program at the NNSS is a systematic implementation of physical protection, material accounting, and material control measures to fulfill order requirements for the protection of nuclear material. Successful implementation of the Safeguards program is critical to the success of the DOE/NNSA and NNSS missions. The NSTec EMSS is the security integrator for the NFO and chairs the Security Program Integration Board, which is responsible for security projects being proposed for the NFO facilities.

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. Defense Nonproliferation missions for the NNSS 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 Response Team, Emergency Communications Network, Joint Technical Operations Team/ACCESS, and Nuclear/Radiological Advisory Team.

Environmental and Waste Management

Environmental and Waste Management at the NNSA 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 risk informed, 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 NNSA.

Strategic Partnership Projects (SPP)

The NNSA supports a variety of other national and global security activities. These include a multitude of activities which focus on nonproliferation, counter-proliferation, counterterrorism, consequence management and response, cyber warfare, and unmanned systems.

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.

SPP complement NNSA activities by leveraging existing facilities and capabilities.

1.2 FY 2014 Accomplishments

FY 2014 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. Some of the major accomplishments are discussed below.

Defense Experimentation and Stockpile Stewardship

In FY 2014, DE&SS successfully completed a total of 18 NA-10 National Level 2 milestones and associated deliverables in the areas of Science

Campaign, Directed Stockpile Work, Readiness in Technical Base and Facilities, and Inertial Confinement Fusion. Within these areas a number of diagnostics systems were successfully developed and advanced, including detectors and instrumentation. Calibration, characterization, and fielding capabilities were provided which span all the nuclear weapons subprograms. Additional contributions were made in radiographic and neutron source development; NvE activities in product realization; and modeling and device disposition. The following summarizes some of these accomplishments:

- Successfully executed the Leda SCE in August 2014 and collected 100% of the data. Leda was a scaled integral experiment that provides critical surrogate hydrodynamic materials data in support of LANL's certification and reuse program. The Leda platform will be used to enhance the diagnostic suite for future SCEs.
- Successfully collaborated with NA-50 to implement the Recapitalization Program defined in the 2014 Office of Infrastructure and Operations Program Management Plan. The Recapitalization Program funds high-priority general plant projects for NNSA mission-critical facilities and site infrastructure.
- Established a project planning and development framework to define and prioritize major investment candidate projects for NNSA critical facility and site infrastructure. The resulting preconceptual planning details provide a basis for multiple data calls and program deliverables for candidate projects.
- Successfully completed design for replacement of DAF south side lead-in lines and initiated procurements for the project.
- Completed the analysis of 10 Reaction History Events for Lawrence Livermore National Laboratory (LLNL), 10 Reaction History Events for Los Alamos National Laboratory (LANL), 12 NUEX Events, and 10 PINEX Images.
- Completed film scanning for 40 Reaction History events for LANL.
- Completed COMSOL multi-physics model for cable response; revised the Statistically-Based Spline Fitting code with updated cable and equalizer model; and completed user interface to the NUEX code. Legacy Nuclear event reanalysis is an important link between experimental data and computer models within the predictive capability framework and is critical for certifying reuse strategies without nuclear testing.

- Successfully supported high-explosive pulsed-power experiments on surrogate materials to optimize the Phoenix platform for equation-of-state measurements on future plutonium experiments at U1a. This included demonstrating the required pressure and accuracy on surrogate materials and documentation of expected accuracy on plutonium experiments.
- Successfully executed 10 JASPER shots, including four Photonic Doppler Velocimetry Encapsulated Alpha shots, all with 100% data recorded.
- Developed diagnostics for dynamic materials, SCEs, and hydro-like experiments:
 - Fabricated and fielded the fifth Multiplexed Photon Doppler Velocimetry system for Leda experiment (LANL).
 - Completed radiographic zoom lens upgrades to meet design performance specifications (LANL).
 - Increased Photomultiplier Tube and solid state detector bandwidth and sensitivity for radiance/pyrometry measurements (LANL).
 - Delivered four 7-channel pyrometry units; three to JASPER and one for development efforts (LLNL).
 - Delivered streaked spectrometers on the High Explosives Application Facility (LLNL).
 - Fielded calibrated system on pulsed X-ray experiment (OMEGA). This effort included integration of diagnostics into facility (design and fabrication), assembly, operations, alignment procedures, and analysis of resultant data (LLNL).
 - Delivered a 6-channel leapfrog Photon Doppler Velocimetry for cylindrical implosion experiments (Sandia National Laboratories).
- Provided diagnostics, analysis, and modeling to understand diode physics phenomena and record diode performance.
- Provided high resolution imaging of a variety of test objects in order to mature the self-magnetic-pinch diode for a next generation U1a radiographic source. This work was performed on the Radiographic Integrated Test Stand accelerator, which serves as a research and development platform for pulsed power and radiographic source development.
- Successfully configured and optimized the performance of the Cygnus Dual Axis Radiographic Sources Imaging System and enhanced the Radiographic Imaging and Analysis capability for SCEs.
- Provided diagnostic support for laser experiments at OMEGA and the National Ignition Facility (NIF), and pulsed power experiments on the Z machine, as follows:
 - Provided calibration, fielding, and analysis support for 29 NIF diagnostics, as well as the development of characterization procedures for measuring X-ray foil thickness and low density foams through X-ray transmission studies.
 - Provided life cycle management support for Generation I and II Microchannel Plate gated detectors fielded at the Z machine during experiments.
 - Utilized Henke X-ray source to conduct curved-crystal diffraction studies for the conceptual design of higher energy X-ray detectors and published a scientific paper on the topic X-ray Diagnostics Characterization.
 - Developed a 3-D model for a pulsed X-ray source output at 17 keV with an optimum X-ray flux of 10^{10} e- within a 100 um spot size and delivered a conceptual design in preparation for prototype development.
 - Designed and built a coating machine for deposition of high-Z materials on silicone substrates in support of gated micro-channel plate detectors used at Z and NIF.
 - Developed an electron beam physical vapor deposition system to apply conductive coatings for Microchannel Plate electrodes.

Emergency Management, Safeguards and Security (EMSS)

EMSS conducted a site-wide full participation exercise (“TREMOR-14”) that demonstrated the NNS’s response to a large-scale seismic event which caused cascading emergency events and hazardous materials releases at multiple facilities. Both onsite assets and offsite response partners participated in this integrated operation to demonstrate NNS and regional emergency preparedness.

Defense Nuclear Nonproliferation

The dry lake bed at the Non-Proliferation Testing and Evaluation Complex at the NNS was the location of the Neptune test, an evaluation of an imaging system

that will be used to detect gases emitted from nuclear weapons testing. NSTec provided logistics support for the Sandia National Laboratories to control the flow rates of gases released during the test and provided meteorological data. The lake bed proved to be the ideal testing ground for the release of gases used to test the sensors.

Counterterrorism and Counter-Proliferation

NSTec Counter Terrorism Operations Support (CTOS) division provided training and radiological exercise expertise to the New York Area Regional Catastrophic Planning Team to help prepare them for a mass fatality management exercise that dealt with an estimated 160,000 fatalities from the detonation of an improvised nuclear device in New York City. CTOS personnel were instrumental in setting up the incident scene by placing radiological sources on mannequins to simulate radiologically contaminated victims. CTOS also provided expert advice, oversight with radiological controls, and general command and control of the radiological component of recovery efforts during the exercise.

Nuclear Emergency Response

The NNSS 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 (WMD) event is essential to the protection of our Nation and its people.

Accomplishments in 2014 include:

- RSL executed a broad range of emergency response activities and exceeded the emergency response work scope described in the FY 2014 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 SPP customers.
- RSL received the prestigious Federal Aviation Administration's Aviation Maintenance Technician Diamond Award for Excellence. This year's recognition represents the ninth consecutive year that RSL Aviation has earned the highly respected Award of Excellence and reflects notable credit for NSTec and the outstanding performance of the Aviation Maintenance Technicians.

- 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; the first United States Africa Leaders' Summit; the Fédération Internationale de Football World Cup in Brazil; the World Ice Hockey Championships in Minsk, Belarus; and the Presidential State of the Union Address.

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:

- Twenty-two corrective action sites were closed in accordance with the FFACO.
- Completed development and testing of two groundwater characterization wells.
- Completed pumping and sampling of nine wells.
- Implemented the use of rod pumps for sampling monitor tubes in characterization wells.
- Disposed of a total of 44,953,700 cubic feet of low level and mixed low-level waste in compliance with NNSS Waste Acceptance Criteria, as of September 30, 2014.
- Completed installation of the new cover on the Transuranic Pad Cover Building, a project that has been delayed since FY 2011 due to insufficient funding.

Strategic Partnership Projects (SPP)

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 the NFO to implement its elements to guide future capability and infrastructure planning. The focus will be to capitalize on the 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-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 NNSC 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 NNSC will remain the center for high-hazard testing.

The NNSC will increase its ability to conduct specialized underground nuclear experiments, which will focus on early explosion-time hydrodynamic (fluid-like flow) characterization of plutonium and its surrogates in weapon relevant geometries. Data of this nature is essential to the National Security Labs' mission to maintain the safety, security, and reliability of the U.S. nuclear weapons stockpile. The next generation of infrastructure and instrumentation investments will enhance these capabilities, including later explosion-time and reactivity experiments. This will improve our understanding of the explosion lifecycle of nuclear weapon primaries for certification of options for modernized weapons.

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 Countering WMD Testing Division (CWTD), formerly called the National Center for Nuclear Security (NCNS), will continue to support the NCNS program, but will also provide WMD testing expertise to a host of customers outside of the NNSA, through SPP and Strategic Intelligence Partnership Programs.

The CWTD is working to become the world's premier WMD testing location. With the unique facilities at the NNSC, the CWTD is the only venue in the U.S. that can perform all-hazard testing across the full chemical, biological, radiological, nuclear, and explosive threat spectrum. Together with the Remote Sensing Laboratory at Nellis Air Force Base and the Special Technologies Laboratory in Santa

Barbara and San Diego, California, CWTD is also able to address contemporary cyber security concerns.

Within CWTD, the Radiological/Nuclear Countermeasures Test and Evaluation Complex, the Nonproliferation Test and Evaluation Complex, and the Port Gaston facility will support radiological/nuclear, chemical/biological, and explosive testing, respectively. In partnership with DE&SS and the Nuclear Operations Directorates, CWTD can provide large-scale explosives capability at the BEEF and Baker site, as well as a variety of tunnels across the NNSC that offer a wide-variety of WMD testing environments.

