Y/IA-451/Rev.1

Y-12 SITE SUSTAINABILITY PLAN

FY2013

Sustainability: "…to create and maintain conditions, under which humans and nature can exist in productive harmony…"

—EXECUTIVE ORDER 13514

DISCLAIMER

Y-12 NATIONAL SECURITY COMPLEX

FY 2013
SITE SUSTAINABILITY PLAN

DECEMBER 2012

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Managed by Babcock & Wilcox Technical Services Y-12, LLC for the U.S. Department of Energy under contract DE-AC05-00OR22800

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ACRONYMS, ABBREVIATIONS, AND INITIALISMS

AFV	alternative fuel vehicles
AHU	air handling unit
ARCS	Access Rate Control System
ARRA	American Recovery and Reinvestment Act
AVID	Accelerated Vendor Inventory Delivery
C&D	construction and demolition
CAIS	Condition Assessment Information System
CAS	condition assessment survey
CEDR	Consolidated Energy and Data Report
CRT	cathode-ray tube
CTS	Consolidated Tracking System
DOE	U.S. Department of Energy
ECM	Energy Conservation Measure
EISA	Energy Independence and Securities Act
EMIP	Energy Modernization Implementation Program
EPA	Environmental Protection Agency
EPEAT	Electronic Product Environmental Assessment Tool
ESCO	energy savings company
ESPC	Energy Savings Performance Contract
ETTP	East Tennessee Technology Park
FAST	Flow and Analysis System for Transportation
FEC	Federal Electronics Challenge
FEMP	Federal Energy Management Program
FIMS	Facility Information Management System
GGE	gasoline gallon equivalent
GHG	greenhouse gas
HMIS	Hazardous Materials Information System
HPSB	high performance and sustainable building
HVAC	heating, ventilating, and air conditioning
IAQ	Indoor Air Quality
ILA	industrial, landscaping, and agricultural
IR	infrared
IT	Information Technology
JCC	Jack Case Center
LEED	Leadership in Energy and Environmental Design
LED	light-emitting diode
M&V	Measurement and Verification
M&O	management and operating
NC	New Construction
NHC	New Hope Center
NNSA	National Nuclear Security Administration
NPO	NNSA Production Office
O&M	operations and maintenance
ORNL	Oak Ridge National Laboratory
ORR	Oak Ridge Reservation
P2	Pollution Prevention
PSF	production support facility
PSS	Plant Shift Superintendent
PUE	power utilization effectiveness
REC	Renewable Energy Certificates
RFID	Radio-Frequency Identification
SSPP	Strategic Sustainability Performance Plan
TVA	Tennessee Valley Authority
TWRA	Tennessee Wildlife Resources Agency
UMS	Utility Management System
UPF	Uranium Processing Facility
VAWT	vertical-axis wind turbine

SITE MANAGEMENT VISION

The accomplishments to date and the long-range planning of the Y-12 Energy Management and Sustainability and Stewardship programs support the U.S. Department of Energy (DOE) and the National Nuclear Security Administration (NNSA) vision for a commitment to energy efficiency and sustainability and to achievement of the Guiding Principles. Specifically, the Y-12 vision is to support the Environment, Safety and Health Policy and the DOE Strategic Sustainability Performance Plan, while promoting overall sustainability and reduction of greenhouse gas emissions. The mission of the Y-12 Energy Management program is to incorporate energy-efficient technologies site-wide and to position Y-12 to meet NNSA energy requirement needs through 2025 and beyond.

MAJOR PLANNING ASSUMPTION AND ISSUES (INCLUDING FUNDING STRATEGIES)

Y-12 is committed to achieving the sustainable energy and transportation goals established in Executive Orders 13423 and 13514. Although complete accomplishment of the present goals exceed existing funding levels, Y-12 will continue to execute projects as funding becomes available or as they can be accomplished incrementally within current funding profiles. All efforts will be made to integrate energy and sustainability initiatives with ongoing site mission objectives.

Dedicated funding for energy and water projects is provided via the Energy Saving Performance Contract (ESPC) mechanism. Y-12 currently has delivery order #2, which is the first period of performance. Delivery order #3 is in the preliminary planning stages and will hopefully be awarded during FY 2013. Efforts from the existing ESPC have greatly contributed towards both energy reduction and gained efficiencies for the project implemented. The site will continue to work with NNSA for successful accomplishment of these efforts.

Accomplishment of minor energy reduction projects is included within internal baseline budgets. Although major funding for specific projects is limited, the site recognizes that significant contri-

butions to the goals can be achieved by including energy, water, and sustainability efficiencies within ongoing maintenance work. When appropriate, modifications to facilities include both energy and sustainable elements. During FY 2012, heating, ventilating, and air-conditioning replacements were completed within two large facilities. Units selected were efficient self-contained air-handling packages which replaced outdated, once-through cooling units. Savings for the installations included both electricity and water. A new parking lot installation included pervious pavement, a solar-powered crosswalk, native plantings, and the removed soil was used to create green space at an abandoned slab (Fig. ES.1). The project had significant contributions for the Energy Independence and Securities Act (EISA) 438 requirements.

SUCCESSES AND CHALLENGES

Y-12 is currently meeting or has exceeded 14 of the twenty goals; several of the remaining goals are on track and are fully expected to be met prior to the established deadlines. Table ES.1 gives a comprehensive overview of Y-12's performance status and planned actions.

Some of the ongoing Y-12 initiatives that have had a significant impact on the sustainability at the site and have helped reduce energy and water intensity during the past few years include:

- ESPC projects,
- pollution prevention and recycle/reuse programs,
- infrastructure reduction,
- American Recovery and Reinvestment Act projects,
- site-wide consolidation and transformation, and
- Energy Modernization and Investment Program.

Other initiatives during FY 2012 that demonstrated significant progress toward the goals are:

- achieved Jack Case Center high performance and sustainable building (30.1% energy reduction);
- supported EISA 438 compliance by using pervious pavement, installing a solar crosswalk, reusing 3.3 acres of soil, and using LED lighting and native plants;
- met 100% of EISA evaluation requirements;
- installed two new air handling units (AHUs) in Building 9201-03 (5 million gallons of water saved);
- reduced high-pressure steam, "right-sized" for application (gas/fuel savings);
- installed low-flow restroom fixtures (171,000 gallons of water saved);
- installed two new AHUs in Building 9201-05N;
- consolidated personnel to vacate four facilities (523,501 kWh/yr savings);

Fig. ES.1. In FY 2012, Y-12's New Hope Center parking lot was constructed utilizing sustainable products and techniques

- reduced 12,857 MT CO_2 (2,741 equivalent pine tree acres);
- repaired condensate pumps at Building 9204-02, 26% of savings for energy conservation measure 7.1, *Condensate Return*;
- received Federal Energy and Water Management Award for Steam Plant;
- received Environmental Excellence Award for Y-12's Sustainability Team;
- received 2012 Federal Electronics Challenge Gold Level Award;
- received 2012 DOE Sustainability Awards: "Reaching Beyond - Y-12 Sustainability Outreach," "Y-12 Targeted Excess Materials;" and
- implemented more than 100 pollution prevention initiatives, which eliminated more than 25.5 million pounds of waste.

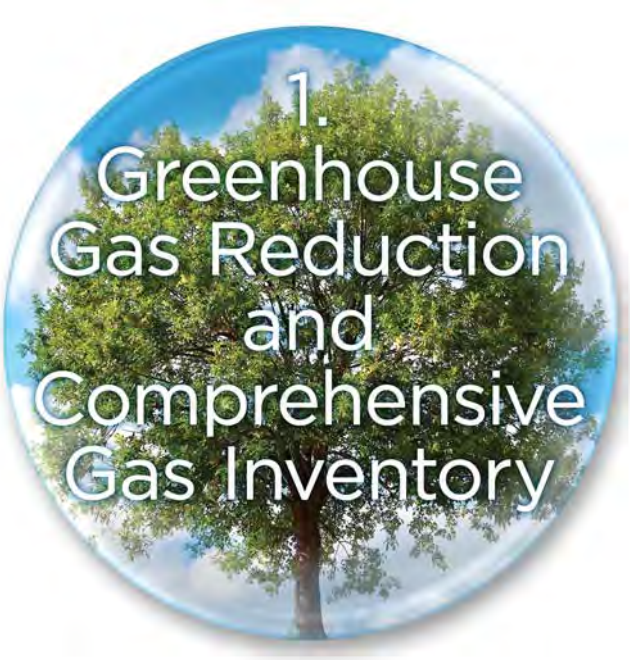
During FY 2013, the site will continue to focus on employee awareness and incorporation of sustainability into maintenance efforts and modernization planning. This focus will enable further site progress towards meeting the goals.

Table ES.1. Summary table of goal targets

SSPP Goal	DOE Goal	Performance Status	Planned Actions and Contribution	Risk of Non-attainment
Goal 1: Greenhouse Gas Reduction and Comprehensive Greenhouse Gas Inventory				
1.1	28% Scope 1 & 2 GHG reduction by FY 2020 from an FY 2008 baseline	**At Risk** – Scope 1 & 2 emissions decreased by 30.1%. It is doubtful this goal will be sustainable once UPF construction begins.	Continue to identify methods for reduction of GHG; further emphasize energy reductions.	Medium
1.2	13% Scope 3 GHG reduction by FY 2020 from an FY 2008 baseline.	**At risk** – Site Scope 3 emissions have decreased by 4.3%.	Site will increase teleconference and webinar capabilities to reduce business travel.	Medium
GOAL 2: Buildings, ESPC Initiative Schedule, and Regional & Local Planning				
2.1	30% energy intensity reduction by FY 2015 from an FY 2003 baseline	**On track** – The site has achieved a 26.4% reduction from the 2003 baseline.	Continue implementation of planned energy reduction initiatives, including delivery order #3 ESPC.	Low
2.2	EISA Section 432 energy and water evaluations	**Goal has been met**. Y-12 completed all EISA-covered assessments during FY 2012.	Assessments will continue to include 25% of EISA-covered facilities for 2nd assessment cycle.	
2.3	Individual buildings or processes metering for 90% of electricity (by October 1, 2012); for 90% of steam, natural gas, and chilled water (by October 1, 2015)	**On track** – Currently 91.6% of total electricity metered - 76 advanced meters were installed in FY 2012, and an additional 27 meters were connected to UMS.	Continue procurement and installation of metering as funding is allocated in accordance with Section 2.3 Metering Plan and Appendix A Metering Spreadsheet.	Electricity: Low Steam: Medium Natural Gas: Low Chilled Water: Medium
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	**On track** – Investments in roofing have increased cool roof technology at the site. ~ 200,000 GSF were completed during 2012.	Future roofing projects will continue to use cool roofs where practical, with 43,600 ft^2 planned for FY 2013.	Low
2.5	15% of existing buildings larger than 5,000 GSF are compliant with the Guiding Principles of HPSB by FY 2015	**At Risk** –The site achieved HPSB compliance for JCC – the site is yellow for GSF, with 12% complete, but still red for building count with 2% complete.	Y-12 will continue to implement initiatives to meet HPSB compliance as funding and resources allow.	High

SSPP Goal	DOE Goal	Performance Status	Planned Actions and Contribution	Risk of Non-attainment
2.6	All new construction, major renovations, and alterations of buildings greater than 5,000 GSF must comply with the Guiding Principles	**On track** – The UPF project is seeking LEED certification	The UPF project team will continue efforts towards LEED certification.	Low
2.7	7.5% of a site's annual electricity consumption from renewable sources by FY 2013 and thereafter	**On track**– Y-12 is at 8% renewable due to purchased Green-e certified Renewable Energy Certificates (RECs) in the amount of 21,000 MWh per year.	Based on DOE decision to accept RECs to satisfy this goal, Y-12 will extend current RECs.	Without RECs: High With RECs: Low
Goal 3: Fleet Management				
3.1	10% annual increase in fleet alternative fuel consumption by FY 2015 relative to an FY 2005 baseline	**Goal has been met**. Y-12 has achieved a 554.3% increase in alternative fuel consumption within 7 years.	Additional measures are being evaluated for continued improvement beyond the goals.	
3.2	2% annual reduction in fleet petroleum consumption by FY 2020 relative to an FY 2005 baseline	**Goal has been met**. Y-12 has achieved the petroleum reduction goal with a 67.1% reduction within 7 years.	Additional measures are being evaluated for continued improvement beyond the goals.	
3.3	100% of light-duty vehicle purchases must consist of alternative fuel vehicles (AFVs) by FY 2015 and thereafter (75% FY 2000–2015)	**Goal has been met**. Y-12 purchases only AFVs for the onsite fleet.	Future vehicle purchases will include consideration for AFVs.	
3.4	Reduce fleet inventory of non-mission-critical vehicles by 35% by FY 2013 relative to an FY 2005 baseline	**On Track**. NNSA established a 35% reduction target complex-wide; Y-12 has reduced by 26% during the last 7 years.	With the inclusion of security force vehicles, Y-12 will evaluate the existing inventory and develop a path forward.	Low
Goal 4: Water Use Efficiency and Management				
4.1	26% water intensity reduction by FY 2020 from an FY 2007 baseline	**Goal has been met.** The site has achieved a 33.4% reduction from the baseline.	Water conservation measures will continue to be implemented on a building-by-building basis in support of the HPSB initiative.	
4.2	20% water consumption reduction of industrial, landscaping, and agricultural (ILA) water by FY 2020 from an FY 2010 baseline	No ILA use at Y-12.	ILA water is considered to be non-potable freshwater used for aiding processes or irrigation. All water used at Y-12 is potable water and included in the potable water category.	N/A
GOAL 5: Pollution Prevention and Waste Reduction				
5.1	Divert at least 50% of nonhazardous solid waste, excluding construction and demolition debris by FY 2015	**Goal has been met.** Over 51% of non-hazardous waste diverted from landfill.	At least one new recycle material stream is added to the recycling program each fiscal year to further increase the diversion rate.	

SSPP Goal	DOE Goal	Performance Status	Planned Actions and Contribution	Risk of Non-attainment
5.2	Divert at least 50% of construction and demolition materials and debris by FY 2015.	**Goal has been met.** Over 80% of construction and demolition (C&D) waste diverted from landfill.	Systematic disposition evaluation method will continue to be used for C&D materials to ensure maximum waste diversion is achieved.	
Goal 6: Sustainable Acquisition				
6.1	Procurements meet requirements by including necessary provision and clauses (Sustainable Procurements/ Biobased Procurements)	Goal has been met. The sustainable acquisition clause 952.223-78 was incorporated into Y-12 procurement clauses in FY 2011. The terms and conditions were revised in 2012 to include Federal Acquisition Regulation clause 52.223-15.	Y-12 will incorporate additional clauses as requested and will continue to evaluate sustainable products for use at the site.	
Goal 7: Electronic Stewardship and Data Centers				
7.1	All data centers are metered to measure a monthly power utilization effectiveness (PUE) (100% by FY 2015)	**At Risk** – Electric meter installations were planned for 2012 but have been postponed until 2013. The primary data centers are funded in FY 2013.	The primary data centers are being consolidated. Efforts will consider additional metering to ensure PUE is effectively measured.	Low
7.2	Maximum annual weighted average PUE of 1.4 by FY 2015	**At Risk** – The PUE is currently estimated at lower than 1.4. However, this value is based solely on electricity usage and does not account for chilled water energy intensity.	Chilled water and electrical metering are planned for Buildings 9103/9117 in 2013. This data will verify the PUE; it is not known at this time what actions are required.	Medium
7.3	Electronic stewardship – 100% of eligible PCs, laptops, and monitors with power management actively implemented and in use by FY 2012	**On Track** – Y-12 has implemented power management to eligible CPUs and laptops; power management features are enabled on all monitors not deemed mission critical.	100% implementation is not currently feasible with existing security network features. The site will continue active implementation of power management of computing devices while maintaining security network features.	Medium
Goal 8: Innovation and Government Wide Support				
8.1	Innovation & Government-Wide support		Continue working with the community and local government agencies to further efforts.	



1.1 SCOPE 1 & 2 GREENHOUSE GAS

Y-12 reduced Scope 1 and 2 emissions by 30.1% in FY 2012, meeting the Scope 1 and 2 reduction goals, primarily due to decreased Scope 1 emissions from steam generation, decreased Scope 2 emissions from energy efficiency projects and cleaner regional electric power sources (Fig. 1.1). The Y-12 Complex seeks to support the greenhouse gas (GHG) reduction targets to the fullest extent possible. The overall goal of 28% reduction (from an FY 2008 baseline) by FY 2020 has been established by U.S. Department of Energy (DOE) for Scope 1 and 2 emissions.

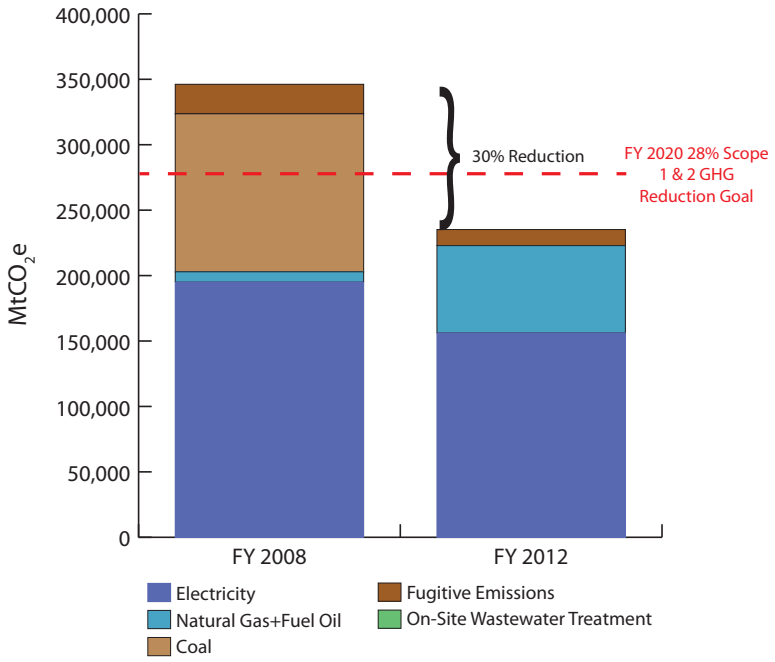


Fig. 1.1. Y-12 Reduced Scope 1 & 2 emissions by 30% in FY 2012.

Table 1.1. Y-12 FY 2012 Scope 1 and 2 GHG emissions compared to baseline

Scope	GHG Emission Source	(Metric ton CO_2e/yr)		
		FY 2008	% Change	FY 2012
1	Steam (Coal, Natural Gas, Fuel Oil)	128,654	-48%	66,746
1	Fugitivie Emissions (SF_6, Vertrel, other)	22,542	-46%	12,274
1	Onsite Wastewater Treatment	6.9	-4%	6.6
1	Fleet Fuels (Gas, E85, Diesel)	1,675	-34%	1,107
1	Total Scope 1	152,878	-48%	80,133
2	Purchased Electricity	184,995	-16%	156,162
1+2	Total Combined Scope 1 & 2 GHG	337,873	-30%	236,295

PERFORMANCE STATUS

Table 1.1 presents the FY 2012 Scope 1 and 2 GHG emissions compared to the FY 2008 baseline. With an FY 2012 reduction of 30.1% compared to baseline, the Scope 1 emissions have surpassed the 28% reduction target. Scope 2 Purchased Electricity was reduced 16% from baseline levels due to incremental reductions in energy intensity and electricity consumption (discussed in Section 1.2), and a reduced eGRID emission factor for regional power sources. Future reductions in purchased electricity may be at risk due to the potential peak in energy intensity with the construction of the Uranium Processing Facility (UPF), minimal renewable energy projects, limited funding for high performance and sustainable building (HPSB) initiatives, and uncertain funding for demolition of antiquated production facilities (requiring ongoing energy expenditures to maintain buildings in cold stand-down status awaiting final demolition).

The following changes and major initiatives contributed significantly to Scope 1 and 2 GHG emissions:

- Scope 1 GHG emissions from steam generation decreased dramatically (48%) due to modernization of the steam plant, conversion from coal to natural gas, and continued building demolitions and efficiency improvements that reduced requirements for steam generation (discussed in Section 1.2). Coal use ceased in FY 2011.
- Scope 2 GHG emissions from purchased electricity decreased significantly (16% vs. baseline) due to numerous successful energy reduction initiatives and HPSB improvements completed in FY 2012 (described in Section 1.2).
- The decrease was also due to changes to the emission factor assigned within the Consolidated Energy Data Report (CEDR) to estimate CO_2 emissions from regional electrical utilities (the emission factor for purchased electricity was reduced from 0.689 $mtCO_2e$/MWh in FY 2008 to 0.6191 in FY 2011).
- Fugitive emissions decreased 46% in FY 2012 versus the baseline primarily due to production demands that reduced the quantity of Vertrel obtained for metal cleaning processes. Y-12 has identified a non-GHG emitting replacement for the Vertrel-based system that is planned for implementation in the future UPF (discussed in the section on Projected Performance).
- Continued progress in management of the Y-12 vehicle fleet to maximize fuel efficiency and alternative fuel use and to streamline fleet vehicle numbers has led to a 48% reduction in vehicle GHG emissions compared to the baseline. (Chapter 3).

The methodology used to gather Scope 1 and 2 greenhouse gas data is described in the CEDR. FY 2012 data on electrical power use and natural gas consumption is gathered from meter monitoring activities. This energy consumption information for facilities and fully serviced leased facilities is input into the CEDR quarterly. FY 2012 data for fugitive emissions were gathered for mixed refrigerants and fugitive F-gases to enable use of the Simplified Material Balance Approach. These data were obtained from the Y-12 Hazardous Material Information System (HMIS) inventory, purchasing records, and disposition records. Equipment capacity data was also entered where available. Fleet fuel usage is compiled by Y-12 and security vehicles from Flow and Analysis System for Transportation (FAST) database entries. For on-site wastewater treatment, the population of personnel in buildings served by the on-site industrial wastewater treatment plant was gathered from site personnel and staffing data information sources. Y-12 does not include Scope 1 GHG data related to on-site landfill and municipal solid waste facilities since GHG emissions from this facility, operated by the East Tennessee Technology Park (ETTP), are included in the ETTP GHG inventory. The landfill data is not included in the Y-12 inventory to avoid double counting. Prior to establishing the 2008 baseline, this approach was agreed upon by personnel from DOE Headquarters, local DOE offices, and each site that utilizes the landfill.

PROJECTED PERFORMANCE

During the first quarter of FY 2013, the security forces were added to the site requirements for reporting purposes at Y-12. The projected out-year GHG emissions are presented in Figure 1.2 and Table 1.2. The projections include Scope 2 reductions from energy efficiencies that will be achieved through site transformation activities, Scope 1 increases due to fleet fuel for security forces (discussed in Section 1.2), and Scope 1 reductions from improvements to the Vertrel-based metal cleaning process, with ultimate elimination of this greenhouse gas solvent with UPF start-up. As shown in Table 1.2, energy efficiencies achieved through building consolidation and demobilization are expected to be off-set by increased fuel consumption and load demand during UPF construction and start-up.

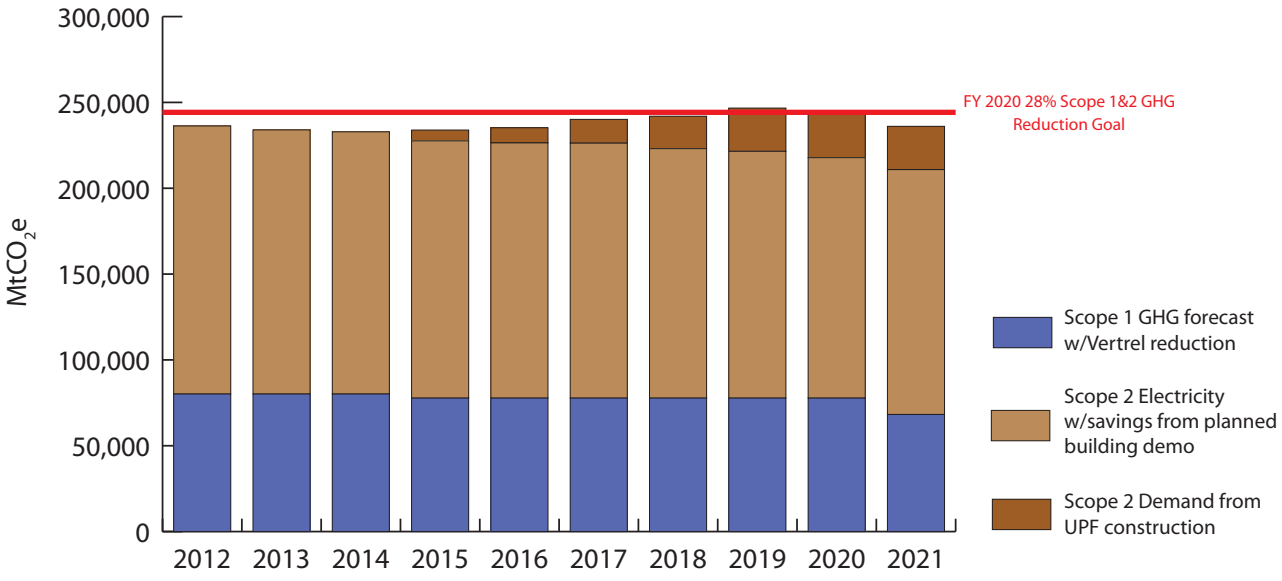


Fig. 1.2. The projected out-year GHG emissions include Scope 2 reductions from energy efficiencies achieved through site transformation activities.

Table 1.2. Scope 1 & 2 GHG projections

GHG Forecast ($MtCo_2e$)	2012 (Actual)	2013	2014	2015	2016	2017	2018	2019	2020	2021
Scope 2 Electricity Consumption	156,162	154,600	153,054	151,524	150,009	148,509	147,023	145,553	144,098	142,657
Energy Savings (Building Demo)	0	(745)	(302)	(1670)	(1341)	(2)	(1711)	(1808)	(4032)	(20)
Electricity (Savings From Demos)	156,162	153,855	152,752	149,854	148,668	148,507	145,312	143,745	140,066	142,637
Demand Growth – UPF Construction	-	-	-	6,301	8,821	13,861	18,902	25,203	25,203	25,203
Scope 2 GHG Forecast	156,162	153,855	152,752	156,155	157,489	162,368	164,214	168,948	165,269	167,840
Scope 1 Projections	80,133	80,133	80,133	80,133	80,133	80,133	80,133	80,133	80,133	80,133
Vertrel Cleaning Improvements (Current Processes)				(2381)	(2381)	(2381)	(2381)	(2381)	(2381)	
Vertrel Elimination (UPF)										(11904)
Scope 1 GHG Forecast	80,133	80,133	80,133	77,752	77,752	77,752	77,752	77,752	77,752	68,229
Scope 1 & 2 GHG Forecast	236,295	233,988	232,885	233,907	235,241	240,120	241,966	246,700	243,021	236,069
28% Reduction Target Scope 1 & 2									243,269	

Purchased electricity (Scope 2) is by far the biggest contributor to Y-12's GHG footprint, accounting for 66% of all Scope 1 & 2 GHG emissions. Expected increased electricity demand during UPF construction during 2015 through 2021 will add an additional challenge to meeting this sustainability goal. While opportunities for reducing Scope 1 fugitive emissions (by replacing Vertrel with a non-GHG-emitting solution) will make a significant contribution toward reaching the goal, Y-12 needs a multifaceted approach, with reduced electricity consumption as a key focal point, to ensure the 28% reduction will be maintained. Energy reduction efforts must include major initiatives involving production facilities and utility infrastructure, since more than half of Y-12 electricity usage and associated CO_2 emissions are consumed primarily in these areas. The Y-12 site transformation plan currently includes many elements that will reduce the number of operating facilities and utility infrastructure. This effort will, in turn, also reduce the electricity demand and GHG emissions as represented in Figure 1.2. However, without significant funding for transformation and demolition, very little impact to energy intensity and Scope 2 GHG emissions can be implemented within these areas. Although construction will not be complete until after 2020, UPF will allow for a significant portion of the production facilities to be deactivated and eventually demolished, further reducing GHG emissions.

Planned activities that, if fully funded and implemented, will result in GHG savings that achieve the Scope 1 and 2 GHG 28% reduction goal by 2020 include:

- **Scope 1 Fugitive Emission Reduction:** The Vertrel process is the source of a large fugitive GHG emission (HFC-4310mee), which is dependent on production rates. Y-12 emitted more than 20,000 pounds of Vertrel last year (approx. 11,900 metric ton CO_2e emissions). Y-12 Production operates a system to reclaim and reuse Vertrel, but the product is used in open vessels, which allows significant evaporation as it is processed. Y-12 Technology Development has completed studies to identify an alternate improved cleaning process for implementation in current operations (Y/DZ-3394, *Removal of 50/50 Propylene Glycol/Water and Aqueous Trim® C350 Machine Coolant from Steel Wool, Stainless Steel Chips, and Depleted Uranium Chips*). The lab study indicates that Vertrel bath cleaning effectiveness will be improved by restoring and maintaining an optimal alcohol level in the Vertrel formulation. Improved effectiveness may lead to reduced usage and emissions. A path forward for implementing this system is being developed and funding needs identified. In addition, a Vertrel-free process targeted for implementation in UPF is incorporated into the current UPF design plans, and is described in the Y-12 development report, Y/DZ-3310, *Machine Chip and Part Cleaning Alternatives* (September 2011).
- **Scope 2 Reductions Through Site Transformation:** Current site transformation plans call for deactivation or removal of over 1.16 million ft^2 of buildings by 2020. These planned activities will result in eliminating annual emissions that total more than 11,600 metric tons of Scope 2 greenhouse gas emissions from 2013 through 2021. Nearly 1 million ft^2 of this footprint is attributed to deactivation of production facilities 9204-04 and 9201-05. American Recovery and Reinvestment Act (ARRA) funding contributed appreciably to the deactivation and shutdown activities. Energy consumption has been significantly reduced, and minimal steam and energy use will be expended to maintain the facilities in safe condition. The majority of the demolition activities are planned in 2020, making it possible that not all energy savings from these activities will be realized in the final goal year of FY 2020. However, current projections indicate sufficient reductions will occur, provided Vertrel reduction efforts are successful.
- **Scope 2 Reductions Through Energy Efficiency Projects, Conservation Measures, and HPSB Efforts:** These are described in Chapter 2. While GHG reductions are expected as a result of these projects, the impact and timing is not currently defined, and the reductions are not included in the projections in Fig. 1.2 and Table 1.2.

Estimated additional funding requirements for energy improvement projects, measurable goals and milestones, and training and awareness activities necessary to encourage behavior changes that will maximize energy conservation are discussed in Section 2.5. Measurable goals are being established for FY 2013 to promote continued progress improving the current Vertrel cleaning process, and funding needs for full implementation of Vertrel cleaning system improvements are being evaluated.

No changes were made to the 2008 baseline for Scope 1 and 2 greenhouse gases. The following methods for gathering baseline and FY 2012 data were implemented to develop the data included in the CEDR:

- Mixed refrigerant and F-Gas FY 2012 data were gathered to enable use of the Simplified Material Balance Approach. Material balance data were obtained from HMIS inventory and purchasing records. Equipment capacity data was also entered where available. FY 2008 baseline and 2011 data reported in previous CEDR reports were re-entered using the Default Approach. FY 2008 and FY 2011 mixed-refrigerant data were verified to be consistent with past entries and were checked to ensure they are not double counted as Fugitive F-Gas. These data were collected based on reviewing purchasing and HMIS data.
- The Scope 1 GHG emissions from waste disposed at the onsite landfill were removed from the CEDR tab 9.1a. Y-12 does not operate the DOE Oak Ridge Reservation (ORR) Landfill.

This landfill is operated under an Environmental Management contract by the ETTP contractor. The Scope 1 emissions from the total quantity of sanitary landfill waste received from both Y-12 and Oak Ridge National Laboratory and other entities are reported by ETTP. Y-12 reports the volume of waste disposed in the ORR landfill in a comment section in the Pollution Prevention Tracking System but does not report the related fugitive emissions for this waste to avoid duplicate reporting of fugitive emissions by ETTP, Y-12, and Oak Ridge National Laboratory (ORNL). This approach was agreed upon by personnel from DOE headquarters, local DOE offices, and each respective site prior to establishing the 2008 baseline.

1.2. SCOPE 3 GHG REDUCTION

Y-12 is currently meeting the incremental reduction targets for the 13% Scope 3 GHG reduction by FY 2020 from an FY 2008 baseline.

PERFORMANCE STATUS

Y-12's Scope 3 GHG emissions have decreased by 4.3% since FY 2008 (Table 1.3). Although the site is currently showing a slight reduction in Scope 3 GHG, the trend is not generally believed to be sustainable. Changes in site population in recent years due to mission activities and ARRA have impacted the metric. Additionally, the security forces were added to the site contract early in FY 2013, which will further increase the site headcount.

EMPLOYEE COMMUTING

While overall Y-12 commuting GHG emissions have increased by 3.2% since the 2008 baseline, the commuting emissions have decreased 1.1% since 2011. With minimal public transit options available, Y-12 has used a multi-pronged approach to reduce the impacts of Y-12 employees' commute to work each day and has a well-established carpooling/ride share program. Y-12 promotes employee participation in Smart Trips, a local program that promotes alternatives to driving alone to work. Smart Trips had a booth at the Y-12 Earth Day Celebration (Fig. 1.3) to educate employees on alternative commuting methods and Smart Trips programs. Participants who register with Smart Trips and log the details of their alternative commutes are rewarded. Smart Trips shares the number of miles and emissions prevented by Y-12 employees' efforts each year.

Table 1.3. Scope 3 GHG reductions

Emission Source	(metric ton CO_2e/yr)		
	FY 2008	% Change	FY 2012
Employee Commuting	17,447	3.2%	18,005
Business Ground and Air Travel	2,251	-32.59%	1517.3
Transmission and Distribution Losses	12,185.8	-15.59%	10287
Contracted Off-Site Wastewater Treatment	25.3	2.17%	25.85
Contracted Off-Site Municipal Waste Disposal	N/A	N/A	N/A
Total Scope 3	**31,909.1**	**4.3%**	**30,526.2**

Fig. 1.3. Y-12 employee discusses commuting with Smart Trips at Y-12 Earth Day celebration.

To calculate commuting emissions, Y-12 calculates the average employee commute distance from employee data. The average commute distance is applied to the ratio of vehicle types driven by site employees and the standard work schedule. The alternative commuting data received from Smart Trips is incorporated into the final commuting emissions calculations.

In Fiscal Year 2012, Y-12 completed benchmarking activities concerning telework programs at the National Renewable Energy Laboratory, Pacific Northwest National Laboratory, and the DOE Office of Inspector General. The benchmarking activities included discussions with organization representatives and reviews of practices, policies, and procedures.

Y-12 converted to a 4/10 work week prior to the baseline of 2008; therefore, Y-12 is continuing to investigate other alternatives to help reduce our Scope 3 GHG emissions. Y-12 has a flexible workplace program procedure to allow an alternative work arrangement of a home-based office to those Y-12 employees whose nature of work and performance history indicates that such an arrangement would enhance their productivity, creativity, and job satisfaction. This flexible workplace program is currently being utilized on a limited basis, including the NNSA Production Office (NPO); however, Y-12 Human Resources is evaluating this program for potential expansion in the future.

BUSINESS GROUND AND AIR TRAVEL

The business ground and air travel GHG emissions decreased significantly in FY 2012 due to restrictions on business travel and adjustments in the emissions factor for air travel. While employees need to occasionally travel as part of their jobs, Y-12 strongly supports the use of webinars and conference calls to avoid business travel. If travel is required to support mission needs, Y-12 strongly encourages employees to use available shuttles and mass transit rather than renting a car at their destinations.

Y-12 utilizes data provided by the Accounts Payable and Travel Organization in order to calculate the business ground and air travel emissions. The actual air miles flown by site employees utilized for air travel emissions calculations based upon reports received from the Y-12 travel agency. The number of vehicle rentals and personal vehicle miles traveled are calculated based on information from business travel expense data.

TRANSMISSION AND DISTRIBUTION LOSSES

When calculating transmission and distribution losses, Y-12 defers to the Transmission Service Guidelines from the Tennessee Valley Authority (TVA), which states that the average losses for the TVA Transmission System "shall be three percent."

CONTRACTED (OFF-SITE) WASTEWATER TREATMENT

The increase in contracted off-site wastewater treatment GHG emissions is proportional to the increase in plant population. Y-12 is continuing modernization efforts to reduce the amount of water that requires off-site treatment. The addition of

the new Steam Plant and the completion of the coal yard stabilization project have reduced the quantity of water from steam production that requires off-site treatment.

The off-site wastewater treatment emissions are calculated solely based upon the plant population that generates sanitary wastewater sent to the City of Oak Ridge Wastewater Treatment Plant. The City of Oak Ridge operates an activated sludge treatment plant, which includes nitrification and limited denitrification.

CONTRACTED (OFF-SITE) MUNICIPAL WASTE DISPOSAL

The Y-12 Complex does not send any municipal waste off-site for disposal. All municipal waste generated at Y-12 is sent to the DOE Oak Ridge Reservation Landfill, which is located within the 229 boundary of the site.

PROJECTED PERFORMANCE

It will be difficult for Y-12 to meet the reduction goal for Scope 3 GHG emissions without the addition of public transit to the Oak Ridge area and/or a telecommuting program. To further reduce employee commuting, Y-12 will continue to encourage the use of the Y-12 carpooling and ride-share programs. Y-12 has recently added bike lanes (Fig. 1.4) to facilitate commuting by bike and will continue the 4/10 workweek. To assist with business travel reduction, Y-12 will continue to promote the use of teleconferences and mass transit while on business travel and is evaluating methods to enhance teleconference and webinar capabilities to reduce the need for travel. Y-12 will also evaluate the expansion of the flexible workplace program.

Y-12 will reevaluate the Scope 3 emissions baseline in FY 2013 due to the transition of the security forces to the management and operating (M&O) contractor. The impact of the transition on future years' performance will be evaluated. Security forces will be incorporated into existing programs related to Scope 3 emissions reductions.

Fig. 1.4. Y-12 has recently added bike lanes to Bear Creek Road.

2.1. ENERGY INTENSITY REDUCTION

Goal: 30% Energy Intensity (Btu per gross square foot) reduction by FY 2015 from an FY 2003 baseline.

PERFORMANCE STATUS

Y-12 is meeting the reduction goal and has achieved a 26.4% reduction in energy intensity from the 2003 baseline (Fig. 2.1).

Based on FY 2012 data, energy use at Y-12 is 2,113,550 MBtu. The square footage is 6,858,240; therefore the FY 2012 estimated energy intensity is 308,177 Btu/GSF, which represents a 10% reduction compared to FY 2011. When compared to the baseline year of FY 2003, this represents a 26.4% reduction. The site has made good progress in implementing several energy reduction initiatives.

FY 2012 initiatives that contributed to the sustainability of facilities and aided in progress toward achieving the energy intensity reductions include:

- energy reduction initiatives in Jack Case Center (JCC);
- retro-commissioning and heating, ventilating, and air conditioning (HVAC) improvements in Buildings 9201-03 and 9201-05N;

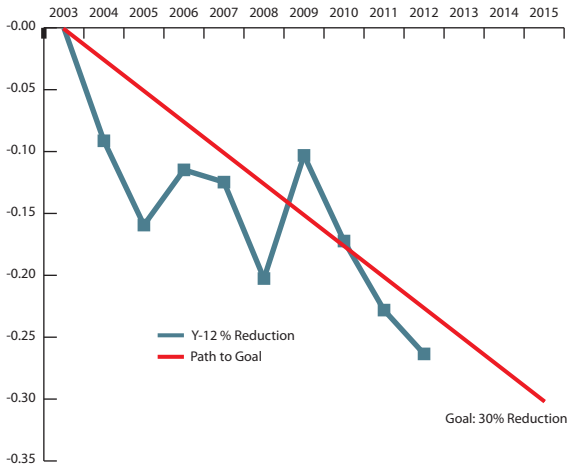


Fig. 2.1. Y-12 has achieved a 26.4% reduction in energy intensity.

- chiller efficiency improvements in Building 9767-8/11;
- reconnecting HVAC controls to the Utility Management System (UMS);
- off-shift temperature setbacks;
- steam trap replacements;
- lighting fixture upgrades;
- Energy Modernization Implementation Program (EMIP) advanced meter installations; and
- low-flow fixture installations in Buildings 9113/9119.

