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Sandia National Laboratories

FY 2013 Sandia National Laboratories Sustainability Commitments

U.S. DEPARTMENT OF ENERGY | NNSA National Nuclear Security Administration

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1.0 Introduction

The National Nuclear Security Administration (NNSA) Office of Sustainability (NA-00-60) is developing a fiscal year (FY) 2013 Program Implementation Plan (PIP) for Sustainability that focuses on its sites' FY 2013 sustainability commitments. The PIP will serve as an FY 2013 management tool. Through periodic reporting NA-00-60 will review and determine whether the sites' sustainability requirements were met.

The PIP does not supplement the FY 2013 Strategic Performance Evaluation Plan (PEP); it helps NA-00-60 manage requirements in an execution year. The FY 2013 Strategic PEP states that "Along with Contributing Factors and Site Specific Outcomes, the Contractor's performance will be evaluated against the NNSA's Strategic Plan, NNSA Performance Priorities and Deliverables, Program Execution Plans, Work Authorizations, and other key inputs (e.g., Multi-Year Strategic Objectives)."

This document serves as Sandia's input into the PIP for FY 2013. Sandia's FY 2013 Site Sustainability Plan and Consolidated Energy Data Report include detailed plans for meeting the objectives.

2.0 FY 2013 Expected Sustainability Accomplishments

2.1 Goal 1: Greenhouse Gas Reduction and Comprehensive GHG Inventory

Sandia will continue to focus on Scopes 1 and 2 greenhouse gas (GHG) emissions reductions in FY 2013. Sandia plans to purchase and install two new stationary sulfur hexafluoride (SF6) reclaimers and associated piping, valves, and gauges to reduce leak rates and improve recovery efficiency for two pulsed power facilities (HERMES III and Saturn) in FY 2013. Sandia will purchase a portable SF6 reclaimer to recover gas from other smaller projects for these facilities and plans to retrofit three pieces of SF6 switchgear equipment. Sandia will retrofit three to four items every year thereafter until all the equipment is upgraded.

In FY 2012, only the Z Pulsed Power Facility had the entire year of estimated usage data for SF6 emissions. Purchase data was used to account for all other SF6 use at Sandia National Laboratories/New Mexico (SNL/NM). For FY 2013, the remaining pulsed power facilities will have improved tracking methods in place, which will provide more accurate emissions data. The planned actions listed as part of Goal 2 will also contribute to Scopes 1 and 2 emissions reductions.

Sandia plans to continue the following Scope 3 GHG emissions-reductions activities:

- Reduce vehicle miles traveled.
- Encourage fuel-efficient rental car use.
- Support the use of public transportation by Sandia personnel.

2.2 Goal 2: Buildings, Energy Savings Performance Contract Initiative Schedule, and Regional and Local Planning

Sandia will continue to meet the energy intensity objective. Energy projects implemented in FY 2012 will contribute to planned FY 2013 reductions shown in the table below. When completed in FY 2013, the following planned actions will contribute to a decrease in energy intensity in FY 2014:

- Design and construct controls conversion from pneumatic to zone direct digital control (DDC) in Buildings C910 and C941 at SNL/California (CA).
- Reprogram controls to optimize operations in Building 870.

- Replace chillers in Building 836.
- Install and program meters to measure chilled water energy for Buildings 701, 886, 857, 700, Nitrogen Plant, 858N, 870, 702, 877, 858S, and 879.
- Install variable frequency drives on return-air fans in Building 897.
- Automate compressed air dryer controls in Building 858J.
- Perform pilot compressed air leak survey in Building 981.
- Install combined occupancy/HVAC sensors in Buildings 701, 811, 1090, 758, 752, 971, 6586, and 895.
- Purchase and install four computer room air conditioning units in Building 880 Annex.
- Update programming to a demand-based programming in Building 870.
- Convert controls pneumatic to DDC zone control in Buildings 886, 890, and 891.

Construction of a new 25,000 gross square foot General Plant Project building east of the Building 880 site is anticipated to cause an increase in energy consumption but a decrease in energy intensity. The building will be LEED® certified to the Gold level and meet Guiding Principles for New Construction.

Sandia anticipates ten additional buildings will meet the Guiding Principles for Existing Buildings in FY 2013.

Sandia will purchase renewable energy credits to meet the renewable energy objective for FY 2013.

Sandia will pursue the planned actions as identified in the SNL FY 2012 Energy and Water Metering Plan to meet the metering objective.