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 CWTD 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 classified components. This project allows both NNSA and U.S. Department of Defense sites to dispose of classified components at Area 5, where no disposal path previously existed. The United States Air Force has reported a 90% cost avoidance by using the process implemented at the NNSC. The infrastructure cost savings of direct disposal by the NNSA sites are still being evaluated; however, any cost savings to the government could be re-directed towards higher mission priorities. In addition, Environmental Management is supporting the State Department and Administration in their ongoing dialogue with the government of Spain regarding the potential for disposal of contaminated soil from Palomares. The soil was contaminated during a mid-air refueling collision where four nuclear weapons were involved. Initial cleanup was done in 1966 at the time of the accident, but additional remediation is being requested by Spain to open the restricted lands for future use.

The NNSC, LLNL, LANL and SNL plan enhancements to the U1a Complex. The U1a Complex Enhanced Capabilities project for sub-critical experiments will integrate the use of existing systems, structures, and components underground and on the surface. The national goal is to have these enhancements in place to support various planning horizons such as the B61 FPU, the development phase of cruise missile replacement, and the start of Interoperable Warheads.

1.4 Enterprise Risks

As the nation faces great fiscal uncertainties, there is little doubt that funding pressures will continue for everyone. At the NNSS, such pressures, if unresolved, could undermine past successes and create future vulnerabilities. Facilities are being run to failure, which can lead to serious degradation in the ability to perform its required missions.

NNSS Enterprise Risk Management (ERM) has identified infrastructure maintenance/recapitalization as the most significant risk to mission execution.

The overall situation is highlighted as follows:

- Sixty-five percent of the NNSS 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 NNSS 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 NNSS.
- A significant portion of the NNSS road system is substandard. The estimated 640 miles of NNSS 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 have become seriously degraded due to age, weather, and maintenance issues.
- The trunked radio system essential for continued NNSS operations is beyond its useful life and is beginning to experience outages that impact mission accomplishment, safety, and security.
- Security vulnerabilities must be addressed to ensure secure operations and mission execution. Funding for a key security project that was to become a line-item project was delayed in FY 2014 and 2015. It is expected to be funded

in 2016. Funding this project is important to the NNSS's ability to meet its mission requirements.

- 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.
- Aging aircraft (fixed wing and rotary) assets that are past 25 years are still kept flying to support national Security Mission on both coasts. Limited work arounds and scavenging for parts to service the aircraft have allowed operations to continue, but this has been increasingly difficult to maintain.

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

- Program Readiness has traditionally represented about 20% of the site's Readiness in Technical Base and Facilities (RTBF) funding. Budget projections for out-years reflect a 60% reduction.
- Additional infrastructure support is required to address increases in operational pace and workload underway/planned at NNSS facilities to meet NA-10/Laboratories program deliverables.
- 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 NNSS 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 NNSS to perform all its required missions.

Indirect funded infrastructure is currently not in a sustainable state and is inadequately tied to mission requirements. Significant funding increases supporting infrastructure consolidation are required to ensure safe, secure, compliant, and efficient mission support.

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

The NNS 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 programmatic materials. Activities at the NNS 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.

The remoteness and expanse of the NNS 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 SPP customers.

NvE Core Capabilities are (C1.1) Design and Certification; (C1.2) Experiments; (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.

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 2,218 employees specializing in scientific, technical, engineering, and administrative employee activities.

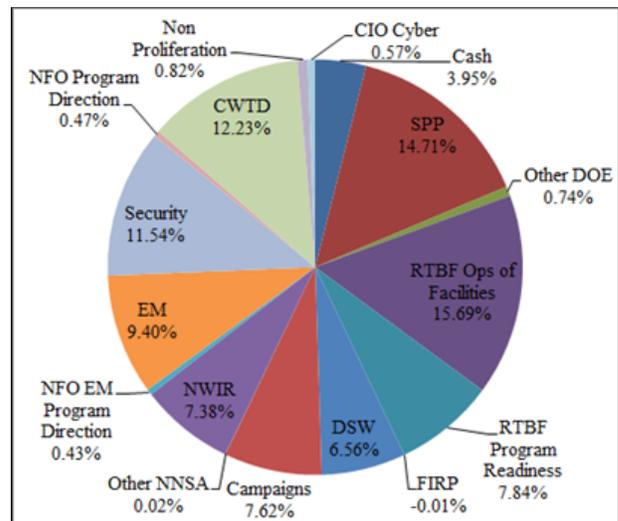
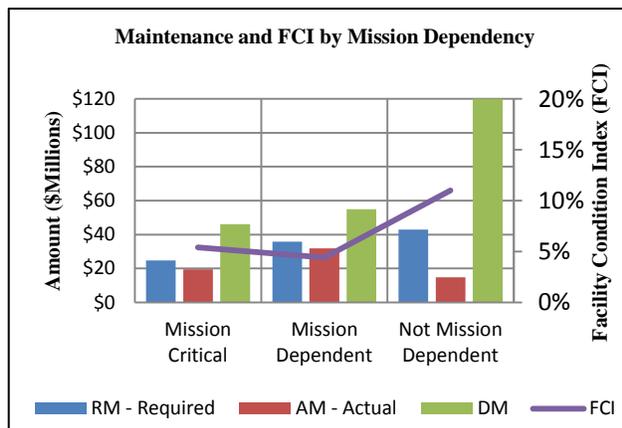
The FY 2014 Real Property Asset data below pertains to gross square footage and condition of assets, as well as, funding by source and total site operating cost.

Real Property:

- 867,103 Acres: (Leased/Owned)
- 466 Buildings/Trailers: (Leased/Owned/Permit)
 - 2,889,321 gsf Active and Operational
 - 305,750 gsf Non-Operational
 - 179,368 gsf Leased
- Replacement Plant Value: \$3,516,294,304 (total assets)
- Deferred Maintenance: \$ 257,927,347 (total assets)
- Facility Condition Index: 7.3%
 - Mission Critical: 5.4%
 - Mission Dependent: 4.4%
 - Asset Utilization Index (Overall): 75%

FY 2014 Funding Source and Cost:

- FY 2014 Total Site Operating Cost: \$ 587 M
- FY 2014 Total NNSA Funding: \$ 444 M
- FY 2014 Total DOE (Non-NNSA) Funding: \$ 70 M
- FY 2014 Total Other Funding: \$ 115 M



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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 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.
- The Office of Defense Programs and the RTBF Program will manage areas that specifically address continuity of weapons-related capabilities. The Office of Operations and Infrastructure will manage the landlord responsibilities under the existing Site Stewardship Program. These 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 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 2015 Facilities Information Management System.

3.3 Planning Assumptions

Numerous initiatives are being combined into a comprehensive approach that integrates all NNS user requirements to ensure a balance between mission support and overall infrastructure sustainability. Key tools and Initiatives being used to develop a risk-informed sustainable infrastructure planning/programming framework focused on core capabilities and mission execution include: Singularity, Efficiency, Effectiveness and Sustainability (SEES) Strategic Implementer; G2 Recapitalization Project Prioritization Module; ERM; Consolidation of Direct and Indirect Program Management; Implementation of a Consolidated Maintenance Program; and Facilities and Infrastructure Initiatives. These tools and initiatives are discussed below.

Singularity, Efficiency, Effectiveness and Sustainability (SEES) Strategic Implementer

The NSTec strategic framework, characterized by the four elements: SEES and an accompanying Strategic Framework Implementer, represent efforts to reinvigorate strategic mission planning and execution at the NNS.

G2 Recapitalization Project Prioritization Module

NSTec will integrate the newly adopted G2 Recapitalization Project Prioritization module process for all recapitalization planning efforts. This includes adherence to the original safety risk, program risk, sustainability opportunities, and return on investment criteria. In addition to the new recapitalization process, NSTec will coordinate their internal ERM process into prioritization of planned projects.

Enterprise Risk Management (ERM)

ERM is a core management process that is designed to anticipate potential future events/conditions that may impact the strategic objectives of the NNSS, align the deployment of scarce resources with the strategic objectives, and promote horizontal and vertical communication within the organization.

ERM has identified aging infrastructure as its highest risk across the mission critical nuclear/high-hazard facilities, supporting facilities, infrastructure, and site utilities (power, water, communication, and roads). The NNSS Infrastructure Program and Strategy has been developed and prioritized to address three key interdependent areas:

- **Critical Site Infrastructure** – reliable and cost effective operation of site-wide infrastructure
- **Mission** – deliver effective experiment operations that generate state-of-the-art diagnostics/data in a safe, secure, and environmentally responsible manner
- **Enterprise Initiatives** – transform infrastructure through consolidation/optimization to achieve sustainability

Consolidation of Direct and Indirect Infrastructure Program Management

Initiative targeting consolidation and integration of program management functions of direct and indirect infrastructure within a single portfolio.

Consolidated Maintenance Program

The Consolidated Maintenance Program is a strategic initiative that enables more effective prioritization of work scope and allocation of resources/funding supporting preventive and corrective maintenance activities.

Facilities Initiative

The Facility Transformation Tiger Team was established in October 2014 to develop and implement an optimized and sustainable long-term facility strategy to align workforce requirements with Infrastructure Program plans. The main goals of the team are to (1) provide an improved work environment that supports recruitment, retention, and productivity, (2) reduce facility costs, (3) increase workforce flexibility through virtualization and hoteling, (4) implement a sustainable business model with focused future investments, and (5) improve life safety through consolidation into fewer facilities.

4.0 Changes from Prior Year TYSP

This year's TYSP focuses on the tactical horizon, extending to 5 years past the next Future Years Nuclear Security Program (10 years) and a strategic horizon extending 15 years past the tactical horizon (25 years). It describes implementation of the Program of Record for all NNSA/NFO programs and communicates the alignment of real property assets with core capabilities and mission and program requirements.

Also, this TYSP discusses the breakout of Core Capability (C1) Design, Certification, Testing, Experiments, Surveillance, and ST&E Base into five capabilities: (C1.1) Design Certification, (C1.2) Experiments, (C1.3) Simulation, (C1.4) Testing and (C1.5) Surveillance. NSTec management identified C1.1 and C1.2 as NNS capabilities.

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.

NSTec updated the gross square footage identified in the Facilities Information Management System in 2013/2014 to be consistent with Building Owners and Managers Association standards. The gross square footage reflects moving from the International Building Code to the American Society of Heating, Refrigeration, and Air-Conditioning Engineers, Inc., guidelines in order to keep aligned with Sustainability requirements- Leadership in Energy and Environmental Design and Energy Star (interior perimeter of wall measurements; revised to exterior perimeter of wall measurements).

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

Future Vision

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 Mission 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).

The combined impacts of current and out-year budget projections, coupled with the physical state of our current infrastructure portfolio are driving actions aimed at improving integration, streamlining resource allocation, and aligning portfolio management functions. Strategic initiatives supporting enhanced execution of core capabilities include the following:

SEES Strategic Implementer: SEES consists of four core elements: Singular, Efficient, Effective, and Sustainable. Each of these elements is further characterized through a Strategic Framework Implementation document that defines specific strategic and enabling goals – central concepts upon which action plans are developed – that will align and direct NNSS mission planning and execution initiatives over the course of the next 25 years. This framework, combined with strengthened integration and collaboration with strategic partners will enable a long term, sustainable platform in support of mission fulfillment serving this nation and the larger global community.