In reference to inspector general audit 0869, Y-12 implemented an aggressive energy assessment schedule to ensure all EISA-covered facilities were evaluated. The evaluations have been provided to facility and utility management, and energy conservation measures (ECMs) are included in project planning for facilities. ECMs have been prioritized and are implemented as funding is available. Specific examples include HVAC replacements and low-flow fixtures. Employees were utilized from within the condition assessment survey (CAS) program. Y-12 recognized this as an available resource with existing knowledge of facility operations and conditions.

As a result of the EMIP effort, the site now has meter data available in the energy management tool of the utility management system. Although electricity billing is not currently under consideration, monthly consumption data with equivalent cost is distributed to facility management for tenant awareness and general knowledge. Future plans include facility competition and building-specific ECMs and "what can you do" campaigns.

BEST MANAGEMENT PRACTICES

Night setbacks were implemented on HVAC systems in a number of buildings including JCC. Some of the same HVAC systems also included maintenance efforts, such as new variable frequency drives and filter change-outs. Lighting upgrades also were installed in several locations. Although Y-12 is looking to implement light-emitting diode (LED) lighting in more locations, recent installations of the more efficient T-8 lighting have proven beneficial. Incandescent lighting is also being replaced with CFL lamps. Parking lot lighting is being replaced with LED fixtures. A new parking lot at the New Hope Center (NHC) uses LED flood fixtures and solar-powered crosswalks. A site-wide initiative to replace T-12 fixtures with T-8/T-5 is underway. During FY 2012, one storage facility received an upgrade from mercury vapor and incandescent lights to T-8 fixtures. Additional initiatives will be completed as funding allows. Most of these efforts also contribute to deferred maintenance reduction, which is a continuing concern for the site.

Specific initiatives that aided in the reduction of electricity consumption at Y-12 during FY 2012 included:

- installed plug-load and lighting occupancy sensors;
- replaced outdated HVAC units in two facilities;
- installed LED and T-8 fluorescent lighting;
- installed meters and facilitated employee awareness;
- relocated personnel to vacate four facilities; and
- gained utility efficiencies including reduction in steam pressure, chilled water production, condensate return, and a new nitrogen plant.

PROJECTED PERFORMANCE

As Figure 2.2 indicates, energy-related projects will be required in numerous areas to fully reduce energy across the plant. Both Facility and Utilities Management are diligently focusing on improvements to achieve the goal. The following efforts can substantially reduce energy in all areas.

- Demolish inactive facilities when funding is identified
- Execute the ECM identified from Energy Independence and Securities Act (EISA) assessments
- Implement delivery order #3 of the Energy Savings Performance Contract (ESPC) project for additional utility impact
- Support construction of UPF to reduce production facility footprint (post 2020)
- Implement new energy-efficient lighting technologies throughout the site

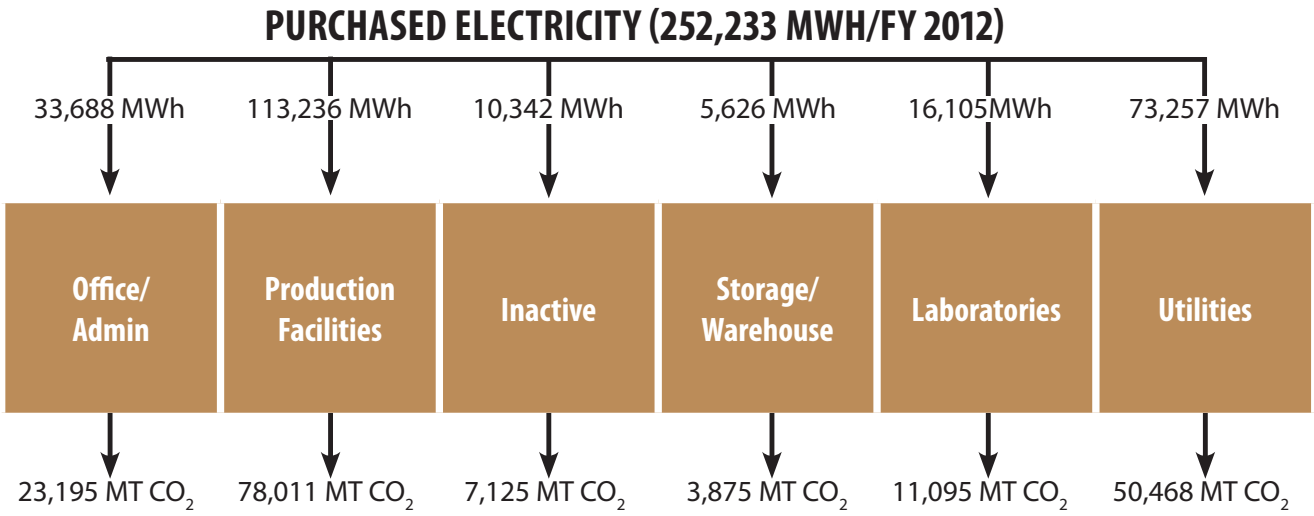


Fig. 2.2. Production facilities require the largest amount of purchased electricity.

- Include ECMs from both EISA and ESPC processes in out-year budget
- Implement low-cost/no-cost efforts, including component replacements, into routine maintenance activities
- Identify and consolidate data centers per Office of Management and Budget definition
- Continue installation advanced metering in accordance with meter plan
- Work with site lighting "team" to upgrade lighting to efficient technologies in several facilities
- Upgrade facilities for HPSB compliance and implement building retro-commissioning
- Continue implementation of cool roof applications
- Encourage energy reduction through tenant awareness, including training and monthly meter reporting

As shown in Figure 2.3, future reductions may be challenging due to a projected increase to the site's energy intensity. Current projections indicate increases may occur once UPF goes on-line but will again be reduced when an infrastructure reduction program can demolish the remaining facilities in the site transformation plan.

Although extensive funding is a challenge, the following energy initiatives are planned for FY 2013.

- Lighting upgrades in production facilities
- Meter installation in data centers, chiller buildings, and utility buildings

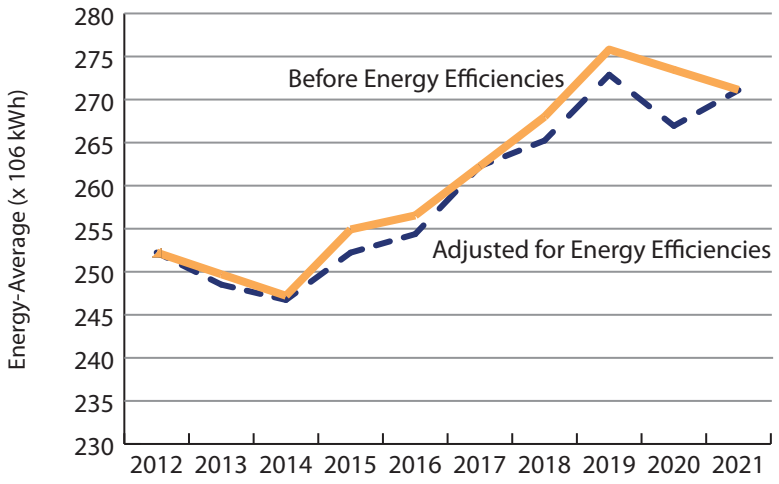


Fig. 2.3. The site energy usage is expected to increase over the next several years.

- Renovation of office areas and HVAC replacement in Building 9103
- Repair condensate return system for Buildings 9204-02 and 9212

Energy savings will be monitored, and proven reductions may be reinvested for funding new energy projects. Current budget levels place energy projects at risk. However, energy projects are included in out-year planning for the site and, where possible and with adequate return on investment, will be funded.

As noted in Figure 2.3, the site energy usage is expected to increase over the next several years, a direct result of UPF construction. Projections are captured in Table 2.1 and include an estimated energy increase for construction, a reduction due to gained efficiencies at the site, and shutdown and demolition of facilities in accordance with the Y-12 Master Site Plan and Twenty-five Year Site Plan.

2.2. EISA SECTION 432

Energy and water evaluations; benchmarking, project implementation, and measures

PERFORMANCE STATUS

Fiscal Year 2012 marked the end of the first four-year reporting cycle for EISA assessments. As reported via the Consolidated Tracking System (CTS) and CEDR tab 11, Y-12 has completed both energy and water assessments on 89% of energy consuming facilities at Y-12. A covered facility is defined as a facility that constitutes 75% of the energy consumption. Based on the requirement to assess 100% of the covered facilities at the site, Y-12 has successfully completed the first four-year requirement. Tables 2.2 and 2.3 provide data reported in the June 2012 CTS deliverable indicating the site's four-year performance. 2012 data has been included to reflect current information.

EISA ASSESSMENTS

Comprehensive water and energy audits at Y-12 are performed to meet EISA 432. These audits evaluate energy and water use and identify opportunities to reduce their use. The audits are performed by a former CAS inspector with energy training. The implementation cost for ECMs are developed using the Condition Assessment Information System (CAIS) database. The audit report component of this evaluation is divided into six sections. Recommended ECMs are included in CEDR tab 3.3 and were reported in CTS.

RE/RETRO-COMMISSIONING EVALUATION

A detailed evaluation has been completed for every audited facility. Energy- and water-related opera-

Table 2.1. Load forecast and projected energy use for Y-12

Load Forecast and Projected Energy Use for Y-12 and Associated Major Demand Growth Components (kWh x 10^6)										
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Total Electricity Consumption	252.23	249.71	247.21	244.74	242.29	239.87	237.47	235.10	232.75	230.4194
Demand Growth Components	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
UPF				10.18	14.25	22.39	30.53	40.71	40.71	40.708
Energy Efficiencies		-1.203	-0.489	-2.698	-2.166	-0.002	-2.76	-2.921	-6.51	-0.03272

**Assumptions for UPF include incremental increases beginning in FY 2014 due to construction, with beneficial occupancy in 2020. Transition efforts will begin post 2020.*

Table 2.2. Y-12 Site and covered facilities characteristics

Site Characteristics				Covered Facilities Characteristics	
Fiscal Year	Total Energy Consumption (10^6 x Btu/Yr)	Potable Water Consumption (10^6 x Btu/Yr)	Gross SF	Covered Energy Consumption (10^6 x Btu/Yr)[2]	Covered SF
2012	2,113,550.829	962.714	6,585.240	2,085,707.76	2,704,231
2011	2,307,470.164	997.204	7,143,781	2,211,603.060	2,704,231
2010	2,488,319.667	1,071.056	7,184,211	2,488,319.667	7,184,211
2009	2,682,214.111	1,181.431	7,146,385	2,682,214.111	7,146,385
2008	2,348,073.153	1,171.759	7,037,070	2,348,073.153	7,037,070

Table 2.3. EISA energy and water evaluations

Energy and Water Evaluations			
EISA S432 Reporting Year	Completed Energy Evaluations (SF)	Percent Progress Towards Goal (%)	Completed Water Evaluation (SF)
2012	2,345,792	115%	2,345,792
2011	302,193	29%	302,193
2010	270,218	17%	270,218
2009	201,705	7%	201,705

tions and maintenance (O&M) and optimization have been identified in some facilities. The projected savings and estimated implementation cost are listed in the O&M section of the audit report. More capital intensive, retrofit opportunities are listed in the ECM section of the audit report. As required by EISA 432, Y-12 provides an annual report of assessment progress and potential ECMs.

Although independent verification and commissioning is not currently performed, systems within facilities are evaluated and considered part of the ongoing CAS and the EISA assessments. As facilities are upgraded, the site will consider using an independent commissioning agent for this purpose. At present, the Jack Case and New Hope Centers have a commissioning agent that performs continuous commissioning. Y-12 has access to the reports and utilizes the information as part of the EISA evaluation. New facilities placed into service in the last several years have a commissioning element in the project acceptance criteria. This information is included in the site Reliability Centered Maintenance effort.

PORTFOLIO MANAGER

Y-12 began entering facilities into the Environmental Protection Agency (EPA) Portfolio Manager in FY 2011. A concerted effort to capture monthly meter data and enter Guiding Principle compliance began in FY 2012. At present, 103 facilities have been entered and are being tracked for compliance. Data from the portfolio manager is shared with NNSA Sustainability contacts and is automatically migrated to the CTS for annual reporting in June.

MEASUREMENT & VERIFICATION

The Measurement and Verification (M&V) methodology currently employed for the ESPC project is consistent with DOE Federal Energy Management Program (FEMP) document, *M&V Guidelines: Measurement and Verification for Federal Energy Projects, Version 3.0.*

The ESPC delivery order #2 entered into the first year of performance in February 2012. The results of the M&V efforts and the effect on savings will be summarized in the FY 2013 annual report. If a savings shortfall is discovered or installed equipment fails to perform as specified in the final proposal, the annual report will propose a remedy to minimize the potential for lost savings. Additionally, utilities, programs and the energy savings company (ESCO) participate in monthly reviews to discuss savings and/or shortfalls to rectify issues in a timely manner.

The M&V methodology balances the cost and benefit of long-term monitoring to ensure guaranteed savings occur. Energy savings are determined by comparing the energy and O&M costs before and after the installation of the ECMs.

In general,
Cost Savings = Baseline Costs ($/Year) – Post-Installation Costs ($/Year)

Table 2.4 presents the annual energy and energy-related savings for the ESPC delivery order #2, and Table 2.5 summarizes the ESPC M&V plan required under the contract.

Additional M&V activities are performed on energy reduction efforts implemented in Jack Case this year. Monthly meter data is evaluated to ensure reductions are still being realized. Additionally, spot checks of office plug-load installations are performed to verify compliance with watt-stopper installation and usage of space heaters and fans.

PROJECTED PERFORMANCE

FOUR-YEAR PLAN FOR EISA ASSESSMENTS

In accordance with EISA of 2007, all agencies must identify all "covered facilities" that constitute at least 75% of the agency's facility energy use. According to the *Facility Energy Management Guidelines and Criteria for Energy and Water Evaluations in Covered Facilities*, Federal agencies are to identify covered facilities where it makes the most sense to concentrate their efforts. The recommended approach for this is to rank facilities according to highest energy use. This list will include all of the facilities where this energy management approach makes sense with 75% as a required minimum threshold.

Table 2.4. Energy savings performance contract annual savings

Total Energy Savings (MBtu)	Electric Energy Savings (kWh)	Electric Demand Savings (kW)	Natural Gas Savings (MBtu)	Potable Water Savings (Gallons)	Other Energy Savings (MBtu)	Total Energy and Water Cost Savings	Other Energy-Related O&M Cost Savings	Total Cost Savings
ECM 2.1: Chiller Plant Improvement								
33,590	9,841,804	9,743	-	-	-	$440,424	-	$440,424
ECM 7.1: Condensate Return System Modifications								
30,890	-131,614	-180	31,339	52,012,781	-	$361,612	$3,325	$364,937
ECM 7.2: Steam Trap Improvements								
44,823	-	-	44,823	-	-	$428,357	-	$428,357
ECM 16.1: Demineralized Water Production Facility Replacement								
1,757	336,611	-104	609	2,988,588	-	$48,886	$727,465	$776,351
Total								
111,060	**10,046,801**	**9,459**	**76,771**	**55,001,369**	**-**	**$1,279,278**	**$730,790**	**$2,010,068**
Guaranteed Annual Cost Savings:						**$1,902,062**		

Table 2.5. Measurement and Verification Plan for ESPC

ECM	ECM Description	M&V Option	Summary of M&V Plan
2.1	Chiller Plant Improvement	FEMP Option B	The advanced electricity and chilled water meters installed for the development of this ECM are utilized throughout the performance period to validate system performance. The metered chilled water plant electricity input and chilled water output are used along with the recorded dry bulb temperature to create the performance year regression model. The data is normalized using the 30-year average weather data for comparison with the baseline regression model. In addition, the Performance Assurance engineer visually inspects the installed equipment, reviews control system programming and energy saving algorithms, reviews the UMS-based metered data, reviews the chiller plant logs, and reviews related maintenance and repair records quarterly.
7.1	Condensate Return System Modification	FEMP Option B	Manufacturer-provided performance data is reviewed to ensure the new equipment meets or exceeds the performance criteria set forth in the final proposal. The Commissioning Report is reviewed to ensure the equipment has been installed and is operating as intended. Various measurements, such as pump motor electricity demand (kW) and condensate water return flow rate and temperature, are made during commissioning to ensure the system is operating as intended. If the new equipment fails to perform as specified in the final proposal, necessary adjustments are made to the system or the savings calculations are modified. The advanced condensate meter is utilized throughout the performance period to validate system performance. In addition, the Performance Assurance engineer visually inspects the installed equipment, reviews the boiler plant logs, and reviews related maintenance and repair records quarterly. Savings calculations are updated annually.
7.2	Steam Trap Improvement	FEMP Option A	During the performance period, the Performance Assurance engineer inspects the outdoor steam distribution system quarterly and makes thermal measurements to identify leaking steam traps. Approximately 25% of the new steam traps installed inside buildings are visually inspected with thermal testing quarterly to ensure the devices are operable.
16.1	Demineralized Water Production Facility Replacement	FEMP Option B	The new plant has advanced metering interfaced to the Y-12 Site UMS, allowing monitoring of the electrical supply, potable water supply, treated water production, and wastewater discharge. In addition to the meters, various points throughout the water treatment process are trended by the control system. The advanced meters are utilized throughout the performance period to validate system performance. In addition, the Performance Assurance engineer visually inspects the installed equipment, reviews the plant logs and reviews related maintenance and repair records quarterly. Savings calculations are updated annually.

Table 2.6. Y-12 EISA-covered facilities

Buildings	EISA-Covered Building GSF	Estimated Total Energy Used (10^6 x Btu/Yr)	Anticipated or Actual Energy Evaluation Date	Anticipated or Actual Water Evaluation Date	Anticipated or Actual Evaluation Type/Level
9212	442,317	534,210	Jul-12	Jul-12	ASHRAE Level 2
9767-13	20,724	83,317	Apr-11	Apr-11	ASHRAE Level 2
9767-10	12,000	62,998	Mar-11	Mar-11	ASHRAE Level 2

Buildings	EISA-Covered Building GSF	Estimated Total Energy Used (10^6 x Btu/Yr)	Anticipated or Actual Energy Evaluation Date	Anticipated or Actual Water Evaluation Date	Anticipated or Actual Evaluation Type/Level
9401-07	19,200	997,865	2013	2013	ASHRAE Level 2
9215	188,729	53,726	Jan-12	Jan-12	ASHRAE Level 2
9998	152,134	43,258	Feb-12	Feb-12	ASHRAE Level 2
9767-04	6,893	40,842	Mar-11	Mar-11	ASHRAE Level 2
9204-02	324,085	38,674	Mar-12	Mar-12	ASHRAE Level 2
301 BCR	411,837	30,518	Oct-11	Oct-11	ASHRAE Level 2
9201-01	270,988	23,822	Apr-12	Apr-12	ASHRAE Level 2
9995	81,655	23,218	Jan-12	Jan-12	ASHRAE Level 2
9204-02E	172,892	20,309	Jul-12	Jul-12	ASHRAE Level 2
9767-11	4,880	19,150	Sep-12	Sep-12	ASHRAE Level 2
9201-05N	78,049	15,355	May-12	May-12	ASHRAE Level 2
9767-08	4,847	14,991	Apr-11	Apr-11	ASHRAE Level 2
9720-82	153,001	14,512	2013	2013	ASHRAE Level 2
1418	-	14,474	2013	2013	ASHRAE Level 2
602 SCA	137,758	13,512	2013	2013	ASHRAE Level 2
9767-12	3,089	12,121	2013	2013	ASHRAE Level 2
9737	98,017	11,707	Sep-12	Sep-12	ASHRAE Level 2
9201-05W	70,005	10,728	Jun-12	Jun-12	ASHRAE Level 2
9201-03	191,978	10,495	May-11	May-11	ASHRAE Level 2

The listing of covered facilities and associated energy consumption identified for Y-12 is provided in Table 2.6 and in the CEDR tab 11.

Although previous assessments were performed by ESCOs and FEMP, Y-12 did not perform EISA assessments internally prior to FY 2011. An approach was presented to NPO in November 2010 to begin implementation of the required assessments. The desired assessment schedule would encompass three fiscal years, with the understanding that additional facilities could be added to the schedule as needed. Table 2.7 provides a list of facilities and includes evaluations for "covered facilities," includes assessments for potential energy savings within HPSB candidates, and includes the chilled water process system.

In addition to the CTS reporting each year, the assessment findings are provided as a report to NPO. The following information is provided within each narrative:

- a description of each facility, including construction details, size, and age;
- a review of the energy consumption (if available) from the 2003 baseline to today;
- an overview of the metering capabilities/plans for implementation;
- a narrative description of potential ECMs, including
  - description of each measure,
  - estimated cost to implement,

Table 2.7. EISA assessment schedule

EISA Assessment Schedule				
FIMS ID	Property ID	Property Name	GSF	Schedule
Completed in FY 2011				
98357	9103	Central Computing Facility	110,248	
98369	9113	Office Building	59,299	
98374	9119	Office Building	73,381	
98634	9767-04	Utilities	6,893	
98373	9117	Central Computing Facility	19,648	
98639	9767-10	Chiller Building	12,000	
98642	9767-13	Chiller Building	20,724	
98377	9201-03	Office Building Maintenance	191,978	
			305,282	
Completed in FY 2012				
204358	301BCR	Jack Case Center	411,837	
98375	9201-01	Production (Alpha-1)	270,988	
98397	9215	Production	188,729	
98801	9995	Plant Laboratory	81,655	
98803	9998	Machine Shops	152,134	
98380	9201-05N	Production (Alpha-5N)	78,049	
133777	9201-05W	Machine Shop	70,005	
98385	9204-02	Production (Beta-2)	324,085	
98395	9212	Production	442,317	
98388	9204-02E	Production (Beta-2E)	172,892	
98621	9737	Laboratory/Office	98,017	
98637	9767-08	Chiller	4,847	
98640	9767-11	Chiller Building	4,880	
98381	9202	Dev. Labs. & Offices	157,228	
98382	9203	Dev. Labs. & Offices	31,107	
			2,603,450	
98641	9767-12	Chiller Bldg., 9737	3,089	FY2013
98370	9114	Office Building	36,901	FY2013
98371	9115	Office Building	16,415	FY2013
98372	9116	Office Building	16,415	FY2013
207482	9401-07	Steam Plant	19,200	FY2013
207178	9720-82	Storage Building	153,001	FY2013
202699	9733-05	Technical Support Facility I	13,322	FY2014

EISA Assessment Schedule				
FIMS ID	Property ID	Property Name	GSF	Schedule
Completed in FY 2011				
98598	9723-27	Changehouse	11,670	FY2013
98599	9723-28	Changehouse	10,252	FY2013
98600	9723-31	Changehouse	27,532	FY2013
98601	9723-33	Changehouse	10,771	FY2013
200821	9723-34	Changehouse	6,700	FY2013
98529	9710-03	Guard Headquarters	41,496	FY2013
			248,995	

– estimated annual energy/water consumption and cost savings, and
– payback period.

COVERED FACILITIES

CEDR Section 11 has been revised to reflect the existing "covered facilities" for Y-12. The energy manager is a participating member of the site planning team and is engaged in activities for demolition and new construction. The EISA-covered facilities are evaluated against the Twenty-five Year Site Plan and Master Site Plan. As changes to the inventory are planned, energy usage is evaluated to ensure the 75% compliance is maintained. As facilities are made cold and dark, the Facility Information Management System (FIMS) is updated to reflect the energy consuming field accordingly. Current efforts for new construction and demolition efforts are included in CEDR tab 3.4.

2.3. METERING

Y-12 currently has numerous standard and advanced electrical meters located on various facilities throughout the site. Efforts to read meters and monitor commodity information have intensified in recent years. The actual electricity costs for the plant are based on total energy consumption as defined by TVA revenue meters in the ELZA 1 substation. Y-12 does not use a space chargeback system, and individual building metering is not currently used for such purposes. Monitoring of the ELZA I substation electricity usage is used to ensure accurate billing from TVA, and develop the annual utilities budget.

BTU meters were installed on components of the chilled water system as part of the ESPC project, and a minimal number of standard water meters are installed throughout the plant. Natural gas meters are located at the steam plant, and on the boilers.

PERFORMANCE STATUS

Appropriate locations for installation of metering are determined by evaluating the utilization, life cycle, and energy load of buildings. This evaluation helps define the "maximum extent practicable" for meter installations and includes the requirements for both EPACT05 and HPSB facilities. During FY 2012, Y-12 received funding from EMIP to install meters in support of the EPAct05 goals. Efforts were concentrated on 13.8-kV advanced meter installations; additional efforts were focused on connectivity of existing and new meters to UMS. The project completed installation of 76 meters and connected a total of 118 meters to UMS. Although the number of buildings completed under the EMIP project was less than originally anticipated, the actual number of meters for each building was greater than anticipated. In many cases, multiple meters were required to complete a single facility.

Recent focus has been on installation of new meters and connectivity to UMS. As these connections have progressed, data is being migrated to the energy management module for eventual use in site metrics, data reporting and energy conservation measures. Meter data is also entered into the Portfolio Manager for benchmarking and reporting purposes.

Meter data is distributed to facility management and building tenants for educational purposes. Since a space chargeback system is not in use, the monthly cost for electricity if billed individually is provided with the total consumption. As more facilities are metered, and historical trending is available, metrics will be provided to monitor progress towards goals at the building level. To further employee awareness, competitions between buildings and organizations may be implemented to emphasize the impact of employees.

See Appendix A for the Y-12 Metering Plan Spreadsheet.

PROJECTED PERFORMANCE

The focus in 2012 was on 13.8-kV and the EISA-covered facilities. Projected efforts for FY 2013 include BTU metering for chilled water, and additional electric meters to complete the EISA-covered facilities. Sub-metering is also planned for chilled water pumps and cooling towers. Metering for HPSB candidates are not funded and remain a concern for the site. This issue prevents adequate monitoring of energy for the required 20% reduction. It is also impacting required reporting of power utilization effectiveness (PUE) on the site data centers. During FY 2013, the site plans to install electric meters for three HPSB candidates as well as electric, chilled water, and steam metering for the data centers.

ELECTRICITY METERING

Electricity metering will continue to be the primary focus of meter installations during FY 2013. The electricity metering goals are shown in Table 2.8. Minimal funding has been identified for FY 2013 electric meter installations. Efforts will include HPSB candidate facilities and the main data centers at Y-12. Installations are also focused on facilities

Table 2.8. Electric meter summary by fiscal year

	Standard Meters			Advanced Meters			Appropriate Buildings	
Fiscal Year	Cumulative Number of Buildings Metered	Cumulative Electricity Metered (kWh)	Cumulative % of Electricity Metered	Cumulative Number of Buildings Metered	Cumulative Electricity Metered (kWh)	Cumulative % of Electricity Metered	Number of Appropriate Buildings for Metering	Cumulative % of Appropriate Buildings Metered *
2011 Report	45	257,168,139	98%	6	22,371,312	2%	37	141%
2012 Actual	24	23,442,960	10%	28	190,644,016	82%	37	141%
2013 Planned	24	23,442,960	10%	36	196,303,495	84%	37	162%
2014 Planned	24	23,442,960	10%	49	198,470,091	85%	37	197%
2015 Planned	24	23,442,960	10%	61	203,750,091	87%	37	230%
2016 Planned	24	23,442,960	10%	64	204,237,677	105%	38	232%
FY 2012 Total Site Electricity Consumption (kWh)					233,717,366			
Progress Towards FY 2015 SSPP Goal					94%			

**Appropriate buildings, as defined by the calculation spreadsheet, does not necessarily correspond to the site requirement to install meters. In many cases, although not cost effective as determined by the calculation, it is in the best interest of the site to install meters.*

not currently metered. Existing standard meters are not planned for replacement unless deemed necessary.

Incremental progress will continue within plant budgets beyond 2013. If additional funding is identified, Y-12 will evaluate the remaining facilities and determine the appropriate path forward for additional meter installations. Future revisions of this plan will be developed in concert with the *Y-12 Master Plan* and *Twenty-five Year Site Plan* to ensure facilities are on the enduring facility list and verify if metering is cost-effective.

NATURAL GAS METERING

Natural gas is currently consumed in three production facilities and the Y-12 Steam Plant. Meters are currently installed at the Station C reduction station on Bethel Valley Road, on each boiler within the steam plant, at 9204-02, and at Area 5 (not facility specific). This existing metering configuration surpasses the 10% and 90% requirements for EPAct05. The meters, however, are not advanced and currently not read, so installation of advanced gas meters is planned to meet the full intent of the goal. The natural gas metering goals are shown in Table 2.9. Current plans include installation of an advanced gas meter at the Steam Plant to capture total consumption and at each separately identified facility.

STEAM METERING

Steam is vital to the operation of the Y-12 Complex. It is the primary source of building heat, both for personnel comfort and for equipment freeze protection. Freeze protection includes protection of critical services (e.g., fire systems and heat tracing of outdoor, above-ground water systems). Other uses of steam in support of the production mission include the regeneration of dehumidification systems and the operation of steam-powered ejectors. Y-12 generates steam from the new natural gas-fired Y-12 Steam Plant (9401-07); the site does not separately purchase steam from a commercial utility district. As a result, there is no cost involved with steam other than from natural gas and fuel oil. The site, however, realizes savings can be achieved from steam production by understanding and reducing consumption.

Table 2.9. Natural gas meter summary by fiscal year

	Standard Meters			Advanced Meters			Appropriate Buildings	
Fiscal Year	Cumulative Number of Buildings Metered	Cumulative Natural Gas Metered (BTU[6])	Cumulative % of Natural Gas Metered	Cumulative Number of Buildings Metered	Cumulative Natural Gas Metered (BTU[6])	Cumulative % of Natural Gas Metered	Number of Appropriate Buildings for Metering	Cumulative % of Appropriate Buildings Metered
2011 Report	1*		100%	1		100%	4	25%
2012 Actual	1*	1,241,092.064	0%	1	992,873.651	100%	4	25%
2013 Planned				4	1,241,092.064	100%	4	100%
2014 Planned				4	1,241,092.064	100%	4	100%
2015 Planned				4	1,241,092.064	100%	4	100%
2016 & Beyond				5	1,365,201,270	100%	5	100%
FY 2012 Total Site Natural Gas Consumption (BTU[6])					1,241,092.064			
Progress Towards FY 2015 SSPP 90% Goal					25%			

**Standard meter at point of service measures all NG.*

Table 2.10. Steam meter summary by fiscal year

	Standard Meters			Advanced Meters			Appropriate Buildings	
Fiscal Year	Cumulative Number of Buildings Metered	Cumulative Steam Metered (BTU[6])	Cumulative % of Steam Metered	Cumulative Number of Buildings Metered	Cumulative Steam Metered (BTU[6])	Cumulative % of Steam-Metered	Number of Appropriate Buildings for Metering	Cumulative % of Appropriate Buildings Metered*
2011 Actual	2	58,602,565	1%	0	-	6%	11	27%
2012 Actual	2	58,602,565	1%	1		6%	11	27%
2013 Planned	2	58,602,565	1%	11	750,450,671	64%	11	118%
2014 Planned	2	58,602,565	1%	23	886,091,450	74%	11	227%
2015 Planned	2	58,602,565	1%	25	1,013,286,479	84%	11	245%
2016 & Beyond	2	58,602,565	1%	26	1,124,528,037	93%	11	255%
FY 2012 Total Site Steam Consumption (BTU[6])					1,271,950,290			
Progress Towards FY 2015 SSPP 90% Goal					1%			

**Appropriate buildings, as defined by the calculation spreadsheet, do not necessarily correspond to the site requirement to install meters. In many cases, although not cost effective as determined by the calculation, it is in the best interest of the site to install meters.*

Meters are currently installed at two end-user locations and in the Steam Plant. When considering new applications, it will be noted that some facilities have a pass-through installation from other facilities. This significantly complicates the ability to separately meter some areas. As the site continues analyzing the system, we will focus on installation of steam meters to comply with the FY 2015 goals (Table 2.10). Not all facilities currently using steam will be considered, due to future transformation of the site. Only those facilities determined to be enduring will be considered for meters.

POTABLE WATER METERING

Y-12's potable water system supplies numerous Y-12 facilities and supports:

- fire protection systems (e.g., sprinkler systems, fire hydrants, and emergency fire-fighting water storage);
- sanitary water systems (e.g., emergency showers and eyewash stations, personnel decontamination facilities, drinking fountains, restrooms, changehouses, and the cafeteria);
- process water systems (e.g., feedwater for the steam plant and demineralizer, makeup water for cooling towers, process cooling, cleaning and decontamination systems, chemical makeup systems, laboratories, and other miscellaneous needs); and
- 16-in. emergency backup water feed for ORNL.

Meters are installed on the potable water tanks and on various facilities within the site. A minimal number of meters within the facilities are currently read and, although a verified listing does not exist, Y-12 is working on verifying all locations of water meters. Future metering will include advanced meter installations for all enduring facilities, as applicable, to comply with the 2015 goal (Table 2.11). Additionally, new advanced meters will be installed on the potable water tanks, since the existing meters are flow meters, rather than totalizing meters.

Table 2.11. Potable water meter summary by fiscal year

	Standard Meters			Advanced Meters			Appropriate Buildings	
Fiscal Year	Cumulative Number of Buildings Metered	Cumulative Water Metered (Gal)	Cumulative % of Water Metered	Cumulative Number of Buildings Metered	Cumula-tive Water Metered (Gal)	Cumulative % of Water Metered	Number of Appropriate Buildings for Metering	Cumulative % of Appropriate Buildings Metered*
2011 Report	3	3,797,000	>1%	2	245,000		17	29%
2012 Actual	4	7,830,836	1%	2	6,539,937	1%	22	27%
2013 Planned	4	7,830,836	1%	8	22,158,003	3%	22	55%
2014 Planned	4	7,830,836	1%	17	33,727,648	4%	22	95%
2015 Planned	4	7,830,836	1%	27	207,848,219	22%	22	141%
2016 & beyond	4	7,830,836	1%	34	275,687,364	29%	22	173%
FY 2012 Total Site Water Consumption (Gal)					962,714,000			
Progress Towards FY 2015 SSPP Goal					27%			

**Appropriate buildings, as defined by the calculation spreadsheet, do not necessarily correspond to the site requirement to install meters. In many cases, although not cost effective as determined by the calculation, it is in the best interest of the site to install meters.*

CHILLED WATER METERING

Y-12 has many functional needs for chilled water, including air-conditioning and dehumidification systems required for maintaining environmental conditions such as temperatures and humidity within production facilities (e.g., precision machine shops, low-humidity areas, inspection areas, and general manufacturing facilities); process cooling applications (e.g., air compressor aftercoolers, ultrasonic cleaners, spindle air, and machine tool coolant systems); and conventional air-conditioning for offices, laboratories, and other support facilities. There have previously been no attempts to capture or monitor total chilled water generated or amounts distributed to facilities. BTU meters are currently installed in Buildings 9767-08, 9767-11, 9767-13, and 9720-82 but do not capture all output from the facilities. Additional BTU meters are planned for chiller buildings, production buildings, and other known large consumers of chilled water (Table 2.12).

DATA CENTERS

Y-12 has two main, onsite data centers. They were not completed with EMIP funding as originally anticipated, but are both priorities for installation with FY 2013 internal funding.

2.4. COOL ROOFS

The Y-12 site is meeting the requirements for cool roof implementation. Since 2002, more than $40 million of Y-12 support funding has been invested in roofing replacements, which has resulted in more than 28 acres of new roofing across Y-12. This new roofing has increased the average remaining roof life to above 10 years for the 3.1 million ft² roofing portfolio. Y-12 has eliminated approximately 130 of 225 CAIS deficiencies that resulted in the retirement of more than $48 million in deferred maintenance reduction across the site.

The cool roof technology began full implementation at Y-12 in FY 2008, and all future roof replacements will use this roofing technique where practicable and economically feasible (Fig. 2.4).

PERFORMANCE STATUS

Most roofing replacement work at Y-12 is performed under the Roof Asset Management Program. Y-12 investments in roofing have resulted in more than 28 acres of new roofing across the complex; 18% of Y-12's total roof areas consist of cool roof applications, with additional cool roof projects being implemented as funding becomes available. The buildings listed in Table 2.13 have all had cool roof installations.

Table 2.12. Chilled water meter comparison by fiscal year

	Standard Meters			Advanced Meters			Appropriate Buildings	
Fiscal Year	Cumulative Number of Buildings Metered	Cumulative Chilled Water Metered (Gal)	Cumulative % of Water Metered	Cumulative Number of Buildings Metered	Cumulative Chilled Water Metered (Gal)	Cumulative % of Chilled Water Metered	Number of Appropriate Buildings for Metering	Cumulative % of Appropriate Buildings Metered
2012 Actual	0	0	0%	3	18,816.48	1%	18	17%
2013 Planned	0	0	0%	7	57,196.58	4%	18	39%
2014 Planned	0	0	0%	18	328,529.27	24%	18	100%
2015 Planned	0	0	0%	22	878,143.67	65%	18	122%
2016 & Beyond	0	0	0%	23	1,188,247.67	88%	18	128%
					FY 2012 Total Site Chilled Water Consumption (Gal)		1,347,112.8	
					Progress Towards FY 2015 SSPP 90% Goal		17%	

Table 2.13. Cool roof installations

Property ID	Building GSF	Total Roof Projected Area (GSF)	Reflective Area (GSF)	Total Cool Roof Area (GSF)
9103	110,248	39,288	38,291	38,291
9113	59,299	21,021	21,021	21,021
9117	19,648	19,648	19,648	19,648
9119	73,381	18,345	18,345	18,345
9203	31,107	26,208	17,703	17,703
9212	442,317	157,733	95,300	95,300
9215	188,729	45,900	17,000	17,000
9998	152,134	48,300	48,300	48,300
9201-01	270,988	71,309	52,000	52,000
9201-5W	70,005	48,000	48,000	48,000
9204-2E	172,892	66,869	56,311	56,311
9225-03	9,260	9,260	9,260	9,260
9712-01	4,697	4,697	4,697	4,697
9712-1N	10,509	10,509	10,509	10,509
9712-01S	9,319	9,319	9,319	9,319
9723-34	6,700	6,700	6,700	6,700
9733-05	13,322	13,322	13,322	13,322
				485,726

Fig. 2.4. Buildings 9204-02E and 9103 cool roof installations.

PROJECTED PERFORMANCE

During FY 2013 sections of Buildings 9212 and 9723-31 are scheduled for cool roof installations. As indicated in Table 2.14, there are 16 additional buildings that have been identified as out-year candidates for cool roofs and will be completed as funding becomes available.

2.5 HIGH PERFORMANCE AND SUSTAINABLE BUILDINGS

Y-12 is diligently working to meet the HPSB goal. Successful achievement of the Guiding Principles is contingent on sufficient funding and resources to implement identified projects. Candidate buildings that will meet the Guiding Principles are aged and approaching end of life, and although projects are identified for the buildings, the effort is beyond anticipated funding levels.

Incremental steps will be taken each fiscal year to incorporate sustainability replacements into the budget profile. Until a definitive funding source is identified, it is uncertain if Y-12 will achieve the FY 2015 targets as identified.

PERFORMANCE STATUS

Y-12 successfully completed all the Guiding Principles for HPSB for JCC in FY 2012 (Fig. 2.5). Constructed in 2007 and designed to be Leadership in Energy and Environmental Design (LEED) compliant, the challenge in meeting the Guiding Principles was the 20% energy reduction requirement. When the effort began, JCC showed a 7% reduction from the 2007 baseline as noted in the EPA Portfolio Manager. Initiatives to reduce energy were implemented, including:

- night and weekend HVAC setbacks,
- occupant sensors,
- plug-load smart strip installation, and
- modifications to cafeteria operations.

The facility reached the 20% reduction in March 2012 and has continued to improve steadily. As of the September 2012 meter readings, the facility was at 30.1% reduction, surpassing expectations.

Table 2.14. Planned cool roof installations

Property ID	Building GSF	Total Roof Projected Area (GSF)	Reflective Area (GSF)	Remaining Roof Area (GSF)
9202	157,228	20,200	5,600	14,600
9212	442,317	157,733	95,300	62,433
9723-31	27,532	12,960	0	12,960
9203	31,107	26,208	17,703	8,505
9201-03	191,978	70,582	41,549	29,033
9201-01	270,988	71,309	52,000	19,309
9616-07	26,054	22,969	0	22,969
9105	7,667	4,290	0	4,290
9202	157,228	20,200	5,600	14,600
9710-02	27,673	17,720	0	17,720
9404-10	3,380	3,380	0	3,380
9995	95,373	42,520	0	42,520
9727-04	1,752	1,752	0	1,752
9723-25	18,974	9,487	0	9,487
9815	1,752	1,047	0	1,047
9204-02	324,085	106,500	0	106,500

Ninety-eight buildings have been identified in the Facility Information Management System that meet the 5,000 GSF and enduring status. The 15% building count requirement indicates 12 buildings must be targeted for HPSB compliance (Table 2.15). The site currently has one LEED facility and one that has met the HPSB criteria for a 2% accomplishment by building count and 12% by square footage.