Sandia National Laboratories FY 2012 Site Sustainability Commitments

SSPP Goal #	DOE/NNSA Goals and Performance Measures	DOE/NNSA FY 2013 Target	Site FY 2013 Target
GOAL 1: Greenhouse Gas (GHG) Reduction and Comprehensive GHG Inventory			
1.1	28% Scope 1 and 2 GHG reduction by FY 2020 from an FY 2008 baseline $\frac{263{,}918\ CO2E}{573{,}736\ CO2E}$ = 46%	-17%	-46%
1.2	13% Scope 3 GHG reduction by FY 2020 from an FY 2008 baseline $\frac{3{,}968\ CO2E}{56{,}682\ CO2E}$ = 7%	-4%	-7%
GOAL 2: Buildings, Energy Savings Performance Contract (ESPC) Initiative Schedule, and Regional and Local Planning			
2.1	30% energy intensity (Btu per gross square feet [GSF]) reduction by FY 2015 from an FY 2003 baseline $\frac{54{,}469\ Btu}{194{,}534\ Btu} = 28\%$	-24%	-28%
2.2	EISA Section 432 energy and water evaluations	25% evaluated	25% evaluated
2.3	Individual buildings metering for 90% of electricity (by October 1,2012); for 90% of steam, natural gas, and chilled water (by October 1, 2015)	90% electric and 50% steam/gas/ chilled	88.4% electric and 50% gas/chilled water
2.4	Cool roofs, unless uneconomical, for roof replacements unless project already has CD-2 approval. New roofs must have thermal resistance of at least R-30.		--
2.5	15% of existing buildings greater than 5,000 GSF are compliant with the Guiding Principles (GPs) of HPSB by FY 2015 $\frac{20\ Buildings}{193\ Buildings} = 10.4\%$	11%	10.4%
2.6	All new construction, major renovations, and alterations of buildings greater than 5,000 GSF must comply with the GPs		
2.7	7.5% of annual electricity consumption from renewable sources by FY 2013 and thereafter $\frac{75.146\ BBtu}{1001.954\ BBtu}$ = 7.5%	7.5%	7.5%
GOAL 3: Fleet Management			
3.1	10% annual increase in fleet alternative fuel consumption by FY 2015 relative to an FY 2005 baseline $\frac{58{,}756\ gallons}{50{,}219\ gallons} = 117\%$	114%	117%
3.2	2% annual reduction in fleet petroleum consumption by FY 2020 relative to an FY 2005 baseline $\frac{116{,}232\ gallons}{249{,}961\ gallons} = 46.5\%$	-16%	-46.5%
3.3	100% of light duty vehicle purchases must consist of alternative fuel vehicles (AFV) by FY 2015 and thereafter (75% FY 2000 – 2015)	75%	100%
3.4	Reduce fleet inventory of non-mission critical vehicles by 35% by FY 2013 relative to an FY 2005 baseline	-35%	-35%

SSPP Goal #	DOE/NNSA Goals and Performance Measures	DOE/NNSA FY 2013 Target	Site FY 2013 Target
GOAL 4: Water Use Efficiency and Management			
4.1	26% potable water intensity (Gallons per gross square foot) reduction by FY 2020 from an FY 2007 baseline $\frac{177{,}286{,}675\ gallons}{585{,}491{,}000\ gallons} = 30.28\%$	-12%	-30.28%
4.2	20% water consumption (Gallons) reduction of industrial, landscaping, and agricultural (ILA) water by FY 2020 from an FY 2010 baseline	-6%	Included in above
GOAL 5: Pollution Prevention and Waste Reduction			
5.1	Divert at least 50% of non-hazardous solid waste, excluding construction and demolition debris, by FY 2015		--
5.2	Divert at least 50% of construction and demolition materials and debris by FY 2015		--
GOAL 6: Sustainable Acquisition			
6.1	Procurements meet requirements by including necessary provisions and clauses (Sustainable Procurements/ Biobased Procurements)	--	--
GOAL 7: Electronic Stewardship and Data Centers			
7.1	All data centers are metered to measure a monthly PUE of 100% by FY 2015	80%	TBD
7.2	Maximum annual weighted average PUE of 1.4 by FY 2015	1.60	TBD
7.3	Electronic Stewardship - 100% of eligible personal computers, laptops, and monitors with power management actively implemented and in use by FY 201	100%	100%
GOAL 8: Innovation and Government-Wide Support			
8.0	Innovation and Government-Wide support	Site Specific	Described in narrative

2.3 Goal 3: Fleet Management

Sandia will continue the following fleet management activities in FY 2013:

- Purchase or lease high-efficiency vehicles when cost competitive and available on the United States General Services Administration schedule.
- Acquire higher-fuel-economy vehicles such as smaller-sized vehicles, hybrid-electric vehicles, and other advanced-technology vehicles.
- Optimize use of alternative fuel, hybrid electric vehicles, and expand and maintain an alternative-fuel infrastructure.
- Employ "right-size" fleet.