G2 Recapitalization Project Prioritization

Module: The integration of the new G2 Recapitalization Project Prioritization module will involve working with NA-50 on the identification of

the facilities planned for disposition and provide them as part of the recapitalization program plan. NSTec also plans to look at the Roof Asset Management Plan and the Asset Management Plan for roof and heating, ventilation, and air conditioning (HVAC) replacement funding in the out-years.

Enterprise Risk Management (ERM): The ERM process elevates a select set of risks from the many risks identified by the programs, projects, functions, facilities, etc., which manage activities at the NNSS. The elevated risks (enterprise risks) are those that threaten the singularity, efficiency, effectiveness, or sustainability of NNSS. The enterprise risks are consistently evaluated for likelihood and consequences using four criteria: program (cost, schedule, and technical adequacy), safety, security, and image. For each enterprise risk, a Risk Owner is assigned, a Risk Handling Strategy is selected, and a Risk Response Plan is developed and implemented. Enterprise risks are monitored on a monthly basis at the mission level and a quarterly basis at the enterprise level. The ERM process is being actively engaged to assess and disposition key infrastructure needs and mission impacts.

Consolidation of Direct and Indirect

Infrastructure Program Management: Initiatives are being implemented to consolidate and integrate the program management functions of direct and indirect infrastructure within a single portfolio. Principal benefits of this strategy include the following:

- Optimization of indirect and direct infrastructure resources within a single portfolio.
- Strong functional ties to and support between the NFO and Management and Operating contractor.
- Effective communication across the site on institutional infrastructure matters.
- Unified set of infrastructure management processes that ensure infrastructure resources are aligned, integrated, and prioritized with missions and institutional strategic direction.
- Proper funding and representation in direct and indirect budget and management processes.
- Clear roles, responsibilities, accountabilities, and authority for oversight and execution functions.
- A sustainable infrastructure execution plan and investment strategy.

Consolidated Maintenance Program (CMP):

In response to projected funding reductions and Headquarters direction to accept additional risk in operations and maintenance, NSTec RTBF Program Management initiated the development of a CMP for direct funded facilities. Principal implementation of the CMP began during FY 2015 and is projected to continue into FY 2016 and out-years. The CMP's full implementation is expected to facilitate the management of portfolio maintenance in a more efficient and effective manner, replacing existing stove-piped processes and improving scope/resource prioritization at a portfolio level. The CMP framework will be used to effectively integrate the direct and indirect facilities into a single infrastructure maintenance portfolio that is sustainable and fully aligned in support of mission execution. Key characteristics include the following:

- Increases transparency of direct/indirect maintenance to NSTec Executive Office and the NFO.
- Consolidates Maintenance budget, Work Breakdown Structure, and Prioritization.
- Increases knowledge of System/Equipment Health to reduce surprises and likelihood of catastrophic failures.
- Eliminates extraneous Preventive Maintenance.
- Increases proactive (predictive) capabilities.
- Enhances centralization/utilization of workforce.
- Leverages Integrated Planning and Execution framework.
- Enhances system metrics to track program effectiveness, inform decisions for modifications, and communicate program performance.

NFO Core 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.

- (C1.1) Design and Certification
- (C1.2) Experiments
- (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 NNSA. 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 DOE National Laboratory operations board broke out Core Capability C1 to include the following: (C1.1) Design and Testing, (C1.2) Experiments, (C1.3) Simulation, (C1.4) testing, and (C1.5) Surveillance. NSTec Management identified C1.1 and C1.2 as NNSC assets.

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 NNSC. 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. NNSC 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 NNSC 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 NNSC infrastructure to meet tactical and strategic programmatic requirements.

Design and Certification (C1.1)

Tactical Planning Horizon (FY 2016 - 2025)

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. In addition, there is a need to modernize NNSC nuclear infrastructure to support and mitigate Beyond Design Basis Events with an emphasis on critical site infrastructure to support these facilities.

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 of 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 (NSE).

Additional planned investments in DAF infrastructure, which implement program elements of the project planning and development initiative and the Recapitalization Program, include upgrades to the facility's backup power and environmental control systems and replacement of the LINAC which supports experimental campaigns for partner National Laboratories. Additional work load at the DAF include NCERC experiments and SPP experiments and training.

JASPER: As a Hazard 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 (up to 60,000 lbs) explosive firing platform for proof-of-concept testing. Additional unique capability of the BEEF allows for experiments using radioactive contaminated surrogate experimental configuration. This proof of concept is done prior to installation and special nuclear material testing underground. One example is the Phoenix experiment.

Strategic Planning Horizon (FY 2016-2040)

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.

Experiments (C1.2)

Tactical Planning Horizon (FY 2016 - 2025)

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.

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. The NNSS, LLNL, LANL and SNL plan enhancements to the U1a Complex, enabling well diagnosed early and late time hydro and reactivity measurements at multiple scales, which will facilitate assessing the effects of aging and manufacturing processes on the viability of the current and future stockpile. The national goal is to have these enhancements in place to support various planning horizons such as the B61 FPU, the development phase of cruise missile replacement, and the start of Interoperable Warheads.

The U1a Complex Enhanced Capabilities project for sub-critical experiments will integrate the use of existing systems, structures, and components underground and on the surface. Infrastructure investments necessary to support this capability will include expansion of the .05 drift to accommodate larger vessels, power upgrades, automatic fire detection and alarm systems, and fire barriers for life safety.

Strategic Planning Horizon (FY 2016-2040)

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 NNSS 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 NNSS in Section 5.1 (C1), this section will focus on the plutonium storage mission at the NNSS.

Tactical Planning Horizon (FY 2016 - 2025)

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 NNSS nuclear facilities.

DAF is the only facility on the NNSS 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.

Anticipated upgrades in conjunction with improvements to Safety Basis will provide an enhanced staging capability at DAF to maximize use of the available floor space. DAF is enhancing processes and upgrades to the Glovebox system to accommodate an alternate pit surveillance capability.

In collaboration with LLNL, three new mission capabilities are being introduced into the DAF: Full Scale Compatibility, Computed Tomography, and Special Nuclear Material (SNM) Component Sampling. Full Scale Compatibility is a long term

experiment that will provide assembly functional data over a 20-yr duration. Lawrence Livermore National Laboratory experiment staff will collect data on a quarterly basis that will aid the stockpile program to optimize refurbishment activity planning. The DAF provides an ideal environment for long term projects of this kind as experiment equipment can't be moved, or disturbed, and requires consistent temperature/humidity conditions. Computed Tomography is a project designed to increase the resolution capabilities of current and future Linear Accelerators. These instruments are used to precisely interrogate components and configuration of SNM within containers and targets. This capability will support the Subcritical Experiment and Emergency Responder Radiologic Test Object training missions. SNM Component Sampling supports collection and analysis of representative medallion samples from aging nuclear weapon pits in direct support of the stockpile verification mission. Startup of this mission in the DAF Glovebox opens the door for additional stockpile viability missions to be performed at the DAF.

The next several years will see a major campaign of facility/equipment repairs, replacements, 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 that is supported and sustainable within the program.

Strategic Planning Horizon (FY 2016-2040)

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 locations. While it is not envisioned that all plutonium will be removed from the DAF within the strategic planning horizon, it will facilitate DAF availability 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 NNSS 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 NNSS include staging, assembly, disassembly, detonation, and storage.

Tactical Planning Horizon (FY 2016 - 2025)

The BEEF and High Explosives Facility complex are capable of accommodating large-scale, high explosive proof-of-concept experiments, using surrogates, prior to installation of special nuclear material and testing underground. However, near term investment in the support infrastructure will be required to keep the capability available.

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

- Streamline facility and operations costs via mortgage reduction initiatives.
- Enhance experimental flexibility via modernization of data and communications capabilities. This facilitates a shift to becoming a National User Facility for High Explosive Testing and Evaluation.
- Shift operational focus from primarily high explosives testing in support Nuclear Weapons Capability to being a National User Facility and location of choice by organizations performing Explosive Testing and Evaluation. This brings more users to NNSS and supports a shift to a sustainable model.

Strategic Planning Horizon (FY 2016-2040)

The long-term vision requires a secure and consistent user base. This supports core mission capabilities and facilitates being the preferred location for High Explosive Testing and Evaluation. This will ensure the availability and capability of the high-explosive test facilities. High explosives facilities will continue to provide proof of concept and other explosive testing and evaluation in support of the core capabilities and National Security Interest. Two diverse examples of this capability could be testing of advanced radiography systems before installation in U1a, and supporting National Security initiatives via testing and evaluation of improvised explosive devices.

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 NNSA and non-NNSA projects. The Shop is qualified to produce classified components and has successfully produced several classified components for Los Alamos National Laboratory. The primary machining equipment is in the process of modernization and refurbishment. A risk-informed reinvestment strategy has been implemented regarding the breadth and depth of modernization. Additional unique capabilities include ability to machine long stock (up to 23 ft in length) and oversize diameter (up to 7 feet in diameter) components.

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 2016 - 2025)

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. The Risk-Informed Reinvestment Strategy has increased availability and precision of the Shop. Machining capability will improve via a systematic process of reinvestment in equipment, processes, and human capital.

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 2016 - 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 customer 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 2016 - 2025)

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 damaged U.S. nuclear weapons. 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 as the standard security technology for the NSE.

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, the DAF is expected to be a proven national asset that is supported and sustainable within the program.

Strategic Planning Horizon: (FY 2016-2040)

The long-term vision for this capability is to ensure the availability and capability of the DAF and other NNSS facilities 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 NNSS continues to play an active role within the complex to support efforts for special nuclear material accountability. The NNSS 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 2016 - 2025)

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.

Also, maintaining the ability to implement material and control requirements for multiple projects in one location, such as JASPER target assembly and Coring, will allow better utilization of DAF facilities. (Supports both C1 and C2)

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 2016-2040)

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.

Implementation of strategic roll-up areas will allow more materials to be stored and used outside of the DAF. This will increase the support capability for testing and development activities. (This supports both C1 and C2 by increasing the ability to do testing outside of DAF so space there can be more effectively utilized).

5.7 Enabling Infrastructure (C10)

The NNSS 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 2016 - 2025)

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.

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 FY 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 laser, advanced cameras, etc.

HVAC Replacements: Provide upgrade of heating, ventilation, and air conditioning systems, including design and installation at the NNSS. Reliability and stability of the heating, ventilation, and air conditioning systems in the event corridor is required to support mission critical personnel and equipment. The NNSS will participate in a pilot study for an HVAC Asset Management Program in FY 2015.