All facility data has been entered into the portfolio manager; Guiding Principle points and energy data are tracked monthly.

Although there continues to be uncertainty regarding the metric for the 2015 goal, Y-12 has identified buildings for best application of the Guiding Principles. Once the site meets the goal of 15% compliance, Y-12 will continue assessing and renovating enduring buildings to reach 100% Guiding Principle compliance.

As additional funding is identified, the site will continue to make progress towards the 2015 goal and implement improvements to the facilities.

Fig. 2.5. Jack Case Center met all Guiding Principles in 2012.

Table 2.15. HPSB candidate facilities

Building	Building Type	GSF	Year Target
602 SCA	New Hope Center	137,758	Complete
301 BCR	Jack Case Center	411,837	Complete
9113	Office Building	59,299	2014
9119	Office Building	73,381	2014
9710-03	Guard Headquarter	41,496	2014
9733-05	Office Building	13,322	2014
9106	Offices	15,990	2015
9109	Offices	9,788	2015
9114	Office Building	36,901	2015
9115	Office Building	16,415	2015
9116	Office Building	16,415	2015
9117	Central Computing	19,648	2015
9103	Central Computing	110,248	2015

PROJECTED PERFORMANCE

Y-12 will focus on the following facilities during FY 2013:

- 9113,
- 9119, and
- 9103.

The site has to meet HPSB criteria in an additional 12 buildings to meet the FY 2015 goal. Y-12 is incorporating cost-effective, innovative building strategies, such as cool roofs, low-flow fixtures, advanced metering, and energy audits, to reduce the consumption of energy, water, and materials. Planned activities include replacing outdated equipment and furnishings, upgrading to energy-efficient and sustainable building components, and updating obsolete equipment to current technology. Although out-year projects are above FY 2013–2015 baseline budgets, the site will continue to execute energy projects as funding becomes available or as they can be accomplished incrementally within existing funding profiles. Table 2.16 provides a listing of planned projects for identified HPSB candidate facilities and an estimated cost for implementation:

2.6 NEW CONSTRUCTION

The proposed UPF is an integral part of the long-range transformation plan to consolidate and

Table 2.16. HPSB candidate facilities project listing

Asset	Project	Quantity	Estimate
9113			
	Upgrade elevator controls	1	$9,500
	New HVAC units SEER 13	6	$372,000
	New water saving urinals	12	$13,800
	New water saving toilets	28	$48,300
	New energy efficient lighting fixtures	587	$130,784
	Install occupancy sensors in offices and common areas	150	$30,600
	Replace carpet with tile (IAQ)	26,200	$290,820
	Paint interior surfaces(IAQ)	87,200	$212,187
	Install meters as needed		$25,000
	Install new windows	500	$197,500
9119			
	Upgrade elevator controls	2	$19,000
	New HVAC units SEER 13	8	$496,000
	New water saving urinals	12	$13,800
	New water saving toilets	28	$48,300
	New energy efficient lighting fixtures	991	$220,795
	Install occupancy sensors in offices and common areas	250	$51,000
	Replace carpet with tile (IAQ)	56,368	$625,685
	Paint interior surfaces (IAQ)	101,824	$247,772
	Install meters as needed		$25,000
	Install new windows	544	$214,880
9103			
	New HVAC units SEER 13	6	$372,000
	Hands-free fixtures sinks	34	$17,510
	New water saving urinals	9	$10,350
	New water saving toilets	32	$55,200
	New energy efficient lighting fixtures	1,137	$253,324
	Install occupancy sensors in offices and common areas	250	$51,000
	Replace carpet with tile (IAQ)	8,798	$97,658
	Paint interior surfaces (IAQ)	50,000	$121,667
	Install meters as needed	2	$41,374
	Install new windows	275	$108,625
9117			
	New HVAC units SEER 13	5	$37,875
	Hands-free fixtures sinks	9	$4,635
	New water saving urinals	2	$2,300
	New water saving toilets	6	$10,350
	New energy efficient lighting fixtures	104	$23,171
	Install occupancy sensors in offices and common areas	20	$4,080
	Paint interior surfaces (IAQ)	22,400	$54,507
	Install meters as needed	1	$20,687

Asset	Project	Quantity	Estimate
	Install new windows	24	$9,480
9710-03			
	New HVAC units SEER 13	6	$372,000
	Install new white roof	22,572	$48,304
	Hands-free fixtures sinks	15	$7,725
	New water saving urinals	7	$8,050
	New water saving toilets	12	$20,700
	New energy efficient lighting fixtures	306	$68,177
	Install occupancy sensors in offices and common areas	45	$9,180
	Replace carpet with tile (IAQ)	960	$10,656
	Paint interior surfaces (IAQ)	40,512	$98,579
	Install meters as needed	2	$41,374
	Install new windows	181	$71,495
9106			
	Install new white roof	8,428	$18,036
	Hands-free fixtures sinks	13	$6,695
	New water saving urinals	2	$2,300
	New water saving toilets	9	$15,525
	New energy efficient lighting fixtures	228	$50,798
	Install occupancy sensors in offices and common areas	50	$10,200
	Replace carpet with tile (IAQ)	1,170	$12,987
	Paint interior surfaces (IAQ)	32,090	$78,086
	Install new windows	24	$9,480
9109			
	New HVAC units SEER 13	6	$60,600
	Install new white roof	4,894	$10,473
	Hands-free fixtures sinks	10	$5,150
	New water saving urinals	2	$2,300
	New water saving toilets	7	$12,075
	New energy efficient lighting fixtures	138	$30,746
	Install occupancy sensors in offices and common areas	35	$7,140
	Replace carpet with tile (IAQ)	4,494	$20,000

Asset	Project	Quantity	Estimate
	Paint interior surfaces (IAQ)	20,288	$49,367
	Install new windows	36	$14,220
9114			
	Replace flooring 2nd floor restrooms	353	$3,918
	Replace sinks/countertops 2nd floor restrooms	13	$5,481
	Replace toilet partitions 2nd floor restrooms	5	$6,750
	Paint interior surfaces 2nd floor restrooms	550	$1,338
	Hands-free fixtures sinks 2nd floor restrooms	5	$2,575
	New water saving urinals 2nd floor restrooms	2	$2,300
	New water saving toilets 2nd floor restrooms	5	$8,625
	New HVAC units SEER 13	2	$124,000
	Install new white roof	18,451	$39,485
	Hands-free fixtures sinks	9	$4,635
	New water saving urinals	1	$1,150
	New water saving toilets	5	$8,625
	New hands-free flush valves for toilet/urinals	6	$3,090
	New energy efficient lighting fixtures	590	$131,452
	Install occupancy sensors in offices and common areas	175	$35,700
	Replace carpet with tile (IAQ)	28,556	$79,243
	Paint interior surfaces (IAQ)	58,000	$141,133
	Install meters as needed	1	$20,687
	Install newwWindows	304	$120,080
9115			
	New HVAC units SEER 13	2	$94,600
	Install new white roof	8,208	$17,565
	Hands-free fixtures sinks	12	$6,180
	New water saving urinals	2	$2,300
	New water saving toilets	8	$13,800
	New energy efficient lighting fixtures	185	$41,218

Asset	Project	Quantity	Estimate
	Install occupancy sensors in offices and common areas	50	$10,200
	Paint interior surfaces (IAQ)	40,684	$98,998
	Install new windows	52	$20,540
9116			
	New HVAC units SEER 13	2	$94,600
	Install new white roof	8,208	$17,565
	Hands-free fixtures sinks	12	$6,180
	New water saving urinals	2	$2,300
	New water saving toilets	8	$13,800
	New energy efficient lighting fixtures	173	$38,544
	Install occupancy sensors in offices and common areas	50	$10,200
	Replace carpet with tile (IAQ)	6,582	$73,060
	Paint interior surfaces (IAQ)	40,684	$98,998
	Install new windows	48	$18,960
9733-05			
	Replace VAV controllers and valves	75	$5,513
	Hands-free fixtures sinks	6	$3,090
	New water saving urinals	2	$2,300
	New water saving toilets	6	$10,350
	New hands-free flush valves for toilet/urinals	8	$4,120
	New energy efficient lighting fixtures	214	$47,679
	Install occupancy sensors in offices and common areas	65	$13,260
	Replace meter	1	$25,000
	Install canopy over west entrance door	1	$6,650

enhance production operations at Y-12. The UPF project is committed to sustainable design strategies not only to meet HPSB requirements, but also to incorporate LEED as a means of monitoring the achievement of the sustainable goals for the project. The current scope of the UPF project is based on LEED New Construction (NC) v2.2 and to be "self-verified" with a goal of achieving enough LEED credits to gain a self-verified LEED Silver rating. Upgrading the project sustainable goals to LEED 2009 and pursuing certification by the U.S. Green Building Council is being considered to more closely align the project with the sustainability goals for the Y-12 site.

PERFORMANCE STATUS

An integrated project team representing architecture, engineering, construction, procurement, and project management has been established. Team members with HPSB experience, including a LEED accredited professional, have identified LEED credits that could be pursued for the UPF project that would also support HPSB Guiding Principles. The sustainable goals for the UPF project have been documented on a separate LEED scorecard for the administration building, production support facility (PSF), and the UPF main building to record the LEED prerequisites that will be achieved and the LEED credits that will be pursued for each building.

The project team identified and incorporated cost-effective life cycle energy, water, materials, site, and indoor environmental quality principles into the design and will track and maintain these features throughout construction and life of the complex. The production and maintenance of a 3D Building Information Management model for the project is instrumental for project planning, integration, and design.

PROJECTED PERFORMANCE

The design of UPF includes innovative features to reduce and improve energy efficiency beyond requirements of current energy codes. Insulation provided for external walls and roofs will exceed minimum requirements. Reflective roofing materials will be used to reduce the heat-island effect. Highly efficient windows for fenestration will exceed requirements for solar heat-gain reduction and overall

heat-transfer coefficients. Heating and cooling loads will be reduced by incorporating these features and providing an efficient building envelope. Windows with sunshades and light shelves and highly efficient insulated skylights will be used to bring natural light into the occupied spaces and reduce the interior lighting load. Low power-consuming LED and/or fluorescent lighting also will be incorporated to further reduce the amount of energy required for lighting interior spaces. LED task lighting controlled by occupancy sensors will be provided at all gloveboxes to further optimize energy performance. The HVAC systems will use high-efficiency fan motors and variable speed drives to reduce energy consumption. The HVAC systems selected for UPF will eliminate emission compounds that contribute to ozone depletion and global warming. Waste heat from the instrument air compressors will be used to supplement heating PSF.

Landscaped areas at the administration building will include native and climate-tolerant plants and be mulched to conserve moisture by preventing evaporative water loss. Landscaping is not planned for the PSF and main UPF building due to security concerns. Potable water will not be used to irrigate landscaping. The UPF project will employ strategies that will collectively reduce domestic water consumption by 37% for the PSF and 43% for the administration and main UPF buildings from a baseline established in accordance with EPAct 1992 and the International Plumbing Code, 2006. Using efficient low-flow toilets and urinals throughout UPF will provide significant, long-term cost and environmental savings. Reducing the amount of potable water used will also decrease the amount of waste that enters the wastewater systems.

The UPF project will divert a minimum of 50% of construction waste from the landfill by reusing or recycling demolition debris and construction materials. Existing asphalt that will be demolished will be reused to pave the new access road and other areas around Y-12. Existing power poles to be demolished will be reused for new and temporary lighting. Reusing these materials on-site not only diverts waste from the landfill, but also decreases the environmental impact of transporting the material off-site. Other construction waste, including packaging materials, will be recycled to the greatest extent possible. The 3D Building Information Management model may be used to help reduce and quantify construction waste.

The UPF project will maximize use of materials that reduce detrimental environmental effects, including using regional materials, bio-based materials that contain recycled content, and products made from rapidly renewable content when appropriate. Materials and finishes specified for interior use will be low or no volatile organic compound-emitting products, which will provide a safe, healthy, and productive environment. The 3D BIM model will be used wherever possible to manage the environmental impact of materials.

The designated "Self-Verification Entity" will be made-up of qualified individuals with LEED Accredited Professional credentials external to the project, such as NNSA, Office of Engineering and Construction Management personnel, and parent company staff. These individuals will perform the LEED self-verification by utilizing LEED-NC v2.2 submittal templates and supplemental documentation of each LEED prerequisite and LEED credit, to determine the level of LEED rating achieved and to record evidence of completion of the HPSB Guiding Principles.

2.7 RENEWABLE ENERGY

Due to the purchase of Renewable Energy Certificates (RECs), the Y-12 site is meeting the 7.5% electricity consumption goal for FYs 2010, 2011, and 2012. The green-e certified RECs in the amount of 21,000 MWh/yr support wind energy generated at Pioneer Prairie Wind Farm I in Iowa. The site plans to renew the purchased credits for FY 2013 and beyond.

PERFORMANCE STATUS

Y-12 uses small photovoltaic panels to supply power to water sampling equipment and a site flagpole light. While these do not approach the 7.5% electricity requirement, they demonstrate a sustainable mind-set, and the site is actively pursuing larger projects for possible installation. During FY 2012,

a new solar powered crosswalk and sign lighting were installed (Fig. 2.6).

PROJECTED PERFORMANCE

Although the site will not achieve the 7.5% initiative in the near term, Y-12 is investigating three renewable energy installations: vertical-axis wind turbine (VAWT), solar parking array, and steam station generator. A renewable energy project was requested for the upcoming ESPC delivery order #3. When the preliminary assessments are received, they will be carefully reviewed for renewable energy related opportunities.

- VAWT — The site is actively working with a vendor to collect data related to wind speed at Y-12. Anemometers have been installed on the south ridge and on top of Building 9201-03 to determine if the average wind speed will support the VAWT installation. If the data supports the installation, a 10-kW VAWT may be installed; if the project is successful, additional installations may follow.
- Solar parking structure — Several locations have been identified as ideal candidates for a solar parking structure. Although initial installations would be small, the long-term plans would be to install several structures to eventually attempt to provide a zero-energy facility. Both the North Portal Parking Lot and the New Hope Center have been identified as good candidates for the installation. Although funding is an issue, the project is being included in the site planning to ensure renewable energy is considered in the prioritized project plan.
- Steam station generator — Although currently only in the investigation phase, a steam station generator could be an ideal renewable source for Y-12. The generator acts as a pressure-reducing station in a steam line. Pressure energy normally dissipated by reducing steam pressure through a pressure-reducing valve is instead converted to power by channeling that steam through a patented radial outflow turbine. The Microsteam® turbine then generates electricity that can be used in the building.

Fig. 2.6. Solar-powered crosswalk at New Hope Center.

- Small modular reactor — Y-12 is supporting a regional commitment to clean energy, facilitated by the potential construction of a small modular reactor that could be built by TVA with prospective financial support (possibly clean energy certificates) provided by DOE, Oak Ridge Operations, and/or B&W.

2.8 REGIONAL AND LOCAL PLANNING

Participation in regional transportation planning, recognition of existing community transportation infrastructure, and incorporation of such efforts into site policy and guidance documents

The vast majority of Y-12's 4,531 employees and approximately 2,500 subcontractors who report to work on-site each day commute from more than 20 surrounding counties making sustainable, safe transportation a significant concern. In fact, the average employee commute is 38 miles. Various governments and other stakeholders of the Knoxville metropolitan area, which includes Oak Ridge, have embarked upon several transportation planning initiatives in recent years. As one of the largest employers in the region and having such a high volume of commuters, Y-12 has been actively engaged in the following initiatives:

- participated in the development of the Knoxville Regional Transit Development Plan to ensure the capture and inclusion of Y-12's needs;
- participated and endorsed the Oak Ridge Energy Corridor and its initiative to establish an electric vehicle charging station for potential use by Y-12 commuters; and
- participates in East Tennessee Sustainability Initiative, now known as PlanET, a regional partnership of communities (five counties, sixteen cities, four towns and rural areas) building a shared direction for the future that protects valuable resources and addresses challenges regarding jobs, housing, transportation, a clean environment, and community health.

Y-12 is actively engaged in and promotes the PlanET process. Simultaneously, Y-12 is continuously working with the City of Oak Ridge mayor, engineers and police to make sustainable transportation improvements for employees in the immediate vicinity of the site. Discussion topics and future possibilities have included improvements to Scarboro Road for traffic and speed control and improved connectivity between Y-12 and the City of Oak Ridge for pedestrian and bicycle traffic.

Also, Y-12 has taken steps on site to encourage sustainable transportation. Some examples of these initiatives include:

- widening and generally improving bicycle paths on-site to encourage bicycle commuting;
- improving on-site taxi service to encourage employees to leave their personal cars parked for the day, thus reducing emissions by consolidating riders and limiting vehicles in use;
- updating the Y-12 vehicle fleet to include more E-85 vehicles, electric vehicles, and a 25 passenger diesel-electric hybrid bus;
- initiating a ride-sharing program with bulletin boards for riders/drivers to establish their own sharing arrangements; and
- partnering with the University of Tennessee Center for Transportation Research to use the Tennessee Vans Program that offers vans for lease to public agencies and nonprofits for statewide travel.

Y-12 is committed to the regional and local planning efforts and on-site to increasing safe and sustainable transportation opportunities for the surrounding communities and its employees.

3. FLEET MANAGEMENT

The Y-12 fleet is comprised of sedans, light-duty trucks/vans, medium-duty trucks/vans, and heavy-duty trucks. Vehicles range from new to 28 years old with the majority (90%) of vehicles between the ages of 7 and 24 years old. To achieve the optimum fleet, Fleet Management is coordinating with other departments on-site (e.g., shuttle services) to develop a strategic plan for managing on-site transportation at Y-12. Vehicles are used as tools to perform work and support the mission at Y-12. Fleet Management is evaluating the current fleet and will focus on efforts to "right-size" the fleet based on mission needs. In addition to the fleet size, petroleum and alternative fuel (E-85) usage is monitored to ensure executive orders are being met. Y-12 Fleet Management has benchmarked other DOE sites and private industry to allow Y-12 to standardize its fleet as well as meet federal requirements. Fleet Management goals support executive orders associated with petroleum consumption reduction and alternate fuel usage.

3.1 INCREASE IN ALTERNATIVE FUEL CONSUMPTION

Relative to the 2005 baseline for alternative fuel usage, Y-12 has already exceeded the goal.

PERFORMANCE STATUS

In light of the 2005 baseline for fuel consumption and alternative fuel use, the site has already achieved the 2020 goal for a 100% increase in alternative fuel use. Due to the expanding mission and increase in transformation-related activities on-site, it is difficult for the site to continue to reduce fuel consumption by 2% each year and increase non-petroleum consumption by 10% annually, but Y-12 continues to progress toward this goal.

Since there is a ready supply of E-85 fuel on site, all AFVs use the fuel 100% of the time. In addition, ultra-low diesel was purchased and used through-

out 2012. Table 3.1 presents a Y-12 fuel statistic pulled from the FAST Data Consistency Report, showing that the goal has been reached through the year 2020.

PROJECTED PERFORMANCE

The additional security vehicles are projected to increase alternative fuel use by 39,000 gasoline gallon equivalent (GGE) , which will more than double the site's use of alternative fuels.

3.2. DECREASE IN FLEET PETROLEUM CONSUMPTION

In accordance with the 2005 baseline of fuel usage, the site has exceeded the goal for petroleum reduction by 67.1%. Table 3.2 shows the Y-12 fuel statistic from the FAST Data Consistency Report. The 2012 data indicates that Y-12 has surpassed the 2%/year reduction through 2018.

Fig. 3.1. Electric carts are used within the protected area of Y-12.

PERFORMANCE STATUS

In FY 2012 a taxi service replaced the existing shuttle service to provide a more efficient alternative form of transportation. In conjunction with this, 100 vehicles were eliminated from the fleet, which directly contributed to the petroleum reduction. Remaining vehicles are monitored monthly for miles driven and overall use. If a vehicle does not achieve the minimum number of required miles, it is pulled from the fleet and either excessed or reassigned, depending on site demand and requirements.

PROJECTED PERFORMANCE

The additional security vehicles are projected to increase the GGE by 60,500, which will negatively impact petroleum reduction, but should not impact meeting the goal.

3.3. ALTERNATIVE FUEL VEHICLE PURCHASES

PERFORMANCE STATUS

Y-12 has met the goal for 75% of vehicle purchases and is striving towards the 100% criteria where applicable.

Table 3.1. Alternative fleet usage statistics

2005 Baseline	2012 Data	% Increase/Decrease	E.O. 13423 Goal
4,801 GGE	26,614 GGE	554.3% increase	10%-per-year increase

Table 3.2. Y-12 fleet petroleum reduction statistics

2005 Baseline	2012 Data	% Increase/Decrease	E.O. 13423 Goal
160,126 GGE	51,791 GGE	67.1% decrease	2%-per-year decrease through 2018

PROJECTED PERFORMANCE

Y-12 has established a replacement priority list for vehicles. A determination must be made as to whether to replace them with government-owned vehicles or GSA-leased vehicles. A business case was developed to examine the pros and cons of the GSA lease option. The results of the evaluation indicated that, because the life-cycle cost of a GSA-leased vehicle under the conditions they are used at the Y-12 Site is higher than the life-cycle cost of a government-owned vehicle, replacing vehicles with GSA leases is not cost effective. AFVs will be used wherever possible when replacing vehicles.

3.4. REDUCE FLEET INVENTORY

NNSA's fleet reduction goal for FY 2012 and FY 2013 is 35% for the organization. Although this goal continues to evolve, the FY 2012 reduction will contribute towards this goal. Given the unsustainable state of the current fleet and the existing funding constraints, Y-12 Fleet Management is taking a multi-tiered approach to managing the current fleet while planning for a more sustainable future fleet to meet the mission needs of the site (Fig. 3.2). The ultimate goal is a smaller, more modern, more cost-efficient, and sustainable fleet.

PERFORMANCE STATUS

In FY 2012, Fleet Management removed 100 vehicles from the fleet. This initiative was aligned with DOE's requirement to right-size the fleet and reduce inventory by 35% in 2 years. The reduction helped Y-12 maintain the average age of the fleet, decrease maintenance costs, and reinvest in the remaining mission-critical fleet. In conjunction with the fleet reduction, the existing shuttle service was transformed into a taxi service to provide a customer-focused alternative form of transportation. In addition, four heavy-duty vehicles were procured to replace commercial leases.

Due to funding constraints over the last decade, Y-12 has had a limited ability to replace vehicles, leading to the current condition of a fleet with high maintenance costs and decreased reliability. Vehicles typically remain in the fleet until parts are unavailable or they encounter a catastrophic failure that inhibits repair. When vehicle mechanical issues arise, it creates a domino effect for the user. While options exist for transporting people from one area to another (i.e., shuttle, walking, carpooling), options for mission-critical vehicles are limited or non-existent. Each year, the size of the fleet has been reduced as the site transforms to a smaller footprint. Shared vehicle pools are used at various facilities as well as a taxi service; this has enabled the site to reduce the total number of vehicles required to support the population by 100 in FY 2012. Currently, vehicle acquisition activities are directly related to replacement of existing inventory and are not additions to the fleet.

As a result of the security force transition, Y-12 acquired 112 additional vehicles in October 2012. These vehicles include law enforcement patrol vehicles, armored vehicles, and pool vehicles. The fuels used by these vehicles will heavily impact the Y-12 GGE.

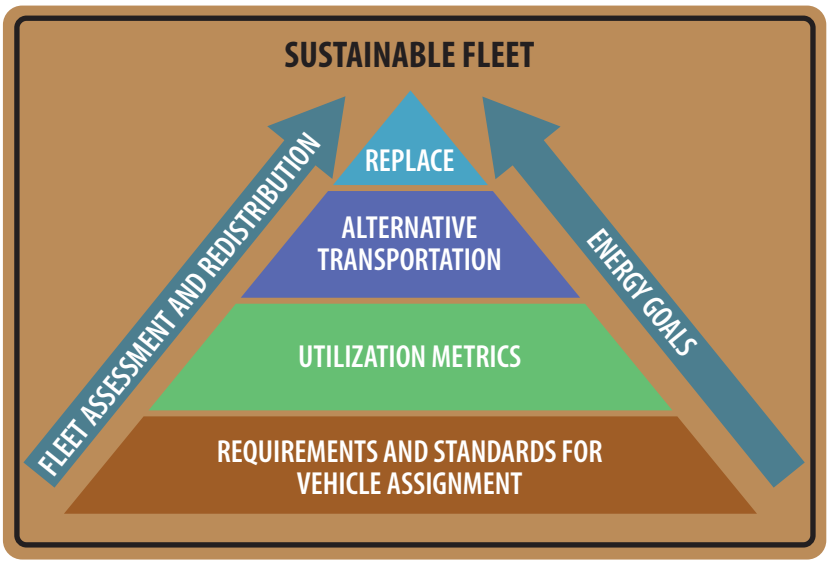


Fig. 3.2. Fleet Management is taking a multi-tiered approach to managing the current fleet.

PROJECTED PERFORMANCE

With the acquisition of the security vehicles, the Y-12 fleet will increase for FY 2013. Y-12 will continue to monitor vehicle usage and redistribute or remove vehicles from the fleet as needed. Replacement vehicle purchases will consider energy use in accordance with Sustainable Acquisition guidance and will be more fuel-efficient. As additional guidance becomes available, Y-12 will evaluate the existing fleet to identify further reductions.

Actions are planned for continued progress in fleet management.

- Increase the use of hybrid electric vehicles as they become available.
- Develop and implement a plan for installing electric charging stations throughout the plant.
- Implement a "preferred parking" initiative for energy-efficient and/or electric vehicles.

4.1. WATER USE EFFICIENCY AND MANAGEMENT

The FY 2012 water intensity reduction from baseline is reported as 33.4%. Y-12 is currently meeting the water intensity reduction goals and storm water initiatives. Y-12's reduction in water intensity exceeds the FY 2016 target of 16%, as well as the FY 2026 target of 26%.

POTABLE WATER REDUCTION

All potable water consumed at Y-12 originates from Melton Hill Lake as raw water and is pumped across the ridge to the City of Oak Ridge water treatment plant, which is located within the Y-12 boundary. Y-12 purchases both potable and raw water from the city for all domestic and industrial applications.

A number of water conservation measures have been identified for the site. These have resulted from both internal and FEMP assessments.

PERFORMANCE STATUS

Y-12 is currently exceeding both the 2016 and 2026 goals. By the end of FY 2012, the site has achieved a 33.4% reduction in potable water use since the baseline was established (Fig. 4.1). During FY 2012, the site noted a reduction of 8.3%. Actions that

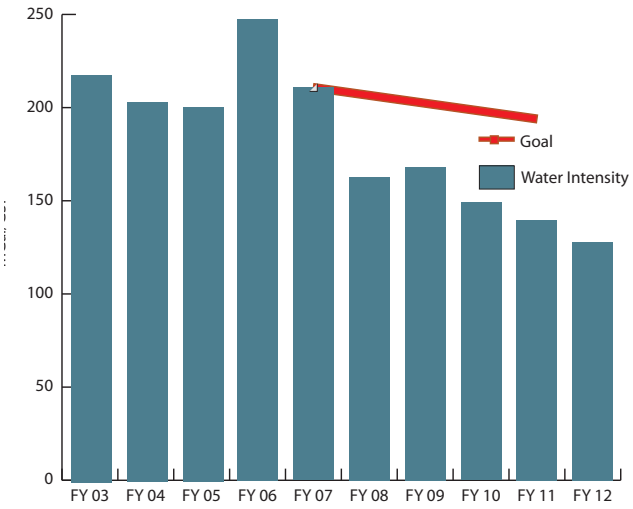


Fig. 4.1. Y-12 is currently meeting the water intensity reduction goals.

have contributed to the overall reduction in potable water use include:

- Steam trap repairs and improvements.
- Condensate return repair and reroute(~10 million gal saved/year).
- Clean out and shutdown of Buildings 9201-05, 9204-01, 9204-04, and 9401-03.
- Replacement of once-through air handling units (~5 million gal saved/year).
- Low-flow fixture installation (~660 thousand gal saved/year).

The Potable Water Management Plan is contained within the Utilities Migration Plan and is revised with the annual update to the plan. The pertinent section from the FY 2012 plan is included in Appendix B. The Storm Water Pollution Prevention Plan for the Y-12 National Security Complex Oak Ridge, Tennessee (Y/TS-1180/R5) is Y-12's documentation of objectives contained in EISA 438. The plan contains best management practices, storm water pollution controls, and guidance.

During FY 2012, Y-12 implemented several initiatives to reduce storm water runoff by creating green spaces and the installation of pervious pavement on the new parking lot at the New Hope Center (Fig. 4.2).

Efforts included taking all the excess soil resulting from the new parking lot near New Hope Center and backfilling over "rubbleized" concrete slabs. This area was an inactive parking area adjacent to demolished buildings. Additionally, green space was created around several demolished facilities to remove roadways and parking spaces that are no longer needed. In all, approximately 3.3 acres

Fig. 4.2. Pervious pavement and native plantings contribute to meeting EISA 438 requirements.

have been added to the green bank to offset future projects within the Y-12 Complex.

PROJECTED PERFORMANCE

Although the site has met this goal, significant reductions in water consumption can still be achieved through continued improvements within facilities, metering, and replacement of inefficient HVAC units. Continued reductions in water usage will be incorporated into ongoing facility repairs and renovations as funding becomes available. These efforts will include:

- Upgrading toilets and urinals to low-flow, hands-free units.
- Installing flow restrictors on faucets and shower heads.
- Repairing condenser loop connections to the cooling towers.
- Replacing once-through water-cooled air conditioning systems with air-cooled equivalents.
- Installing advanced potable water meters.
- Repairing Buildings 9212 and 9204-02E condensate returns.

Many of the domestic upgrades are identified in the Balance of Plant Plan for implementation on a building-by-building basis as funding allows. Similarly, many of the cooling tower upgrades are prioritized in the Utilities Migration Plan and will be evaluated accordingly for implementation as funding permits.

4.2 INDUSTRIAL, LANDSCAPE, AND AGRICULTURAL WATER

Industrial, landscaping, and agriculture (ILA) water is considered to be non-potable freshwater used for aiding processes such as cooling, washing, and manufacturing, or for irrigation and other uses. Based on this criteria, Y-12 does not consume ILA water.

PERFORMANCE STATUS

Jack Case and New Hope Centers are the only buildings at Y-12 that have an irrigation system.

NHC was constructed with a rainwater capture system for irrigation purposes. However, during periods of drought, the irrigation system is augmented by potable water.

JCC uses potable water for all irrigation, with no augmentation of any type. During FY 2012, management requested a 50% reduction in potable water consumption for irrigation purposes. At this time, the system is not metered, so positive verification is unavailable.

PROJECTED PERFORMANCE

No additional efforts are planned for ILA water.

The Y-12 Pollution Prevention (P2) program is designed and implemented to fully comply with state, federal, DOE, and NNSA requirements concerning pollution prevention, as well as to identify and assist with the implementation of sustainable, technically-feasible, and cost-effective pollution prevention activities.

The P2 program provides technical assistance to employees and organizations at the Y-12 Complex. This assistance includes identifying ways to eliminate waste streams; changing waste generator processes to reduce the volume or toxicity of waste streams; and segregating waste streams to allow for efficient reuse, recycle, or treatment for storage or disposal. The P2 program conducts Pollution Prevention Operational Assessments to evaluate site processes and operations for potential opportunities to apply P2 techniques to implement sustainable practices, conserve resources, and reduce waste generation.

Based on FY 2012 data, Y-12 has implemented more than 100 pollution prevention initiatives, with an anticipated reduction of more than 25.5 million pounds of waste and a projected cost avoidance of more than $2.4 million.

Y-12's transformation efforts are expected to continue to have an overall positive impact on recycling and should ultimately reduce waste generation. The P2 program has been integrated into construction and D&D activities to ensure all materials are recycled or reused where possible. The P2 program reviews project waste management plans and National Environmental Policy Act checklists to ensure pollution prevention techniques, such as reuse/recycling and sustainable acquisition, are incorporated into each project.

The P2 program continues to focus on employee awareness related to P2 and individual contributions to site sustainability performance. At the Y-12 Earth Day celebration, the P2 booth focused on

individual behaviors that support sustainability efforts (Fig. 5.1).

Initiation, expansion, or end of composting programs and the expected impact on waste stream

Y-12 has investigated the availability of local off-site composting facilities. There is not a local off-site composting facility currently available. Following a study in 2011 on the volume of cafeteria food waste, it was determined that it is not feasible to establish an on-site composting facility due to the relatively small volume of material generated. Y-12 has instead focused on cafeteria food waste source reduction practices. In support of the source reduction focus, the Y-12 cafeteria has implemented methods to reduce the quantity of food waste generated.

Reducing printing paper use and acquiring uncoated printing and writing paper containing at least 30% post-consumer fiber

Y-12 is continuing efforts to reduce paper usage, and has reduced printing paper purchases by 19% since FY 2008. Y-12 purchases paper with at least 30% post-consumer fiber in support of sustainable acquisition requirements. Printers at Y-12 with duplex printing capability are set to duplex printing on the print server by default. Y-12 is taking steps to reduce the need to use paper where possible, and is continuing to expand the use of digital signatures to improve processing time for commonly used documents/forms.

The Plant Shift Superintendent (PSS) office has implemented a paperless system for employee accountability. In order to ensure employee ac-

Fig. 5.1. Y-12 employees share information concerning sustainable behaviors at the Y-12 Earth Day celebration.

countability during an emergency situation, the PSS office tracks employees working on-site during off-shift hours. Historically, this was a manual process. The previous process required employees working outside of their normal work schedule to complete a form and then fax or email the completed form to the PSS office. The employees were then required to call the PSS office prior to leaving the site. Now employees can access the new paperless notification system on the intranet. The new system has reduced paper usage and increased the efficiency of the tracking system.

Increasing use of acceptable non-toxic or less toxic alternative chemicals and processes while minimizing acquisition of hazardous chemicals and materials.

During FY 2012, the Unneeded Materials and Chemicals program was instrumental in the processing of more than 60 kg of pyrophoric chemicals for reuse at Y-12 instead of disposing the chemicals as hazardous waste. Y-12 has also completed various other reuse initiatives that have reduced the acquisition of hazardous chemicals, such as filtering a material so that it could be reused in the process; completing equipment modifications to extend the life of a material to reduce the amount of materials that had to be purchased and disposed of; and isolating and containerizing a material so that it could be transferred for reuse in a different facility rather than becoming a waste.

Additionally, Y-12 continued focusing on activities to enhance the current Y-12 chemical management system, including revamping procedures and training to ensure consistency across the site. Y-12 is continuing to assess changes to enhance its site-wide HMIS to provide Y-12 with a more robust system to track chemicals across the complex, which in turn supports the goal of being able to target specific toxic chemicals for reduction. The Y-12 chemical management system was recently evaluated using Lean Value Stream Mapping tools, with the key considerations being reducing inventories, information quality, and improved control on procurement of hazardous materials. Proposed recommendations from this evaluation included minimizing choices (use less hazardous materials); embracing the concept of 100% reuse (no waste); and maximizing technology usage [e.g., barcodes and Radio Frequency Identification (RFID)] to ensure accurate inventories. As a result of this effort, a pilot program using RFID inventory system technology is underway in the Sign and Paint Shop, and improvements to the Material Safety Data Sheet system are being developed.

The complex has established mechanisms for internal and external transfers of chemicals for reuse in order to minimize the quantity of chemicals acquired, used, and disposed of. The Product Exchange system provides a means for employees to post information concerning excess chemicals that are available for on-site reuse.

Integration of pest management and landscape management practices.

Y-12 has an integrated grounds pest management program to manage specific insects, such as wasps. Pest management within buildings is managed by the building managers to ensure each facility's needs are met. Y-12 has continued to pilot test ultrasonic rodent repellers for rodent control to be used in place of traditional rodenticides or traps. The use of the ultrasonic rodent repellers will be expanded based upon the successful pilot test results. Y-12 also uses P2 techniques in landscape management practices. The site is working to control invasive foliage through targeted herbicide use and reintroduction of native grass species.

Clearance of property procedures.

Y-12 has completed an evaluation of its clearance of property procedures for disposition of excess materials. As a result of the evaluation, Y-12 has implemented continuous improvement activities, such as a "Stuff I Want to Get Rid Of" website and a central telephone number (574-JUNK), to provide employees easy access to information and assistance related to the proper methods for disposing of excess materials.

5.1. SOLID WASTE

At Y-12, unneeded materials are not automatically assumed to be wastes requiring disposal. Y-12 uses a systematic disposition evaluation process. The first step in the disposition process is to determine if the items can be reused at Y-12. Items that cannot be used at Y-12 are evaluated for use at other DOE facilities or government agencies. Items are then evaluated for potential sale, recycle, or, as a last resort, disposal as waste. There is not a waste-to-energy facility for non-hazardous solid municipal or construction and demolition waste in Tennessee.

PERFORMANCE STATUS

Diverting at least 50% of non-hazardous solid waste, excluding construction and demolition debris, by the end of FY 2015.

Y-12 is currently meeting this goal. In FY 2012, more than 51% of non-hazardous solid waste was diverted from the landfill through reuse and recycle. This has been achieved due to implementation of the systematic disposition evaluation process.

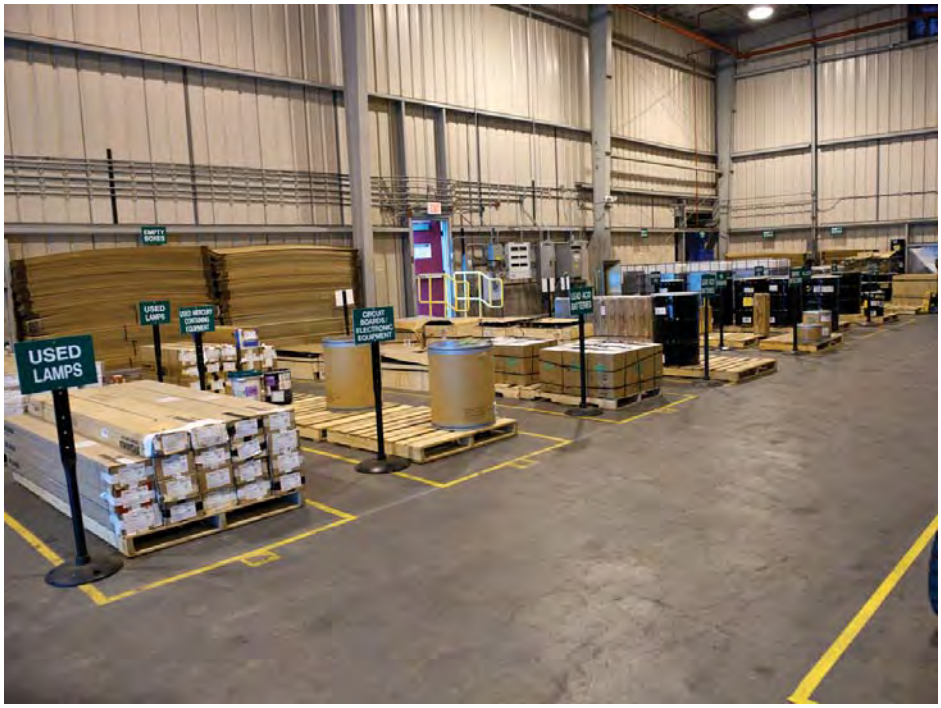
The Property Exchange intranet site provides a means for employees to post usable excess property items for on-site reuse. Y-12 has transferred materials for reuse to several agencies and facilities, including the Department of Justice, the Department of Homeland Security, ETTP, and ORNL. Items transferred in FY 2012 include analytical equipment, maintenance supplies, and construction and demolition heavy equipment.

Y-12 encourages employees to recycle at work and at home. The site hosted a second annual employee-owned electronic equipment collection event. Over 4,700 pounds of electronics were collected to be either reused by local charities or recycled (Fig. 5.2). In support of continual improvement efforts, personal document shredding and recycling were added to this year's event. Over 1,100 pounds of personal documents were shredded and sent for recycling.