2.4 Goal 4: Water Use Efficiency and Management

In FY 2013, Sandia will continue to explore water-conservation opportunities including the following projects:

- Construct weak acid cation and reclaim tanks.
- Retrofit restrooms with high-efficiency fixtures.
- Install new building-level water meters as appropriate.
- Consider water savings when planning new data-center activities.

2.5 Goal 5: Pollution Prevention and Waste Reduction

In FY 2013, Sandia plans to continue the following successful efforts in pollution prevention and waste reduction.

- Perform opportunity assessments and participate in Lean/Six Sigma events to identify opportunities for waste and pollutant source reduction.
- Revise the FY 2009 Recycling Opportunity Assessment to document progress and prioritize new actions to continue reducing waste generation.
- Building 704 is under construction at SNL/NM and required to achieve LEED Gold certification. The project must achieve a 50% diversion rate for one point, and is targeting a 75% diversion rate for a second point.
- Implement material staging for more efficient shipments from the new recycling sprung structure in Technical Area II near the Construction and Demolition Recycle Center at SNL/NM.
- Conduct (in the second half of FY 2013) a crushing operation of concrete and asphalt debris accumulated since the last crushing event in July 2011 at SNL/NM.
- Revise the corporate procedure on technical work document preparation to address waste minimization and associated required documentation intended to improve compliance with the waste management hierarchy required in the corporate procedure on hazardous waste management.
- Revise the *Integrated Pest Management Plan* to include SNL/CA.

2.6 Goal 6: Sustainable Acquisition

In FY 2013, Sandia will update corporate policies, processes, and procedures to reflect the incorporation of Department of Energy Acquisition Regulations clause 970.5223-7 on SA requirements into the SNL Management and Operations Prime Contract.

2.7 Goal 7: Electronic Stewardship and Data Centers

Based on the current DOE definition, Sandia has over 150 rooms that may qualify as data centers and server rooms. For FY 2013, Sandia will initiate a Data Center Consolidation planning effort which will result in a list of data center and server rooms and prioritized consolidation opportunities. When Sandia has identified its enduring data centers and server rooms it will proceed with consolidation implementation and a metering plan to meet the first two objectives.

Sandia continues to improve data center metering capabilities at major SNL/NM data center locations, as well as automating metered data acquisition and monitoring to enable autocalculation of efficiency metrics such as power utilization effectiveness (PUEs). By the end of FY 2013, Sandia will have the ability to autocalculate PUEs for all the data center rooms in Building 880A.

In FY 2013, Sandia plans to install meters at the electrical infrastructure and rack levels and configure them for monitoring capability through the building automation system in Buildings 725 and 899.

Sandia anticipates having the ability to perform automated calculations of PUEs for data centers located in Buildings 725, 880A, and 899 by the end of FY 2013.

Sandia will continue to deploy NightWatchman® Enterprise software on existing personal computers. In FY 2013 Sandia anticipates adding about 1,200 computers to NightWatchman when they are converted to Microsoft® Windows XP.

2.8 Goal 8: Site Innovation and Government-Wide Support

In FY 2013, Sandia plans to pursue the following:

- Use SNL locations as testbeds for research and development (R&D) technologies
- Evaluate microgrid for mission-critical energy-security applications
- Explore further benefits of the energy partnership with Kirtland Air Force Base at SNL/NM
- Explore coordinated SNL/CA and LLNL opportunities for the Livermore Valley Open Campus.
- Expand R&D concentrated solar activities at the National Solar Thermal Test Facility.

3.0 Funding Strategy

Beginning in FY 2013, Sandia will make the following energy investments:

- Invest electric utility and energy conservation cost savings in energy and sustainability projects over the next four years.
  - $5 million invested annually in energy-reduction projects and R&D support
  - $2 million to incentivize consolidation of data centers and reduce energy use