Mercury Complex Redevelopment: Modern facilities and infrastructure to support testing and training, as well as advanced experimentation and production at the NNSS 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.

Emergency Management, Safeguards and Security:

Relocate Gate 100 and the Badging Office at the NNSS outward on Mercury Highway toward Highway 95 to enhance security by creating a greater barrier between the Main entrance of the NNSS (Gate 100) and the facilities and personnel within Mercury, Area 23. This initiative will also afford the NNSS the ability to provide enhanced protection to planned projects at the Desert Rock Airstrip.

Establishing a shipping/receiving warehouse at the same boundary would enhance security by ensuring that delivery personnel could not access the NNSS. This would result in less traffic at the Badge Office and eliminate the need to obtain approval to escort non-U.S. citizens who are employed as delivery drivers.

Provide an NNSS Command Center facility that is the “nerve center” for operations. Command Center will support future NNSS customers in conducting safe, successful operations in a secure environment. Below are key operational and performance capabilities:

- Flexible operational configurations to support training, testing and experimentation.
- Reduction in facility operating cost and staffing efficiencies.

Utilize facility engineering and technology standards to develop an integrated Command, Control, Communications, Coordination (C4) operations within a distributed common operating picture environment. This robust facility architecture would support a 24/7 operations center to include growth and flexibility to support NNSS “tactical” needs:

- C4 Enterprise that integrates high speed processing, equipment and redundant storage capabilities.

- Critical systems will include red/black air/ground communication systems, air/ground monitoring/scheduling capabilities, weather data and forecasting, emergency management systems and flexible Research and Development “suite” to support SPP program.
- Integration of manned and unmanned platforms to support emergency management, security and R&D.
- Support airfield operations relating to manned and unmanned operations to include aviation support services.
- The Radio Communications Systems Modernization project to replace the core NNSS/Southern Nevada trunking radio infrastructure is initiating in FY 2015. The execution strategy for this project is to replace the core system infrastructure in phases over a projected three-year time period (FY 2015 - 2017). NNSS and other partner agencies utilizing the system will be responsible for upgrading their existing radios and/or procuring new replacements. Execution of this project addresses an identified critical site infrastructure need and alleviates increasing failures and outages with the existing system.

Construction Working Group Projects

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

In December 2014, the following projects were submitted to the Construction Working Group to address mission gaps

New 138kV Power Transmission Mission Corridor:

The project will 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 NNSS 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 20 miles of the NNSS mission corridor. The new transmission line will increase the reliability of the NNSS transmission system by replacing aging wood pole structures with new steel structures.

Water Supply and Distribution Systems

Upgrades: The project will provide safe, reliable, and operational water lines in Mercury and forward areas of the NNSS, 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.

Consolidated Mission Support Facility: This is a proposed new facility tentatively located in Area 6 which addresses three significant needs:

- Growth in mission activities specifically associated with the experimental capabilities exercised by all three National Security Laboratories and the NNSS Management and Operating Contractor at the U1a Complex, DAF, and other forward area National Security Mission.
- Degradation of existing facilities that are producing unacceptable conditions and risks to resident personnel and unsustainable costs for repair and maintenance.
- Consolidation and reinvestment (ongoing and planned) along the mission corridor that will result in lower operating costs and risks, reliable and improved operations, and enhanced mission support.

This project will be a centerpiece of site plans to combine targeted investments with continued and enhanced use of the newest facilities and support systems (to include potential repurposing of the Atlas facility) in one centralized, consolidated complex supporting the NNSS forward area.

Strategic Planning Horizon (FY 2016-2040)

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 NNSS. Due to the nature of missions, new requirements beyond ten years are more difficult to predict with any degree of certainty. However, the NNSS's enabling infrastructure will be maintained and modernized in a manner that will support NNSA's Program of Record for the NNSS.

The long-term vision for missions will include continued lifecycle maintenance of both the NNSS 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 2016 - 2025)

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 NNSS 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 Support 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.

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.

Strategic Planning Horizon (FY 2016-2040)

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 NNSS 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 NNSS 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 NNSS 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 NNSS encompass SPP aspects under the Global Security mission and the Environmental Management Program.

Strategic Partnership Projects (SPP)

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

The NNSS 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 NNSS 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 NNSS and its associated laboratories an important and recognized member of the nuclear and intelligence communities.

Tactical Planning Horizon (FY 2016 - 2025)

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 SPP, leverage activities with the NNSA activities, and create a synergistic environment. Both the NNSA and SPP customers benefit from this relationship. Facilities will be repurposed and upgraded by SPP customers.

Expanded and new technologies are utilized to create technological solutions to national security challenges.

Both the NNSA and SPP 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 NNSS:

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

Strategic Planning Horizon (FY 2016-2040)

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 NNSS 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 SPP customers. Activities defined by other federal agencies will continue to require test beds and capabilities unique to the NNSS 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.

Environmental Management

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

Tactical Planning Horizon (FY 2016 - 2025)

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. New initiatives to dispose classified components at the

NNSS will reduce infrastructure costs across the DOE Complex and providing support to the State Department for potential disposal of contaminated soil from Palomares, Spain would assist Spain in opening restricted land for future use.

Strategic Planning Horizon (FY 2016-2040)

The long-term vision for Environmental Management is to perform waste disposal operations, including Classified Component Disposal, in a cost-effective and safe manner and support the environmental restoration work at the site. 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 activity is scheduled to continue through approximately FY 2030.

Support for the Soils Sites activity, 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 NNSS Waste Acceptance Criteria through generator coordination and supervision. The NNSS is the only facility within the DOE complex capable of accepting low-level, mixed low-level, non-radiological, non-hazardous, and hazardous waste. This program is scheduled to continue operations through FY 2030.

The Radioactive Waste Program will continue to assist other sites across the complex in disposing of their low-level waste to the NNSS. The Waste Generator Services organization has been very effective in certifying off-site shipments to the NNSS, when it is cost prohibitive for a small site to become certified to the NNSS 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-50 Dashboard metrics. The 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, 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 issues management tools (i.e., caWeb) and share 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.
- NFO staff continues to analyze data and results of contractor data and report changes to risk, health of functional areas defined in annual implementation plans. This has allowed NFO staff to focus on emerging trends of high hazard activities, requiring increased federal oversight.

Strategic Planning Horizon (FY 2016-2040)

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 NNSS 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 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 (NA)

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 2016 - 2025)

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 2016-2040)

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.



C1.1 Design and Certification

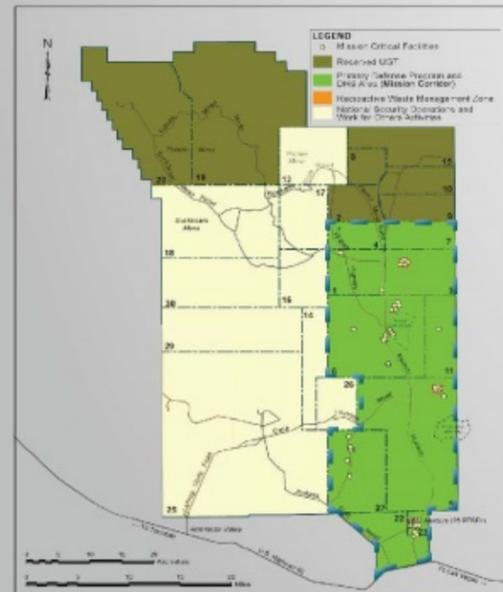


Linkage to NSE Mission

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.

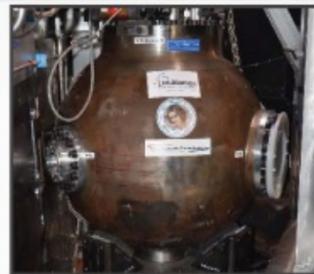


- DAF - a multiuser facility where criticality experiments are conducted as well as assembly of tests supporting the NNSA stockpile stewardship programs
- U1a Complex - Measure properties of plutonium; conduct sub-critical experiments to collect data from plutonium

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

Current



- 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 C1.1

- 14 DAF Projects
- 1 U1a Complex Projects
- 2 HEF Projects
- 4 Infrastructure Projects
- 14 Facility Projects
- 10 Electrical Projects
- 3 Communication Projects
- 5 Road Projects
- 6 Water/Sewer Projects

Tactical Horizon



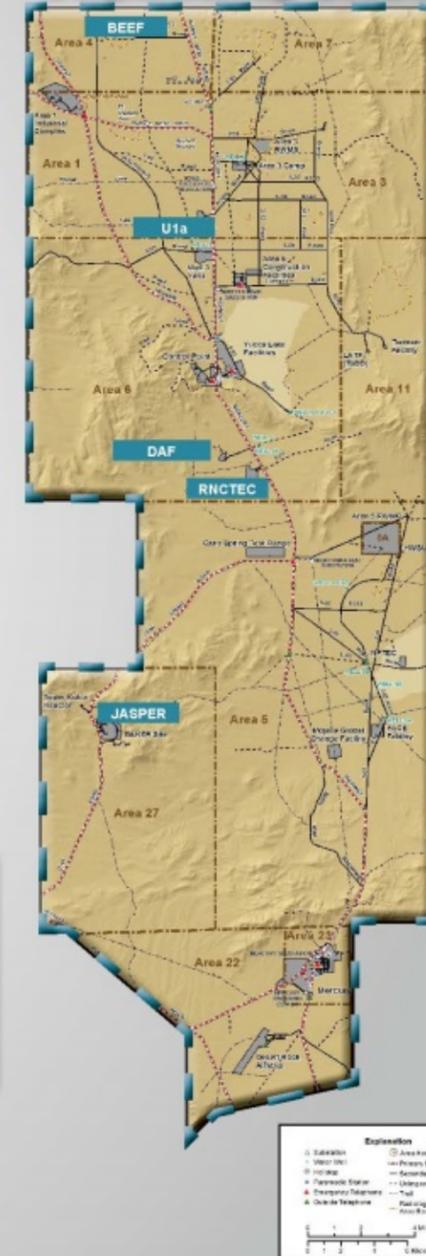
Proposed Future Initiatives

- 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.

Strategic Horizon



Mission Corridor Capability Sites





C1.2 Experiments



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. 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.