PROJECTED PERFORMANCE

Y-12 adds at least one new recycling stream to the Recycle Program each year to continue to increase the waste diversion rate. The Recycle Program has implemented the 7S process at the Recycle Center (Fig. 5.3). The 7S process includes the following seven steps: sort, set in order, shine, standardize, safety, security, and sustain. The 7S process was implemented to improve the overall organization,

Fig. 5.2. Y-12 employees recycled over 4,700 pounds of personal electronics at the second annual employee-owned electronic equipment collection event.



Flg. 5.3. Waste diversion efforts will continue to benefit from the increased efficiency and productivity achieved through the implementation of the 7S process at the Recycle Center.

cleanliness, safety, security, and productivity of the Recycle Center. The 7S process has made the recycling program more efficient, which will contribute the site's ongoing efforts for landfill diversion through reuse and recycling.

Y-12 will also maintain the focus on source reduction to facilitate the reduction in the total quantity of waste materials generated. Increasing employee awareness continues to be a key focus for waste reduction activities.

In FY 2013, security activities were transferred to the Y-12 M&O contractor. The personnel and training facility activities are being incorporated into Y-12's recycling and reuse processes to ensure maximum diversion of related waste materials. Y-12 does not foresee any significant site population changes that will impact non-hazardous solid waste generation volumes.

5.2. CONSTRUCTION AND DEMOLITION

Diverting at least 50% of construction and demolition materials and debris by the end of FY 2015.

PERFORMANCE STATUS

Y-12 is currently meeting this goal. In FY 2012, more than 80% of construction and demolition materials and debris were diverted from the landfill through reuse and recycle. Y-12 applies the systematic disposition approach to construction projects, building cleanouts, and demolitions to ensure that maximum waste diversion is achieved.

Personnel preserve historical items discovered during building cleanouts for use in the Y-12 History Center. Over 3 tons of items were transferred to the History Center in FY 2012, including company clothing, furniture, and equipment.

In FY 2012, Y-12 diverted more than 138 tons of wood materials from the solid waste stream. Y-12 sends wood waste to an off-site recycle facility that processes the materials to make mulch. Y-12 also uses this vendor for purchasing mulch for site landscaping activities. More than 298 tons of utility poles were diverted from the solid waste stream through external transfers for reuse. A portion of the utility poles were transferred to the Blount County Sherriff's Department for reuse at the firing range.

Approximately 4,200 tons of asphalt that was removed to allow for repaving were diverted from the landfill and reused to surface other roads and areas at Y-12, including the new Recycle Yard. The Recycle Yard is used to stage materials and equipment for recycling. The Recycle Yard was established in FY 2012 as a part of the continual improvement efforts to increase program efficiency.

PROJECTED PERFORMANCE

Construction and demolition projects will continue to use the systematic disposition evaluation method and the expanding Y-12 recycling program to ensure that project materials are reused or recycled, as appropriate, in order to maintain a greater than 50% diversion rate. In support of transformation efforts, Y-12 anticipates an increase in construction and demolition activities beyond FY 2013. Construction and demolition project waste management plans will specify the segregation and recycling requirements for each individual project.

6.1. PROCUREMENT AND ACQUISITION

Y-12 is currently meeting the procurement goals through the implementation of the Y-12 Sustainable Acquisition program.

PERFORMANCE STATUS

The sustainable acquisition requirements of DOE Acquisition Regulation clause 952.223-78 were incorporated into Y-12's procurement clauses in FY 2011. In FY 2012, Y-12's terms and conditions were updated to include Federal Acquisition Regulation Clause 52.223-15. This clause requires that energy efficient products meet DOE and EPA criteria for use of the Energy Star® trademark label, or are in the upper 25% of efficiency for all similar products as designated by DOE's FEMP.

Sustainable acquisition requirements are included in all Accelerated Vendor Inventory Delivery (AVID) preferred vendor contracts. AVID vendors are required to sign an annual Sustainable Acquisition Program certification statement that states they will provide Y-12 with products that meet requirements for recycled content, bio-based content, Energy Star, WaterSense®, alternative fuels, and the Electronic Product Environmental Assessment Tool (EPEAT), as applicable. This allows Y-12 to maximize the purchase of materials to meet the requirements for recycled content in FY 2012.

Y-12 procured more than 1,300 tons of recycled content asphalt to use for various paving activities completed at the site, which supports the overall goals of the sustainable acquisition program.

Sustainable acquisition has truly been ingrained into the daily activities across Y-12, as evidenced by the following examples:

- The Analytical Chemistry Organization completed the transfer of approximately 19 chemicals (e.g., sodium hydroxide, boric acid, and sulfuric acid) to ORNL rather than disposing of them as waste. ORNL provided Y-12 with a listing of chemicals that are typically used by ORNL, which allows Y-12 personnel to easily determine if a material could be readily transferred for use by ORNL. This material transfer/

reuse saves ORNL the cost of purchasing new materials while saving Y-12 the cost of disposition.
- Prior to purchasing items, Y-12 employees review Product Exchange [Y-12's internal website listing of consumables (e.g., office supplies, maintenance and laboratory chemicals) available for free)] and Property Exchange [Y-12's internal website listing of non-consumables (e.g., equipment, tools, and furniture) available for free] as the first source of supply. This ensures that the current inventories of items are used rather than purchasing new materials.
- Y-12 also reutilized materials from other sites instead of purchasing new materials. Examples of materials that were acquired from other federal facilities include truck scales and various maintenance supplies. This saves Y-12 from having to procure various materials while supporting our sustainable acquisition initiatives.

As part of Y-12's continual improvement philosophy, sustainable behaviors were highlighted during Y-12's Earth Day celebration activities. The Y-12 Pollution Prevention booth highlighted sustainable acquisition behaviors through the use of a poster display and examples of environmental impacts by each employee (i.e., amount of paper used by each employee during a fiscal year was shown as a visual display to reinforce paper reduction initiatives); the Y-12 Energy Management booth highlighted energy conservation activities and included a pervious pavement display; and the Y-12 Environmental Compliance booth highlighted Y-12's Environmental Management System initiatives. Various awareness materials were given to each employee to reinforce Y-12's overall message of reducing, reusing, recycling, and conserving energy and water to support the pollution prevention philosophy.

PROJECTED PERFORMANCE

Due to the inclusion of the sustainable acquisition requirements in site procurement clauses, future procurement activities should contain the sustainable acquisition requirements. Y-12's cross-functional Sustainable Acquisition Team identifies and tests alternative products and chemicals for use at Y-12 in support of sustainable acquisition. Y-12 will continue efforts to expand the use of sustainable products.

In FY 2013, security activities were transitioned to the Y-12 M&O contractor. The Y-12 Sustainable Acquisition Program will be used for the procurement of the various materials needed for security activities.

7.1. DATA CENTERS/ELECTRONIC STEWARDSHIP

Y-12 has made significant progress toward the electronic stewardship goals outlined in the Executive Order. Although the site is not currently using the Data Center Pro (DCPRO) Tool Suite, consideration will be given to incorporating it as needed in the future. The site continues toward consolidation of data centers and use of thin/thick-client and virtual server technology through the implementation of thin/thick client appliances in the unclassified desktop environment. Y-12's Information Technology (IT) organization has taken many significant actions to enhance the electronic stewardship of our data centers in support of the Y-12 Site Sustainability Plan and DOE Order 436.1. These actions include initiatives in the areas of server virtualization, virtual desktop infrastructure, procurement of energy-efficient computing equipment, reuse and recycle of computing equipment, replacement of aging computing equipment with more energy-efficient equipment, and reconfiguration of data centers to achieve more energy-efficient operations.

DATA CENTER METERS

PERFORMANCE STATUS

At present, none of the Y-12 data centers are individually metered. Metering is funded for Buildings 9103 and 9117 during FY 2013. This will include electric, chilled water, and steam metering.

PROJECTED PERFORMANCE

Future consolidation efforts for the site data centers will be evaluated and sub-level metering may be installed during the consolidation efforts in order to effectively capture the data center energy usage.

7.2. POWER UTILIZATION EFFECTIVENESS

Although the PUE rating for data centers is unknown, Y-12 is diligently implementing measures to increase efficiency. The site is replacing physical servers with virtual servers as existing physical servers reach end-of-life or as new servers are needed. Y-12 had deployed approximately 360 virtual servers on about 90 physical hosts by the end of FY 2012 and plans to continue deploying virtual servers to the maximum extent practicable. Assuming a reasonable 5-to-1 virtual-to-physical server ra-

tio (5 virtual servers per physical server on average) when fully implemented, energy usage will be four times as efficient using virtual servers as compared to the old paradigm of using only physical servers. This should save a significant amount of electricity.

PERFORMANCE STATUS

Y-12 has taken steps to reduce power consumption pursuant to data backup and recovery. The IT organization installed several Linear Tape-Open libraries in FY 2012 to consolidate numerous older tape drives and libraries.

The IT organization has started a program to reconfigure, over time, Y-12's data centers to reduce power consumption over the current configuration. Servers are being placed back to back, for example, to implement the "hot aisle, cold aisle" paradigm whereby servers are dispersing hot air into alternating aisles, which can have cooling directed there, leaving every other aisle relatively cool.

Y-12's IT organization has issued internal guidance to Procurement to require that computing equipment with Energy Star features is delivered with these features enabled. Y-12 has implemented power management to eligible CPUs and laptops; power management features are enabled on all monitors not deemed mission critical. Y-12 currently uses Microsoft Systems Management Server to ensure that Energy Star power management features are implemented. Implementation of Energy Star power management features is incorporated into a group policy that is pushed to site computers multiple times each day. Y-12 is expanding its use of energy efficient thin clients and currently has over 700 power managed thin clients deployed.

Y-12 has implemented policies requiring recycled printer paper and toner cartridges. The Y-12 IT organization has implemented policies encouraging usage of shared network printers with duplex capabilities enabled. During FY 2012, the specified default for all networked printers with duplexers was "duplex" instead of "simplex," except for documented exceptions based on articulated business needs.

PROJECTED PERFORMANCE

Y-12 is deploying Citrix Provisioning Services, XenServer, and XenApp to enable a virtual desktop infrastructure. This infrastructure will allow the replacement in the near term of 300 PCs with more energy efficient thin clients, which will save an estimated 500,000 kWh of electricity per year. Citrix XenApp Power and Capacity Management will also allow Y-12 to power off Citrix servers when not in use, saving electricity in the data center.

7.3. ELECTRONIC STEWARDSHIP

In FY 2013, Y-12's IT organization plans to continue its actions to enhance the electronic stewardship of the site's data centers in support of the Y-12 Site Sustainability Plan and DOE Order 436.1. IT plans to continue to expand on the initiatives already underway in the areas of server virtualization and virtual desktop infrastructure.

Y-12 employs a computing equipment recycling program developed by IT, Property, and Sustainability and Stewardship personnel to recycle electronic computing equipment. All computer recycling facilities are reviewed and approved by Y-12 environmental compliance personnel prior to use for Y-12 materials.

PERFORMANCE STATUS

Y-12 joined the Federal Electronics Challenge (FEC) in FY 2008 and won the FEC Bronze award in FY 2009. Y-12 built on that foundation and won the FEC Silver award in FY 2010 and FY 2011 and the FEC Gold award in FY 2012. Y-12 plans to apply for the FEC Platinum award in FY 2013. Y-12's computing equipment recycling program was one important aspect of meeting the FEC's rigorous rating criteria.

The IT organization has been proactive and aggressive in replacing older cathode-ray tube (CRT) monitors with newer flat-panel monitors that are much more energy efficient. Many CRT monitors were replaced during FY 2012, which results in a substantial percentage energy reduction.

All computer desktops, laptops, monitors, and thin clients purchased or leased during FY 2012 were EPEAT-registered products. Y-12's standard desktop configuration specifies the procurement of EPEAT-registered and Energy Star-qualified products.

PROJECTED PERFORMANCE

IT is making plans for FY 2013 to transition to disk-to-disk backups in the unclassified domain, which are expected to eliminate dozens of tape drives and libraries and several dedicated backup servers. These disk-to-disk backups will collectively back up all central Windows and UNIX servers.

Y-12 is known for solving tough technical problems. As engineers and scientists support production efforts by focusing on productivity improvements and technology implementation, research and development innovations become applicable across a broad spectrum. Below are a few examples of technologies that support sustainability that were invented at Y-12 and either deployed on-site, by Y-12 customers, or both.

1. Access Rate Control System (ARCS): ARCS is a fully mechanical, ready-to-install kit that controls the speed of a person's entry through full-height turnstiles. The faster the entry speed, the more resistance is generated by ARCS on the rotor to slow the operator. At a preset normal entry speed, the operator can pass through with a minimal amount of force, and ARCS freewheels on exit. This invention creates a cost effective added layer of security with no need for external power or control circuitry. It increases security without increasing energy consumption.
2. Code 4 Armor™: For government agencies, law enforcement departments, and private security organizations that need ballistic protection for their facilities/structures, tools, vehicles and/or canine support teams, Code 4 ArmorTM is a multi-impact, customizable, monolithic armor technology. Unlike competitive products, Code 4 ArmorTM uses cermet technology, a composite material composed of ceramic and metal. It provides superior protection to traditional steel armor at half the weight. It can also be produced on an assembly line. These benefits mean less fuel burned when applied to a vehicle both in production and end-product operation. That means lower cost and reduced greenhouse gas.
3. Infrared (IR) Debonding: IR Debonding is a dry, nondestructive method of using heat to separate components joined by adhesives. It is safer and better for the environment than debonding techniques currently in use. Materials are not damaged and abraded, which means they can be reused. Because IR heating is instantaneous and rapid and shortens

production schedules, it uses less energy than conventional methods.

4. Microwave and Process Technologies: For more than two decades, Y-12 has been developing microwave metal and ceramic processing technologies related to melting, casting, heat-treating, sintering, and bonding. Recent developments include vast improvements in ceramic systems that provide ways to heat materials not readily amenable to microwave processing. With one basic system, it is possible to melt, cast, and heat-treat. This system increases throughput and greatly improves energy efficiency in the manufacturing process.

Supporting Y-12's missions by solving problems reaps a number of benefits. In addition to meeting challenges and saving taxpayer dollars, new technologies often result in more sustainable operations. Y-12 employees have always been creative in applying development of new technologies to mission-related areas. New technologies for national security missions will continue to be developed and will be pushed for increased sustainability benefits.

Y-12 has received more than 95 P2 awards from external agencies since 2001. The following awards were received in 2012:

- Tennessee Chamber of Commerce and Industry 2012 Environmental Excellence Award - Y-12's Sustainability Team
- Tennessee Chamber of Commerce and Industry 2012 Solid Waste Management Certificate – Sustainable Scenarios: Y-12 Reduces Risk and Waste
- Tennessee Chamber of Commerce and Industry 2012 Environmental Excellence Award – Y-12's Sustainability Team,
- Tennessee Chamber of Commerce and Industry 2012 Solid Waste Management Certificate – Sustainable Scenarios: Y-12 Reduces Risk and Waste,
- 2012 Federal Electronics Challenge Gold Award,
- 2012 U.S. Department of Energy Silver Green-Buy Award,
- 2012 Department of Energy Sustainability Award for FY 2011 Activities – Community Collaboration and Engagement Category – Reaching Beyond: Y-12 Sustainability Outreach,
- 2012 Department of Energy Sustainability Award for FY 2011 Activities – Cradle to Cradle Category – Y-12 Targeted Excess Materials Program Pursues Sustainable Disposition Paths,
- 2012 National Nuclear Security Administration Pollution Prevention/Sustainability Environmental Stewardship Best in Class Award – Living Laboratory Category – Y-12's Environmentally Friendly Solvent Blend (RonJohn®),
- 2012 National Nuclear Security Administration Pollution Prevention/Sustainability Environmental Stewardship Best in Class Award – Health and the Environment Category – Y-12 Breaks the Chains and Clears the Way for Site Transformation,
- 2012 National Nuclear Security Administration Pollution Prevention/Sustainability Environmental Stewardship Best in Class Award – Cradle to Cradle Category – Y-12 Targeted Excess Materials Program Pursues Sustainable Disposition Paths,
- 2012 National Nuclear Security Administration Pollution Prevention/Sustainability Environmental Stewardship Award – Environmental Management Systems Category – Y-12's Analytical Chemistry Organization's Objective: Reduce, Reuse and Recycle,
- 2012 National Nuclear Security Administration Pollution Prevention/Sustainability Environmental Stewardship Award – Community Collaboration and Engagement Category – Reaching Beyond – Y-12 Sustainability Outreach,
- 2012 National Nuclear Security Administration Pollution Prevention/Sustainability Environmental Stewardship Award – Change Agents Category – Reaching Beyond – Fast-Tracking Y-12 Sustainability Dream to Reality,
- 2012 National Nuclear Security Administration Pollution Prevention/Sustainability Environmental Stewardship Award – Comprehensive Energy and/or Fleet Management Category –¬ Reaching Beyond - Y-12 Shines the Light on Energy Reductions, and
- Y-12 Maintains Tennessee Pollution Prevention Partnership Program – Performer Level Status for 2012.

8.1. BUDGET/FUNDING

Dedicated funding for energy and water projects is provided via the ESPC mechanism. Y-12 currently has delivery order #2, which is in the first period of performance. Delivery order #3 is in the preliminary planning stages and should be awarded during FY 2013.

Accomplishment of minor energy reduction projects is included within internal baseline budgets. Although extensive funding for specific projects is limited, the site recognizes that significant contributions to the goals can be achieved by including energy, water, and sustainability efficiencies within ongoing maintenance work. When appropriate, modifications to facilities include both energy and sustainable elements. Specific examples of this integration include the HVAC replacements, pervious pavement and solar elements in the parking lot, lighting replacements, energy-efficient utility modifications, and sustainable acquisition clauses.

Whenever practicable, savings resulting from energy reductions are reinvested into plant-wide efforts. Facility management and the Readiness in Technical Base and Facilities program annually review identified energy projects. Efforts are selected for implementation based on funding levels and priority of installation. Although out-year funding is uncertain, Y-12 will continue to execute projects as funding becomes available or as they can be accomplished incrementally within current funding profiles.

The site has evaluated past data for trends in weather patterns as well as specific weather events. The following information provides an overview of recent impacts and planning activities related to climate change. Based on the 1895–2010 data available, it is unlikely that Tennessee will experience increased warming relative to the global average. However, the state has experienced extreme weather occurrences that would be considered random incidents. If the weather patterns were unique, they might be true anomalies; however, the unusual events continue without a true pattern, so consideration should be given to management of catastrophic events.

OBJECTIVE 1.1/1.2/4.2

Y-12 is fortunate in regards to climate change information and data exchange. The site has three meteorological towers and a resident meteorologist. The site is also located adjacent to the Oak Ridge National Laboratory, where some of the nation's foremost research on climate change is underway. Y-12 participates in opportunities for regional planning with ORNL and other local governments, including ORNL's annual regional Sustainability Summit. The summit is an ongoing effort to deploy sustainable technologies across the southeast and includes participants from federal, state, and local governments as well as universities and colleges.

OBJECTIVE 2.2

For planning purposes, the following topics have been assessed and potential impacts to the Y-12 are considered.

- Water resources and quality: Water quality is closely monitored at Y-12. Flooding and flow rates on Bear Creek could be impacted by increased/decreased rainfall.
- Infrastructure: More sporadic rainfall could impact facilities due to flooding and roof leakage. Additionally, energy demands are likely to rise with increases in temperature.
- Tornadoes and hurricanes: East Tennessee has experienced tornadoes and increased rain/snow due to hurricanes. Severe weather events can impact facility operations, energy demand, and resources.

- Health impacts: EPA projects that Tennessee's environment may become more hospitable to disease-carrying insects, including those with malaria, Lyme disease, and dengue fever. East Tennessee may be further impacted by poor air quality and an increase in respiratory diseases and heat-related health issues.
- Temperature extremes: Higher temperatures and heat waves will likely increase the number of heat-related deaths and illnesses. Higher temperatures will also increase demand for water supplies used for both drinking and cooling.
- Impact on wildlife: Tennessee Wildlife Resources Agency (TWRA) maintains a presence on ORR, where Y-12 resides. Although Y-12 is considered an urban environment, due to the size and surrounding land areas, the site has many of the resources found in a rural area. Turkey, whitetail deer, coyote, and the occasional black bear are resident on the site (Fig. CC.1). East Fork Poplar Creek, located immediately adjacent to Y-12, contains numerous species of fish and aquatic animals. Flooding and drought conditions would likely have the most impact on wildlife. In cooperation with TWRA, wildlife and aquatic animals are monitored to ensure the site has no adverse effects on the population.

OBJECTIVE 4.1

Sustainability, energy reduction and climate change are included as elements of site-wide reports, including the *Master Site Plan* and *Twenty-five Year Site Plan*. As noted in the section on Regional and Local Planning, Y-12 is engaged in numerous organizations dedicated to future planning and impacts. Y-12 will continue to participate in government and regional strategies for climate change adaptation.

CONCLUSION

Although there is no observational evidence of long-term climate changes in Tennessee, Y-12 will continue to implement initiatives to reduce greenhouse gas and provide a more sustainable site. No single site within NNSA or DOE is a stand-alone example for climate change impact. Each site is responsible for the overall contribution of the complex, and must play a role in driving change.

Fig. CC.1. Turkey, whitetail deer, coyote, and the occasional black bear are resident on the site.


Appendix A:
Metering
Spreadsheet

NNSA FY 2013 Site Metering Plan Spreadsheet (Building-by-Building)

					ELECTRICAL					STEAM					NATURAL GAS					CHILLED WATER				WATER				DATA CENTER			
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF
Site	Building (FIMS Name)	Property Sequence Number	GSF	HPSB	Meter Type and Status	Estimated Annual Energy Usage (KWh)	Fiscal Year to Install 201x	Cost (Dollars)	EPAct	Meter Type and Status	Estimated Annual Energy Usage (Btu[6])	Fiscal Year to Install 201x	Cost (Dollars)	EISA	Meter Type and Status	Estimated Annual Energy Usage (Btu[6])	Fiscal Year to Install 201x	Cost (Dollars)	EISA	Meter Type and Status	Estimated Annual Energy Usage (Btu[6])	Fiscal Year to Install 201x	Cost (Dollars)	Meter Type and Status	Estimated Annual Water Usage (000s Gallons)	Fiscal Year to Install	Cost (Dollars)	Data Center Building	Data Center Metered	FY to Complete Metering	Cost (Dollars)
Y-12 NSC	1418	208391		2 No	5 Advanced Installed	4,242,020			YES					NO					NO					4 Standard Installed	471,848						
Y-12 NSC	9103	98357	110,248	1 Yes	3 No Meter Future Advanced	2,480,580	2013	$45,000	NO	3 No Meter Future Advanced	8,455,926	2014	$50,000	YES					NO	3 No Meter Future Advanced	22,935	2013	$ 50,000	3 No Meter Future Advanced	4,335	2014	$ 25,000	9103	No	2013	$ 50,000
Y-12 NSC	9105	98361	7,667	2 No	3 No Meter Future Advanced	99,671	2014	$25,000	NO					NO					NO												
Y-12 NSC	9106	98362	15,990	1 Yes	3 No Meter Future Advanced	232,640	2014	$25,000	NO	3 No Meter Future Advanced		2014	$50,000	YES					NO					3 No Meter Future Advanced	629	2013	$ 25,000				
Y-12 NSC	9108	98364	7,544	2 No	4 Standard Installed	123,760			NO					NO					NO												
Y-12 NSC	9109	98365	9,788	1 Yes	4 Standard Installed	129,280			NO	3 No Meter Future Advanced		2014	$50,000	YES					NO					3 No Meter Future Advanced	385	2014	$ 25,000				
Y-12 NSC	9110	98366	8,634	2 No	4 Standard Installed	2,584,064			NO					NO					NO												
Y-12 NSC	9113	98369	59,299	1 Yes	3 No Meter Future Advanced	830,186	2013	$25,000	NO	3 No Meter Future Advanced	7,657,141	2014	$50,000	YES					NO	3 No Meter Future Advanced	7,343	2014	$ 50,000	3 No Meter Future Advanced	2,332	2013	$ 25,000				
Y-12 NSC	9114	98370	36,901	1 Yes	5 Advanced Installed	884,880			NO	3 No Meter Future Advanced	3,815,851	2014	$50,000	YES					NO					3 No Meter Future Advanced	1,451	2013	$ 25,000				
Y-12 NSC	9115	98371	16,415	1 Yes	3 No Meter Future Advanced	213,395	2014	$25,000	NO	4 Standard Installed	1,364,803			NO					NO	3 No Meter Future Advanced	4,479	2014	$ 50,000	4 Standard Installed	645						
Y-12 NSC	9116	98372	16,415	1 Yes	3 No Meter Future Advanced	213,395	2014	$25,000	NO	3 No Meter Future Advanced	1,327,916	2014	$50,000	YES					NO	3 No Meter Future Advanced	4,192	2014	$ 50,000	4 Standard Installed	645						
Y-12 NSC	9117	98373	19,648	1 Yes	3 No Meter Future Advanced	442,080	2013	$45,000	NO	3 No Meter Future Advanced	544,395	2014	$50,000	YES					NO	3 No Meter Future Advanced	1,538	2013	$ 50,000	3 No Meter Future Advanced	773	2013	$ 25,000	9117	No	2013	$ 25,000
Y-12 NSC	9119	98374	73,381	1 Yes	4 Standard Installed	1,039,000			NO	3 No Meter Future Advanced	6,359,751	2014	$50,000	YES					NO	3 No Meter Future Advanced	13,930	2014	$ 50,000	3 No Meter Future Advanced	2,885	2013	$ 25,000				
Y-12 NSC	9202	98381	157,228	2 No	4 Standard Installed	2,086,200			NO	3 No Meter Future Advanced	76,317,017	2013	$50,000	YES					NO					3 No Meter Future Advanced	6,182	2015	$ 25,000				
Y-12 NSC	9203	98382	31,107	2 No	3 No Meter Future Advanced	404,391	2014	$25,000	NO	3 No Meter Future Advanced	19,079,254	2013	$50,000	YES					NO												
Y-12 NSC	9212	98395	442,317	2 No	5 Advanced Installed	36,859,281		$25,000*	YES	3 No Meter Future Advanced	178,073,041	2013	$50,000	YES	3 No Meter Future Advanced	124	2013	$ 25,000	YES	3 No Meter Future Advanced	264,481	2015	$ 50,000	3 No Meter Future Advanced	17,392	2016	$ 25,000				
Y-12 NSC	9215	98397	188,729	2 No	5 Advanced Installed	15,727,216		$25,000*	YES	3 No Meter Future Advanced	114,475,526	2013	$50,000	YES	3 No Meter Future Advanced	62	2013	$ 25,000	YES	3 No Meter Future Advanced	89,831	2015	$ 50,000	3 No Meter Future Advanced	7,421	2016	$ 25,000				
Y-12 NSC	9624	125772	37,372	2 No	3 No Meter Future Advanced	485,836	2016	$25,000	NO					NO					NO												
Y-12 NSC	9731	98610	37,159	2 No	5 Advanced Installed	185,795			NO					NO					NO												
Y-12 NSC	9737	98621	98,017	2 No	4 Standard Installed	3,431,000			YES	3 No Meter Future Advanced	25,439,006	2014	$50,000	YES					NO	3 No Meter Future Advanced	41,527	2014	$ 50,000	3 No Meter Future Advanced	3,854	2014	$ 25,000				
Y-12 NSC	9995	98801	81,655	2 No	5 Advanced Installed	6,804,497			YES	3 No Meter Future Advanced	76,317,017	2015	$50,000	YES					NO					3 No Meter Future Advanced	3,211	2016	$ 25,000				
Y-12 NSC	9996	98802	34,233	2 No	5 Advanced Installed	2,852,714			NO					NO					NO												
Y-12 NSC	9998	98803	152,134	2 No	5 Advanced Installed	12,677,672		$25,000*	YES	3 No Meter Future Advanced	50,878,012	2015	$50,000	YES					NO					3 No Meter Future Advanced	5,982	2016	$ 25,000				
Y-12 NSC	301 BCR	204358	411,837	1 Yes	5 Advanced Installed	8,944,000			YES					NO					NO					4 Standard Installed	16,194						
Y-12 NSC	741-000	133800	4,558	2 No	5 Advanced Installed	4,558			NO					NO					NO												
Y-12 NSC	743-000	142004	1,750	1 Yes	3 No Meter Future Advanced	1,750	2016	$25,000	NO					NO					NO												
Y-12 NSC	9201-01	98375	270,988	2 No	5 Advanced Installed	6,981,613			YES	3 No Meter Future Advanced	57,237,763	2013	$50,000	YES					NO	3 No Meter Future Advanced	138,664	2015	$ 50,000	3 No Meter Future Advanced	10,655	2015	$ 25,000				
Y-12 NSC	9201-03	98377	191,978	1 Yes	5 Advanced Installed	3,075,812			YES	4 Standard Installed	57,237,763			YES					NO					3 No Meter Future Advanced	7,549	2013	$ 25,000				
Y-12 NSC	9201-05N	98380	78,049	2 No	5 Advanced Installed	4,500,000			YES	3 No Meter Future Advanced	38,158,509	2013	$50,000	YES					NO	3 No Meter Future Advanced	56,638	2015	$ 50,000								
Y-12 NSC	9201-05W	133777	70,005	2 No	5 Advanced Installed	3,144,000			YES	3 No Meter Future Advanced	25,439,006	2013	$50,000	YES					NO												
Y-12 NSC	9203A	98383	13,881	1 Yes	3 No Meter Future Advanced	180,453	2014	$25,000	NO					NO					NO												
Y-12 NSC	9204-02	98385	324,085	2 No	5 Advanced Installed	11,315,999			YES	3 No Meter Future Advanced	114,475,526	2013	$50,000	YES	3 No Meter Future Advanced	62	2013	$ 25,000	YES	3 No Meter Future Advanced	94,466	2014	$ 50,000	3 No Meter Future Advanced	12,743	2016	$ 25,000				
Y-12 NSC	9204-02E	98388	172,892	2 No	5 Advanced Installed	5,952,000			NO	3 No Meter Future Advanced	89,036,520	2013	$50,000	YES					NO	3 No Meter Future Advanced	102,478	2014	$ 50,000	3 No Meter Future Advanced	6,798	2016	$ 25,000				
Y-12 NSC	9204-03	98386	255,656	2 No	5 Advanced Installed	2,149,034			YES					NO					NO												
Y-12 NSC	9225-03	202393	9,260	1 Yes	3 No Meter Future Advanced	314,840	2014	$25,000	NO	3 No Meter Future Advanced	25,439,006	2013	$50,000	YES					NO					3 No Meter Future Advanced	364	2014	$ 25,000				
Y-12 NSC	9401-07	207482	19,200	2 No	4 Standard Installed	2,817,672			YES	4 Standard Installed	12,719,503			YES	4 Standard Installed	993			YES												
Y-12 NSC	9404-13	98412	953	2 No	5 Advanced Installed	953			NO					NO					NO												
Y-12 NSC	9409-02	98269	40,000	2 No	3 No Meter Future Advanced	440,000	2015	$25,000	NO					NO					NO					3 No Meter Future Advanced	19,660	2015	$ 25,000				
Y-12 NSC	9409-10	98257	40,000	2 No	3 No Meter Future Advanced	440,000	2013	$25,000	NO					NO					NO					3 No Meter Future Advanced	19,660	2015	$ 25,000				
Y-12 NSC	9409-13	98255	40,000	1 Yes	3 No Meter Future Advanced	440,000	2015	$25,000	NO					NO					NO												
Y-12 NSC	9409-15	98253	40,000	2 No	3 No Meter Future Advanced	440,000	2015	$25,000	NO					NO					NO												
Y-12 NSC	9409-18	98266	40,000	2 No	3 No Meter Future Advanced	440,000	2013	$25,000	NO					NO					NO					3 No Meter Future Advanced	19,660	2015	$ 25,000				
Y-12 NSC	9409-20	98167	40,000	2 No	3 No Meter Future Advanced	440,000	2015	$25,000	NO					NO					NO												
Y-12 NSC	9409-22	98264	40,000	2 No	3 No Meter Future Advanced	440,000	2015	$25,000	NO					NO					NO					3 No Meter Future Advanced	19,660	2015	$ 25,000				
Y-12 NSC	9409-22E	98249	40,000	2 No	3 No Meter Future Advanced	440,000	2015	$25,000	NO					NO					NO					3 No Meter Future Advanced	19,660	2015	$ 25,000				
Y-12 NSC	9409-23	98260	40,000	2 No	3 No Meter Future Advanced	440,000	2015	$25,000	NO					NO					NO					3 No Meter Future Advanced	19,660	2015	$ 25,000				
Y-12 NSC	9409-24	98256	40,000	2 No	3 No Meter Future Advanced	440,000	2015	$25,000	NO					NO					NO					3 No Meter Future Advanced	19,660	2015	$ 25,000				
Y-12 NSC	9409-24E	139676	40,000	2 No	3 No Meter Future Advanced	440,000	2015	$25,000	NO					NO					NO					3 No Meter Future Advanced	19,660	2015	$ 25,000				
Y-12 NSC	9409-26	127792	40,000	2 No	3 No Meter Future Advanced	440,000	2015	$25,000	NO					NO					NO												
Y-12 NSC	9409-30	98250	40,000	2 No	3 No Meter Future Advanced	440,000	2015	$25,000	NO					NO					NO												
Y-12 NSC	9409-31	98247	40,000	2 No	3 No Meter Future Advanced	440,000	2013	$25,000	NO					NO					NO												
Y-12 NSC	9409-34	98275	40,000	2 No	3 No Meter Future Advanced	440,000	2015	$25,000	NO					NO					NO												
Y-12 NSC	9710-03	98529	41,496	1 Yes	3 No Meter Future Advanced	539,448	2013	$25,000	NO	3 No Meter Future Advanced	6,995,727	2014	$50,000	YES					NO	3 No Meter Future Advanced	13,907	2013	$ 50,000								
Y-12 NSC	9712-01	201424	4,697	2 No	5 Advanced Installed	23,485			NO	3 No Meter Future Advanced	11,447,553	2014	$50,000	YES					NO												
Y-12 NSC	9712-01N	203811	10,509	2 No	5 Advanced Installed	52,545			NO					NO					NO												
Y-12 NSC	9712-01S	203812	9,319	2 No	5 Advanced Installed	46,595			NO					NO					NO												
Y-12 NSC	9720-15	98546	5,065	2 No	4 Standard Installed	5,065			NO					NO					NO												
Y-12 NSC	9720-82	207178	153,001	2 No	5 Advanced Installed	4,253,049			YES	3 No Meter Future Advanced	63,597,515	2014	$50,000	YES					NO	5 Advanced Installed	6,202			4 Standard Installed	6,016						
Y-12 NSC	9720-94	203813	9,437	1 Yes	3 No Meter Future Advanced	47,185	2013	$25,000	NO					NO					NO												
Y-12 NSC	9723-27	98598	11,670	1 Yes	3 No Meter Future Advanced	58,350	2014	$25,000	NO					NO					NO					3 No Meter Future Advanced	459	2014	$ 25,000				
Y-12 NSC	9723-28	98599	10,252	1 Yes	3 No Meter Future Advanced	51,260	2014	$25,000	NO					NO					NO					3 No Meter Future Advanced	403	2014	$ 25,000				
Y-12 NSC	9723-31	98600	27,532	1 Yes	3 No Meter Future Advanced	137,660	2014	$25,000	NO					NO					NO					3 No Meter Future Advanced	1,083	2014	$ 25,000				
Y-12 NSC	9723-33	98601	10,771	1 Yes	3 No Meter Future Advanced	53,855	2014	$25,000	NO					NO					NO					3 No Meter Future Advanced	424	2014	$ 25,000				
Y-12 NSC	9723-34	200821	6,700	1 Yes	3 No Meter Future Advanced	33,500	2014	$25,000	NO					NO					NO					3 No Meter Future Advanced	263	2014	$ 25,000				
Y-12 NSC	9733-05	202699	13,322	1 Yes	3 No Meter Future Advanced	173,186	2014	$25,000	NO					NO					NO	3 No Meter Future Advanced	2,917	2014	$ 50,000	4 Standard Installed	524						
Y-12 NSC	9767-04	98634	6,893	2 No	5 Advanced Installed	11,969,600			YES					NO					NO	3 No Meter Future Advanced	N/A*	2014	$50,000†								
Y-12 NSC	9767-08	98637	4,847	2 No	5 Advanced Installed	4,393,452			YES					NO					NO	3 No Meter Future Advanced	N/A*	2014	$50,000†								
Y-12 NSC	9767-10	98639	12,000	2 No	5 Advanced Installed	18,463,000			YES					NO					NO	3 No Meter Future Advanced	N/A*	2013	$50,000†								
Y-12 NSC	9767-11	98640	4,880	2 No	5 Advanced Installed	5,612,240			YES					NO					NO	3 No Meter Future Advanced	N/A*	2014	$50,000†								
Y-12 NSC	9767-12	98641	3,089	1 Yes	5 Advanced Installed	3,552,350			NO					NO					NO	5 Advanced Installed	N/A*										
Y-12 NSC	9767-13	98642	20,724	2 No	5 Advanced Installed	24,417,759			YES					NO					NO	5 Advanced Installed	12,614										
Y-12 NSC	9999-03	98805	2,447	2 No	5 Advanced Installed	2,447			NO					NO					NO												
Y-12 NSC	9999-06	133797	3,008	2 No	5 Advanced Installed	3,008			NO					NO					NO												
Y-12 NSC	9999-08	141262	2,332	1 Yes	5 Advanced Installed	2,332			NO					NO					NO												
Y-12 NSC	UPF	Y-2002-0295	363,466	1 Yes	3 No Meter Future Advanced	-	2016	$25,000		3 No Meter Future Advanced	111,241,559	2016	$50,000		3 No Meter Future Advanced	124	2016	$ 25,000		3 No Meter Future Advanced	310,104	2016	$ 50,000	3 No Meter Future Advanced	14,292	2016	$ 25,000				

* Advanced metering was installed for these facilities at the 13.8kV service. Additional sub-metering is required at the building level.
† Y-12 generated own chilled water - metering is required at the point of service. Consumption not included in calculations


Appendix B:
Potable Water
Management
Plan

14. POTABLE WATER SYSTEM

14.1 SYSTEM DESCRIPTION

Potable water is supplied by the City of Oak Ridge (COR) under contract with the U.S. Department of Energy Oak Ridge Operations. The potable water supply is provided from the COR water treatment plant on Pine Ridge and delivered to two new Y-12 elevated storage tanks by two independent feeds (i.e., one 16-in. and one 24-in. main underground pipeline). These water tanks have a total capacity of 4,000,000 gal. A total of 500,000 gal is reserved as emergency water storage for fire-fighting activities on the Y-12 site.

Water flows from the tanks at a peek supply pressure of 90 psi through pressure regulators (which regulate system pressure to nominally 66 psi) and flowmeters to one 16-in. and one 24-in. line along Bear Creek Road and then through four isolation connections and into the plant grid, which consists of more than 28 miles of underground piping. The distribution system meets all Tennessee Department of Environment and Conservation (TDEC) water standards and is overseen by a designated operator certified by the State of Tennessee. The distribution system ranges in size from 6-in. to 24-in. piping.

The grid supplies potable water for fire suppression, domestic, and industrial process use. Process water systems are connected through reduced-pressure backflow preventer assemblies to mitigate the potential of contaminating the potable water supply. Approximately 300 backflow assemblies are installed throughout Y-12 to meet the water quality regulations.

Pursuant to TDEC regulations, the water system is tested for chlorine residuals weekly, total coliform and propylene glycol monthly, disinfectant byproduct quarterly, and lead and copper every 5 years.

Y-12's average daily water usage is approximately 3.5 million gal with peek demands of 5.3 mgd.

14.2 CURRENT MISSION

Y-12's potable water system, which meets state water requirements, supplies sanitary water to all Y-12 facilities. The potable water system supports

- fire protection systems, including sprinkler systems and fire hydrants, and emergency fire-fighting water storage;
- sanitary water systems, including emergency showers and eyewash stations, personnel decontamination facilities, drinking fountains, rest rooms, changehouses, and the cafeteria;
- process water systems, including feedwater for the steam plant and demineralizer, makeup water for cooling towers, process cooling, cleaning and decontamination systems, chemical makeup systems, laboratories, and other miscellaneous needs; and
- 16-in. emergency backup water feed for Oak Ridge National Laboratory.