U1a Complex - Measure properties of plutonium; conduct sub-critical experiments to collect data from plutonium

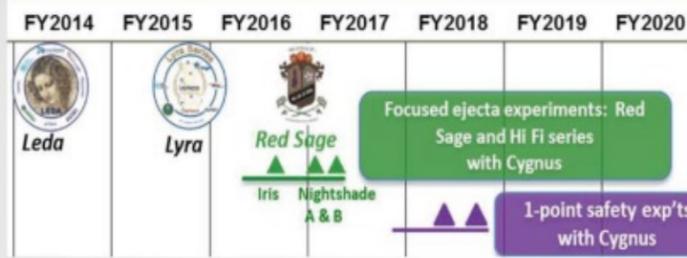
Current Activities

- 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

Mission Corridor Capability Sites



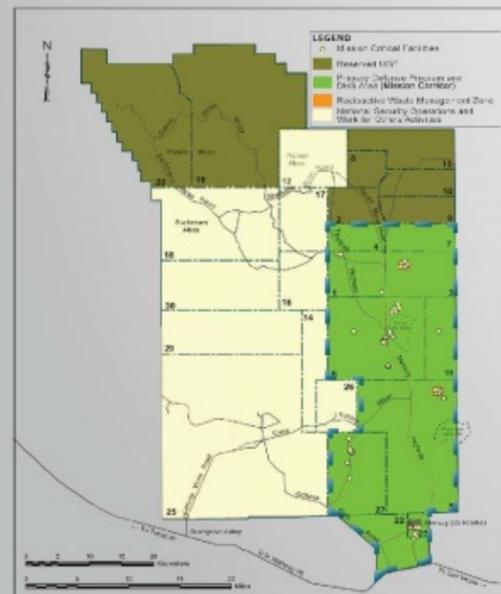
Current



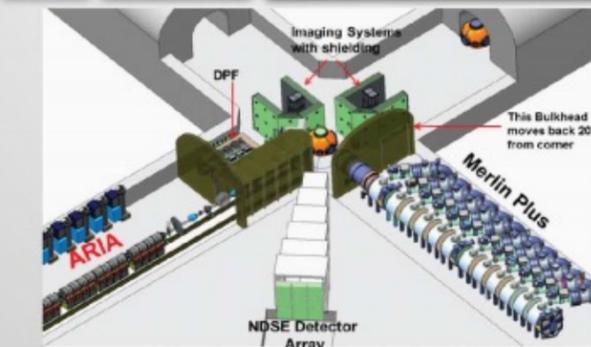
- The NvE will implement projects to assure a stable, fully-functional, reliable, and efficient facility as funding becomes available
- U1a Complex - Subcritical experiments have been proposed through the next several years at the U1a complex

Proposed Projects C1.2

- 1 DAF Project
- 7 U1a Complex Projects
- The investment for this enhanced capability is planned over a 10 year period
- The end state includes 2 axes of radiography (one being multi-pulse) coupled with interdependent diagnostics, including those using neutrons



Tactical Horizon



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.

Strategic Horizon





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

Mission Corridor Capability Sites



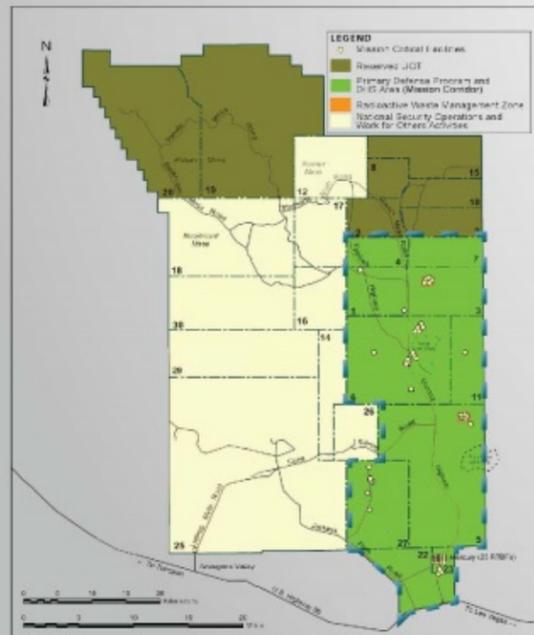
Current



Proposed Projects

- Anticipated upgrades in conjunction with improvements to Safety Basis will provide an enhanced staging capability at DAF to maximize use of the available floor space

- 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



Tactical Horizon

2016

2025



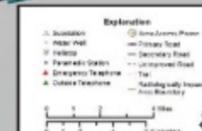
Proposed Future Initiatives

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

Strategic Horizon

2016

2040





80037

C5 High Explosives



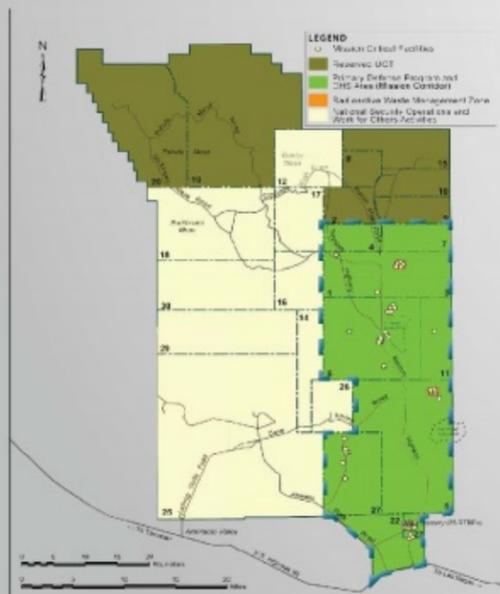
Linkage to NSE Mission

The NNSS HEF 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 NNSS include:

- Staging
- Disassembly
- Storage
- Assembly
- Detonation

Vision

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

Current



Proposed Projects

- 2 JASPER Projects

- Provide additional firing table to support increased workload
- Support the storage and assembly of HEs 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

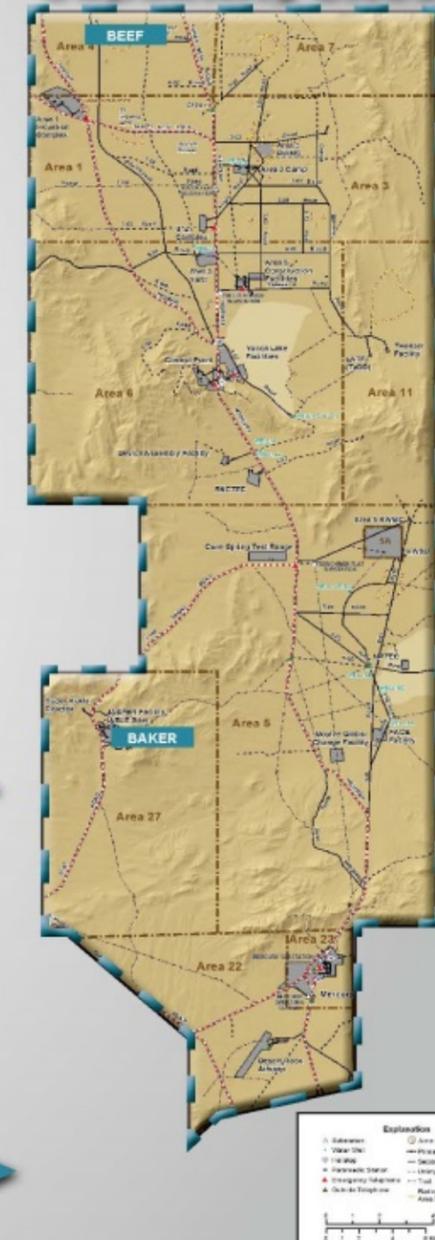


Proposed Future Initiatives

- No proposed future initiatives



Mission Corridor Capability Sites





C6 Non-Nuclear



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.



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

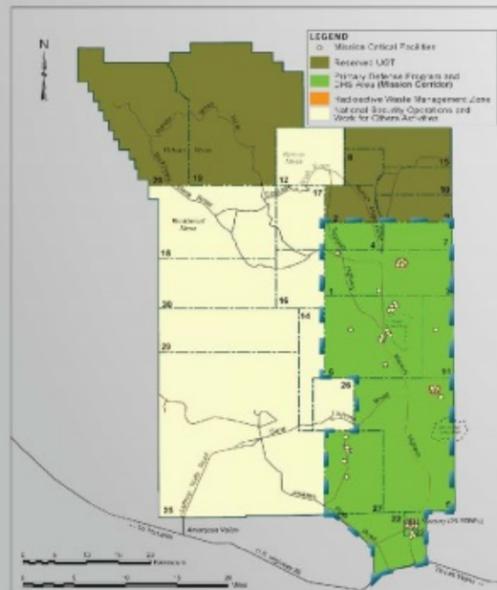
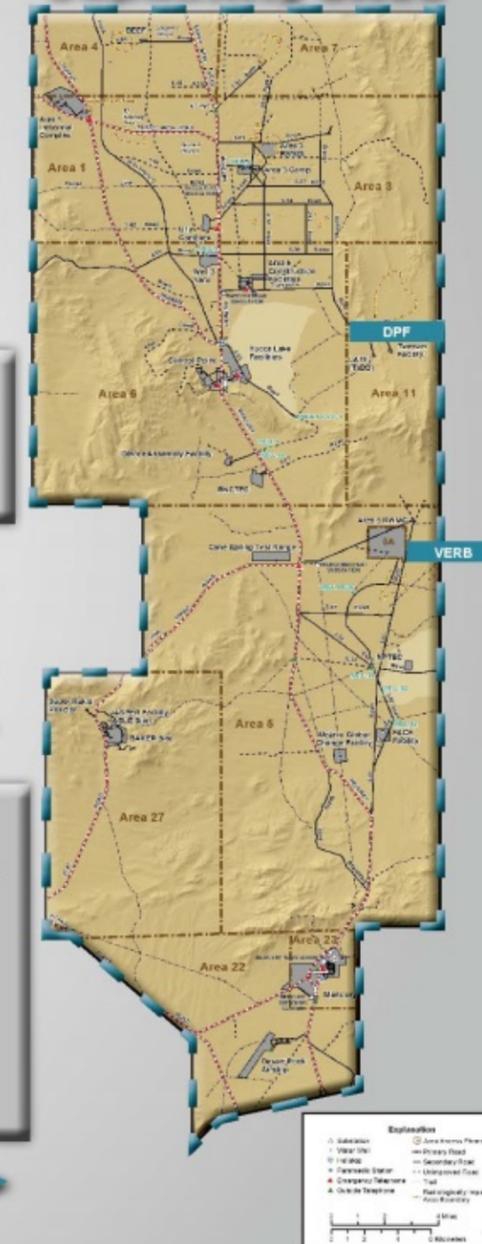


Proposed Projects

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

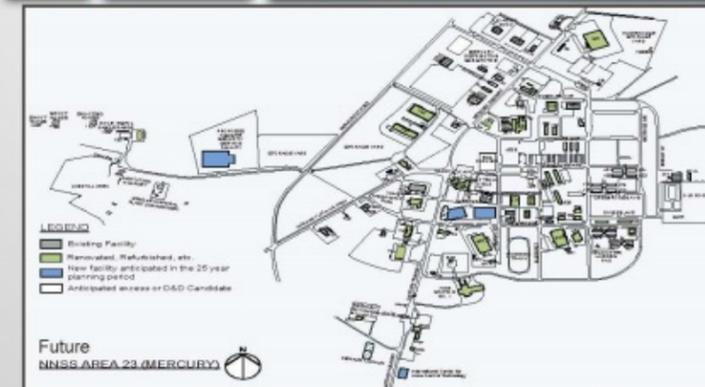
Mission Corridor Capability Sites



2016

Tactical Horizon

2025



Proposed Future Initiatives

- Mercury (Area 23) - A large, geographically diverse outdoor laboratory, the NNSC 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

2016

Strategic Horizon

2040



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 of experiments for Stockpile Stewardship and other programs
- DAF houses the most modern assembly cells, in the nuclear weapons enterprise, which support work on SNM, radiation test objects and high-explosives. DAF is poised to play an expanded role supporting additional nuclear weapons operations as an alternate or backup capability to LANL PF-4 and other facilities within the NNSA complex

Current



Proposed Projects

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

Tactical Horizon

2016

2025



2016

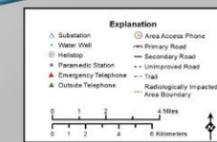
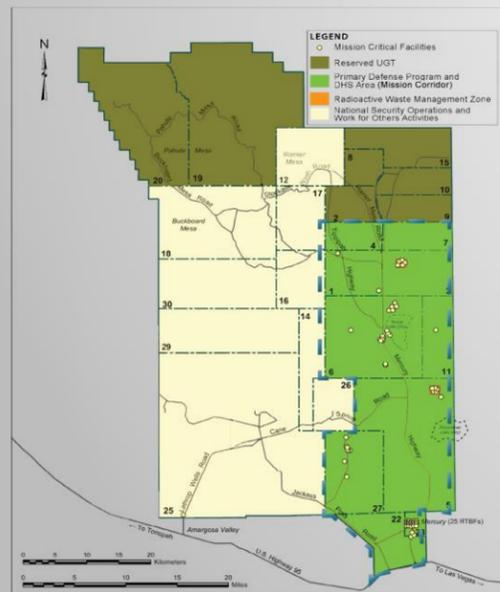
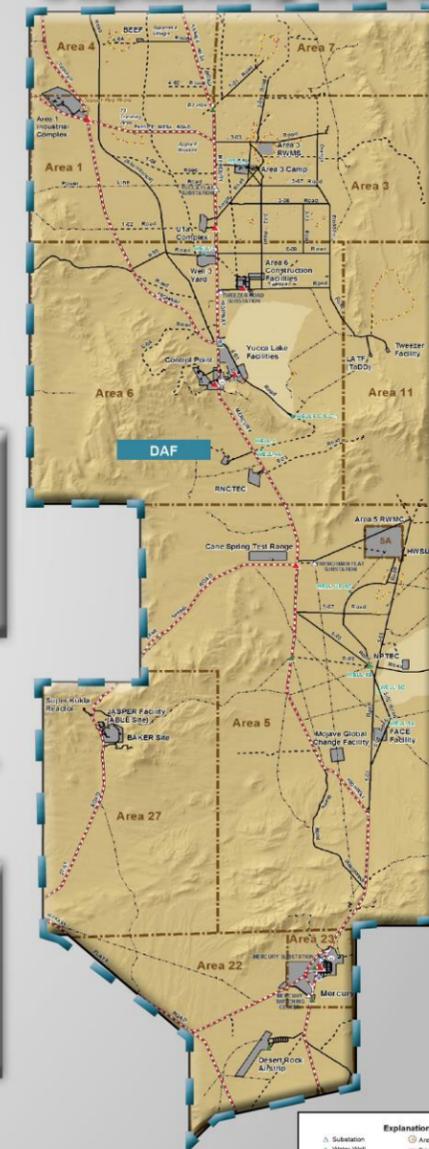
Strategic Horizon

2040

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

Mission Corridor Capability Sites





SNM

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



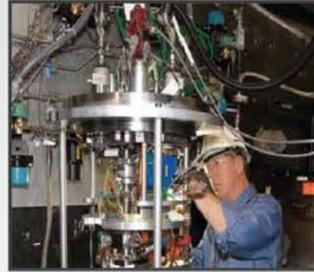
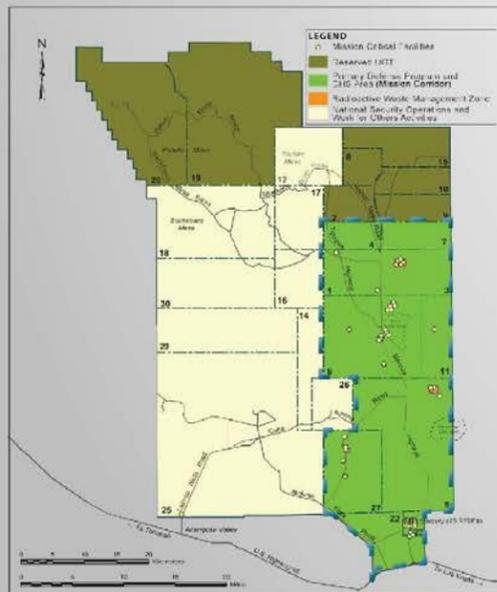
Linkage to NSE Mission

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

- 9 DAF Projects
- 1 Facility Project

- RNCTEC and Baker provide additional capabilities for the staging and handling of Special Nuclear Material in support of NNSA and SPP programs
- Continued support in risk and cost reduction in support of SNM handling

2016

Tactical Horizon

2025



Proposed Future Initiatives

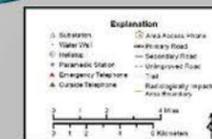
- The DAF capabilities have reduced cost and risk at other sites and has more to offer:
- Nuclear Materials Staging capabilities can be expanded
- Small incremental investment can provide unique, small lot, or back-up capabilities that eliminate production interference and mitigate operational upsets across the Nuclear Weapons Complex

2016

Strategic Horizon

2040

Mission Corridor Capability Sites





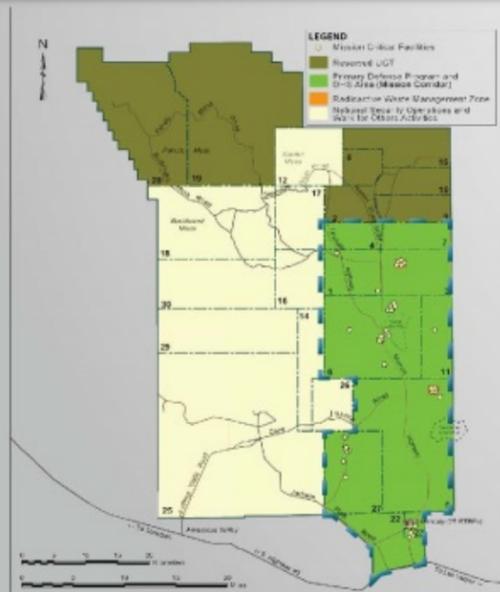
Linkage to NSE Mission

The NNSS 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 NNSS. 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 NNSS enabling infrastructure will be maintained and modernized in a manner that will support NNSA's Program of Record for the NNSS.



C10 Enabling Infrastructure



- #### 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

- NNSS-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

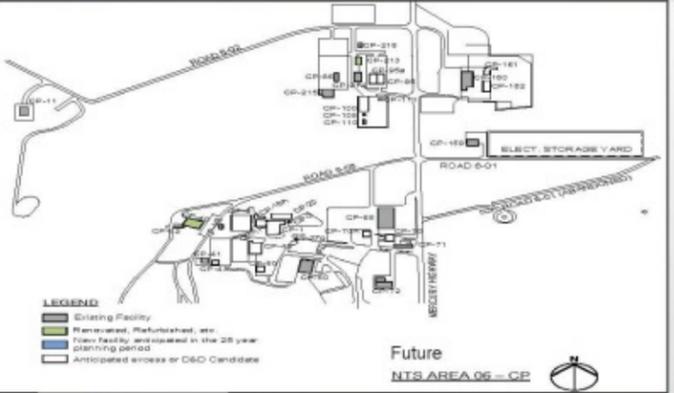
Current



- #### Proposed Projects
- 4 Infrastructure Projects
 - 14 Facility Projects
 - 10 Electrical Projects
 - 3 Communication Projects
 - 5 Road Projects
 - 6 Water/Sewer 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

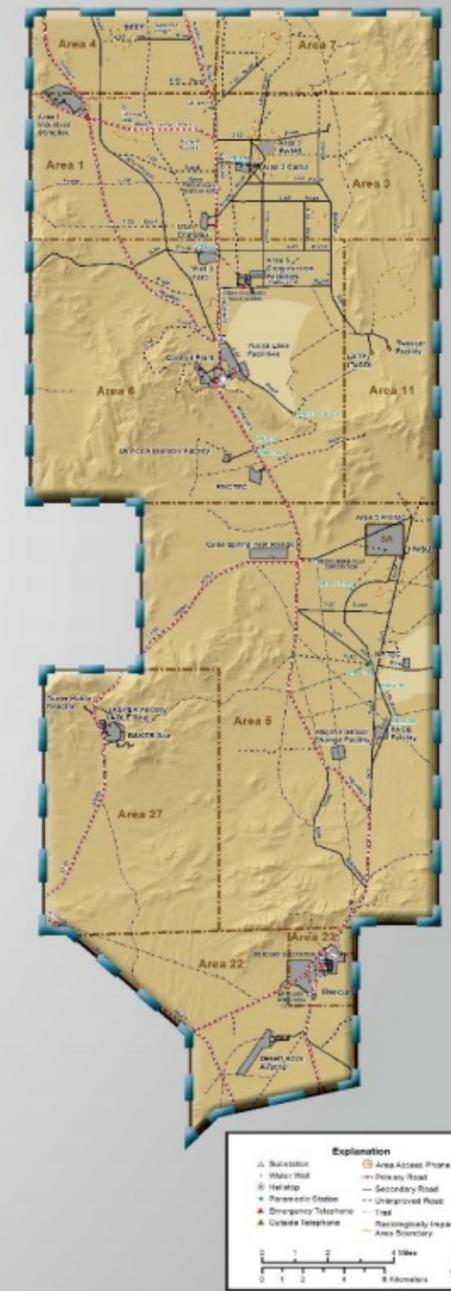
Tactical Horizon



- #### 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

Strategic Horizon

Mission Corridor Infrastructure





C11 Counterterrorism and Counterproliferation



Linkage to NSE Mission

The NNSS 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 NNSS and its remote locations. As current mission expand and new missions are added, additional capabilities will need to be identified and developed.