Fig. 14.1. The new potable water system has two 2-million-gal elevated storage tanks.

Fig. 14.2. The potable water system upgrade project, completed in 2010, evaluated the distribution system and upgraded the infrastructure.

14.3 CURRENT CONDITION

The potable water system upgrade (PWSU) project, completed in 2010, evaluated the distribution system and upgraded the infrastructure. Significant improvements to the overall system include:

- completion of two 2-million-gal elevated storage tanks with automated fill control and Utilities Management System monitoring (Fig. 14.1);
- replacement of 2,300 ft of potable water piping within the system grid;
- cleaning and lining of 2,115 ft of existing pipe within the grid;
- installation of 8,360 ft of new piping from the new elevated tanks to the system grid;
- installation of 52 new reduced-pressure backflow preventer assemblies; and
- installation of 50 new isolation valves.

Because of the PWSU project, portions of the potable water system are in excellent condition.

Table 14.1. Potable water system condition assessment survey results

System	Deferred Maintenance Cost Estimate	Replacement Plant Value (RPV)	Condition
Potable Water	$7,930,070	$294,148,312	Good

The overall system condition assessment results are shown in Table 14.1. The plant potable water system grid has approximately 200 isolation valves ranging in size from 6 in. to 24 in. that are more than 20 years old, with some dating to the original construction of Y-12. These valves are required to isolate portions of the distribution system during a water main break or routine system operation. These valves were not identified as part of the PWSU project and are approaching or have exceeded normal operational life expectancy. Consideration should be given to prioritizing their replacement. Isolations within the system are often difficult to accomplish with older valves. This portion of the potable water system is in fair condition.

As a result of infrastructure reduction activities, the original potable water system configuration is changing from a "grid" system to a "tree" system. The resulting dead-end lines potentially could lead to poor water quality in regions of the plant where water usage is minimal.

The new potable water system elevated storage tanks have increased water pressure in the system grid by approximately 20 psi. This rise in pressure may increase the potential to cause leaks in the older infrastructure. The existing pressure monitoring system measures the water pressure at three locations: Buildings 9401-3, 9995, and 9201-5. The pressure sensor in Building 9201-5 is not working and is being replaced. The two working locations (Buildings 9401-3 and 9995) do not provide adequate coverage of the system pressure for the entire site.

The system contains 300-plus underground isolation valves that do not have local valve numbers. Identifying these valves in the field is often difficult.

During the early 1990s, approximately 30,000 ft of building laterals was scheduled to be replaced as part of the Facility Capability Assurance Program. The laterals were subsequently deleted from the project because of funding limitations and the need to complete higher priority work. Consideration needs to be given to the replacement of these laterals.

Equipment conditions are provided in Appendix 14.1.

14.4 FUTURE SYSTEM MISSION AND CAPABILITIES

The only known future system mission is connection to the Uranium Processing Facility (UPF). System isolation points and connection points have already been provided by the PWSU project. The potable water system in its current configuration is capable of supporting the UPF mission.

14.5 ENERGY AND WATER ANALYSIS

Several point of service water meters will be installed as part of the energy metering project. These meters will be tied into UMS to provide near real time data on water usage.

Two new 300-hp pumps have been installed by the PWSU project to fill the new elevated potable water storage tanks from the COR supply headers. Based on current daily potable water usage, one pump will run continuously approximately 40% of the time. Electrical meters were installed to monitor the electrical use at the storage tanks. The pump energy use will have a negative impact on the Y-12 electricity reduction goal.

The PWSU project also installed two water flowmeters at the new water storage tanks. The new meters will allow Utilities to trend plant water use and verify the COR water billing invoices.

14.6 MISSION GAP ANALYSIS

The capacity of the potable water system is adequate to support both current and future service requirements.

As a result of infrastructure reduction activities, the potable water pressure monitoring system potentially will be reduced to one monitoring location at Building 9995. The pressure monitoring system must be upgraded to ensure the Plant Shift Superintendent's office detects low-pressure conditions and initiates actions to address the safety basis requirements for Y-12 production facilities.

Meters for potable water service to enduring facilities must be installed to support the energy and water reduction goals established by the National Nuclear Security Administration.

14.7 SYSTEM RISK ASSESSMENT SUMMARY

A summary of the risk assessment evaluation forms prepared during the risk assessment process is provided in Appendix 14.2. The risk grading process is defined in Y15-016, *Risk Determination and Acceptance*, and uses form UCN-21891, *Risk Grading and Approval*, to capture the risk analysis. The risk assessments use the mission, condition, and project data to evaluate the residual risks, assuming that the projects will be executed and that appropriate and timely maintenance and running repairs are accomplished.

14.8 PROJECTS

Five projects are identified for the potable water system as listed in Appendix 14.3.

14.8.1 FUNDED PROJECTS

There are currently no funded projects.

14.8.2 PROPOSED PROJECTS

Develop a flushing program to ensure water quality is maintained in remote or perimeter areas of the grid. As facilities are eliminated, careful consideration must be given to maintaining the integrity of the distribution to avoid dead ends.

The proposed new sitewide pressure monitoring system will give adequate and continuous data of the site's water grid pressure and provide sufficient redundancy in the event of equipment failure.

The proposed project is to locate all potable water system isolation valves with a Global Positioning System and label the more significant valves. These actions would make isolating the water system in the event of an emergency safer and more efficient.

The proposed water valve replacement project would replace the 1940s-era isolation valves within the distribution system. In the event of a water main break, portions of the system must be isolated quickly to reduce uncontrolled chlorinated water discharge to East Fork Poplar Creek.

The proposed building lateral replacement project would increase reliability within the potable water system up to the facility wall, reducing the possibility of pipe ruptures associated with legacy piping.

14.9 RECOMMENDATIONS AND CONCLUSIONS

System upgrades are needed to ensure water quality meets TDEC guidelines and to ensure effective isolation within the system grid during routine and emergency outages.

- The system needs to be looped in to eliminate dead-end lines and ensure water quality;
- The system isolation valves need to be identified using Global Positioning System technology for safe, efficient isolations within the system grid;
- Isolation valves need to be identified and marked;
- Valves from the 1990s and legacy isolation valves need to be identified and replaced; and
- Building laterals up to the facility boundary need to be replaced.

APPENDIX 14.1 EQUIPMENT LIST

Facility	Equipment Type	Capacity	UOM	Equipment ID	Service	Condition
1418	Potable Water Storage Tank	2,000,000	gal		Storage Tank	Good
1419	Potable Water Storage Tank	2,000,000	gal		Storage Tank	Good
1418	Potable Water Tank	6,500	gpm	PWP-J-100	Tank-Fill Pump	Good
1418	Potable Water Tank	6,500	gpm	PWP-J-200	Tank-Fill Pump	Good
1418	Potable Water Tank	300	hp	J-100	Tank-Fill Pump Motor	Good
1418	Potable Water Tank	300	hp	J-200	Tank-Fill Pump Motor	Good
1418	Potable Water Tank	16	in.	PPW-PCV-100	Pressure-Regulating Valve	Good
1418	Potable Water Tank	16	in.	PPW-PCV-200	Pressure-Regulating Valve	Good
1418	Electric Check Valve	16	in.	PWP-FV-100	Check Valve	Good
1418	Electric Check Valve	16	in.	PWP-FV-200	Check Valve	Good
	Water Distribution Pipe	4-24	in.		147,840 ft Underground Pipe	Good
	Valves	4-24	in.		Approximately 300 Isolation Valves	Fair

APPENDIX 14.2 SYSTEM RISK ASSESSMENT

Risk Reduction	Tracking Number	Project Description	Initial Risk	Residual Risk	Risk Explanation
9	PWS 03	Locate and label water system valves.	High - 2	Low - 11	Water system valves are not labeled and make identification difficult.
8	PWS 02	Install a pressure monitoring system.	High - 4	Low - 12	Maintaining potable water system minimum pressure is required by the state.
6	PWS 01	Develop a flushing program.	Medium - 10	Low - 16	Dead-end lines have potential to cause poor water quality within the potable water system.
5	PWS 05	Replace valves.	Medium - 10	Low - 15	Legacy potable water system isolation valves need to be replaced.
5	PWS 06	Replace building laterals.	Medium - 10	Low - 15	Legacy building laterals need to be replaced due to age.

APPENDIX 14.3 PROJECTS

Risk Reduction	Tracking Number	Project Description	Cost Estimate	Start Date	Repair	Replace/ Upgrade	Removal
9	PWS 03	Locate and label water system valves.	$250,000	2013		X	
8	PWS 02	Install a pressure monitoring system.	$695,000	2011		X	
6	PWS 01	Develop a flushing program.	$75,000	2015		X	
5	PWS 05	Replace valves.	$1,500,000	TBD		X	
5	PWS 06	Replace building laterals.	$3,500,000	TBD		X	
		Total:	**$6,020,000**				


Appendix C:
Y-12
Sustainabilty
Highlights

Y-12 National Security Complex

Site Vision:

Support the Environment, Safety and Health Policy and the DOE Strategic Sustainability Performance Plan (SSPP) while promoting overall sustainability and reduction of greenhouse gas (GHG) emissions.

Major accomplishments:

- Achieved Jack Case HPSB (30.1% reduction)
- Supported EISA 438 compliance:
  - Installed pervious pavement parking lot
  - Installed solar crosswalk/LED lighting
  - Re-used 3.3 acres of soil for slab cover (landfill avoidance)
- Met 100% of EISA evaluation requirements
- Installed 2 new AHU in 9201-03, (5M gallons water saved)
- Reduced high pressure steam; 'right-sized' for application (Gas/fuel savings)
- Installed low-flow restroom fixtures (171,000 gallons water saved)
- Installed 2 new AHU in 9201-05N
- Consolidated personnel to vacate 4 facilities (523,501kwh/yr savings)
- Reduced 12,857 MT CO2 through ESPC effort (2,741 equivalent pine tree acres)
- Repaired condensate pumps at 9204-02; 26% of savings for ECM 7.1, Condensate Return system
- Recycled over 4,700 pounds of employee-owned electronics and shredded over 1,100 pounds of personal documents at second annual Personal Electronics Collection Event.

Awards:

- Federal Energy and Water Management Award for Steam Plant
- Environmental Excellence Award for Y-12's Sustainability Team
- 2012 Federal Electronics Challenge (FEC) Gold Level Award
- 2012 DOE Sustainability Award
- Reaching Beyond - Y-12 Sustainability Outreach
- Y-12 Targeted Excess Materials

During FY2013, the site will continue to focus on employee awareness and incorporation of sustainability into maintenance efforts and modernization planning. This focus will further enable the site progress towards meeting the goals.

Facts and Status

- Jack Case met 100% of guiding principles
- 30.1% reduction in Scope 1& 2 GHG
- 4.3% reduction in Scope 3 GHG
- 26.4% reduction in energy intensity
- 91.6% of electricity metered
- 8% electricity consumption offset by renewable energy credits
- 67.1% reduction in fleet petroleum
- 554.3% increase in alternative fuel
- 100% light-duty vehicles are alternative fuel
- 33.4% reduction water intensity
- > 51% non-hazardous waste diversion
- >80% C&D waste diversion
- Sustainable acquisition clause included in purchasing
- Completed over 100 Pollution Prevention Initiatives with a reduction of over 25.5 million pounds of waste
- 100% of acquisitions of eligible electronic products were EPEAT registered
- Over 4,700 pounds of employee-owned electronics collected for recycling
- Over 1,100 pounds of personal documents shredded and recycled at second annual Personal Electronics Collection Event.

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Appendix D:
Consolidated
Energy and
Data Report
(CEDR)

Performance Summary

The table below summarized performance for several sustainability goals based on information reported in this workbook. Please note, Scope 1 & 2 GHG emissions do not include emissions from on-site and contracted landfill as these are to be reported in PPTRS.

SSPP Goal #	DOE Goal	Baseline	Current FY	Performance Status
1.1	28% Scope 1 & 2 GHG reduction by FY 2020 from a FY 2008 baseline	337,628.4	236,125.9	-30.1%
1.2	13% Scope 3 GHG reduction by FY 2020 from a FY 2008 baseline	31,894.5	29,820.6	-6.5%
2.1	30% energy intensity reduction by FY 2015 from a FY 2003 baseline *(Note: Estimates without REC credit)*	418,447	308,177	-26.4%
	Goal Energy (10^6 Btu)	2,924,565	2,113,549.829	
	Goal Square Footage (x1,000)	6,989	6,858.240	
2.3a	Individual buildings or processes metering for 90% of electricity (by October 1, 2012)		92.0%	92.0%
2.3b	Individual buildings or processes metering for 90% of natural gas (by October 1, 2015)		80.0%	80.0%
2.3c	Individual buildings or processes metering for 90% of steam (by October 1, 2015)		5.6%	5.6%
2.3d	Individual buildings or processes metering for 90% of chilled water (by October 1, 2015)		1.4%	1.4%
2.7	7.5% of annual electricity consumption from renewable sources by FY 2013 and thereafter (5% FY 2010 – 2012)	263,309	21,005	8.0%
3.1	10% annual increase in fleet alternative fuel consumption by FY 2015 relative to a FY 2005 baseline	4,801	26,614	554.3%
3.2	2% annual reduction in fleet petroleum consumption by FY 2020 relative to a FY 2005 baseline *(Note: Estimates without biodiesel credit)*	160,317	52,791	67.1%
4.1	26% water intensity reduction by FY 2020 from a FY 2007 baseline	210.8	140.4	-33.4%
	Potable Water Consumption (10^6 Gal)	1,370	963	
	Total Gross Square Footage (x1,000)	6,500	6,858	
4.2	20% water consumption reduction of industrial, landscaping, and agricultural (ILA) water by FY 2020 from a FY 2010 baseline	0	0	

Energy Management Data Report

Requirement(s): See tables

Instructions: If applicable, complete cells with blue text and highlight the cell. The information requested is for completing DOE's Annual Energy Report.

Source: Site/Lab

ENERGY EFFICIENCY IMPROVEMENTS AND FUNDING

1-1. E.O. 13514/OMB Circular A-11 Direct Agency Obligations

	FY 2012		Projected FY 2013		Projected FY 2014	
		(Thou. $)		(Thou. $)		(Thou. $)
Direct obligations for facility energy efficiency improvements, including facility surveys/audits		$6,560.9		$5,000.0		$5,000.0
Estimated annual energy savings anticipated from obligations (Million BTU)	193,920.3	$6,563.5	148,000.0	$5,008.0	148,000.0	$5,008.0
Estimated annual water savings anticipated from obligations (Thousands Gal)	34.5	$67.8	35.0	$68.8	35.0	$68.8

1-2. E.O. 13514/OMB Circular A-11 Awarded Energy Savings Performance Contracts (ESPCs)

	Annual savings (10^6 BTU)	(Number/Thou. $)
Number of ESPC Task/Delivery Orders awarded in fiscal year & annual energy (Million BTU) savings	0.0	0.0
Investment value of ESPC Task/Delivery Orders awarded in fiscal year		$0.0
Amount privately financed under ESPC Task/Delivery Orders awarded in fiscal year		$0.0
Cumulative guaranteed cost savings of ESPCs awarded in fiscal year relative to the baseline spending		$0.0
Total contract award value of ESPCs awarded in fiscal year (sum of contractor payments for debt repayment, M&V, and other negotiated performance period services)		$0.0
Total payments made to all ESPC contractors in fiscal year		$4,718,581.0

1-3. E.O. 13514/OMB Circular A-11 Awarded Utility Energy Services Contracts (UESCs)

	Annual savings (10^6 BTU)	(Number/Thou. $)
Number of UESC Task/Delivery Orders awarded in fiscal year & annual energy (Million BTU) savings	0.0	0.0
Investment value of UESC Task/Delivery Orders awarded in fiscal year		$0.0
Amount privately financed under UESC Task/Delivery Orders awarded in fiscal year		$0.0
Cumulative cost savings of UESCs awarded in fiscal year relative to the baseline spending		$0.0
Total contract award value of UESCs awarded in fiscal year (sum of payments for debt repayment and other negotiated performance period services)		$0.0
Total payments made to all UESC contractors in fiscal year		$0.0

1-4. EPAct 1992 Training

	(Number)	(Thou. $)
Number of personnel trained in FY 2012/Expenditure	8	$0.0

Energy Management Data Report

Requirement(s): See tables

Instructions: If applicable, complete cells with blue text and highlight the cell. The information requested is for completing DOE's Annual Energy Report.

Source: Site/Lab

1-5a. EPAct 2005 Metering Of Electricity Use

(Note: If a building has an advanced and a standard meter, only account for the advanced meter. If a building has multiple meters, ensure the utility metered is accounted/reported only once)

Fiscal Year	# of "Appropriate" Buildings Per EPAct 2005	Standard Meters			Advanced Meters			Total		Total % of Electricity Metered
		# of Buildings with Standard Meters	Estimated Amount of Purchased Electricity Metered (kWh/Yr)	Estimated Amount of On-Site Generate Electricity Metered (kWh/Yr)	# of Buildings with Advanced Meters	Estimated Amount of Purchased Electricity Metered (kWh/Yr)	Estimated Amount of On-Site Generate Electricity Metered (kWh/Yr)	# of Appropriate Buildings with Dedicated Meters	Cumulative % of "Appropriate" Buildings Metered	
2012 Report	37	24	23,442,960	0	28	190,644,016	0	52.0	140.5%	92.0%
2013 Planned	37	24	23,442,960	0	36	196,303,495	0	60.0	162.2%	94.0%
2014 Planned	37	24	23,442,960	0	49	198,470,091	0	73.0	197.3%	95.0%
2015 Planned	37	24	23,442,960	0	61	203,750,091	0	85.0	229.7%	97.0%

1-5b. EISA 2007 Metering Of Natural Gas Use

(Note: If a building has an advanced and a standard meter, only account for the advanced meter. If a building has multiple meters, ensure the utility metered is accounted/reported only once)

Fiscal Year	# of "Appropriate" Buildings Per EPAct 2005	Standard Meters			Advanced Meters			Total		Total % of Natural Gas Metered
		# of Buildings with Standard Meters	Estimated Amount of Purchased Natural Gas Metered (CF/Yr)	Estimated Amount of On-Site Generate Natural Gas Metered (CF/Yr)	# of Buildings with Advanced Meters	Estimated Amount of Purchased Natural Gas Metered (CF/Yr)	Estimated Amount of On-Site Generate Natural Gas Metered (CF/Yr)	# of Appropriate Buildings with Dedicated Meters	Cumulative % of "Appropriate" Buildings Metered	
2012 Report	4	1	1,241,092.06	0	1	992,873.65	0	2.0	50.0%	80.0%
2013 Planned	4	0	0	0	4	1,241,092.06	0	4.0	100.0%	100.0%
2014 Planned	4	0	0	0	4	1,241,092.06	0	4.0	100.0%	100.0%
2015 Planned	4	0	0	0	4	1,241,092.06	0	4.0	100.0%	100.0%

1-5c. EISA 2007 Metering Of Steam Use

(Note: If a building has an advanced and a standard meter, only account for the advanced meter. If a building has multiple meters, ensure the utility metered is accounted/reported only once)

Fiscal Year	# of "Appropriate" Buildings Per EPAct 2005	Standard Meters			Advanced Meters			Total		Total % of Steam Metered
		# of Buildings with Standard Meters	Estimated Amount of Purchased Steam Metered (Btu^6/Yr)	Estimated Amount of On-Site Generate Steam Metered (Btu/Yr)	# of Buildings with Advanced Meters	Estimated Amount of Purchased Steam Metered (Btu^6/Yr)	Estimated Amount of On-Site Generate Steam Metered (Btu/Yr)	# of Appropriate Buildings with Dedicated Meters	Cumulative % of "Appropriate" Buildings Metered	
2012 Report	23	2	58,602,566	0	1	12,719,503	0	3.0	13.0%	5.6%
2013 Planned	23	2	58,602,566	0	11	750,450,671	0	13.0	56.5%	63.6%
2014 Planned	23	2	58,602,566	0	23	886,091,450	0	25.0	108.7%	74.3%
2015 Planned	23	2	58,602,566	0	25	1,013,286,479	0	27.0	117.4%	84.3%

1-5d. DOE O 436.1 & SSPP Metering Of Chilled Water Use

(Note: If a building has an advanced and a standard meter, only account for the advanced meter. If a building has multiple meters, ensure the utility metered is accounted/reported only once)

Fiscal Year	# of "Appropriate" Buildings Per EPAct 2005	Standard Meters			Advanced Meters			Total		Total % of Chilled Water Metered
		# of Buildings with Standard Meters	Estimated Amount of Purchased Chilled Water Metered (Btu^6/Yr)	Estimated Amount of On-Site Generate Chilled Water Metered (Btu/Yr)	# of Buildings with Advanced Meters	Estimated Amount of Purchased Chilled Water Metered (Btu^6/Yr)	Estimated Amount of On-Site Generate Chilled Water Metered (Btu/Yr)	# of Appropriate Buildings with Dedicated Meters	Cumulative % of "Appropriate" Buildings Metered	
2012 Report	18	0		0	3	18,816.48	0	3.0	16.7%	1.4%
2013 Planned	18	0		0	7	57,196.58	0	7.0	38.9%	4.2%
2014 Planned	18	0		0	18	328,529.27	0	18.0	100.0%	24.4%
2015 Planned	18	0		0	22	878,143.67	0	22.0	122.2%	65.2%

1-5e. Water Management Best Practice Metering Of Water Use

(Note: If a building has an advanced and a standard meter, only account for the advanced meter. If a building has multiple meters, ensure the utility metered is accounted/reported only once)

Fiscal Year	# of "Appropriate" Buildings Per EPAct 2005	Standard Meters			Advanced Meters			Total		Total % of Water Metered
		# of Buildings with Standard Meters	Estimated Amount of Purchased Water Metered (Gal/Yr)	Estimated Amount of On-Site Captured Water Metered (Gal/Yr)	# of Buildings with Advanced Meters	Estimated Amount of Purchased Water Metered (Gal/Yr)	Estimated Amount of On-Site Captured Water Metered (Gal/Yr)	# of Appropriate Buildings with Dedicated Meters	Cumulative % of "Appropriate" Buildings Metered	
2012 Report	22	4	7,830,836	0	2	6,539,937	0	6.0	27.3%	1.5%
2013 Planned	22	4	7,830,836	0	8	22,158,003	0	12.0	54.5%	3.1%
2014 Planned	22	4	7,830,836	0	17	33,727,648	0	21.0	95.5%	4.3%
2015 Planned	22	4	7,830,836	0	27	207,848,219	0	31.0	140.9%	22.4%

3.1 Energy Water

Utility/Fuel Consumption and Cost													Notes		Estimated GHG Emissions			
PSO	Site #	Site	Category	Subcategory	Usage Unit	FY	QTR	Usage Amount	BTU x 10^6	Cost (1,000 $)	$/Unit	Main Site Zip Code	Additional Information	SPO Notes	Scope	Anthropogenic $MtCO_2e$	Biogenic $MtCO_2e$	Scope 3 - T&D Loss, $MtCO_2e$
NNSA	146	Y12	Buildings	Coal	Short Ton	2003	1	16,277.000	405,785.610	$682.773	$ 0.04	37831			1	38,195.382	0.000	0.000
NNSA	146	Y12	Buildings	Electricity	Megawatt Hour	2003	1	79,233.400	270,344.361	$3,202.897	$ 0.04	37831			2	54,585.617	0.000	3,595.609
NNSA	146	Y12	Buildings	Fuel Oil	1,000 Gallons	2003	1	0.000	0.000	$0.000	NA	37831			1	0.000	0.000	0.000
NNSA	146	Y12	Buildings	Natural Gas	1,000 Cubic Feet	2003	1	36,603.000	37,627.884	$187.768	$ 0.01	37831			1	1,996.987	0.000	0.000
NNSA	146	Y12	Vehicles and Equipment	Diesel	1,000 Gallons	2003	1	13.987	1,930.206	$17.548	$ 1.25	37831			1	143.239	0.000	0.000
NNSA	146	Y12	Vehicles and Equipment	Gasoline	1,000 Gallons	2003	1	31.775	3,971.875	$38.568	$ 1.21	37831			1	279.894	0.000	0.000
NNSA	146	Y12	Buildings	Coal	Short Ton	2003	2	28,829.000	718,706.970	$1,189.449	$ 0.04	37831			1	67,649.731	0.000	0.000
NNSA	146	Y12	Buildings	Electricity	Megawatt Hour	2003	2	75,099.380	256,239.085	$2,974.665	$ 0.04	37831			2	51,737.601	0.000	3,408.008
NNSA	146	Y12	Buildings	Fuel Oil	1,000 Gallons	2003	2	0.000	0.000	$0.000	NA	37831			1	0.000	0.000	0.000
NNSA	146	Y12	Buildings	Natural Gas	1,000 Cubic Feet	2003	2	28,302.000	29,094.456	$177.593	$ 0.01	37831			1	1,544.101	0.000	0.000
NNSA	146	Y12	Vehicles and Equipment	Diesel	1,000 Gallons	2003	2	19.324	2,666.712	$26.394	$ 1.37	37831			1	197.894	0.000	0.000
NNSA	146	Y12	Vehicles and Equipment	Gasoline	1,000 Gallons	2003	2	33.933	4,241.625	$44.812	$ 1.32	37831			1	298.903	0.000	0.000
NNSA	146	Y12	Buildings	Coal	Short Ton	2003	3	12,243.000	305,217.990	$495.858	$ 0.04	37831			1	28,729.254	0.000	0.000
NNSA	146	Y12	Buildings	Electricity	Megawatt Hour	2003	3	82,739.800	282,308.198	$3,657.729	$ 0.04	37831			2	57,001.253	0.000	3,754.730
NNSA	146	Y12	Buildings	Fuel Oil	1,000 Gallons	2003	3	0.000	0.000	$0.000	NA	37831			1	0.000	0.000	0.000
NNSA	146	Y12	Buildings	Natural Gas	1,000 Cubic Feet	2003	3	91,413.000	93,972.564	$583.301	$ 0.01	37831			1	4,987.312	0.000	0.000
NNSA	146	Y12	Vehicles and Equipment	Diesel	1,000 Gallons	2003	3	16.001	2,208.138	$21.765	$ 1.36	37831			1	163.864	0.000	0.000
NNSA	146	Y12	Vehicles and Equipment	Gasoline	1,000 Gallons	2003	3	30.696	3,837.000	$40.735	$ 1.33	37831			1	270.390	0.000	0.000
NNSA	146	Y12	Buildings	Coal	Short Ton	2003	4	4,091.000	101,988.630	$166.613	$ 0.04	37831			1	9,599.884	0.000	0.000
NNSA	146	Y12	Buildings	Electricity	Megawatt Hour	2003	4	82,739.800	282,308.198	$3,827.322	$ 0.05	37831			2	57,001.253	0.000	3,754.730
NNSA	146	Y12	Buildings	Fuel Oil	1,000 Gallons	2003	4	0.000	0.000	$0.000	NA	37831			1	0.000	0.000	0.000
NNSA	146	Y12	Buildings	Natural Gas	1,000 Cubic Feet	2003	4	137,131.000	140,970.668	$801.703	$ 0.01	37831			1	7,481.595	0.000	0.000
NNSA	146	Y12	Buildings	Square Feet	1,000 Square Feet	2003	4	6,989.084			$ -	37831			NA	0.000	0.000	0.000
NNSA	146	Y12	Vehicles and Equipment	Diesel	1,000 Gallons	2003	4	14.101	1,945.938	$18.093	$ 1.28	37831			1	144.406	0.000	0.000
NNSA	146	Y12	Vehicles and Equipment	Gasoline	1,000 Gallons	2003	4	34.228	4,278.500	$45.466	$ 1.33	37831			1	301.502	0.000	0.000
NNSA	146	Y12	Buildings	Coal	Short Ton	2004	1	16,346.000	407,505.780	$672.500	$ 0.04	37831			1	38,357.297	0.000	0.000
NNSA	146	Y12	Buildings	Electricity	Megawatt Hour	2004	1	73,584.800	251,071.338	$3,359.822	$ 0.05	37831			2	50,694.174	0.000	3,339.276
NNSA	146	Y12	Buildings	Natural Gas	1,000 Cubic Feet	2004	1	39,325.000	40,426.100	$243.655	$ 0.01	37831			1	2,145.494	0.000	0.000
NNSA	146	Y12	Vehicles and Equipment	Diesel	1,000 Gallons	2004	1	12.366	1,706.508	$15.705	$ 1.27	37831			1	126.638	0.000	0.000
NNSA	146	Y12	Vehicles and Equipment	Gasoline	1,000 Gallons	2004	1	30.988	3,873.500	$39.964	$ 1.29	37831			1	272.962	0.000	0.000
NNSA	146	Y12	Buildings	Coal	Short Ton	2004	2	26,768.000	667,326.240	$1,122.034	$ 0.04	37831			1	62,813.417	0.000	0.000
NNSA	146	Y12	Buildings	Electricity	Megawatt Hour	2004	2	71,927.130	245,415.368	$3,367.182	$ 0.05	37831			2	49,552.169	0.000	3,264.051
NNSA	146	Y12	Buildings	Natural Gas	1,000 Cubic Feet	2004	2	67,751.000	69,648.028	$394.370	$ 0.01	37831			1	3,696.360	0.000	0.000
NNSA	146	Y12	Vehicles and Equipment	Diesel	1,000 Gallons	2004	2	16.829	2,322.402	$23.480	$ 1.40	37831			1	172.343	0.000	0.000
NNSA	146	Y12	Vehicles and Equipment	Gasoline	1,000 Gallons	2004	2	34.699	4,337.375	$48.417	$ 1.40	37831			1	305.650	0.000	0.000
NNSA	146	Y12	Buildings	Coal	Short Ton	2004	3	11,422.000	284,750.460	$484.095	$ 0.04	37831			1	26,802.707	0.000	0.000
NNSA	146	Y12	Buildings	Electricity	Megawatt Hour	2004	3	73,719.040	251,529.364	$3,324.322	$ 0.05	37831			2	50,786.655	0.000	3,345.368
NNSA	146	Y12	Buildings	Natural Gas	1,000 Cubic Feet	2004	3	44,081.000	45,315.268	$304.524	$ 0.01	37831			1	2,404.972	0.000	0.000
NNSA	146	Y12	Vehicles and Equipment	Diesel	1,000 Gallons	2004	3	15.052	2,077.176	$21.709	$ 1.44	37831			1	154.145	0.000	0.000
NNSA	146	Y12	Vehicles and Equipment	Gasoline	1,000 Gallons	2004	3	41.175	5,146.875	$66.107	$ 1.61	37831			1	362.695	0.000	0.000

3.1 Energy Water

Utility/Fuel Consumption and Cost													Notes		Estimated GHG Emissions			
PSO	Site #	Site	Category	Subcategory	Usage Unit	FY	QTR	Usage Amount	BTU x 10^6	Cost (1,000 $)	$/Unit	Main Site Zip Code	Additional Information	SPO Notes	Scope	Anthropogenic $MtCO_2e$	Biogenic $MtCO_2e$	Scope 3 - T&D Loss, $MtCO_2e$
NNSA	146	Y12	Buildings	Coal	Short Ton	2004	4	7,154.000	178,349.220	$301.363	$ 0.04	37831			1	16,787.477	0.000	0.000
NNSA	146	Y12	Buildings	Electricity	Megawatt Hour	2004	4	76,865.450	262,264.915	$3,500.542	$ 0.05	37831			2	52,954.285	0.000	3,488.152
NNSA	146	Y12	Buildings	Natural Gas	1,000 Cubic Feet	2004	4	169,244.000	173,982.832	$1,040.850	$ 0.01	37831			1	9,233.617	0.000	0.000
NNSA	146	Y12	Buildings	Square Feet	1,000 Square Feet	2004	4	7,567.481			$ -	37831			NA	0.000	0.000	0.000
NNSA	146	Y12	Vehicles and Equipment	Diesel	1,000 Gallons	2004	4	13.881	1,915.578	$21.094	$ 1.52	37831			1	142.153	0.000	0.000
NNSA	146	Y12	Vehicles and Equipment	Gasoline	1,000 Gallons	2004	4	35.901	4,487.625	$59.866	$ 1.67	37831			1	316.238	0.000	0.000
NNSA	146	Y12	Buildings	Coal	Short Ton	2005	1	11,901.000	296,691.930	$515.594	$ 0.04	37831			1	27,926.721	0.000	0.000
NNSA	146	Y12	Buildings	Electricity	Megawatt Hour	2005	1	70,645.460	241,042.310	$3,073.224	$ 0.04	37831			2	48,669.198	0.000	3,205.889
NNSA	146	Y12	Buildings	Natural Gas	1,000 Cubic Feet	2005	1	35,140.000	36,123.920	$266.918	$ 0.01	37831			1	1,917.169	0.000	0.000
NNSA	146	Y12	Vehicles and Equipment	Diesel	1,000 Gallons	2005	1	8.628	1,190.664	$16.566	$ 1.92	37831			1	88.358	0.000	0.000
NNSA	146	Y12	Vehicles and Equipment	Gasoline	1,000 Gallons	2005	1	29.640	3,705.000	$39.673	$ 1.34	37831			1	261.088	0.000	0.000
NNSA	146	Y12	Buildings	Coal	Short Ton	2005	2	29,807.000	743,088.510	$1,431.138	$ 0.05	37831			1	69,944.692	0.000	0.000
NNSA	146	Y12	Buildings	Electricity	Megawatt Hour	2005	2	68,625.000	234,148.500	$3,206.427	$ 0.05	37831			2	47,277.259	0.000	3,114.200
NNSA	146	Y12	Buildings	Natural Gas	1,000 Cubic Feet	2005	2	23,137.000	23,784.836	$180.730	$ 0.01	37831			1	1,262.309	0.000	0.000
NNSA	146	Y12	Vehicles and Equipment	Diesel	1,000 Gallons	2005	2	8.703	1,201.014	$16.710	$ 1.92	37831			1	89.126	0.000	0.000
NNSA	146	Y12	Vehicles and Equipment	Gasoline	1,000 Gallons	2005	2	25.637	3,204.625	$51.787	$ 2.02	37831			1	225.827	0.000	0.000
NNSA	146	Y12	Buildings	Coal	Short Ton	2005	3	12,575.000	313,494.750	$675.237	$ 0.05	37831			1	29,508.320	0.000	0.000
NNSA	146	Y12	Buildings	Electricity	Megawatt Hour	2005	3	69,223.000	236,188.876	$3,226.938	$ 0.05	37831			2	47,689.235	0.000	3,141.338
NNSA	146	Y12	Buildings	Natural Gas	1,000 Cubic Feet	2005	3	29,536.000	30,363.008	$284.596	$ 0.01	37831			1	1,611.426	0.000	0.000
NNSA	146	Y12	Vehicles and Equipment	Diesel	1,000 Gallons	2005	3	4.167	575.046	$8.001	$ 1.92	37831			1	42.674	0.000	0.000
NNSA	146	Y12	Vehicles and Equipment	Gasoline	1,000 Gallons	2005	3	15.657	1,957.125	$32.165	$ 2.05	37831			1	137.917	0.000	0.000
NNSA	146	Y12	Buildings	Coal	Short Ton	2005	4	6,049.000	150,801.570	$344.450	$ 0.06	37831			1	14,194.499	0.000	0.000
NNSA	146	Y12	Buildings	Electricity	Megawatt Hour	2005	4	76,612.000	261,400.144	$3,529.385	$ 0.05	37831			2	52,779.678	0.000	3,476.650
NNSA	146	Y12	Buildings	Natural Gas	1,000 Cubic Feet	2005	4	37,967.000	39,030.076	$353.048	$ 0.01	37831			1	2,071.404	0.000	0.000
NNSA	146	Y12	Buildings	Square Feet	1,000 Square Feet	2005	4	7,409.264			$ -	37831			NA	0.000	0.000	0.000
NNSA	146	Y12	Vehicles and Equipment	Diesel	1,000 Gallons	2005	4	13.725	1,894.050	$26.352	$ 1.92	37831			1	140.556	0.000	0.000
NNSA	146	Y12	Vehicles and Equipment	Gasoline	1,000 Gallons	2005	4	34.564	4,320.500	$71.187	$ 2.06	37831			1	304.461	0.000	0.000
NNSA	146	Y12	Buildings	Coal	Short Ton	2006	1	14,318.000	356,947.740	$858.540	$ 0.06	37831			1	33,598.420	0.000	0.000
NNSA	146	Y12	Buildings	Electricity	Megawatt Hour	2006	1	66,929.480	228,363.386	$3,008.592	$ 0.04	37831			2	46,109.179	0.000	3,037.258
NNSA	146	Y12	Buildings	Natural Gas	1,000 Cubic Feet	2006	1	30,534.000	31,388.952	$443.339	$ 0.01	37831			1	1,665.874	0.000	0.000
NNSA	146	Y12	Vehicles and Equipment	Diesel	1,000 Gallons	2006	1	8.117	1,120.146	$19.138	$ 2.36	37831			1	83.125	0.000	0.000
NNSA	146	Y12	Vehicles and Equipment	Gasoline	1,000 Gallons	2006	1	23.661	2,957.625	$56.864	$ 2.40	37831			1	208.421	0.000	0.000
NNSA	146	Y12	Buildings	Coal	Short Ton	2006	2	24,153.000	602,134.290	$1,520.197	$ 0.06	37831			1	56,677.094	0.000	0.000
NNSA	146	Y12	Buildings	Electricity	Megawatt Hour	2006	2	64,114.330	218,758.094	$2,910.597	$ 0.05	37831			2	44,169.760	0.000	2,909.506
NNSA	146	Y12	Buildings	Natural Gas	1,000 Cubic Feet	2006	2	22,140.000	22,759.920	$238.247	$ 0.01	37831			1	1,207.914	0.000	0.000
NNSA	146	Y12	Vehicles and Equipment	Diesel	1,000 Gallons	2006	2	6.940	957.720	$16.129	$ 2.32	37831			1	71.071	0.000	0.000
NNSA	146	Y12	Vehicles and Equipment	Gasoline	1,000 Gallons	2006	2	22.840	2,855.000	$48.740	$ 2.13	37831			1	201.189	0.000	0.000
NNSA	146	Y12	Buildings	Coal	Short Ton	2006	3	13,203.000	329,150.790	$856.267	$ 0.06	37831			1	30,981.976	0.000	0.000
NNSA	146	Y12	Buildings	Electricity	Megawatt Hour	2006	3	67,593.130	230,627.760	$3,421.025	$ 0.05	37831			2	46,566.382	0.000	3,067.374
NNSA	146	Y12	Buildings	Natural Gas	1,000 Cubic Feet	2006	3	26,871.000	27,623.388	$255.993	$ 0.01	37831			1	1,466.028	0.000	0.000