- ### 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. NNSS 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
 - 7 Infrastructure Projects

- 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

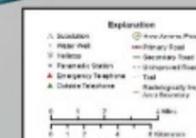
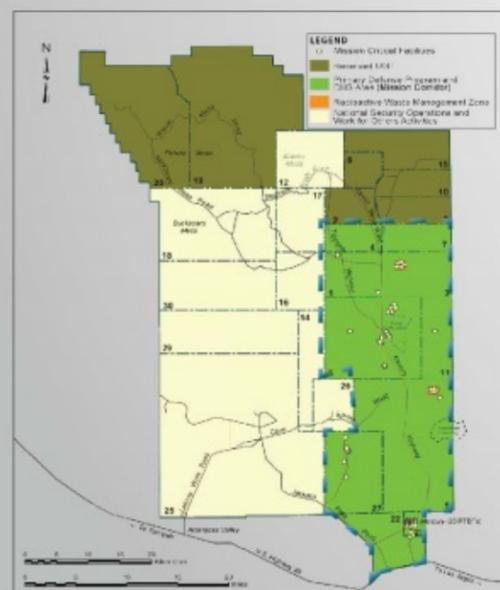
2016 Tactical Horizon 2025



- ### Proposed Future Initiatives
- T-1 Training Complex- Replacement of triple-wide, manufactured classroom (NLT 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

2016 Strategic Horizon 2040

Mission Corridor Capability Sites





Linkage to NSE Mission

Other missions supported at the NNSS encompass the Environmental Management (EM) program, and SPP 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.

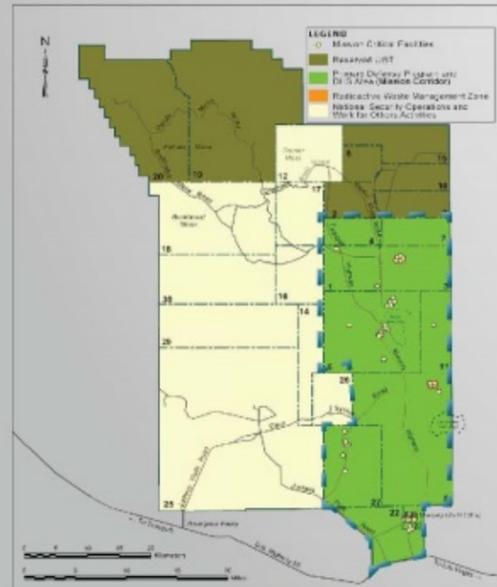
Vision

The near-term vision for Global Security is to continue to utilize the capabilities and assets developed under SPP, 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 He³ gas

Current



Proposed Projects

- 2 Electrical Projects
- 1 Water Project
- 9 Infrastructure Projects

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



Proposed Future Initiatives

- The Countering Weapons of Mass Destruction Testing Division (CWTD), formerly called the National Center for Nuclear Security (NCNS) will continue to support the NCNS program, but will also provide weapons of mass destruction (WMD) testing expertise to a host of customers outside of the NNSA, through Strategic Partnership Projects and Strategic Intelligence Partnership Programs.



Mission Corridor Capability Sites





C13 Federal Management and Oversight



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.



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

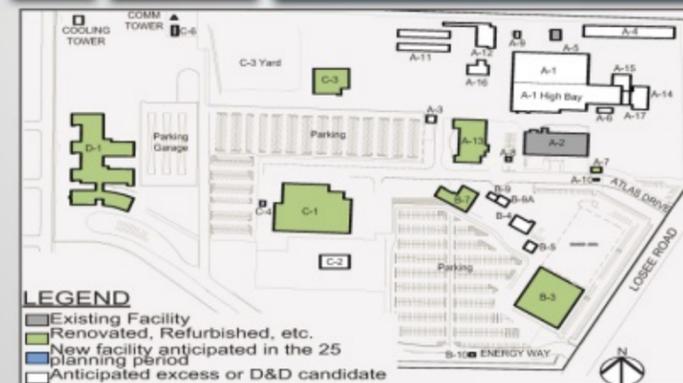
- Upgrade facilities and infrastructure and improve capabilities through development and implementation of plans that efficiently and effectively supports critical missions

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

2016

Tactical Horizon

2025



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 NNS

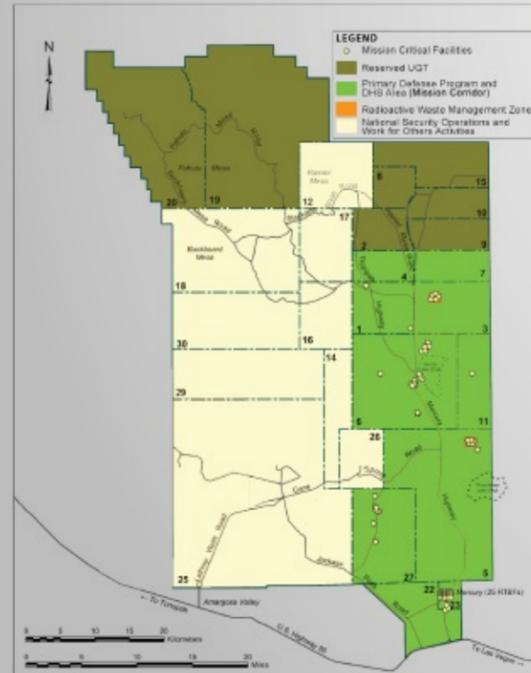
- NFO will continue to anticipate and forecast the future long-term use of facilities and infrastructure, develop innovative approaches, comply with new regulations, and implement designated projects to improve existing facilities and infrastructure

2016

Strategic Horizon

2040

Mission Corridor Capability Sites





Reserve Real Property Assets NA



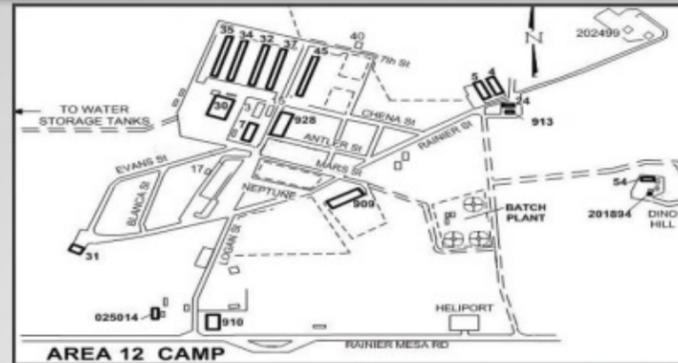
Linkage to NSE Mission

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.

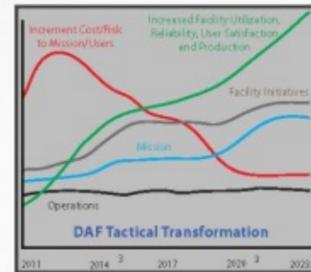
The long-term vision consists of providing a fully-functional, cost effective asset for the conduct of work at the NNSS. Assets held in reserve may be utilized by SPP, as required.



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

Tactical Horizon



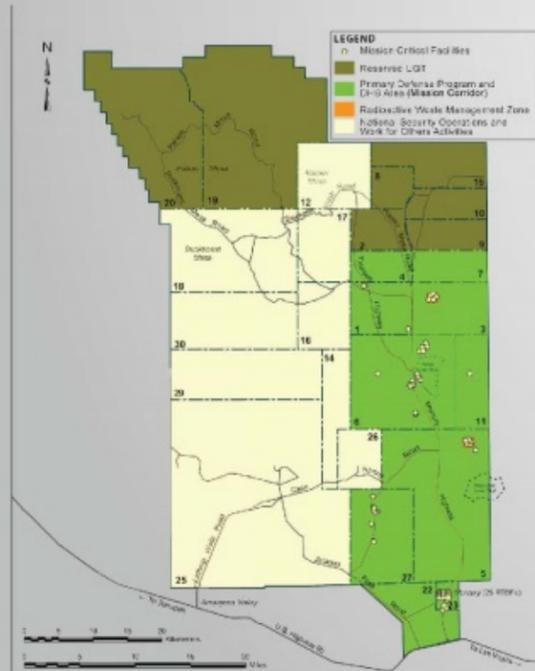
Proposed Future Initiatives

- 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

Strategic Horizon

Mission Corridor Capability Sites



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 65% 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 NNSA performance goals as related to the facility condition index (FCI) for the mission dependent category only. Recent Condition Assessments Surveys identified deferred maintenance for mission-critical facilities resulting in a FCI increase, as well as an increase for the not mission dependent category. The overall FCI corporate goals for all mission statuses are:

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

The overall sustainment is slightly over the line with the NNSA performance goal. If the overall FCI >5%, maintenance should be 3-5% of Replacement Plant Value or approximately \$105M.

Real Property Asset Management

Replacement Plant Value		\$3,516	M			
Total Deferred Maintenance		\$ 258	M			
Site Wide FCI		7.3%				
		Facility Condition Index	Asset Condition Index	Asset Utilization Index	# of Assets	Gross Square Feet (GSF) Buildings and Trailers (000s)
Mission Dependency	Mission Critical	5.4%	.95	89.0	32	405
	Mission Dependent	4.4%	.96	83.0	418	1,253
	Not Mission Dependent	11.0%	.89	64.0	788	1,290
Facility Use	Office	4.5%	.96	85.0	73	800
	Warehouse	13.8%	.86	87.0	114	424
	Laboratory	7.7%	.92	68.0	35	521
	Housing	5.0%	.95	71.0	42	229

Data represents FY 2014 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)

NSTec updated the gross square feet (GSF) identified in the Facilities Information Management System in FY 2013/2014 to be consistent with Building Owners and Managers Association standards. The gsf reflects moving from the International Building Code to the American Society of Heating, Refrigeration, and Air-Conditioning Engineers, Inc., guidelines in order to keep aligned with Sustainability requirements- Leadership in Energy and Environmental Design and Energy Star (interior perimeter of wall measurements; revised to exterior perimeter of wall measurements).

The Facilities Initiative (see Chapter 3.0) will implement a 3-tiered approach to evaluate and transform the footprint to meet future mission and workforce requirements. This approach will focus on long-term site sustainability and integrate direct and indirect maintenance requirements, facility condition and useful life, and proximity to mission.

Phase 1 will focus on defining the facility requirements for the current and future workforce, including identifying optimal locations where workers can be most effective, opportunities for virtualization and hoteling, and opportunities for consolidation to fewer facilities. After the requirements are defined, a series of scenarios will be developed and analyzed, which will become the basis for the business case for Phase 2 and 3 implementation.

Phase 2 will focus on implementing the preferred scenario for consolidation/transformation of the North Las Vegas Facility.

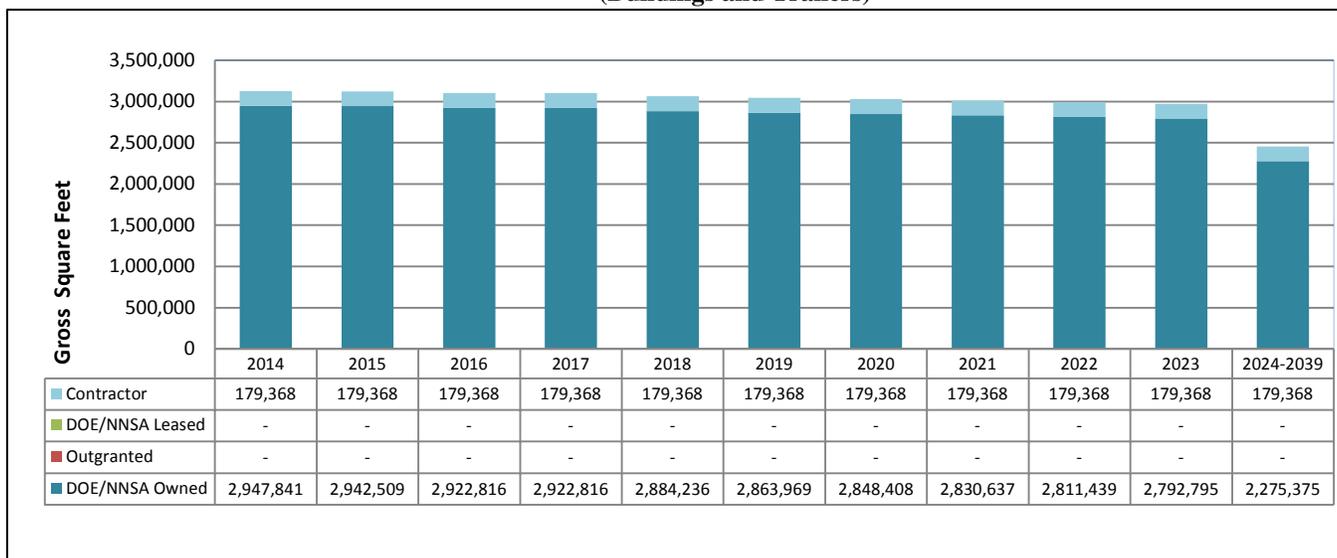
Phase 3 will focus on implementing the preferred scenario for consolidation/transformation of NNSS facilities.

There are 416 NNSA/NFO owned buildings and 35 trailers that totals approximately 2,948,000 gsf at the NNSS and auxiliary sites listed in the Facilities Information Management System (as of the end of FY 2014 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.

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



Note: NNSS footprint projections are recognized to be unsustainable given current funding outlook. Options are being explored to aggressively consolidate the NNSS support infrastructure footprint.

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 (NA-50) is looking at funding a Disposition Program across the complex. If funding is received, the NNSS footprint (see chart below) is expected to decrease over the next 5 to 10 years by approximately 175,000 gsf. Initially, 14 facilities had been approved for excess at approximately 44,000 gsf.

In response to the new “Freeze the Footprint” policy, the NNSS has identified a FY 2012 baseline of 1,250,784 gsf for Facilities Information Management System usage codes as identified in the chart below. In FY 2013, the NNSS realigned the site footprint to be consistent with Building Owners and Managers Association standards and the gross footage was impacted. 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
NNSS* Baseline**

Usage Code	FY 2012 GSF	FY 2014 GSF
100 Office	841,897	895,981
400 Warehouse	408,887	424,324
Total GSF (baseline)	1,250,784	1,320,305

*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.

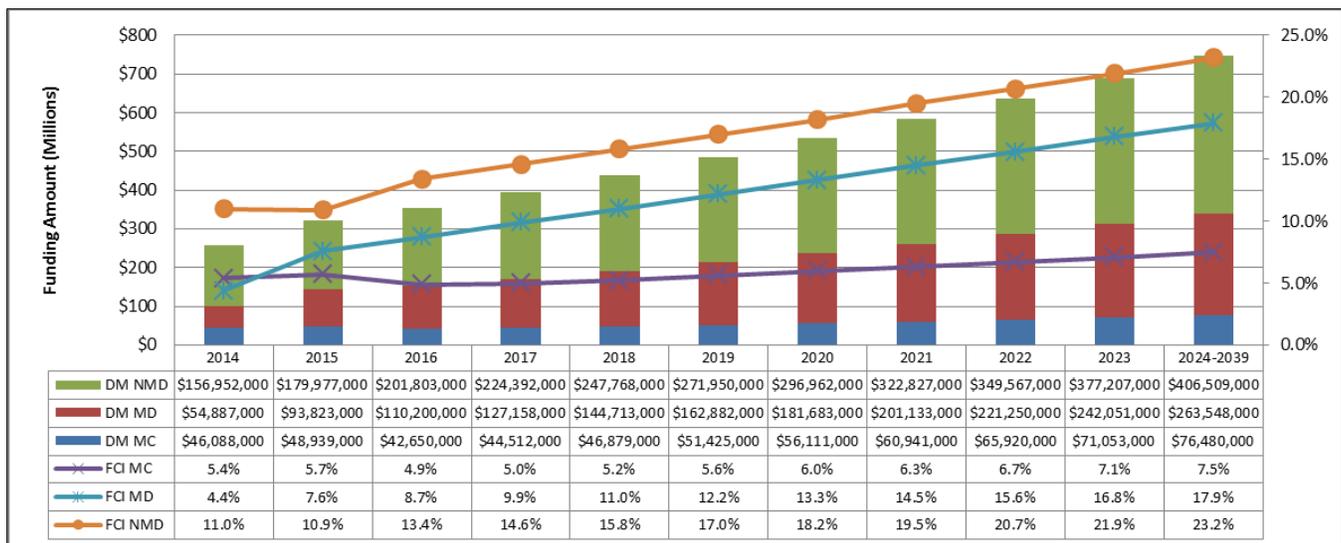
Many of the facilities at the NNSS have already reached the end of their useful lives, both structurally and technologically.

In FY 2014, the deferred maintenance reduction was \$861K. At the end of FY 2014, deferred maintenance was \$258 M.

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**



Note: Real property expenditures reflect updated actuals for FY 2014 and prior year projections for years FY 2015 and beyond. NNSS is evaluating the formulation of out-year deferred maintenance escalation in conjunction with initiatives targeting facility consolidation and footprint reduction that will impact prospective deferred maintenance forecasts. Current deferred maintenance escalation is recognized to be unsustainable given current funding outlook. Options are being explored to aggressively consolidate the NNSS support infrastructure footprint and reduce projected deferred maintenance.

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 2014 are discussed below.

In FY 2014, the NNSA received the Federal Energy and Water Management Award for its Alternative Fuel Vehicle Management Program. It was the only DOE or NNSA site to win this federal award. In FY 2013, the NNSA's fuel Lockout Program resulted in the increased use of renewable fuel by 35.3% and a decrease in the use of petroleum based fuels by 18.6% compared to FY 2012. Program results were improved in FY 2013 due to the installation of a second E85 station to enable the availability of renewable fuels (E85 and B20) at both of the site's fueling locations. By the end of FY 2014, implementation of the program at both service stations has increased consumption of renewable fuel by approximately 164% when compared to the FY 2005 baseline.

The Operations Facility Manager at Livermore Operations has worked steadily for the last eight years to reduce annual energy usage by targeting the

replacement of dated technical infrastructure, equipment, and systems componentry over a period of 8 years with the utilization of energy efficient parts and components being the prime focus.

Replacement and/or repairs were accomplished during normal maintenance/repair cycles within established fiscal-year budgets. These actions have resulted in a 28% reduction in energy consumption over this reported time period. Livermore Operations now utilizes ~30% less energy than it did 8 years ago with the added benefit of improved systems up-time.

In an effort to realize even more savings, the Livermore Operations Facility Manager replaced all of the wall-mounted light switches (throughout the facility) with passive "occupancy" sensor switches.

In FY 2014, NNSA Warehouse 160 received the Environmental Stewardship Award –Category Green Buildings, for exemplary contributions to NNSA and DOE environmental sustainability goals. Warehouse 23-160 is the Main Warehouse in Mercury at the NNSA. In 2009, as part of an Energy Savings Performance Contract, lighting and heating controls were installed in the Warehouse. The Energy Savings Performance Contract (ESPC) installations resulted in significant power savings (37%) the following year. In FY 2013, the Clean Burn System was implemented at Warehouse 160. The Clean Burn System involved the installation of four Clean Burn furnaces and four very large high-volume low-speed fans. The furnaces were installed to assist in keeping Warehouse 160 warm during the winter months and the fans helped to circulate the warm and cool air, creating an ambient temperature throughout the warehouse. The Clean Burn System is a renewable source which utilizes recycled oil. The energy cost savings to heat Warehouse 160 will be approximately \$58,000 a year.

Other improvements to Warehouse 160 include:

- Installed 4 high-speed, low-velocity fans.
- Installed a water fountain with filter and meter. To date they have saved 1,744 bottles from going to the landfill. Water is still ordered but only for workers going out in the field.
- Replaced high sodium 100 and 500 watt bulbs with 60 watt light emitting diode (LED) bulbs on the exterior of building (total of 8 lights).
- Replaced 66 (32 watt) fluorescent bulbs with 15 watt LED bulbs.

- Installed air strip curtains on (2) exterior rolling door exits.
- Sealed off roof vents inside the building with clear plexiglass. This prevents heating and cooling escaping through the vents and provides some day lighting in warehouse.
- Replaced 40-gallon water heater with a 10-gallon water heater. (The water heater services only the men's restroom.)
- Placed weather stripping around all walk-in entrance doors.

The facility manager continues to look for improvements and tenants are changing their behavioral attitude/actions towards energy conservation.

6.5 Security

Several programmatic initiatives are on-going to strengthen the safety and security at all facilities in the NFO complex. They include permanent implementation of an increased security posture and compliance with the Graded Security Protection policy. The NFO was certified compliant with the Graded Security Protection 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.

Security Infrastructure

Centerra-Nevada has a three building 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 Centerra-Nevada logistical support, facilities management, supply warehouse, and fleet management facility. A building located at the NNSA/NFO Protective Force Training Academy complex within Mercury is the primary administrative office, training operations coordination center, and general instruction facility for Centerra-Nevada training. Other facilities at the NNSA/NFO Protective Force Training Academy complex include a shoot house for Special Response Team training, an Elevated Shoot Tower and a Special Response Team obstacle course. In Area 6, several buildings support security activities in the forward areas. An ongoing project, scheduled for completion in coincidence with the Argus system installation, will expand the DAF Entry Guard Station throughput to accommodate the startup of the NCERC. This DAF Entry Guard Station project will activate four new access control portals that are compatible with the Argus alarm and access control system, which is anticipated to be installed in FY 2016-2021. A proposed Radio Communication System Replacement project, to replace the current system that is beyond its useful life, is necessary to provide reliable security response, NNS fire response, emergency management operations, primary interoperability with local law enforcement, and personnel safety in remote forward areas.

The proposed Security Consolidation Facility 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.