3.1 Energy Water

Utility/Fuel Consumption and Cost													Notes		Estimated GHG Emissions			
PSO	Site #	Site	Category	Subcategory	Usage Unit	FY	QTR	Usage Amount	BTU x 10^6	Cost (1,000 $)	$/Unit	Main Site Zip Code	Additional Information	SPO Notes	Scope	Anthropogenic $MtCO_2e$	Biogenic $MtCO_2e$	Scope 3 - T&D Loss, $MtCO_2e$
NNSA	146	Y12	Vehicles and Equipment	Diesel	1,000 Gallons	2006	3	6.283	867.054	$15.071	$ 2.40	37831			1	64.343	0.000	0.000
NNSA	146	Y12	Vehicles and Equipment	Gasoline	1,000 Gallons	2006	3	22.364	2,795.500	$53.616	$ 2.40	37831			1	196.996	0.000	0.000
NNSA	146	Y12	Buildings	Coal	Short Ton	2006	4	6,257.000	155,987.010	$423.637	$ 0.07	37831			1	14,682.589	0.000	0.000
NNSA	146	Y12	Buildings	Electricity	Megawatt Hour	2006	4	73,385.910	250,392.725	$3,683.403	$ 0.05	37831			2	50,557.154	0.000	3,330.250
NNSA	146	Y12	Buildings	Natural Gas	1,000 Cubic Feet	2006	4	37,229.000	38,271.412	$311.486	$ 0.01	37831			1	2,031.140	0.000	0.000
NNSA	146	Y12	Buildings	Square Feet	1,000 Square Feet	2006	4	6,728.940			$ -	37831			NA	0.000	0.000	0.000
NNSA	146	Y12	Vehicles and Equipment	Diesel	1,000 Gallons	2006	4	7.923	1,093.374	$20.681	$ 2.61	37831			1	81.138	0.000	0.000
NNSA	146	Y12	Vehicles and Equipment	Gasoline	1,000 Gallons	2006	4	23.674	2,959.250	$60.446	$ 2.55	37831			1	208.535	0.000	0.000
NNSA	146	Y12	Buildings	Coal	Short Ton	2007	1	14,786.170	368,619.218	$1,046.861	$ 0.07	37831			1	34,697.021	0.000	0.000
NNSA	146	Y12	Buildings	Electricity	Megawatt Hour	2007	1	64,923.000	221,517.276	$2,856.612	$ 0.04	37831			2	44,726.871	0.000	2,946.204
NNSA	146	Y12	Buildings	Natural Gas	1,000 Cubic Feet	2007	1	26,288.940	27,025.030	$229.502	$ 0.01	37831			1	1,434.272	0.000	0.000
NNSA	146	Y12	Vehicles and Equipment	Diesel	1,000 Gallons	2007	1	6.199	855.462	$16.032	$ 2.59	37831			1	63.483	0.000	0.000
NNSA	146	Y12	Vehicles and Equipment	Gasoline	1,000 Gallons	2007	1	23.602	2,950.250	$50.843	$ 2.15	37831			1	207.901	0.000	0.000
NNSA	146	Y12	Water	Potable	Million Gallons	2007	1	362.050		$189.962	$ 0.52	37831			NA	0.000	0.000	0.000
NNSA	146	Y12	Buildings	Coal	Short Ton	2007	2	22,678.620	565,377.997	$1,605.646	$ 0.07	37831			1	53,217.335	0.000	0.000
NNSA	146	Y12	Buildings	Electricity	Megawatt Hour	2007	2	62,601.000	213,594.612	$2,754.444	$ 0.04	37831			2	43,127.194	0.000	2,840.831
NNSA	146	Y12	Buildings	Natural Gas	1,000 Cubic Feet	2007	2	20,771.380	21,352.979	$181.333	$ 0.01	37831			1	1,133.245	0.000	0.000
NNSA	146	Y12	Vehicles and Equipment	Diesel	1,000 Gallons	2007	2	7.008	967.104	$17.488	$ 2.50	37831			1	71.768	0.000	0.000
NNSA	146	Y12	Vehicles and Equipment	Gasoline	1,000 Gallons	2007	2	22.316	2,789.500	$47.225	$ 2.12	37831			1	196.573	0.000	0.000
NNSA	146	Y12	Water	Potable	Million Gallons	2007	2	310.261		$174.543	$ 0.56	37831			NA	0.000	0.000	0.000
NNSA	146	Y12	Buildings	Coal	Short Ton	2007	3	11,828.440	294,883.009	$837.453	$ 0.07	37831			1	27,756.453	0.000	0.000
NNSA	146	Y12	Buildings	Electricity	Megawatt Hour	2007	3	63,446.000	216,477.752	$2,791.624	$ 0.04	37831			2	43,709.333	0.000	2,879.177
NNSA	146	Y12	Buildings	Natural Gas	1,000 Cubic Feet	2007	3	24,580.080	25,268.322	$214.584	$ 0.01	37831			1	1,341.040	0.000	0.000
NNSA	146	Y12	Vehicles and Equipment	Diesel	1,000 Gallons	2007	3	4.718	651.084	$12.826	$ 2.72	37831			1	48.316	0.000	0.000
NNSA	146	Y12	Vehicles and Equipment	Gasoline	1,000 Gallons	2007	3	19.848	2,481.000	$50.437	$ 2.54	37831			1	174.834	0.000	0.000
NNSA	146	Y12	Water	Potable	Million Gallons	2007	3	358.023		$313.916	$ 0.88	37831			NA	0.000	0.000	0.000
NNSA	146	Y12	Buildings	Coal	Short Ton	2007	4	6,397.194	159,482.046	$452.922	$ 0.07	37831			1	15,011.567	0.000	0.000
NNSA	146	Y12	Buildings	Electricity	Megawatt Hour	2007	4	68,515.000	233,773.180	$3,014.660	$ 0.04	37831			2	47,201.478	0.000	3,109.209
NNSA	146	Y12	Buildings	Natural Gas	1,000 Cubic Feet	2007	4	32,408.350	33,315.784	$282.925	$ 0.01	37831			1	1,768.135	0.000	0.000
NNSA	146	Y12	Buildings	Square Feet	1,000 Square Feet	2007	4	6,499.541			$ -	37831			NA	0.000	0.000	0.000
NNSA	146	Y12	Vehicles and Equipment	Diesel	1,000 Gallons	2007	4	5.111	705.318	$15.123	$ 2.96	37831			1	52.341	0.000	0.000
NNSA	146	Y12	Vehicles and Equipment	Gasoline	1,000 Gallons	2007	4	16.142	2,017.750	$43.428	$ 2.69	37831			1	142.189	0.000	0.000
NNSA	146	Y12	Water	Potable	Million Gallons	2007	4	339.666		$297.821	$ 0.88	37831			NA	0.000	0.000	0.000
NNSA	146	Y12	Buildings	Coal	Short Ton	2008	1	11,177.000	278,642.610	$793.309	$ 0.07	37831			1	26,227.793	0.000	0.000
NNSA	146	Y12	Buildings	Electricity	Megawatt Hour	2008	1	66,175.276	225,790.042	$2,941.531	$ 0.04	37831			2	45,589.591	0.000	3,003.032
NNSA	146	Y12	Buildings	Natural Gas	1,000 Cubic Feet	2008	1	35,902.000	36,907.256	$225.592	$ 0.01	37831			1	1,958.742	0.000	0.000
NNSA	146	Y12	Vehicles and Equipment	Diesel	1,000 Gallons	2008	1	4.872	672.336	$15.232	$ 3.13	37831			1	49.893	0.000	0.000
NNSA	146	Y12	Vehicles and Equipment	Gasoline	1,000 Gallons	2008	1	13.500	1,687.500	$34.620	$ 2.56	37831			1	118.916	0.000	0.000
NNSA	146	Y12	Water	Potable	Million Gallons	2008	1	287.387		$359.480	$ 1.25	37831			NA	0.000	0.000	0.000
NNSA	146	Y12	Buildings	Coal	Short Ton	2008	2	22,439.000	559,404.270	$1,459.208	$ 0.07	37831			1	52,655.046	0.000	0.000

3.1 Energy Water

Utility/Fuel Consumption and Cost													Notes		Estimated GHG Emissions			
PSO	Site #	Site	Category	Subcategory	Usage Unit	FY	QTR	Usage Amount	BTU x 10^6	Cost (1,000 $)	$/Unit	Main Site Zip Code	Additional Information	SPO Notes	Scope	Anthropogenic $MtCO_2e$	Biogenic $MtCO_2e$	Scope 3 - T&D Loss, $MtCO_2e$
NNSA	146	Y12	Buildings	Electricity	Megawatt Hour	2008	2	66,241.238	226,015.104	$2,815.933	$ 0.04	37831			2	45,635.034	0.000	3,006.025
NNSA	146	Y12	Buildings	Natural Gas	1,000 Cubic Feet	2008	2	42,893.000	44,094.004	$271.301	$ 0.01	37831			1	2,340.157	0.000	0.000
NNSA	146	Y12	Vehicles and Equipment	Diesel	1,000 Gallons	2008	2	5.279	728.502	$17.451	$ 3.31	37831			1	54.061	0.000	0.000
NNSA	146	Y12	Vehicles and Equipment	Gasoline	1,000 Gallons	2008	2	16.397	2,049.625	$45.226	$ 2.76	37831			1	144.435	0.000	0.000
NNSA	146	Y12	Water	Potable	Million Gallons	2008	2	278.938		$346.324	$ 1.24	37831			NA	0.000	0.000	0.000
NNSA	146	Y12	Buildings	Coal	Short Ton	2008	3	10,804.000	269,343.720	$667.171	$ 0.06	37831			1	25,352.516	0.000	0.000
NNSA	146	Y12	Buildings	Electricity	Megawatt Hour	2008	3	64,342.184	219,535.532	$3,161.053	$ 0.05	37831			2	44,326.734	0.000	2,919.846
NNSA	146	Y12	Buildings	Natural Gas	1,000 Cubic Feet	2008	3	32,849.000	33,768.772	$353.184	$ 0.01	37831			1	1,792.176	0.000	0.000
NNSA	146	Y12	Vehicles and Equipment	Diesel	1,000 Gallons	2008	3	0.000	0.000	$0.000	NA	37831			1	0.000	0.000	0.000
NNSA	146	Y12	Vehicles and Equipment	Gasoline	1,000 Gallons	2008	3	0.000	0.000	$0.000	NA	37831			1	0.000	0.000	0.000
NNSA	146	Y12	Water	Potable	Million Gallons	2008	3	261.559		$318.598	$ 1.22	37831			NA	0.000	0.000	0.000
NNSA	146	Y12	Buildings	Coal	Short Ton	2008	4	7,033.000	175,332.690	$557.393	$ 0.08	37831			1	16,503.540	0.000	0.000
NNSA	146	Y12	Buildings	Electricity	Megawatt Hour	2008	4	71,770.012	244,879.281	$3,630.208	$ 0.05	37831			2	49,443.927	0.000	3,256.921
NNSA	146	Y12	Buildings	Natural Gas	1,000 Cubic Feet	2008	4	33,424.000	34,359.872	$663.480	$ 0.02	37831			1	1,823.547	0.000	0.000
NNSA	146	Y12	Buildings	Square Feet	1,000 Square Feet	2008	4	7,037.070			$ -	37831			NA	0.000	0.000	0.000
NNSA	146	Y12	Vehicles and Equipment	Diesel	1,000 Gallons	2008	4	0.000	0.000	$0.000	NA	37831			1	0.000	0.000	0.000
NNSA	146	Y12	Vehicles and Equipment	Gasoline	1,000 Gallons	2008	4	0.000	0.000	$0.000	NA	37831			1	0.000	0.000	0.000
NNSA	146	Y12	Water	Potable	Million Gallons	2008	4	343.875		$402.710	$ 1.17	37831			NA	0.000	0.000	0.000
NNSA	146	Y12	Buildings	Coal	Short Ton	2009	1	13,814.000	344,383.020	$1,657.753	$ 0.12	37831			1	32,415.741	0.000	0.000
NNSA	146	Y12	Buildings	Electricity	Megawatt Hour	2009	1	66,609.556	227,271.805	$4,126.500	$ 0.06	37831			2	45,888.776	0.000	3,022.740
NNSA	146	Y12	Buildings	Natural Gas	1,000 Cubic Feet	2009	1	46,542.000	47,845.176	$375.673	$ 0.01	37831			1	2,539.239	0.000	0.000
NNSA	146	Y12	Water	Potable	Million Gallons	2009	1	320.714		$425.880	$ 1.33	37831			NA	0.000	0.000	0.000
NNSA	146	Y12	Buildings	Coal	Short Ton	2009	2	29,371.000	732,219.030	$3,979.673	$ 0.14	37831			1	68,921.581	0.000	0.000
NNSA	146	Y12	Buildings	Electricity	Megawatt Hour	2009	2	66,040.241	225,329.302	$3,860.819	$ 0.06	37831			2	45,496.562	0.000	2,996.904
NNSA	146	Y12	Buildings	Natural Gas	1,000 Cubic Feet	2009	2	62,902.000	64,663.256	$433.057	$ 0.01	37831			1	3,431.808	0.000	0.000
NNSA	146	Y12	Water	Potable	Million Gallons	2009	2	293.724		$388.401	$ 1.32	37831			NA	0.000	0.000	0.000
NNSA	146	Y12	Buildings	Coal	Short Ton	2009	3	12,475.000	311,001.750	$1,675.192	$ 0.13	37831			1	29,273.662	0.000	0.000
NNSA	146	Y12	Buildings	Electricity	Megawatt Hour	2009	3	66,444.558	226,708.832	$3,518.385	$ 0.05	37831			2	45,775.105	0.000	3,015.252
NNSA	146	Y12	Buildings	Natural Gas	1,000 Cubic Feet	2009	3	57,251.000	58,854.028	$351.801	$ 0.01	37831			1	3,123.501	0.000	0.000
NNSA	146	Y12	Water	Potable	Million Gallons	2009	3	273.569		$362.723	$ 1.33	37831			NA	0.000	0.000	0.000
NNSA	146	Y12	Buildings	Coal	Short Ton	2009	4	6,343.000	158,130.990	$868.631	$ 0.14	37831			1	14,884.396	0.000	0.000
NNSA	146	Y12	Buildings	Electricity	Megawatt Hour	2009	4	71,034.528	242,369.810	$3,567.267	$ 0.05	37831			2	48,937.236	0.000	3,223.545
NNSA	146	Y12	Buildings	Natural Gas	1,000 Cubic Feet	2009	4	42,254.000	43,437.112	$219.383	$ 0.01	37831			1	2,305.294	0.000	0.000
NNSA	146	Y12	Buildings	Square Feet	1,000 Square Feet	2009	4	7,146.385			$ -	37831			NA	0.000	0.000	0.000
NNSA	146	Y12	Water	Potable	Million Gallons	2009	4	293.424		$387.998	$ 1.32	37831			NA	0.000	0.000	0.000
NNSA	146	Y12	Buildings	Coal	Short Ton	2010	1	15,208.000	379,135.440	$1,746.954	$ 0.11	37831			1	35,686.882	0.000	0.000
NNSA	146	Y12	Buildings	Electricity	Megawatt Hour	2010	1	65,152.000	222,298.624	$2,916.830	$ 0.04	37831			2	44,884.634	0.000	2,956.596
NNSA	146	Y12	Buildings	Natural Gas	1,000 Cubic Feet	2010	1	66,689.000	68,556.292	$300.627	$ 0.00	37831			1	3,638.420	0.000	0.000
NNSA	146	Y12	Water	Potable	Million Gallons	2010	1	270.168		$357.328	$ 1.32	37831			NA	0.000	0.000	0.000
NNSA	146	Y12	Buildings	Coal	Short Ton	2010	2	7,698.000	191,911.140	$589.159	$ 0.08	37831			1	18,064.020	0.000	0.000

3.1 Energy Water

Utility/Fuel Consumption and Cost													Notes		Estimated GHG Emissions			
PSO	Site #	Site	Category	Subcategory	Usage Unit	FY	QTR	Usage Amount	BTU x 10^6	Cost (1,000 $)	$/Unit	Main Site Zip Code	Additional Information	SPO Notes	Scope	Anthropogenic $MtCO_2e$	Biogenic $MtCO_2e$	Scope 3 - T&D Loss, $MtCO_2e$
NNSA	146	Y12	Buildings	Electricity	Megawatt Hour	2010	2	66,509.000	226,928.708	$2,791.514	$ 0.04	37831			2	45,819.501	0.000	3,018.176
NNSA	146	Y12	Buildings	Natural Gas	1,000 Cubic Feet	2010	2	412,347.000	423,892.716	$2,367.221	$ 0.01	37831			1	22,496.834	0.000	0.000
NNSA	146	Y12	Water	Potable	Million Gallons	2010	2	261.897		$346.370	$ 1.32	37831			NA	0.000	0.000	0.000
NNSA	146	Y12	Buildings	Coal	Short Ton	2010	3	962.000	23,982.660	$53.384	$ 0.06	37831			1	2,257.416	0.000	0.000
NNSA	146	Y12	Buildings	Electricity	Megawatt Hour	2010	3	65,299.667	222,802.464	$3,268.401	$ 0.05	37831			2	44,986.365	0.000	2,963.297
NNSA	146	Y12	Buildings	Natural Gas	1,000 Cubic Feet	2010	3	304,464.000	312,988.992	$1,509.151	$ 0.00	37831			1	16,610.952	0.000	0.000
NNSA	146	Y12	Water	Potable	Million Gallons	2010	3	239.410		$316.795	$ 1.32	37831			NA	0.000	0.000	0.000
NNSA	146	Y12	Buildings	Coal	Short Ton	2010	4	0.000	0.000	$0.000	NA	37831			1	0.000	0.000	0.000
NNSA	146	Y12	Buildings	Electricity	Megawatt Hour	2010	4	73,781.212	251,741.495	$3,946.662	$ 0.05	37831			2	50,829.486	0.000	3,348.189
NNSA	146	Y12	Buildings	Natural Gas	1,000 Cubic Feet	2010	4	159,612.000	164,081.136	$948.461	$ 0.01	37831			1	8,708.114	0.000	0.000
NNSA	146	Y12	Buildings	Square Feet	1,000 Square Feet	2010	4	7,184.211			$ -	37831			NA	0.000	0.000	0.000
NNSA	146	Y12	Water	Potable	Million Gallons	2010	4	299.581		$396.257	$ 1.32	37831			NA	0.000	0.000	0.000
NNSA	146	Y12	Buildings	Coal	Short Ton	2011	1	0.000	0.000		NA	37831			1	0.000	0.000	0.000
NNSA	146	Y12	Buildings	Electricity	Megawatt Hour	2011	1	63,886.000	217,979.032	$3,616.880	$ 0.06	37831			2	39,552.942	0.000	2,605.392
NNSA	146	Y12	Buildings	Fuel Oil	1,000 Gallons	2011	1	492.293	67,936.434	$1,501.494	$ 3.05	37831			1	5,041.495	0.000	0.000
NNSA	146	Y12	Buildings	Natural Gas	1,000 Cubic Feet	2011	1	283,679.000	291,622.012	$1,094.806	$ 0.00	37831			1	15,476.963	0.000	0.000
NNSA	146	Y12	Water	Potable	Million Gallons	2011	1	258.787		$342.388	$ 1.32	37831			NA	0.000	0.000	0.000
NNSA	146	Y12	Buildings	Coal	Short Ton	2011	2	0.000	0.000	$0.000	NA	37831			1	0.000	0.000	0.000
NNSA	146	Y12	Buildings	Electricity	Megawatt Hour	2011	2	64,715.000	220,807.580	$3,470.045	$ 0.05	37831			2	40,066.191	0.000	2,639.200
NNSA	146	Y12	Buildings	Fuel Oil	1,000 Gallons	2011	2	749.431	103,421.478	$2,393.207	$ 3.19	37831			1	7,674.804	0.000	0.000
NNSA	146	Y12	Buildings	Natural Gas	1,000 Cubic Feet	2011	2	446,396.000	458,895.088	$3,009.407	$ 0.01	37831			1	24,354.480	0.000	0.000
NNSA	146	Y12	Water	Potable	Million Gallons	2011	2	233.925		$309.572	$ 1.32	37831			NA	0.000	0.000	0.000
NNSA	146	Y12	Buildings	Coal	Short Ton	2011	3	0.000	0.000	$0.000	NA	37831			1	0.000	0.000	0.000
NNSA	146	Y12	Buildings	Electricity	Megawatt Hour	2011	3	64,898.532	221,433.791	$3,276.004	$ 0.05	37831			2	40,179.818	0.000	2,646.685
NNSA	146	Y12	Buildings	Fuel Oil	1,000 Gallons	2011	3	0.000	0.000	$0.000	NA	37831			1	0.000	0.000	0.000
NNSA	146	Y12	Buildings	Natural Gas	1,000 Cubic Feet	2011	3	300,895.000	309,320.060	$1,390.097	$ 0.00	37831			1	16,416.234	0.000	0.000
NNSA	146	Y12	Water	Potable	Million Gallons	2011	3	231.333		$305.360	$ 1.32	37831			NA	0.000	0.000	0.000
NNSA	146	Y12	Buildings	Coal	Short Ton	2011	4	0.000	0.000	$0.000	NA	37831			1	0.000	0.000	0.000
NNSA	146	Y12	Buildings	Electricity	Megawatt Hour	2011	4	69,804.713	238,173.681	$4,612.372	$ 0.07	37831			2	43,217.321	0.000	2,846.768
NNSA	146	Y12	Buildings	Fuel Oil	1,000 Gallons	2011	4	0.000	0.000	$0.000	NA	37831			1	0.000	0.000	0.000
NNSA	146	Y12	Buildings	Natural Gas	1,000 Cubic Feet	2011	4	173,036.000	177,881.008	$854.741	$ 0.00	37831			1	9,440.501	0.000	0.000
NNSA	146	Y12	Buildings	Square Feet	1,000 Square Feet	2011	4	7,143.781			$ -	37831			NA	0.000	0.000	0.000
NNSA	146	Y12	Water	Potable	Million Gallons	2011	4	273.159		$352.375	$ 1.29	37831			NA	0.000	0.000	0.000
NNSA	146	Y12	Buildings	Coal	Short Ton	2012	1	0.000	0.000	$0.000	NA	37831			1	0.000	0.000	0.000
NNSA	146	Y12	Buildings	Electricity	Megawatt Hour	2012	1	64,914.400	221,487.933	$3,056.159	$ 0.05	37831			2	40,189.643	0.000	2,647.332
NNSA	146	Y12	Buildings	Fuel Oil	1,000 Gallons	2012	1	0.000	0.000	$0.000	NA	37831			1	0.000	0.000	0.000
NNSA	146	Y12	Buildings	Natural Gas	1,000 Cubic Feet	2012	1	288,721.000	296,805.188	$1,244.659	$ 0.00	37831			1	15,752.045	0.000	0.000
NNSA	146	Y12	Water	Potable	Million Gallons	2012	1	241.453		$311.474	$ 1.29	37831			NA	0.000	0.000	0.000
NNSA	146	Y12	Buildings	Coal	Short Ton	2012	2	0.000	0.000	$0.000	NA	37831			1	0.000	0.000	0.000
NNSA	146	Y12	Buildings	Electricity	Megawatt Hour	2012	2	63,088.680	215,258.576	$3,108.383	$ 0.05	37831			2	39,059.307	0.000	2,572.876

3.1 Energy Water

Utility/Fuel Consumption and Cost													Notes		Estimated GHG Emissions			
PSO	Site #	Site	Category	Subcategory	Usage Unit	FY	QTR	Usage Amount	BTU x 10^6	Cost (1,000 $)	$/Unit	Main Site Zip Code	Additional Information	SPO Notes	Scope	Anthropogenic $MtCO_2e$	Biogenic $MtCO_2e$	Scope 3 - T&D Loss, $MtCO_2e$
NNSA	146	Y12	Buildings	Fuel Oil	1,000 Gallons	2012	2	85.782	11,837.916	$321.143	$ 3.74	37831			1	878.480	0.000	0.000
NNSA	146	Y12	Buildings	Natural Gas	1,000 Cubic Feet	2012	2	508,989.000	523,240.692	$2,215.494	$ 0.00	37831			1	27,769.430	0.000	0.000
NNSA	146	Y12	Water	Potable	Million Gallons	2012	2	270.879		$349.434	$ 1.29	37831			NA	0.000	0.000	0.000
NNSA	146	Y12	Buildings	Coal	Short Ton	2012	3	0.000	0.000	$0.000	NA	37831			1	0.000	0.000	0.000
NNSA	146	Y12	Buildings	Electricity	Megawatt Hour	2012	3	60,873.260	207,699.563	$3,079.131	$ 0.05	37831			2	37,687.702	0.000	2,482.527
NNSA	146	Y12	Buildings	Fuel Oil	1,000 Gallons	2012	3	0.000	0.000	$0.000	NA	37831			1	0.000	0.000	0.000
NNSA	146	Y12	Buildings	Natural Gas	1,000 Cubic Feet	2012	3	255,104.000	262,246.912	$842.977	$ 0.00	37831			1	13,917.968	0.000	0.000
NNSA	146	Y12	Water	Potable	Million Gallons	2012	3	213.954		$276.001	$ 1.29	37831			NA	0.000	0.000	0.000
NNSA	146	Y12	Buildings	Coal	Short Ton	2012	4	0.000	0.000	$0.000	NA	37831			1	0.000	0.000	0.000
NNSA	146	Y12	Buildings	Electricity	Megawatt Hour	2012	4	63,356.910	216,173.777	$4,037.159	$ 0.06	37831			2	39,225.373	0.000	2,583.815
NNSA	146	Y12	Buildings	Fuel Oil	1,000 Gallons	2012	4	0.000	0.000	$0.000	NA	37831			1	0.000	0.000	0.000
NNSA	146	Y12	Buildings	Natural Gas	1,000 Cubic Feet	2012	4	154,474.000	158,799.272	$750.407	$ 0.00	37831			1	8,427.795	0.000	0.000
NNSA	146	Y12	Buildings	Square Feet	1,000 Square Feet	2012	4	6,858.240			$ -	37831			NA	0.000	0.000	0.000
NNSA	146	Y12	Water	Potable	Million Gallons	2012	4	236.428		$304.992	$ 1.29	37831			NA	0.000	0.000	0.000

3.2a Operating On-Site RE

System Information														
PSO	**Site #**	**Site**	**System Description/Name**	**Location Description (e.g., building name, etc.)**	**System Location (Zip Code)**	**Year Installed (YYYY)**	**End Use Category**	**Siting Status - On Federal or Indian Land?**	**% of RECs Retained**	**On or Off Grid?**	**Does the site own the T&D system that delivers the electricity?**	**Scope 1 or 2 System?**	**Generator Nameplate Capacity (MW)**	**System Type/Category**
NNSA	146	Y12	Solar Powered Lighting	Lighting for remote storage unit	37831	2008	Goal Subject	On Federal Land, On User Site	100%	Electric Off Grid	Yes	Scope 1	0.000040	Solar Photovoltaic
NNSA	146	Y12	Remote Battery Charging Station	Elza 2 switchyard	37831	2004	Goal Subject	On Federal Land, On User Site	100%	Electric Off Grid	Yes	Scope 1	0.000040	Solar Photovoltaic
NNSA	146	Y12	Portable Solar Lighting	Spot lighting for United Way signage	37831	2009	Goal Subject	On Federal Land, On User Site	100%	Electric Off Grid	Yes	Scope 1	0.000040	Solar Photovoltaic
NNSA	146	Y12	Portable Solar Digital Signage	Speed limit signs	37831	2008	Goal Subject	On Federal Land, On User Site	100%	Electric Off Grid	Yes	Scope 1	0.000040	Solar Photovoltaic
NNSA	146	Y12	Solar Powered Lighting	Bear Creek Road Flag-pole	37831	2010	Goal Subject	On Federal Land, On User Site	100%	Electric Off Grid	Yes	Scope 1	0.000040	Solar Photovoltaic
NNSA	146	Y12	ISCO Solar Panels - Power to Water Sampling Equipment	9422-8/S24 Bear Creek	37831	portable	Goal Subject	On Federal Land, On User Site	100%	Electric Off Grid	Yes	Scope 1	0.000600	Solar Photovoltaic
NNSA	146	Y12	ISCO Portable Solar Panels - Power to Water Sampling Equipment	Open to be assigned	37831	portable	Goal Subject	On Federal Land, On User Site	100%	Electric Off Grid	Yes	Scope 1	0.000050	Solar Photovoltaic
NNSA	146	Y12	ISCO Solar Panels - Power to Water Sampling Equipment	Outfalls	37831	portable	Goal Subject	On Federal Land, On User Site	100%	Electric Off Grid	Yes	Scope 1	0.000070	Solar Photovoltaic
NNSA	146	Y12	ISCO Portable Solar Panels (20) - Power to Water Sampling Equipment	Storage - 9108 Room 120	37831	portable	Goal Subject	On Federal Land, On User Site	100%	Electric Off Grid	Yes	Scope 1	0.000360	Solar Photovoltaic
NNSA	146	Y12	Solar lighted crosswalk	New Hope Parking Lot	37831	2012	Goal Subject	On Federal Land, On User Site	100%	Electric Off Grid	Yes	Scope 1	0.000170	Solar Photovoltaic

3.2a Operating On-Site RE

Production/Consumption Information					Cost	Biomass Fuel Information					Notes	
Estimated Annual Renewable Electricity Output (MWh/Yr)	Estimated Annual Renewable Electricity Consumed (MWh/Yr)	Estimated Annual GHG Emissions Avoided ($MtCO_2e$/Yr)	Estimated Annual Renewable Thermal Output (10^6 BTU/Yr)	Estimated Annual Renewable Thermal Consumed (10^6 BTU/Yr)	Implementation Cost ($)	Principal Biomass Fuel Type	Principal Biomass Fuel Use (10^6 BTU/Yr)	Secondary/ Blend Fuel Type	Secondary/ Blend Fuel Use (10^6 BTU/Yr)	Fuel Costs ($)	Additional Information	SPO Notes
0.180	0.180	0.164		0.000	$ 2,000.00							
0.180	0.180	0.164		0.000	$ 2,000.00							
0.180	0.180	0.164		0.000	$ 2,000.00							
0.180	0.180	0.164		0.000	$ 2,000.00							
0.180	0.180	0.164		0.000	$ 2,000.00							
0.270	0.270	0.237		0.000	$ 3,000.00							
0.225	0.225	0.197		0.000	$ 5,000.00							
0.315	0.315	0.276		0.000	$ 7,000.00							
1.440	1.440	1.261		0.000	$ 20,000.00							
1.489	1.489	1.304		0.000	$ 40,000.00							

3.2b Purchased RE

Purchase Information											Consumption Information			Cost		Notes	
PSO	Site #	Site	Type of Renewable Energy Purchased	System Type/Category	Source Location (Zip Code)	Service Year (YYYY)	Purchase Year (FY)	End Use Category	Purchase Term	Siting Status - On Federal or Indian Land?	Total Renewable Electricity Purchased (MWh/Yr)	Estimated Annual GHG Emissions Avoided ($MtCO_2e$/Yr)	Total Renewable Thermal Purchased (10^6 BTU/Yr)	Annual Cost ($)	$/Unit	Additional Information	SPO Notes
NNSA	146	Y12	Renewable Energy Credits	Wood and wood residuals	80301		2008	Goal Subject	Short-Term (≤ 10)		3,958.200	2,916.507		$ 34,473.00	$ 8.71		
NNSA	146	Y12	Renewable Energy Credits	Wood and wood residuals	80301		2009	Goal Subject	Short-Term (≤ 10)		4,027.146	2,967.308		$ 35,076.44	$ 8.71	Corrected	SPO Request: Cost seems too high. Please review and update.
NNSA	146	Y12	Renewable Energy Credits	Wind	50461		2010	Goal Subject	Short-Term (≤ 10)		21,000.000	20,676.543		$ 23,800.00	$ 1.13	Per site email on 1/25/2011. Email included documentation of 21,000 MWh for next 3 yrs.	
NNSA	146	Y12	Renewable Energy Credits	Wind	50461		2011	Goal Subject	Short-Term (≤ 10)		21,000.000	20,268.455		$ 23,800.00	$ 1.13	Per site email on 1/25/2011. Email included documentation of 21,000 MWh for next 3 yrs.	
NNSA	146	Y12	Renewable Energy Credits	Wind	50461		2012	Goal Subject	Short-Term (≤ 10)		21,000.000	20,268.455		$ 23,800.00	$ 1.13	Per site email on 1/25/2011. Email included documentation of 21,000 MWh for next 3 yrs.	

Measure/Project Description												Funding Overview							Measurement & Verification		
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)	(s)	(t)	(u)	(v)
PSO	Site #	Site	HQ Measure #	If Covered, EISA S432 Reporting Year (YYYY)	Has this measure been included in an official DOE budget requests? If yes, provide Project/Measure #	Site Project #	Conservation Measure(s) Status	Conservation Measure(s) Type	Conservation Measure(s) Name or Description	Measure(s) Location (Zip Code)	Is this a multiple or single facility ECM?	Does the measure contribute to the reduction of deferred maintenance?	Is this effort/measure beyond typical O&M improvement to meet a goal?	Funding Source/Type (Actual or Potential)	Starting Year of Measure Implementation (Anticipated or Actual - YYYY)	Completion/ Operational Year of Measure (Anticipated or Actual -- YYYY)	Estimated Service Life	Estimated Implementation Cost ($)	Are there plans to measure and verify the performance of this measure?	If M&V has been conducted, provide type and date		
																				Type of M&V	MM	YYYY
NNSA	146	Y12	NNSA-0146-0003	2009		2.1	Operational	Chiller Plant Improvement	Chiller Plant Improvement - Ph 1			Yes	No	ESPC	2010	2011	25	$ 5,722,651	Yes	B - Retrofit	Apr	2012
NNSA	146	Y12	NNSA-0146-0004	2009		7.1	Operational	Chilled Water/Hot Water/Steam Distribution Systems	Condensate Return System Modification - Ph 1			No	No	ESPC	2010	2011	25	$ 4,539,321	Yes	B - Retrofit	Apr	2012
NNSA	146	Y12	NNSA-0146-0005	2009		7.2	Operational	Chilled Water/Hot Water/Steam Distribution Systems	Steam Trap Improvement - Ph 1			Yes	No	ESPC	2010	2011	25	$ 1,997,488	Yes	A - Retrofit	Apr	2012
NNSA	146	Y12	NNSA-0146-0006	2009		16.1/FIS 16	Operational	Water & Sewer Conservation Systems	Demineralized Water Production Facility Replacement - Ph 2			Yes	No	ESPC	2010	2012	25	$ 3,578,990	Yes	B - Retrofit	Apr	2012
NNSA	146	Y12	NNSA-0146-0010	2009		Y12-R-TC11-01	Identified	Solar Photovoltaic	Renewable energy projects (Solar/Load Sharing/Biomass/Photovoltaic)			No	Yes	Unknown	2011	2016	15	$ 55,575,000				
NNSA	146	Y12	NNSA-0146-0011	2009		Y12-E-TC5-01	Operational	Lighting Improvements	9212 A2 Relamping			Yes	No	M&R Indirect	2010	2012	10	$ 869,589				
NNSA	146	Y12	NNSA-0146-0016	2009			Operational	Other	Feasibility of Renewable Energy Options			No	Yes	Other	2010	2010	25	$ -				
NNSA	146	Y12	NNSA-0146-0017	2009		3.1	Identified	Building Automation Systems/EMCS	Building Management System Improvement - Evaluate for ESPC DO#3		Multiple	Yes	No	Unknown	2012	2013	25	$ 5,137,089				
NNSA	146	Y12	NNSA-0146-0024	2009		Y12-E-TC2-01	Operational	Chilled Water/Hot Water/Steam Distribution Systems	Chiller Tube Cleaning			No	No	M&R Indirect	2010	2012	5	$ 80,000				
NNSA	146	Y12	NNSA-0146-0025	2009		Y12-E-TC12-01	Operational	Other	Electrical Reroute (9201-5 and 9204-4)			No	No	M&R Indirect	2011	2012	25	$ 1,200,000				
NNSA	146	Y12	NNSA-0146-0028	2009		Y12-E-TC7-02	Cancelled	Chilled Water/Hot Water/Steam Distribution Systems	Steam and Brine Distribution Piping and Insulation Repair		Multiple	Yes	No	Unknown	2011	2012	25	$ 12,000,000				
NNSA	146	Y12	NNSA-0146-0030	2009		Y12-E-TC18-01	Awarded/Approv	Advanced Metering System	Water Advanced Metering Systems Installations		Multiple	No	Yes	Unknown	2012	2015	25	$ 2,450,000				
NNSA	146	Y12	NNSA-0146-0030	2009		Y12-E-TC18-01	Identified	Advanced Metering System	9720-82 Advanced water meter		Single	No	Yes	Unknown	2012	2014	25	$ 9,000				
NNSA	146	Y12	NNSA-0146-0030	2009		Y12-E-TC18-01	Identified	Advanced Metering System	9401-7 Advanced water meter		Single	No	Yes	Unknown	2012	2014	25	$ 9,000				
NNSA	146	Y12	NNSA-0146-0031	2009		Y12-E-TC4-01	Cancelled	Electric Motors & Drives	Controllable laboratory exhaust fans		Multiple	No	No	Unknown	2011	2011	25	$ 500,000				
NNSA	146	Y12	NNSA-0146-0032	2009		Y12-E-TC18-02	Awarded/Approv	Advanced Metering System	Electricity Advanced Metering Systems Installations		Multiple	No	Yes	Other	2012	2015	25	$ 3,156,000				
NNSA	146	Y12	NNSA-0146-0032	2009		Y12-E-TC18-02	Awarded/Approv	Advanced Metering System	9103 Advanced electrical meter		Single	No	Yes	Other	2012	2012	25	$ 18,000				
NNSA	146	Y12	NNSA-0146-0032	2009		Y12-E-TC18-02	Awarded/Approv	Advanced Metering System	9710-03 Advanced electrical meter		Single	No	Yes	Other	2012	2012	25	$ 9,000				
NNSA	146	Y12	NNSA-0146-0032	2009		Y12-E-TC18-02	Verified	Advanced Metering System	9733-05 Advanced electrical meter repair		Single	No	Yes	Other	2012	2013	25	$ 9,000				
NNSA	146	Y12	NNSA-0146-0033	2009		UMP STM-004	Awarded/Approv	Advanced Metering System	Steam Advanced Metering Systems Installation in buildings		Multiple	No	Yes	Unknown	2012	2013	25	$ 2,660,000				
NNSA	146	Y12	NNSA-0146-0033	2009		UMP STM-004	Operational	Standard Metering Systems	Steam Meter Installation 9201-03		Single	No	Yes	M&R Indirect	2012	2012	25	$ 25,000				
NNSA	146	Y12	NNSA-0146-0034	2009		Y12-E-TC5-01	Identified	Lighting Improvements	Energy-Efficient Lighting Upgrade -Various		Multiple	Yes	No	Unknown	2010	2012	10	$ 5,358,382				

Source Savings/Renewable Energy Output													Cost Savings				Notes			SIR
(w)	(x)	(y)	(z)	(aa)	(ab)	(ac)	(ad)	(ae)	(af)	(ag)	(ah)	(ai)	(aj)	(ak)	(al)	(am)	(an)	(ao)	(ap)	(ar)
Is this a energy saving measure or renewable energy system?	Provide estimated energy saved or switched for each energy type, as applicable. If there are no savings associated with the measure enter "0". If estimated savings are unknown at this time enter "TBD".								Estimated Annual Potable Water Savings (10^3 Gal/Yr)	Estimated Annual ILA (Non-Potable Freshwater) Savings (10^3 Gal/Yr)	Estimated Annual Renewable Electricity Output (MWh/Yr)	Estimated Annual Renewable Thermal Output (10^9 BTU/Yr)	Estimated Annual Energy Cost Savings ($/Yr)	Estimated Annual Water Cost Savings ($/Yr)	Estimated Annual Cost Savings ($/Yr) from switching to a renewable energy source	Estimated Annual Ancillary Cost Savings ($/Yr)	Site Priority	Additional Information	SPO Comments/Notes	Savings to Investment Ratio
	Estimated Annual Electricity Saved (MWh/Yr)	Estimated Annual Fuel Oil Saved (10^3 Gal/Yr)	Estimated Annual Natural Gas Saved (10^3 Cf/Yr)	Estimated Annual LPG/Propane Saved (10^3 Gal/Yr)	Estimated Annual Coal Saved (Short Ton/Yr)	Estimated Annual Steam Saved (10^9 BTU/Yr)	Estimated Annual Other Saved (10^9 BTU/Yr)	If "Other", what is "Other"?												
Energy Saving E	9,841.804	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	$ 314,169	$ -		$ -		Project Complete		N/A
Energy Saving E	0.000	0.000	31,339.000	0.000	0.000	0.000	0.000		52,013.000	0.000	0.000	0.000	$ 339,505	$ 73,639		$ 3,566		Project Complete		N/A
Energy Saving E	0.000	0.000	45,322.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	$ 491,092	$ -		$ -		Project Complete		N/A
Energy Saving E	514.947	0.000	0.000	0.000	0.000	0.000	0.000		664.340	0.000	0.000	0.000	$ 646,959	$ 33,741		$ 727,465		Project Complete		N/A
Fuel Switching I	8,072.195	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	8,072.195	0.000	$ 322,887	$ -	$ 322,887	$ -		Awaiting ESPC DO#3 for additional project information	SPO Note: Changed the "Estimated Annual Electricity and Fuel Oil Saved" values to the "Estimated Annula RE electricity and RE Thermal Output" values provided	0.09
Energy Saving E	1,314.365	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	$ 52,573	$ -		$ 46,864				0.73
Energy Saving E	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	$ -	$ -		$ -		Project Complete		N/A
Energy Saving E	3,230.597	0.000	21,621.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	$ 283,882	$ -		$ -		Awaiting ESPC DO#3 for additional project information		1.54
Energy Saving E	2,133.608	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	$ 81,077	$ -		$ -		Project Complete		6.29
Energy Saving E	1,371.428	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	$ 86,000	$ -		$ -		Project Complete		1.13
Energy Saving E	0.000	0.000	31,567.273	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	$ 361,414	$ -		$ -		Project Cancelled		0.63
Water Saving E	0.000	0.000	0.000	0.000	0.000	0.000	0.000		15.813	0.000	0.000	0.000	$ -	$ 22,394		$ -		Reconciled with FY2012 meter plan		0
Water Saving E	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.125	0.000	0.000	0.000	$ -	$ 177		$ -		Metering planned for future year		0
Energy Saving E	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	$ -	$ -		$ -		Metering planned for future year		N/A
Energy Saving E	3.947	0.000	4.367	0.000	0.000	0.000	0.000			0.000	0.000	0.000	$ 296			$ -			SPO Note: Completion year on or before 2011, please verify/update conservation measure status	0.01
Energy Saving E	12,795.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	$ 828,410	$ -		$ -		Reconciled with FY2012 meter plan		3.77
Energy Saving E	124.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	$ 8,062	$ -		$ -				6.96
Energy Saving E	46.683	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	$ 621	$ -		$ -				5.21
Energy Saving E	11.523	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	$ 749	$ -		$ -				1.28
Energy Saving E	0.000	0.000	0.000	0.000	0.000	160.307	0.000		0.000	0.000	0.000	0.000	$ 157,567	$ -		$ -		Reconciled with FY2012 meter plan		1.03
Energy Saving E	105.738	0.000	7.162	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	$ 4,100	$ -		$ -		Balance of Plant Plan		4.31
Energy Saving E	8,215.362	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	$ 460,178	$ -		$ 46,864		Requires evaluation by ESCO		0.71

PSO	Site #	Site	HQ Measure #	If Covered, EISA S432 Reporting Year (YYYY)	Has this measure been included in an official DOE budget requests? If yes, provide Project/Measure #	Site Project #	Conservation Measure(s) Status	Conservation Measure(s) Type	Conservation Measure(s) Name or Description	Measure(s) Location (Zip Code)	Is this a multiple or single facility ECM?	Does the measure contribute to the reduction of deferred maintenance?	Is this effort/measure beyond typical O&M improvement to meet a goal?	Funding Source/Type (Actual or Potential)	Starting Year of Measure Implementation (Anticipated or Actual - YYYY)	Completion/ Operational Year of Measure (Anticipated or Actual -- YYYY)	Estimated Service Life	Estimated Implementation Cost ($)	Are there plans to measure and verify the performance of this measure?	If M&V has been conducted, provide type and date		
																				Type of M&V	MM	YYYY
NNSA	146	Y12	NNSA-0146-0035	2009		12	Identified	Energy/Utility Distribution Systems	Compressed Air/Power Distribution			No	No	Unknown	2011	2012	25	$ 2,093,667				
NNSA	146	Y12	NNSA-0146-0036	2009			Operational	Appliance/Plug-load reductions	Water heater/PC power managermnt/Mech System Improvements		Single	No	No	Unknown	2012	2015	25	$ 3,381,983				
NNSA	146	Y12	NNSA-0146-0037	2009		Y12-E-TC40-01	Cancelled	Energy Audit	ESCO support/EISA audits/ JCC LEED		Multiple	No	Yes	M&R Indirect	2011	2012	25	$ 1,000,000				
NNSA	146	Y12	NNSA-0146-0038	2009			Operational	Other	Capping of Coal Pile - Design			No	No	M&R Indirect	2011	2011	25	$ 200,000				
NNSA	146	Y12	NNSA-0146-0039	Not Covered		BOP A1 20	Cancelled	Energy Related Process Improvements	9113 Occupancy sensors		Single	No	No	Unknown	2012	2015	10	$ 36,000				
NNSA	146	Y12	NNSA-0146-0040	Not Covered		BOP A1 22	Identified	Energy Related Process Improvements	9115 Occupancy sensors		Single	No	No	Unknown	2012	2015	10	$ 10,200				
NNSA	146	Y12	NNSA-0146-0041	Not Covered		BOP A1 23	Identified	Energy Related Process Improvements	9116 Occupancy sensors		Single	No	No	Unknown	2012	2015	10	$ 10,200				
NNSA	146	Y12	NNSA-0146-0042	Not Covered		BOP A1 25	Cancelled	Energy Related Process Improvements	9119 Occupancy sensors		Single	No	No	Unknown	2012	2015	10	$ 51,000				
NNSA	146	Y12	NNSA-0146-0043	Not Covered		BOP A1 30	Identified	Energy Related Process Improvements	9733-05 Occupancy sensors		Single	No	No	Unknown	2012	2015	10	$ 13,260				
NNSA	146	Y12	NNSA-0146-0002	2010			Operational	Other	Stationary Fuel Cell Feasibility Study			No	Yes	Other	2010	2010	25	$ 117,000				
NNSA	146	Y12	NNSA-0146-0007	2010		06-D-603	Operational	Chilled Water/Hot Water/Steam Distribution Systems	Natural Gas–fired Steam Plant Replacement of Coal-Fired Plant			Yes	No	Line Item	2008	2010	25	$ 61,500,000				
NNSA	146	Y12	NNSA-0146-0008	2010		06-D-160.4	Operational	Water & Sewer Conservation Systems	Potable Water Supply and System Repairs		Multiple	Yes	No	Line Item	2008	2010	25	$ 62,500,000				
NNSA	146	Y12	NNSA-0146-0044	Not Covered		FIS 3	Cancelled	Heating, Ventilating, and Air Conditioning (HVAC)	9113 HVAC Replacements		Single	Yes	No	M&R Indirect	2013	2013	25	$ 372,000				
NNSA	146	Y12	NNSA-0146-0045	2010		BOP A1 15	Operational	Heating, Ventilating, and Air Conditioning (HVAC)	9737 HVAC - Install Variable Speed Drives on fans			Yes	No	M&R Indirect	2011	2011	25	$ 372,000				
NNSA	146	Y12	NNSA-0146-0046	Not Covered			Operational	Energy Related Process Improvements	Install New Cool Roof - 9119		Single	Yes	No	Disposition	2011	2012	25	$ 39,258				
NNSA	146	Y12	NNSA-0146-0047	2010			Operational	Energy Related Process Improvements	Capping of Coal Pile - Implementation Phase			No	No	M&R Indirect	2012	2012	25					
NNSA	146	Y12	NNSA-0146-0048	Not Covered		BOP A1 13	Identified	Water & Sewer Conservation Systems	9723-27 Plumbing upgrades (D20)		Single	Yes	No	M&R Indirect	2011	2015	25	$ 67,650				
NNSA	146	Y12	NNSA-0146-0049	Not Covered		BOP A1 13	Identified	Water & Sewer Conservation Systems	9723-31 Plumbing upgrades (D20)		Single	Yes	No	M&R Indirect	2011	2015	25	$ 172,077				
NNSA	146	Y12	NNSA-0146-0051	Not Covered		BOP A1 13	Identified	Water & Sewer Conservation Systems	9723-28 Plumbing upgrades (D20)		Single	Yes	No	M&R Indirect	2011	2015	25	$ 43,455				
NNSA	146	Y12	NNSA-0146-0052	Not Covered		BOP A1 13	Identified	Water & Sewer Conservation Systems	9723-33 Plumbing upgrades (D20)		Single	Yes	No	M&R Indirect	2011	2015	25	$ 54,260				
NNSA	146	Y12	NNSA-0146-0053	Not Covered		FIS 8	Operational	Chilled Water/Hot Water/Steam Distribution Systems	9723-34 water heater replacement		Single	Yes	No	M&R Indirect	2011	2011	15	$ 60,000				
NNSA	146	Y12	NNSA-0146-0054	2010		BOP A1 17-30	Identified	Building Automation Systems/EMCS	Lighting occupancy sensors various buildings		Multiple	No	No	Unknown	2012	2015	10	$ 5,390,689				
NNSA	146	Y12	NNSA-0146-0055	2010		FIS 3/10/11	Identified	Heating, Ventilating, and Air Conditioning (HVAC)	Upgrade HVAC; restore UMS Connection; Various Bldgs		Multiple	Yes	No	Unknown	2011	2016	25	$ 1,540,000				

Is this a energy saving measure or renewable energy system?	Provide estimated energy saved or switched for each energy type, as applicable. If there are no savings associated with the measure enter "0". If estimated savings are unknown at this time enter "TBD".								Estimated Annual Potable Water Savings (10^3 Gal/Yr)	Estimated Annual ILA (Non-Potable Freshwater) Savings (10^3 Gal/Yr)	Estimated Annual Renewable Electricity Output (MWh/Yr)	Estimated Annual Renewable Thermal Output (10^9 BTU/Yr)	Estimated Annual Energy Cost Savings ($/Yr)	Estimated Annual Water Cost Savings ($/Yr)	Estimated Annual Cost Savings ($/Yr) from switching to a renewable energy source	Estimated Annual Ancillary Cost Savings ($/Yr)	Site Priority	Additional Information	SPO Comments/Notes	Savings to Investment Ratio
	Estimated Annual Electricity Saved (MWh/Yr)	Estimated Annual Fuel Oil Saved (10^3 Gal/Yr)	Estimated Annual Natural Gas Saved (10^3 Cf/Yr)	Estimated Annual LPG/Propane Saved (10^3 Gal/Yr)	Estimated Annual Coal Saved (Short Ton/Yr)	Estimated Annual Steam Saved (10^9 BTU/Yr)	Estimated Annual Other Saved (10^9 BTU/Yr)	If "Other", what is "Other"?											
Energy Saving E	9,143.409	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	$ 501,299	$ -		$ -		Infrared scanning of power distribution lines to detect temperature differences from loose connections; Requires ESCO evaluation		4.41
Energy Saving E	2,329.939	0.000	8,496.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	$ 142,761	$ -		$ -		Previous ECM 4.1 JCI Initial Proposal		0.72
Energy Saving E	977.100	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	$ 103,047	$ -		$ -		Project Cancelled		1.78
Energy Saving E	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	$ 1	$ -		$ -		Project Complete		N/A
Energy Saving E	444.900	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	$ 17,047	$ -		$ -		Included in NNSA-146-1203		9.86
Energy Saving E	123.095	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	$ 4,717	$ -		$ -		Balance of Plant Plan		9.63
Energy Saving E	123.095	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	$ 4,717	$ -		$ -		Balance of Plant Plan		5.37
Energy Saving E	550.410	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	$ 21,090	$ -		$ -		Included in NNSA-146-1204		10.19
Energy Saving E	99.941	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	$ 3,829	$ -		$ -		Balance of Plant Plan		3.37
Energy Saving E	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	$ -	$ -		$ -		Project Complete		N/A
Energy Saving E	6,907.148	0.000	0.000	0.000	61,761.856	0.000	0.000		0.000	0.000	0.000	0.000	$ 8,456,995	$ -		$ -		Project Complete		N/A
Water Saving E	0.000	0.000	0.000	0.000	0.000	0.000	0.000		23,994.000	0.000	0.000	0.000	$ -	$ 20,155		$ -		Project Complete		N/A
Energy Saving E	61.286	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	$ 3,688	$ -		$ -		Included in NNSA-146-1203		0.16
Energy Saving E	100.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	$ 5,000	$ -		$ -		Project Complete		N/A
Energy Saving E	15.899	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	$ 953	$ -		$ -				N/A
Energy Saving E	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	$ -	$ -		$ -		Project Complete		N/A
Water Saving E	0.000	0.000	0.000	0.000	0.000	0.000	0.000		4,200.000	0.000	0.000	0.000	$ -	$ 5,544		$ -		Balance of Plant Plan		11.06
Water Saving E	0.000	0.000	0.000	0.000	0.000	0.000	0.000		4,000.000	0.000	0.000	0.000	$ -	$ 5,280		$ -		Balance of Plant Plan		4.14
Water Saving E	0.000	0.000	0.000	0.000	0.000	0.000	0.000		4,000.000	0.000	0.000	0.000	$ -	$ 5,280		$ -		Balance of Plant Plan		15.92
Water Saving E	0.000	0.000	0.000	0.000	0.000	0.000	0.000		4,000.000	0.000	0.000	0.000	$ -	$ 5,280		$ -		Balance of Plant Plan		12.75
Energy Saving E	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	TBD	$ -		$ -		Project Complete		N/A
Energy Saving E	14,425.850	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	$ 470,008	$ -		$ -		Balance of Plant Plan		2.53
Energy Saving E	0.000	0.000	0.000	0.000	0.000	0.000	0.000		TBD	0.000	0.000	0.000	TBD	TBD		TBD		The HVAC system components need replacment to restore design operating capability. Upgrades will allow the systems to operate more efficiently, and will restore setback capability.		N/A

PSO	Site #	Site	HQ Measure #	If Covered, EISA S432 Reporting Year (YYYY)	Has this measure been included in an official DOE budget requests? If yes, provide Project/Measure #	Site Project #	Conservation Measure(s) Status	Conservation Measure(s) Type	Conservation Measure(s) Name or Description	Measure(s) Location (Zip Code)	Is this a multiple or single facility ECM?	Does the measure contribute to the reduction of deferred maintenance?	Is this effort/measure beyond typical O&M improvement to meet a goal?	Funding Source/Type (Actual or Potential)	Starting Year of Measure Implementation (Anticipated or Actual - YYYY)	Completion/ Operational Year of Measure (Anticipated or Actual -- YYYY)	Estimated Service Life	Estimated Implementation Cost ($)	Are there plans to measure and verify the performance of this measure?	If M&V has been conducted, provide type and date		
																				Type of M&V	MM	YYYY
NNSA	146	Y12	NNSA-0146-0056	2010			Identified	Building Envelope Modifications	Cool roof & window installations		Multiple	Yes	No	M&R Indirect	2011	2011	10	$ 1,488,000				
NNSA	146	Y12	NNSA-0146-0057	2010		16.1	Operational	Water & Sewer Conservation Systems	Demineralized Water Production Facility Replacement - Ph 1			Yes	No	Unknown	2011	2011	25	$ 6,999,660				
NNSA	146	Y12	NNSA-0146-0058	2012			Operational	Energy Related Process Improvements	Jack Case HPSB initiatives		Single	No	Yes	M&R Indirect	2012	2012	25	$ 300,000				
NNSA	146	Y12	NNSA-0146-0059	Not Covered			Operational	Energy Related Process Improvements	Facility Consolidation			Yes	No	M&R Indirect	2012	2015	25	$ 500,000				
NNSA	146	Y12	NNSA-0146-0060	Not Covered			Verified	Energy Related Process Improvements	9113 HPSB Initiatives		Single	Yes	No	M&R Indirect	2012	2012	25	$ 691,774				
NNSA	146	Y12	NNSA-0146-0061	Not Covered			Verified	Energy Related Process Improvements	9119 HPSB Initiatives		Single	Yes	No	M&R Indirect	2012	2012	25	$ 893,132				
NNSA	146	Y12	NNSA-0146-0062	2012			Identified	Lighting Improvements	Lighting replacements		Multiple	Yes	No	M&R Indirect	2011	2015	25	$ 10,669,000				
NNSA	146	Y12	NNSA-0146-0063	Not Covered			Identified	Lighting Improvements	Occupant Sensors for HPSB facilities		Multiple	No	Yes	M&R Indirect	2013	2015	25	$ 100,000				
NNSA	146	Y12	NNSA-0146-0064	Not Covered			Identified	Other	Electric Vehicle Charging Stations			No	Yes	Unknown	2014	2016	25	$ 25,000				
NNSA	146	Y12	NNSA-0146-0065	Not Covered			Identified	Other	Facility Demolitions			Yes	No	Disposition	2012	2012	25	$ 13,500,000				
NNSA	146	Y12	NNSA-0146-0066	Not Covered			Identified	Water & Sewer Conservation Systems	Potable water upgrades for HPSB facilities		Multiple	Yes	Yes	M&R Indirect	2012	2015	25	$ 2,000,000				

Is this a energy saving measure or renewable energy system?	Provide estimated energy saved or switched for each energy type, as applicable. If there are no savings associated with the measure enter "0". If estimated savings are unknown at this time enter "TBD".								Estimated Annual Potable Water Savings (10^3 Gal/Yr)	Estimated Annual ILA (Non-Potable Freshwater) Savings (10^3 Gal/Yr)	Estimated Annual Renewable Electricity Output (MWh/Yr)	Estimated Annual Renewable Thermal Output (10^9 BTU/Yr)	Estimated Annual Energy Cost Savings ($/Yr)	Estimated Annual Water Cost Savings ($/Yr)	Estimated Annual Cost Savings ($/Yr) from switching to a renewable energy source	Estimated Annual Ancillary Cost Savings ($/Yr)	Site Priority	Additional Information	SPO Comments/Notes	Savings to Investment Ratio
	Estimated Annual Electricity Saved (MWh/Yr)	Estimated Annual Fuel Oil Saved (10^3 Gal/Yr)	Estimated Annual Natural Gas Saved (10^3 Cf/Yr)	Estimated Annual LPG/Propane Saved (10^3 Gal/Yr)	Estimated Annual Coal Saved (Short Ton/Yr)	Estimated Annual Steam Saved (10^9 BTU/Yr)	Estimated Annual Other Saved (10^9 BTU/Yr)	If "Other", what is "Other"?											
Energy Saving E	70.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	TBD	$ -		$ -			SPO Note: Completion year on or before 2011, please verify/update conservation measure status; Completion year on or before 2011, please verify/update conservation measure status	0.05
Water Saving E	0.000	0.000	0.000	0.000	0.000	0.000	0.000		40,525.000	0.000	0.000	0.000	$ 3	$ 41,976		$ -		Project Complete		N/A
Energy Saving E	900.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	$ 100,000	$ -		$ -			SPO Note: HQ measure numbers were changed to follow HQ's reporting format. Maintained EISA S432 reporting year in column.	N/A
Energy Saving E	1,000.000	0.000	0.000	0.000	0.000	0.000	0.000		TBD	0.000	0.000	0.000	$ 50,000	TBD		$ -			SPO Note: HQ measure numbers were changed to follow HQ's reporting format. Maintained EISA S432 reporting year in column.	N/A
Energy Saving E	217.230	0.000	0.000	0.000	0.000	0.000	0.000	Sewer	851.800	0.000	0.000	0.000	$ 12,281	$ 1,099		$ 8,424			SPO Note: HQ measure numbers were changed to follow HQ's reporting format. Maintained EISA S432 reporting year in column.	0.54
Energy Saving E	450.460	0.000	0.000	0.000	0.000	0.000	0.000	Sewer	1,346.900	0.000	0.000	0.000	$ 25,466	$ 1,738		$ 13,322			SPO Note: HQ measure numbers were changed to follow HQ's reporting format. Maintained EISA S432 reporting year in column.	0.79
Energy Saving E	7,330.560	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	$ 439,834	$ -		$ -			SPO Note: HQ measure numbers were changed to follow HQ's reporting format. Maintained EISA S432 reporting year in column.	0.62
Energy Saving E	145,000.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	$ 15,000	$ -		$ -			SPO Note: HQ measure numbers were changed to follow HQ's reporting format. Maintained EISA S432 reporting year in column.	1.42
Energy Saving E	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	$ -	$ -		$ -		No energy savings is associated with electric vehicle charging stations.	SPO Note: HQ measure numbers were changed to follow HQ's reporting format. Maintained EISA S432 reporting year in column.	N/A
Energy Saving E	143.302	0.000	0.000	0.000	0.000	0.000	0.000		1,000.000	0.000	0.000	0.000	$ 9,315	$ 1,416		$ -			SPO Note: HQ measure numbers were changed to follow HQ's reporting format. Maintained EISA S432 reporting year in column.	0.01
Energy Saving E	0.000	0.000	0.000	0.000	0.000	0.000	0.000		TBD	0.000	0.000	0.000	TBD	TBD		$ -			SPO Note: HQ measure numbers were changed to follow HQ's reporting format. Maintained EISA S432 reporting year in column.	N/A

PSO	Site #	Site	HQ Measure #	If Covered, EISA S432 Reporting Year (YYYY)	Has this measure been included in an official DOE budget requests? If yes, provide Project/Measure #	Site Project #	Conservation Measure(s) Status	Conservation Measure(s) Type	Conservation Measure(s) Name or Description	Measure(s) Location (Zip Code)	Is this a multiple or single facility ECM?	Does the measure contribute to the reduction of deferred maintenance?	Is this effort/measure beyond typical O&M improvement to meet a goal?	Funding Source/Type (Actual or Potential)	Starting Year of Measure Implementation (Anticipated or Actual - YYYY)	Completion/ Operational Year of Measure (Anticipated or Actual -- YYYY)	Estimated Service Life	Estimated Implementation Cost ($)	Are there plans to measure and verify the performance of this measure?	If M&V has been conducted, provide type and date		
																				Type of M&V	MM	YYYY
NNSA	146	Y12	NNSA-0146-0067	2012			Identified	Advanced Metering System	Advanced Natural Gas Meters			No	Yes	TBD	2011	2015	25	$ 36,000				
NNSA	146	Y12	NNSA-0146-0068	2012			Identified	Advanced Metering System	Advanced Chilled Water Meters			No	Yes	TBD	2014	2015	25	$ 250,000				
NNSA	146	Y12	NNSA-0146-0069	2012			Cancelled	Water & Sewer Conservation Systems	Change JCC Irrigation to Raw Water Feed		Single	No	Yes	Other		2015	25	$ 250,000				
NNSA	146	Y12	NNSA-0146-0070	2012		PD-40,42,43, 44,45	Identified	Heating, Ventilating, and Air Conditioning (HVAC)	9212 HVAC refurbishments			Yes	No	Unknown		2013	25	$ 650,000				
NNSA	146	Y12	NNSA-0146-0071	2012		PD-134,168	Identified	Heating, Ventilating, and Air Conditioning (HVAC)	9215 HVAC/Steam refurbishment			Yes	No	Unknown		2013	25	$ 450,000				
NNSA	146	Y12	NNSA-0146-0072	2012		PD-172,174,177, 178,179,180,192,199	Awarded/Approv	Heating, Ventilating, and Air Conditioning (HVAC)	9201-05N/W HVAC replacments			Yes	No	Unknown		2013	25	$ 2,580,000				
NNSA	146	Y12	NNSA-0146-0073	2012		PD-230,231	Identified	Heating, Ventilating, and Air Conditioning (HVAC)	9204-02E Fan refurbishment			Yes	No	Unknown		2013	25	$ 120,000				
NNSA	146	Y12	NNSA-0146-0074	2012		PD-36,37	Identified	Energy Related Process Improvements	9212 Electrical upgrades			Yes	No	Unknown		2013	25	$ 580,000				
NNSA	146	Y12	NNSA-0146-0075	Not Covered			Identified	Solar Photovoltaic	Solar Parking Structure		Multiple	No	Yes	Unknown		2014	25	$ 1,000,000				
NNSA	146	Y12	NNSA-0146-0076	Not Covered			Identified	Wind	Vertical Axis Wind Turbine		Multiple	No	Yes	Unknown		2012	25	$ 250,000				
NNSA	146	Y12	NNSA-0146-0077	2012			Identified	Renewable Energy Assessment	Steam Station Generator		Multiple	No	Yes	Unknown		2015	25	$ 250,000				
NNSA	146	Y12	NNSA-0146-0078	2012			Identified	Chiller Plant Improvement	9767-10 Chiller life-cycle replacement		Single	No	No	Unknown	2016	2018	25	$ 14,000,000				
NNSA	146	Y12	NNSA-0146-0079	2012			Identified	Chiller Plant Improvement	9767-08 Chiller life-cycle replacement		Single	No	No	Unknown	2016	2018	25	$ 4,600,000				

Is this a energy saving measure or renewable energy system?	Provide estimated energy saved or switched for each energy type, as applicable. If there are no savings associated with the measure enter "0". If estimated savings are unknown at this time enter "TBD".								Estimated Annual Potable Water Savings (10^3 Gal/Yr)	Estimated Annual ILA (Non-Potable Freshwater) Savings (10^3 Gal/Yr)	Estimated Annual Renewable Electricity Output (MWh/Yr)	Estimated Annual Renewable Thermal Output (10^9 BTU/Yr)	Estimated Annual Energy Cost Savings ($/Yr)	Estimated Annual Water Cost Savings ($/Yr)	Estimated Annual Cost Savings ($/Yr) from switching to a renewable energy source	Estimated Annual Ancillary Cost Savings ($/Yr)	Site Priority	Additional Information	SPO Comments/Notes	Savings to Investment Ratio
	Estimated Annual Electricity Saved (MWh/Yr)	Estimated Annual Fuel Oil Saved (10^3 Gal/Yr)	Estimated Annual Natural Gas Saved (10^3 Cf/Yr)	Estimated Annual LPG/Propane Saved (10^3 Gal/Yr)	Estimated Annual Coal Saved (Short Ton/Yr)	Estimated Annual Steam Saved (10^9 BTU/Yr)	Estimated Annual Other Saved (10^9 BTU/Yr)	If "Other", what is "Other"?												
Energy Saving E	0.000	0.000	24,080.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	$ 138,995	$ -		$ -			SPO Note: HQ measure numbers were changed to follow HQ's reporting format. Maintained EISA S432 reporting year in column.	N/A
Energy Saving E	TBD	0.000	0.000	0.000	0.000	0.000	TBD	Chilled Water - Electric Driven Chiller	0.000	0.000	0.000	0.000	TBD	$ -		$ -			SPO Note: HQ measure numbers were changed to follow HQ's reporting format. Maintained EISA S432 reporting year in column.	N/A
Energy Saving E	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000	TBD	0.000	0.000	$ -	TBD		$ -		Project determined not feasible		N/A
Energy Saving E	200.000	0.000	0.000	0.000	0.000	0.544	0.544	Chilled Water - Electric Driven Chiller	0.000	0.000	0.000	0.000	$ 30,000	$ -		TBD			SPO Note: HQ measure numbers were changed to follow HQ's reporting format. Maintained EISA S432 reporting year in column.	0.8
Energy Saving E	TBD	0.000	TBD	0.000	0.000	TBD	TBD	Chilled Water - Electric Driven Chiller	0.000	0.000	0.000	0.000	TBD	$ -		TBD			SPO Note: HQ measure numbers were changed to follow HQ's reporting format. Maintained EISA S432 reporting year in column.	N/A
Energy Saving E	TBD	0.000	0.000	0.000	0.000	TBD	TBD	Chilled Water - Electric Driven Chiller	0.000	0.000	0.000	0.000	TBD	$ -		TBD		2 units completed in 2012	SPO Note: HQ measure numbers were changed to follow HQ's reporting format. Maintained EISA S432 reporting year in column.	N/A
Energy Saving E	TBD	0.000	0.000	0.000	0.000	TBD	TBD	Chilled Water - Electric Driven Chiller	0.000	0.000	0.000	0.000	TBD	$ -		TBD			SPO Note: HQ measure numbers were changed to follow HQ's reporting format. Maintained EISA S432 reporting year in column.	N/A
Energy Saving E	TBD	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	TBD	$ -		TBD			SPO Note: HQ measure numbers were changed to follow HQ's reporting format. Maintained EISA S432 reporting year in column.	N/A
Fuel Switching I	1.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	$ 60	$ -		$ -			SPO Note: HQ measure numbers were changed to follow HQ's reporting format. Maintained EISA S432 reporting year in column.	N/A
Fuel Switching I	0.100	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	$ 6	$ -		$ -			SPO Note: HQ measure numbers were changed to follow HQ's reporting format. Maintained EISA S432 reporting year in column.	N/A
Fuel Switching I	0.100	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	$ 6	$ -		$ -			SPO Note: HQ measure numbers were changed to follow HQ's reporting format. Maintained EISA S432 reporting year in column.	N/A
Energy Saving E	7,153.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	$ 429,192	$ -	$ -	$ -				0.55
Energy Saving E	1,820.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	$ 109,200	$ -	$ -	$ -				0.43

PSO	Site #	Site	HQ Measure #	If Covered, EISA S432 Reporting Year (YYYY)	Has this measure been included in an official DOE budget requests? If yes, provide Project/Measure #	Site Project #	Conservation Measure(s) Status	Conservation Measure(s) Type	Conservation Measure(s) Name or Description	Measure(s) Location (Zip Code)	Is this a multiple or single facility ECM?	Does the measure contribute to the reduction of deferred maintenance?	Is this effort/measure beyond typical O&M improvement to meet a goal?	Funding Source/Type (Actual or Potential)	Starting Year of Measure Implementation (Anticipated or Actual - YYYY)	Completion/ Operational Year of Measure (Anticipated or Actual -- YYYY)	Estimated Service Life	Estimated Implementation Cost ($)	Are there plans to measure and verify the performance of this measure?	If M&V has been conducted, provide type and date		
																				Type of M&V	MM	YYYY
NNSA	146	Y12	NNSA-0146-0080	2012			Identified	Chiller Plant Improvement	9767-13 Chiller life-cycle replacement		Single	No	No	Unknown	2016	2018	25	$ 9,200,000				
NNSA	146	Y12	NNSA-0146-0081	Not Covered			Operational	Building Envelope Modifications	9103 Cool Roof Installation		Single	Yes	No	M&R Indirect	2012	2012	25	$ 282,775				
NNSA	146	Y12	NNSA-0146-0082	Not Covered			Awarded/Approv	Building Envelope Modifications	9103 Thermal Window Replacement		Single	Yes	No	M&R Indirect	2013	2013	40	$ 198,000				
NNSA	146	Y12	NNSA-0146-0083	Not Covered			Awarded/Approv	Building Envelope Modifications	9103 Plumbing fixture replacement		Single	Yes	No	M&R Indirect	2013	2013	35	$ 183,000				
NNSA	146	Y12	NNSA-0146-0084	Not Covered			Awarded/Approv	Building Envelope Modifications	9103 T-12 Fixture Replacement		Single	Yes	No	M&R Indirect	2013	2013	20	$ 1,107,653				
NNSA	146	Y12	NNSA-0146-0085	Not Covered			Awarded/Approv	Building Envelope Modifications	9103 Occupancy Sensor Installation		Single	Yes	No	M&R Indirect	2013	2013	20	$ 176,250				
NNSA	146	Y12	NNSA-0146-0086	2012			Identified	Building Envelope Modifications	9201-03 Cool Roof Installation		Single	Yes	No	M&R Indirect	2015	2015	25	$ 507,892				
NNSA	146	Y12	NNSA-0146-0087	2012			Identified	Building Envelope Modifications	9201-03 Thermal Window Replacement		Single	Yes	No	M&R Indirect	2016	2016	40	$ 134,304				
NNSA	146	Y12	NNSA-0146-0088	2012			Awarded/Approv	Building Envelope Modifications	9201-03 Air Handler Replacements		Single	Yes	No	M&R Indirect	2016	2016	20	$ 1,033,769				
NNSA	146	Y12	NNSA-0146-0089	2012			Identified	Building Envelope Modifications	9201-03 Plumbing Fixture Replacements		Single	Yes	No	M&R Indirect	2016	2016	35	$ 121,079				
NNSA	146	Y12	NNSA-0146-0090	2012			Identified	Building Envelope Modifications	9201-03 Lighting Fixture Replacement		Single	Yes	No	M&R Indirect	2016	2016	20	$ 816,786				
NNSA	146	Y12	NNSA-0146-0091	2012			Identified	Building Envelope Modifications	9201-03 Lighting control (occupant Sensor)		Single	Yes	No	M&R Indirect	2016	2016	20	$ 139,650				
NNSA	146	Y12	NNSA-0146-0092	2012			Identified	Building Envelope Modifications	9215 Lighting Fixture Replacement		Single	Yes	No	M&R Indirect	2016	2016	20	$ 1,559,502				
NNSA	146	Y12	NNSA-0146-0093	2012			Identified	Building Envelope Modifications	9215 Lighting control (occupant Sensor)		Single	Yes	No	M&R Indirect	2016	2016	20	$ 141,000				
NNSA	146	Y12	NNSA-0146-0094	2012			Identified	Building Envelope Modifications	9998 Lighting Fixture Replacement		Single	Yes	No	M&R Indirect	2016	2016	20	$ 1,953,615				
NNSA	146	Y12	NNSA-0146-0095	2012			Identified	Building Envelope Modifications	9998 Lighting control (occupant Sensor)		Single	Yes	No	M&R Indirect	2016	2016	20	$ 105,750				
NNSA	146	Y12	NNSA-0146-0096	2012			Identified	Building Envelope Modifications	9995 Lighting Fixture Replacement		Single	Yes	No	M&R Indirect	2016	2016	20	$ 1,316,660				
NNSA	146	Y12	NNSA-0146-0097	2012			Identified	Building Envelope Modifications	9995 Lighting control (occupant Sensor)		Single	Yes	No	M&R Indirect	2016	2016	20	$ 141,000				
NNSA	146	Y12	NNSA-0146-0098	2012			Identified	Building Envelope Modifications	9201-01 Thermal window replacement		Single	Yes	No	M&R Indirect	2016	2016	40	$ 2,791,480				
NNSA	146	Y12	NNSA-0146-0099	2012			Identified	Building Envelope Modifications	9201-01 Lighting replacements		Single	Yes	No	M&R Indirect	2016	2016	20	$ 599,983				
NNSA	146	Y12	NNSA-0146-0100	2012			Identified	Building Envelope Modifications	9201-01 Air Filter Replacements		Single	Yes	No	M&R Indirect	2016	2016	1	$ 1,500				
NNSA	146	Y12	NNSA-0146-0101	2012			Identified	Building Envelope Modifications	9201-01 vacuum pump controls		Single	Yes	No	M&R Indirect	2016	2016	20	$ 4,000				
NNSA	146	Y12	NNSA-0146-0102	2012			Identified	Building Envelope Modifications	9201-05N Lighting Replacements		Single	Yes	No	M&R Indirect	2016	2016	20	$ 1,246,393				
NNSA	146	Y12	NNSA-0146-0103	2012			Identified	Building Envelope Modifications	9201-05N vacuum pump controls		Single	Yes	No	M&R Indirect	2016	2016	20	$ 100,000				
NNSA	146	Y12	NNSA-0146-0104	2012			Identified	Building Envelope Modifications	9201-05W Lighting Replacements		Single	Yes	No	M&R Indirect	2016	2016	20	$ 878,486				
NNSA	146	Y12	NNSA-0146-0105	2012			Identified	Building Envelope Modifications	9201-05W vacuum pump controls		Single	Yes	No	M&R Indirect	2016	2016	20	$ 100,000				
NNSA	146	Y12	NNSA-0146-0106	2012			Identified	Building Envelope Modifications	9201-05W Electric Motor Replacement		Single	Yes	No	M&R Indirect	2016	2016	25	$ 6,679				
NNSA	146	Y12	NNSA-0146-0107	2012			Identified	Building Envelope Modifications	9204-02 Lighting Replacements		Single	Yes	No	M&R Indirect	2016	2016	20	$ 2,016,086				
NNSA	146	Y12	NNSA-0146-0108	2012			Identified	Building Envelope Modifications	9204-02 vacuum pump controls		Single	Yes	No	M&R Indirect	2016	2016	20	$ 600,000				
NNSA	146	Y12	NNSA-0146-0109	2012			Identified	Building Envelope Modifications	9204-02 Lighting control (occupant Sensor)		Single	Yes	No	M&R Indirect	2016	2016	20	$ 141,000				
NNSA	146	Y12	NNSA-0146-0110	2012			Operational	Building Envelope Modifications	9204-02 Condensate Pump Replacement		Single	Yes	No	M&R Indirect	2016	2016	20	$ 600,000				
NNSA	146	Y12	NNSA-0146-0111	2012			Awarded/Approv	Building Envelope Modifications	9212 Condensate Pump Replacement		Single	Yes	No	M&R Indirect	2016	2016	20	$ 600,000				
NNSA	146	Y12	NNSA-0146-0112	2012			Identified	Building Envelope Modifications	9212 Lighting Replacements		Single	Yes	No	M&R Indirect	2016	2016	20	$ 3,678,078				

Is this a energy saving measure or renewable energy system?	Provide estimated energy saved or switched for each energy type, as applicable. If there are no savings associated with the measure enter "0". If estimated savings are unknown at this time enter "TBD".								Estimated Annual Potable Water Savings (10^3 Gal/Yr)	Estimated Annual ILA (Non-Potable Freshwater) Savings (10^3 Gal/Yr)	Estimated Annual Renewable Electricity Output (MWh/Yr)	Estimated Annual Renewable Thermal Output (10^9 BTU/Yr)	Estimated Annual Energy Cost Savings ($/Yr)	Estimated Annual Water Cost Savings ($/Yr)	Estimated Annual Cost Savings ($/Yr) from switching to a renewable energy source	Estimated Annual Ancillary Cost Savings ($/Yr)	Site Priority	Additional Information	SPO Comments/Notes	Savings to Investment Ratio
	Estimated Annual Electricity Saved (MWh/Yr)	Estimated Annual Fuel Oil Saved (10^3 Gal/Yr)	Estimated Annual Natural Gas Saved (10^3 Cf/Yr)	Estimated Annual LPG/Propane Saved (10^3 Gal/Yr)	Estimated Annual Coal Saved (Short Ton/Yr)	Estimated Annual Steam Saved (10^9 BTU/Yr)	Estimated Annual Other Saved (10^9 BTU/Yr)	If "Other", what is "Other"?												
Energy Saving E	4,600.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	$ 196,600	$ -	$ -	$ -				0.54
Energy Saving E	20.925	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	$ 1,183	$ -	$ -	$ -				0.07
Energy Saving E	83.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	$ 4,700	$ -	$ -	$ -				0.43
Energy Saving E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Sewer	905.000	0.000	0.000	0.000	$ -	$ 1,167	$ -	$ 8,950				1.69
Energy Saving E	330.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	$ 20,000	$ -	$ -	$ -				0.3
Energy Saving E	54.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	$ 3,100	$ -	$ -	$ -				0.31
Energy Saving E	92.468	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	$ 11,676	$ -	$ -	$ -				0.19
Energy Saving E	25.356	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	$ 1,331	$ -	$ -	$ -				0.2
Energy Saving E	327.575	0.000	0.000	0.000	0.000	0.000	0.000	0	43,938.000	0.000	0.000	0.000	$ 18,519	$ 57,998	$ -	$ -		2 Units replaced in 2012		8.54
Energy Saving E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Sewer	1,565.000	0.000	0.000	0.000	$ -	$ 2,019	$ -	$ 15,480				2.5
Energy Saving E	983.308	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	$ 55,589	$ -	$ -	$ -				1.25
Energy Saving E	555.013	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	$ 31,376	$ -	$ -	$ -				4.12
Energy Saving E	523.308	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	$ 29,584	$ -	$ -	$ -				0.36
Energy Saving E	125.529	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	$ 7,097	$ -	$ -	$ -				0.92
Energy Saving E	472.757	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	$ 26,726	$ -	$ -	$ -				0.25
Energy Saving E	301.797	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	$ 17,062	$ -	$ -	$ -				2.93
Energy Saving E	269.998	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	$ 15,264	$ -	$ -	$ -				0.21
Energy Saving E	103.267	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	$ 5,835	$ -	$ -	$ -				0.76
Energy Saving E	472.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	$ 28,368	$ -	$ -	$ -				0.17
Energy Saving E	205.463	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	$ 11,615	$ -	$ -	$ -				0.36
Energy Saving E	113.800	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	$ 6,430	$ -	$ -	$ -				4.71
Energy Saving E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	3,714.000	0.000	0.000	0.000	$ -	$ 4,791	$ -	$ -		Cooling water continously running, needs control		20.71
Energy Saving E	464.293	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	$ 26,248	$ -	$ -	$ -				0.39
Energy Saving E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	12,264.000	0.000	0.000	0.000	$ -	$ 15,821	$ -	$ -				2.73
Energy Saving E	171.575	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	$ 9,700	$ -	$ -					0.2
Energy Saving E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	12,264.000	0.000	0.000	0.000	$ -	$ 15,821	$ -					2.73
Energy Saving E	9.110	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	$ 515	$ -	$ -					1.42
Energy Saving E	562.100	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	$ 31,777	$ -	$ -					0.29
Energy Saving E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	8,914.180	0.000	0.000	0.000	$ -	$ 11,499	$ -					0.33
Energy Saving E	349.388	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	$ 19,752	$ -	$ -					2.57
Energy Saving E	0.000	0.000	8,148.140	0.000	0.000	0.000	0.000		13,523.380	0.000	0.000	0.000	$ 36,422	$ 17,445		$ 3,566				N/A
Energy Saving E	0.000	0.000	13,475.000	0.000	0.000	0.000	0.000		22,365.590	0.000	0.000	0.000	$ 60,237	$ 28,852		$ 3,566				1.95
Energy Saving E	899.580	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	$ 50,856	$ -	$ -					0.25

PSO	Site #	Site	HQ Measure #	If Covered, EISA S432 Reporting Year (YYYY)	Has this measure been included in an official DOE budget requests? If yes, provide Project/Measure #	Site Project #	Conservation Measure(s) Status	Conservation Measure(s) Type	Conservation Measure(s) Name or Description	Measure(s) Location (Zip Code)	Is this a multiple or single facility ECM?	Does the measure contribute to the reduction of deferred maintenance?	Is this effort/measure beyond typical O&M improvement to meet a goal?	Funding Source/Type (Actual or Potential)	Starting Year of Measure Implementation (Anticipated or Actual - YYYY)	Completion/ Operational Year of Measure (Anticipated or Actual -- YYYY)	Estimated Service Life	Estimated Implementation Cost ($)	Are there plans to measure and verify the performance of this measure?	If M&V has been conducted, provide type and date		
																				Type of M&V	MM	YYYY
NNSA	146	Y12	NNSA-0146-0113	2012			Identified	Water and Sewer Conservation Systems	9204-02E Plumbing Fixture Replacement		Single	No	No	M&R Indirect	2016	2016	35	$ 97,342				
NNSA	146	Y12	NNSA-0146-0114	2012			Identified	Lighting Improvements	9204-02E Install Occupancy Sensors		Single	No	No	M&R Indirect	2016	2016	20	$ 75,435				
NNSA	146	Y12	NNSA-0146-0115	2012			Identified	Lighting Improvements	9204-02E Install Lighting Timer		Single	No	No	M&R Indirect	2016	2016	20	$ 20,065				
NNSA	146	Y12	NNSA-0146-0116	2012			Identified	Water and Sewer Conservation Systems	9202 Plumbing Fixture Replacements		Single	No	No	M&R Indirect	2016	2016	35	$ 102,494				
NNSA	146	Y12	NNSA-0146-0117	2012			Identified	Lighting Improvements	9202 Replace Incandescent Lamps		Single	No	No	M&R Indirect	2016	2016	5	$ 2,100				
NNSA	146	Y12	NNSA-0146-0118	2012			Identified	Lighting Improvements	9202 Install Occupancy Sensors		Single	No	No	M&R Indirect	2016	2016	20	$ 122,550				
NNSA	146	Y12	NNSA-0146-0119	2012			Identified	Water and Sewer Conservation Systems	9203 & 3A Plumbing Fixture Replacements		Single	No	No	M&R Indirect	2016	2016	35	$ 32,450				
NNSA	146	Y12	NNSA-0146-0120	2012			Identified	Lighting Improvements	9203 & 3A Install Occupancy Sensors		Single	No	No	M&R Indirect	2016	2016	20	$ 54,150				
NNSA	146	Y12	NNSA-0146-0121	2012			Identified	Lighting Improvements	9203 & 3A Replace Incandescent Lamps		Single	No	No	M&R Indirect	2016	2016	5	$ 714				
NNSA	146	Y12	NNSA-0146-0122	2012			Identified	Water and Sewer Conservation Systems	9737 Plumbing Fixture Replacement		Single	No	No	M&R Indirect	2016	2016	35	$113,070				
NNSA	146	Y12	NNSA-0146-0123	2012			Identified	Lighting Improvements	9737 Install Occupancy Sensors		Single	No	No	M&R Indirect	2016	2016	20	$88,350				
NNSA	146	Y12	NNSA-0146-0124	2012			Identified	Lighting Improvements	9767-08 Replace HPS Lights with T8 Lights		Single	No	No	M&R Indirect	2016	2016	20	$13,842.00				
NNSA	146	Y12	NNSA-0146-0125	2012			Identified	Lighting Improvements	9767-08 Install Occupancy Sensors		Single	No	No	M&R Indirect	2016	2016	20	$1,140.00				
NNSA	146	Y12	NNSA-0146-0126	2012			Identified	Lighting Improvements	9767-11 Install Occupancy Sensors		Single	No	No	M&R Indirect	2016	2016	20	$2,280.00				
NNSA	146	Y12	NNSA-0146-0127	2012			Identified	Lighting Improvements	9767-11 Replace MH Lights with T8 Lights		Single	No	No	M&R Indirect	2016	2016	20	$15,054.00				

Is this a energy saving measure or renewable energy system?	Provide estimated energy saved or switched for each energy type, as applicable. If there are no savings associated with the measure enter "0". If estimated savings are unknown at this time enter "TBD".								Estimated Annual Potable Water Savings (10^3 Gal/Yr)	Estimated Annual ILA (Non-Potable Freshwater) Savings (10^3 Gal/Yr)	Estimated Annual Renewable Electricity Output (MWh/Yr)	Estimated Annual Renewable Thermal Output (10^9 BTU/Yr)	Estimated Annual Energy Cost Savings ($/Yr)	Estimated Annual Water Cost Savings ($/Yr)	Estimated Annual Cost Savings ($/Yr) from switching to a renewable energy source	Estimated Annual Ancillary Cost Savings ($/Yr)	Site Priority	Additional Information	SPO Comments/Notes	Savings to Investment Ratio
	Estimated Annual Electricity Saved (MWh/Yr)	Estimated Annual Fuel Oil Saved (10^3 Gal/Yr)	Estimated Annual Natural Gas Saved (10^3 Cf/Yr)	Estimated Annual LPG/Propane Saved (10^3 Gal/Yr)	Estimated Annual Coal Saved (Short Ton/Yr)	Estimated Annual Steam Saved (10^9 BTU/Yr)	Estimated Annual Other Saved (10^9 BTU/Yr)	If "Other", what is "Other"?											
Water Saving ECM Only	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	841.154	0.000	0.000	0.000	$ -	$ 1,085	$ -	$ 8,319				1.84
Energy Saving ECM	65.444	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	$ 3,700	$ -	$ -	$ -				0.67
Energy Saving ECM	87.239	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	$ 4,932	$ -	$ -	$ -				3.39
Water Saving ECM Only	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	479.138	0.000	0.000	0.000	$ -	$ 618	$ -	$ 4,739				1
Energy Saving ECM	42.916	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	$ 2,426	$ -	$ -	$ -				15.91
Energy Saving ECM	211.094	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	$ 11,934	$ -	$ -	$ -				1.34
Water Saving ECM Only	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	186.3316	0.000	0.000	0.000	$ -	$240.37	$ -	$1,842.82				0.85
Energy Saving ECM	88.73	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	$5,016.23	$ -	$ -	$ -				1.28
Energy Saving ECM	16.15	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	$913.05	$ -	$ -	$ -				0.38
Water Saving ECM Only	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	841.15408	0.000	0.000	0.000	$ -	$1,085.09	$ -	$8,319.01				1.59
Energy Saving ECM	137.6678	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	$ -	$ -	$ -	$ -				1.21
Energy Saving ECM	32.1672	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	$1,818.52	$ -	$ -	$ -				1.81
Energy Saving ECM	6.1806	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	$349.44	$ -	$ -	$ -				4.22
Energy Saving ECM	9.841103	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	$556.35	$ -	$ -	$ -				3.36
Energy Saving ECM	18.05731	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	1,020.76	$ -	$ -	$ -				0.93

3.4 Bldg Inventory Changes

Basic Information																		For compliance with Sec 438 of EISA	For compliance with DOE O 436.1	Complete this section if *new* building project was CD-1 or lower on 10/1/06		Complete this section if construction has been completed	Notes	
PSO	Site #	Site	Project ID	Building/Project Name	Location (Zip Code)	Planned or Actual CD-2 Date (MM/YY)	Current CD Status	Total Project Cost ($ M)	Number/Type of Facilities	Facility Change Status	Anticipated Electricity Usage (kWh/Yr)	Anticipated Natural Gas Usage (10^3 Cubic Feet/Yr)	Estimated Annual GHG Emissions Avoided ($MtCO_2e$/Yr)	Anticipated Potable Water Usage (10^3 Gal/Yr)	Anticipated ILA Water Usage (10^3 Gal/Yr)	Excluded from Energy Intensity?	Expected Building Occupancy or Removal Year (YYYY)	Anticipated Square Footage	If > 5,000 sq ft, will it maintain or restore pre-development hydrology?	What GP equivalency will the building achieve?	Estimated percentage below ASHRAE Std 90.1 in terms of energy use	If not at least 30% below ASHRAE Std 90.1, will design achieve maximum level of energy efficiency that is life-cycle cost-effective?	In terms of energy use, percentage below ANSI/ASHRAE/IESNA Standard 90.1 achieved	Additional Information	SPO Comments/Notes
NNSA	146	Y12	06-D-141	Uranium Processing Facility	37831	Pending	1	$3,500.0	3/Main Processing; Administration; Process Support	New	31,733,000	200	19,657	14,804	0	No	2020	363,466	Yes	LEED® Certified	20%	Yes			
NNSA	146	Y12	TBD	Fire Hall	37831	Pending	0		Fire Hall	New			TBD			No	2019	24,000	Yes	LEED® Gold					
NNSA	146	Y12	TBD	Emergency Operations Center	37831	Pending	0		Emergency Operations	New			TBD			No	2019	14,000	Yes	LEED® Gold					
													TBD												
													TBD												
NNSA	146	Y12	DEMO - TBD	2410 CHERAHALA	37831					Demolition	665		TBD				2013	32,058						Leased facility - terminate lease	
NNSA	146	Y12	DEMO - TBD	9404-02	37831					Demolition	5		TBD				2012	4,585							
NNSA	146	Y12	DEMO - TBD	9720-12	37831					Demolition	15						2012	15000							
NNSA	146	Y12	DEMO - TBD	9720-18	37831					Demolition	6.046						2014	6046							
NNSA	146	Y12	DEMO - TBD	9949-04	37831					Demolition	0.06						2014	61							
NNSA	146	Y12	DEMO - TBD	9983-HF	37831					Demolition	0.375						2014	375							
NNSA	146	Y12	DEMO - TBD	9111	37831					Demolition	253.44						2014	13717							
NNSA	146	Y12	DEMO - TBD	9112	37831					Demolition	253.44						2014	11804							
NNSA	146	Y12	DEMO - TBD	9124	37831					Demolition	0.4						2014	400							
NNSA	146	Y12	DEMO - TBD	9811-06	37831					Demolition	1.546						2014	1546							
NNSA	146	Y12	DEMO - TBD	9983-88	37831					Demolition	1.344						2014	1344							
NNSA	146	Y12	DEMO - TBD	9983-GX	37831					Demolition	2.4						2014	2400							
NNSA	146	Y12	DEMO - TBD	9107	37831					Demolition	126.123						2014	11632							
NNSA	146	Y12	DEMO - TBD	9404-17	37831					Demolition	1.395						2014	1395							
NNSA	146	Y12	DEMO - TBD	9404-18	37831					Demolition	4.76						2014	4760							
NNSA	146	Y12	DEMO - TBD	9416-24	37831					Demolition	0.06						2015	64							
NNSA	146	Y12	DEMO - TBD	9720-37	37831					Demolition	0.23						2015	230							
NNSA	146	Y12	DEMO - TBD	9723-35	37831					Demolition	1.08						2015	1080							
NNSA	146	Y12	DEMO - TBD	9949-36	37831					Demolition	0.036						2015	36							
NNSA	146	Y12	DEMO - TBD	9983-94	37831					Demolition	2.16						2016	2160							
NNSA	146	Y12	DEMO - TBD	9983-FG	37831					Demolition	352.67						2016	1307							
NNSA	146	Y12	DEMO - TBD	113C UNION VALLEY RI	37831					Demolition	1939						2016	18450							
NNSA	146	Y12	DEMO - TBD	9401-03	37831					Demolition	39.2						2016	62124							
NNSA	146	Y12	DEMO - TBD	9770-10	37831					Demolition	0.106						2016	106							
NNSA	146	Y12	DEMO - TBD	9770-11	37831					Demolition	0.106						2016	106							
NNSA	146	Y12	DEMO - TBD	9983-FD	37831					Demolition	122						2016	1307							
NNSA	146	Y12	DEMO - TBD	9983-FE	37831					Demolition	344.7						2016	1307							
NNSA	146	Y12	DEMO - TBD	9983-FF	37831					Demolition	252.68						2016	1307							
NNSA	146	Y12	DEMO - TBD	1099 COMMERCE PARK	37831					Demolition	2162.1						2016	65000							
NNSA	146	Y12	DEMO - TBD	9401-04	37831					Demolition	3.755						2016	3755							
NNSA	146	Y12	DEMO - TBD	9724-01	37831					Demolition	0						2016	298							
NNSA	146	Y12	DEMO - TBD	9949-49	37831					Demolition	0						2016	49							
NNSA	146	Y12	DEMO - TBD	9990-03	37831					Demolition	2.447						2016	4463							
NNSA	146	Y12	DEMO - TBD	200 SUMMIT PLACE	37831					Demolition	845.4						2016	24585							
NNSA	146	Y12	DEMO - TBD	9206	37831					Demolition	1917.75						2016	57812							
NNSA	146	Y12	DEMO - TBD	9417-09	37831					Demolition	0.1						2016	100							
NNSA	146	Y12	DEMO - TBD	9424-01	37831					Demolition	0						2016	359							
NNSA	146	Y12	DEMO - TBD	9424-02	37831					Demolition	0						2016	357							
NNSA	146	Y12	DEMO - TBD	9622	37831					Demolition	0.218						2016	218							
NNSA	146	Y12	DEMO - TBD	9701-05	37831					Demolition	0.64						2016	640							
NNSA	146	Y12	DEMO - TBD	9949-29	37831					Demolition	0						2016	34							
NNSA	146	Y12	DEMO - TBD	9949-35	37831					Demolition	0						2016	49							
NNSA	146	Y12	DEMO - TBD	9949-37	37831					Demolition	0.121						2016	121							
NNSA	146	Y12	DEMO - TBD	9949-47	37831					Demolition	0						2016	49							
NNSA	146	Y12	DEMO - TBD	9949-51	37831					Demolition	0						2016	49							
NNSA	146	Y12	DEMO - TBD	9949-80	37831					Demolition	0						2016	65							
NNSA	146	Y12	DEMO - TBD	9949-89	37831					Demolition	0						2016	64							
NNSA	146	Y12	DEMO - TBD	9976	37831					Demolition	0						2016	2797							
NNSA	146	Y12	DEMO - TBD	115 UNION VALLEY RO	37831					Demolition	2000						2017	28800							
NNSA	146	Y12	DEMO - TBD	9201-04	37831					Demolition	913.772						2017	510218							
NNSA	146	Y12	DEMO - TBD	9616-10	37831					Demolition	0.438						2017	438							
NNSA	146	Y12	DEMO - TBD	9720-17	37831					Demolition	4.314						2017	4314							
NNSA	146	Y12	DEMO - TBD	9811-04	37831					Demolition	1.112						2017	1112							
NNSA	146	Y12	DEMO - TBD	9811-07	37831					Demolition	1.363						2017	1363							
NNSA	146	Y12	DEMO - TBD	9105	37831					Demolition	99.671						2017	7667							
NNSA	146	Y12	DEMO - TBD	9201-05	37831					Demolition	4520.4						2017	613642							
NNSA	146	Y12	DEMO - TBD	9204-04	37831					Demolition	1846						2017	313771							
NNSA	146	Y12	DEMO - TBD	9404-09	37831					Demolition	4.057						2017	4057							
NNSA	146	Y12	DEMO - TBD	9404-16	37831					Demolition	1.526						2017	1526							
NNSA	146	Y12	DEMO - TBD	9616-09	37831					Demolition	3.4						2017	3400							
NNSA	146	Y12	DEMO - TBD	9706-02	37831					Demolition	27.475						2017	27475							
NNSA	146	Y12	DEMO - TBD	9722-02	37831					Demolition	0.663						2017	663							
NNSA	146	Y12	DEMO - TBD	9803	37831					Demolition	0.174						2017	174							
NNSA	146	Y12	DEMO - TBD	9808	37831					Demolition	7.54						2017	7540							
NNSA	146	Y12	DEMO - TBD	9811-03	37831					Demolition	1.047						2017	1047							
NNSA	146	Y12	DEMO - TBD	9816	37831					Demolition	0.633						2017	633							
NNSA	146	Y12	DEMO - TBD	9826	37831					Demolition	0.09						2019	90							
NNSA	146	Y12	DEMO - TBD	9983-HS	37831					Demolition	0.5						2019	160							
NNSA	146	Y12	DEMO - TBD	9219	37831					Demolition	7.37						2019	7370							
NNSA	146	Y12	DEMO - TBD	9720-22	37831					Demolition	12.712						2020	12712							
NNSA	146	Y12	DEMO - TBD	9720-24	37831					Demolition	11.192						2021	11192							
NNSA	146	Y12	DEMO - TBD	9817-01	37831					Demolition	0.824						2021	824							
NNSA	146	Y12	DEMO - TBD	9817-02	37831					Demolition	0.617						2021	617							

Source Energy Savings Credit

Requirement(s): E.O. 13123

Instructions: Optional, complete the tables below for projects that increase site energy use but save source energy. For additional guidance see: http://www.eere.energy.gov/femp/pdfs/sec502e_%20guidance.pdf. Edited and new data cells should be highlighted.

Source: Site/Lab

EPACT Goal Subject Buildings

Name of Project Saving Source Energy in FY 2011 (insert additional rows as necessary)	Annual Site Energy Increase with the Project	Annual Source Energy Saved with the Project	Adjustment to Annual Site Energy
	(10^6 BTU/Yr)	(10^6 BTU/Yr)	(10^6 BTU/Yr)
Project No. 1	0.0	0.0	0.0
Project No. 2	0.0	0.0	0.0
Project No. 3	0.0	0.0	0.0
Totals	**0.0**	**0.0**	**0.0**

EPACT Excluded Buildings

Name of Project Saving Source Energy in FY 2011 (insert additional rows as necessary)	Annual Site Energy Increase with the Project	Annual Source Energy Saved with the Project	Adjustment to Annual Site Energy
	(10^6 BTU/Yr)	(10^6 BTU/Yr)	(10^6 BTU/Yr)
Project No. 1	0.0	0.0	0.0
Project No. 2	0.0	0.0	0.0
Project No. 3	0.0	0.0	0.0
Totals	**0.0**	**0.0**	**0.0**

5.1 Data Centers

Basic Information

PSO	Site #	Site	GOCO / FED	Data Center Name	Data Center Function	Assigned DCEP POC	Data Center POC	Target Date for Closure (CY) (If Scheduled)	Phase of Closure	Street Address	Street Address 2	City	State	Zip Code	Country	Gross Floor Area (Sq.Ft.)	Facility Cost ($/Sq.Ft./Yr)	Electricity Included in Cost? (Y/N)	Ownership Type	Data Center Tier / Type	Electricity Metered (Y/N)
NNSA	146	Y12	GOCO	9117 (South)	General		Rick Shipp			Bear Creek Road		Oak Ridge	TN	37831	USA	6,608	$0.00	No	1: Agency Owned	2: Tier II	No
NNSA	146	Y12	GOCO	9103 (1) West	General		Rick Shipp	2016 or beyond	Considering	Bear Creek Road		Oak Ridge	TN	37831	USA	7,264	$0.00	No	1: Agency Owned	2: Tier II	No
NNSA	146	Y12	GOCO	9103 (2) East	General		Rick Shipp	2016 or beyond	Considering	Bear Creek Road		Oak Ridge	TN	37831	USA	5,626	$0.00	No	1: Agency Owned	2: Tier II	No

5.1 Data Centers

IT Facilities, Energy								Physical Servers									Virtualization				Network Storage			Notes
Total Data Center (Facility) Power Capacity (kW)	Average Data Center Electricity Usage (kWh)	Total Data Center IT Power Capacity (kW)	Average IT Electricity Usage (kWh)	Cost Per kWh (if known)	Watts per Sq.ft.	Estimated Power Usage Effectiveness (PUE)	Has A DC Pro Assessment been Conducted?	Current Rack Count (#)	Sq. Ft. per Rack	Super Computers or HPC Systems	Mainframes (IBM or compatible)	Mainframes (Other)	Windows Servers	Unix Servers	Linux Servers	Other	Total Physical Server Count (#)	Total Virtual Host Count (#)	Total Virtual OS Count (#)	Total Operating Systems Count (#)	Average CPU Utilization of All Physical Servers	SAN/NAS/ DAS - Total (TB)	SAN/NAS/ DAS - Used (TB)	Percent Used	Additional Information
900.000	113.000	729.000	68.000	$0.06	10.29	1.66	No	35	189	0	0	1	92	13	0	0	110	4	6	112	20%	135	62	46%	Estimated based on installed equipment
1,220.000	298.000	1,018.000	211.000	$0.06	29.05	1.41	No	63	115	0	0	4	208	76	0	0	331	43	204	492	20%	386	200	52%	Estimated based on installed equipment
850.000	130.000	702.000	78.000	$0.06	13.86	1.67	No	34	165	0	0	10	42	28	0	0	100	20	93	173	20%	138	75	54%	Estimated based on installed equipment

Refrigerant Information																								Notes	
							Default Approach	OR	Simplified Material Balance Approach						Emitted Refrigerant Quantity (lbs)	F-Gas: Type 1		F-Gas: Type 2		F-Gas: Type 3		F-Gas: Type 4		Anthropogenic $MtCO_2e$		
PSO	Site #	Site	FY	Data Entry Type	Refrigerant Type	Composition	Quantity Purchased/ Issued (lbs)	Quantity Returned to Supply (lbs)	Quantity in storage at beginning of inventory year (lbs)	Quantity in storage at end of inventory year (lbs)	Sum of all refrigerant acquisitions (lbs)	Sum of all refrigerant disbursements (lbs)	Total capacity of refrigerant in equipment at beginning of inventory year (lbs)	Total capacity of refrigerant in equipment at end of inventory year (lbs)		Material	Amount (lbs)	Material	Amount (lbs)	Material	Amount (lbs)	Material	Amount (lbs)		Additional Information	SPO Notes
NNSA	146	Y12	2008	Fiscal Year	R-134a	R-134a	407.000								407.000	HFC-134a	407.000	-	-	-	-	-	-	239.996	FY 2008 Baseline data provided and checked to verify fugitives are not double counted.	.
NNSA	146	Y12	2008	Fiscal Year	R-23	R-23	93.000								93.000	HFC-23	93.000	-	-	-	-	-	-	493.553		
NNSA	146	Y12	2008	Fiscal Year	R-125	R-125	12.000								12.000	HFC-125	12.000	-	-	-	-	-	-	15.241	FY2008 Total Mix Refrig GHG =	
NNSA	146	Y12	2008	Fiscal Year	R-143a	R-143a	-								-	HFC-143a	-	-	-	-	-	-	-	-	748.790	
NNSA	146	Y12	2011	Fiscal Year	R-134a	R-134a	233.000								233.000	HFC-134a	233.000	-	-	-	-	-	-	137.393		
NNSA	146	Y12	2011	Fiscal Year	R-23	R-23	6.000								6.000	HFC-23	6.000	-	-	-	-	-	-	31.842		
NNSA	146	Y12	2011	Fiscal Year	R-402B	R-125/290/22	26.000								26.000	HFC-125	9.880	-	-	-	-	-	-	12.548		
NNSA	146	Y12	2011	Fiscal Year	R-404A	R-125/143a/134a	89.000								89.000	HFC-125	39.160	HFC-134a	3.560	HFC-143a	46.280	-	-	131.605		
NNSA	146	Y12	2011	Fiscal Year	R-407C	R-32/125/134a	25.000								25.000	HFC-32	5.750	HFC-125	6.250	HFC-134a	13.000	-	-	17.299		
NNSA	146	Y12	2011	Fiscal Year	R-410A	R-32/125	85.000								85.000	HFC-32	42.500	HFC-125	42.500	-	-	-	-	66.508		
NNSA	146	Y12	2011	Fiscal Year	R-420A	R-134a/142b	25.000								25.000	HFC-134a	22.000	-	-	-	-	-	-	12.973		
NNSA	146	Y12	2011	Fiscal Year	R-502	R-22/115	30.000								30.000	-	-	-	-	-	-	-	-	-		
NNSA	146	Y12	2011	Fiscal Year	R-503	R-23/13	10.000								10.000	HFC-23	4.010	-	-	-	-	-	-	21.281	FY2011 Total Mix Refrig GHG =	
NNSA	146	Y12	2011	Fiscal Year	R-508B	R-23/116	20.000								20.000	HFC-23	9.200	PFC-116	10.800	-	-	-	-	93.894	525.343	
NNSA	146	Y12	2012	Fiscal Year	R-134a	R-134a			420.000	342.000	61.000		1,050.000	1,050.000	139.000	HFC-134a	139.000	-	-	-	-	-	-	81.964		
NNSA	146	Y12	2012	Fiscal Year	R-23	R-23			40.000	40.000	20.000				20.000	HFC-23	20.000	-	-	-	-	-	-	106.141		
NNSA	146	Y12	2012	Fiscal Year	R-14	R-14			56.000	70.000	20.000				6.000	PFC-14	6.000	-	-	-	-	-	-	17.690		
NNSA	146	Y12	2012	Fiscal Year	R-116	R-116			12.000	12.000	-				-	PFC-116	-	-	-	-	-	-	-	-		
NNSA	146	Y12	2012	Fiscal Year	R-401A	R-22/152a/124			75.000	45.000	-				30.000	HFC-152a	3.900	-	-	-	-	-	-	0.248		
NNSA	146	Y12	2012	Fiscal Year	R-402A	R-125/290/22			27.000	27.000	-				-	HFC-125	-	-	-	-	-	-	-	-		
NNSA	146	Y12	2012	Fiscal Year	R-402B	R-125/290/22			26.000	26.000	-				-	HFC-125	-	-	-	-	-	-	-	-		
NNSA	146	Y12	2012	Fiscal Year	R-404A	R-125/143a/134a			89.000	89.000	25.000				25.000	HFC-125	11.000	HFC-134a	1.000	HFC-143a	13.000	-	-	36.968		
NNSA	146	Y12	2012	Fiscal Year	R-407C	R-32/125/134a			25.000	50.000	25.000				-	HFC-32	-	HFC-125	-	HFC-134a	-	-	-	-		
NNSA	146	Y12	2012	Fiscal Year	R-410A	R-32/125			75.000	200.000	200.000				75.000	HFC-32	37.500	HFC-125	37.500	-	-	-	-	58.683		
NNSA	146	Y12	2012	Fiscal Year	R-420A	R-134a/142b			80.000	80.000	-				-	HFC-134a	-	-	-	-	-	-	-	-		
NNSA	146	Y12	2012	Fiscal Year	R-500	R-12/152a			10.000	-	-				10.000	HFC-152a	2.620	-	-	-	-	-	-	0.166		
NNSA	146	Y12	2012	Fiscal Year	R-502	R-22/115			80.000	110.000	30.000				-	-	-	-	-	-	-	-	-	-		
NNSA	146	Y12	2012	Fiscal Year	R-503	R-23/13			10.000	50.000	40.000				-	HFC-23	-	-	-	-	-	-	-	-	FY 2012 Total Mix Refrig GHG =	
NNSA	146	Y12	2012	Fiscal Year	R-508B	R-23/116			20.000	20.000					-	HFC-23	-	PFC-116	-	-	-	-	-	-	301.860	

Methodology

FY 2012 data were gathered to enable use of the Simplified Material Balance Approach. Material balance data were gathered from HMIS inventory and purchasing records. FY 2008, 2010, and 2011 data reported in previous CEDR reports were re-entered using the Default Approach, were verified to be consistent with past entries, and were checked to ensure they are not double counted as Fugitive F-Gas. These data were collected based on reviewing purchasing and HMIS data.

Fugitive Gas Information

							Default Approach	OR	Simplified Material Balance Approach								Notes	
PSO	Site #	Site	FY	Data Entry Type	Material Type	Composition	Quantity Purchased/ Issued (lbs)	Quantity Returned to Supply (lbs)	Quantity in storage at beginning of inventory year (lbs)	Quantity in storage at end of inventory year (lbs)	Sum of all F-Gas acquisitions (lbs)	Sum of all F-Gas disbursements (lbs)	Total capacity of F-Gas in equipment at beginning of inventory year (lbs)	Total capacity of all F-Gas in equipment at end of inventory year (lbs)	Quantity Emitted (lbs)	Anthropogenic $MtCO_2e$	Additional Information	SPO Notes
NNSA	146	Y12	2008		Carbon dioxide	CO2	2,842.000								2,842.000	1.289		
NNSA	146	Y12	2008		HFC-134	C2H2F4	60.000								60.000	27.216		
NNSA	146	Y12	2008		HFC-152a	CH3CHF2	7.000								7.000	0.445		
NNSA	146	Y12	2008		HFC-245fa	CHF2CH2CF3	467.000								467.000	218.182		
NNSA	146	Y12	2008		HFC-43-10mee	CF3CFHCFHCF2C	25,840.000								25,840.000	15,237.062	FY08 Ttl GHGs F Gas =	
NNSA	146	Y12	2008		Sulfur hexafluoride	SF6	582.000								582.000	6,309.374	21,793.568	
NNSA	146	Y12	2010		Methane	CH4	4,059.000								4,059.000	38.664		
NNSA	146	Y12	2010		Carbon dioxide	CO2	77.000								77.000	0.035		
NNSA	146	Y12	2010		HFC-125	C2HF5	9.000								9.000	11.431		
NNSA	146	Y12	2010		HFC-134	C2H2F4	100.000								100.000	45.359		
NNSA	146	Y12	2010		HFC-134a	CH2FCF3	250.000								250.000	147.417		
NNSA	146	Y12	2010		HFC-143a	C2H3F3	11.000								11.000	18.960		
NNSA	146	Y12	2010		HFC-245fa	CHF2CH2CF3	197.000								197.000	92.038		
NNSA	146	Y12	2010		HFC-43-10mee	CF3CFHCFHCF2C	123.000								123.000	72.529		
NNSA	146	Y12	2010		PFC-14	CF4	1.000								1.000	2.948	FY10 Ttl GHGs F Gas =	
NNSA	146	Y12	2010		Sulfur hexafluoride	SF6	246.000								246.000	2,666.849	3,096.231	
NNSA	146	Y12	2011		Carbon dioxide	CO2	47,585.000								47,585.000	21.584		
NNSA	146	Y12	2011		HFC-134a	CH2FCF3	5.000								5.000	2.948		
NNSA	146	Y12	2011		HFC-152a	CH3CHF2	9.000								9.000	0.572		
NNSA	146	Y12	2011		HFC-245fa	CHF2CH2CF3	1.000								1.000	0.467	.	
NNSA	146	Y12	2011		HFC-43-10mee	CF3CFHCFHCF2C	27,811.000								27,811.000	16,399.301	FY11 Ttl GHGs F Gas =	
NNSA	146	Y12	2011		Methane	CH4	2,497.000								2,497.000	23.785	Methane data corrected by correcting a weight conversion factor used in HMIS database.	
NNSA	146	Y12	2011		Sulfur hexafluoride	SF6	528.000								528.000	5,723.968	22,172.626	
NNSA	146	Y12	2012		Methane	CH4			1,480.000	1,396.000	2,078.000				2,162.000	20.594		
NNSA	146	Y12	2012		Carbon dioxide	CO2			10,887.000	5,425.000	10,200.000				15,662.000	7.104		
NNSA	146	Y12	2012		Nitrous Oxide	N2O			119.000	119.000	-				-	-		
NNSA	146	Y12	2012		HFC-134	C2H2F4			130.000	310.000	180.000				-	-		
NNSA	146	Y12	2012		HFC-134a	CH2FCF3			37.000	11.000	3.000				29.000	17.100		
NNSA	146	Y12	2012		HFC-152a	CH3CHF2			13.000	30.000	78.000				61.000	3.874		
NNSA	146	Y12	2012		HFC-245fa	CHF2CH2CF3			5.000	2.000	-				3.000	1.402		
NNSA	146	Y12	2012		HFC-365mfc	CH3CF2CH2CF3			-	-	1.000				1.000	0.360		
NNSA	146	Y12	2012		HFC-43-10mee	CF3CFHCFHCF2CF3			18,682.000	17,930.000	19,435.000				20,187.000	11,903.660	Switched to Material Balance Approach in FY 2012	
NNSA	146	Y12	2012		PFC-14	CF4			56.000	70.000	20.000				6.000	17.690	FY 2012 Tt; Fgas GHG=	
NNSA	146	Y12	2012		Sulfur hexafluoride	SF6			121.000	147.000	26.000				-	-	11,971.784	

Methodology

Population served is based upon population of buildings served by the on-site industrial wastewater treatment plant.

On-Site Wastewater Treatment Information														Notes	
PSO	Site #	Site	FY	Workdays per Year	Centralized WWTP with Anaerobic Digestion (Persons)	Centralized WWTP with Nitrification / Denitrification (Persons)	Centralized WWTP without Nitrification / Denitrification (Persons)	Effluent Discharge to Rivers and Estuaries with Nitrification / Denitrification (Persons)	Effluent Discharge to Rivers and Estuaries without Nitrification / Denitrification (Persons)	Wastewater Treatment Lagoons (Persons)	Septic Systems (Persons)	Biogenic $MtCO_2e$	Anthropogenic $MtCO_2e$	Additional Information	SPO Notes
NNSA	146	Y12	2011	208.000		3,058.000		3,058.000				-	6.886	Y-12 corrected Workdays/yr	
NNSA	146	Y12	2008	208.000		3,053.000		3,053.000				-	6.900	Y-12 corrected Workdays/yr and added plant population served.	SPO Request: Do not have raw data. Please provide original data, if available
NNSA	146	Y12	2010	208.000		3,221.000		3,221.000				-	7.300	Y-12 corrected Workdays/yr and added plant population served.	SPO Request: Do not have raw data. Please provide original data, if available
NNSA	146	Y12	2012	208.000		2,953.000		2,953.000				-	6.649		

Methodology

Y-12 sanitary wastewater is sent to the City of Oak Ridge Activated Sludge Treatment Plant. Based upon information received from City of Oak Ridge personnel, the treatment system includes nitrification and limited denitrification.

Contracted Wastewater Information																		Notes	
PSO	Site #	Site	FY	Workdays per Year	Centralized WWTP with Anaerobic Digestion (Persons)	Centralized WWTP with Nitrification / Denitrification		Centralized WWTP without Nitrification / Denitrification		Effluent Discharge to Rivers and Estuaries with Nitrification / Denitrification		Effluent Discharge to Rivers and Estuaries without Nitrification / Denitrification		Wastewater Treatment Lagoons		Biogenic $MtCO_2e$	Total Anthropogenic $MtCO_2e$	Additional Information	SPO Notes
						%	Persons	%	Persons	%	Persons	%	Persons	%	Persons				
NNSA	146	Y12	2008	208.000	4,940.0	100.0%	4,940.0	0.0%	-	100.0%	4,940.0	0.0%	-	0.0%	-	14.136	11.195	Y-12 updated treatment methodology and correct plant population.	SPO Note: Updated baseline during FY 2011 reporting. Y12 updated number of days and nitrification/denitrification to 100% for '08 but not '11 > did not accept 100%.
NNSA	146	Y12	2011	208.000	5,122.0	100.0%	5,122.0	0.0%	-	100.0%	5,122.0	0.0%	-	0.0%	-	14.657	11.607	Y-12 updated number of days and treatment methodology.	SPO Request: Please check accuracy/consistency following change in reporting method vs 2008 and 2010.
NNSA	146	Y12	2010	208.000	5,084.0	100.0%	5,084.0	0.0%	-	100.0%	5,084.0	0.0%	-	0.0%	-	14.548	11.521	Y-12 provided raw data and updated treatment methodology.	SPO Request: Please provide actual data, if available. Do not have raw data.
NNSA	146	Y12	2012	208.000	5,041.0	100.0%	5,041.0	0.0%	-	100.0%	5,041.0	0.0%	-	0.0%	-	14.425	11.424		

Methodology

Travel miles are based on actual miles flown. Y-12 receives reports which include that actual miles ticketed by the responsible travel agency.

Air Travel Information										Notes	
PSO	Site #	Site	FY	Process Type	Flight Type	Fuel Type	Consumption/ Usage	Unit of Measure	Anthropogenic $MtCO_2e$	Additional Information	SPO Notes
NNSA	146	Y12	2008	Air Business Travel	Unknown	Jet Fuel	7,009,956	Passenger miles	1,919.700	Y-12 added original mileage data.	SPO Request: Do not have raw data. Please provide original data, if available. Used goal seek to estimate miles as unknown to match original 08 MtCO2e estimate of: 18.9
NNSA	146	Y12	2010	Air Business Travel	Unknown	Jet Fuel	8,680,330	Passenger miles	2,377.100	Y-12 added original mileage data.	SPO Request: Do not have raw data. Please provide original data, if available. Used goal seek to estimate miles as unknown to match original 08 MtCO2e estimate of: 18.9
NNSA	146	Y12	2011	Air Business Travel	Unknown	Jet Fuel	7,389,020	Passenger miles	2,023.508		
NNSA	146	Y12	2012	Air Business Travel	Unknown	Jet Fuel	6,488,032	Passenger miles	1,240.103		

Methodology

Number of rentals and personal vehicle miles traveled are calculated based upon business travel expense data.

Ground Travel Information												Notes	
PSO	Site #	Site	FY	Process Type	Vehicle Type	Fuel Type	Consumption / Usage	Unit of Measure	Site Average Miles per Trip	Default Average Miles per Trip	Anthropogenic $MtCO_2e$	Additional Information	SPO Notes
NNSA	146	Y12	2008	Rental Trip Mileage	Passenger Car	Gasoline	1,301	Number of Agency Busir	280.000	210.000	136.449		SPO Note: Revised data per site update during FY 2011 reporting.
NNSA	146	Y12	2008	POV Mileage	Passenger Car	Gasoline	519,466	Total Reimbursed Mileage		-	194.577		SPO Note: Revised data per site update during FY 2011 reporting.
NNSA	146	Y12	2010	Rental Trip Mileage	Passenger Car	Gasoline	1,650	Number of Agency Busir	350.000	210.000	216.315	Y12 added raw data for 2010 rentals	SPO Request: Do not have raw data. Please provide original data, if available. Used goal seek to estimate # of passenger car trips at 419 miles per trip to match original 08 MtCO2e estimate of: 410.9
NNSA	146	Y12	2011	Rental Trip Mileage	Passenger Car	Gasoline	1,658	Number of Agency Busir	419.000	210.000	260.215		
NNSA	146	Y12	2011	POV Mileage	Passenger Car	Gasoline	624,084	Total Reimbursed Mileage		-	233.764		
NNSA	146	Y12	2012	Rental Trip Mileage	Passenger Car	Gasoline	1,204	Number of Agency Business Trips		210.000	94.707		
NNSA	146	Y12	2012	POV Mileage	Passenger Car	Gasoline	487,366	Total Reimbursed Mileage		-	182.553		
NNSA	146	Y12	2010	POV Mileage	Passenger Car	Gasoline	519,466	Total Reimbursed Mileage		-	194.577	Y12 added raw data for 2010 POV miles	

Methodology

Calculated average employee commute distance from employee data and applied average commute distance to ratio of vehicle types driven by site employees. Incorporated carpooling data received from SmartTrips Program (local organization that promotes and tracks carpooling, alternative transportation usage).

Ground Travel Information												Notes	
PSO	Site #	Site	FY	Process Type	Vehicle Type	Fuel Type	Consumption / Usage	Unit of Measure	Site Number of Commute Days per Year	Default Number of Commute Days per Year	Anthropogenic $MtCO_2e$	Additional Information	SPO Notes
NNSA	146	Y12	2008	Personal Owned Vehicles	POV Passenger Car	Gasoline	202,513		230.000	230.000	17,446.800		
NNSA	146	Y12	2010	Personal Owned Vehicles	POV Passenger Car	Gasoline	217,610		230.000	230.000	18,747.400		
NNSA	146	Y12	2011	Personal Owned Vehicles	POV Passenger Car	Gasoline	86,446		208.000	230.000	6,735.082		
NNSA	146	Y12	2011	Personal Owned Vehicles	POV SUV or Truck	Gasoline	95,570		208.000	230.000	10,621.576		
NNSA	146	Y12	2011	Personal Owned Vehicles	POV SUV or Truck	Diesel	5,957		208.000	230.000	695.385		
NNSA	146	Y12	2011	Personal Owned Vehicles	Motorcycle	Gasoline	3,732		208.000	230.000	132.471		
NNSA	146	Y12	2011	Personal Owned Vehicles	POV Passenger Car	Hybrid	603		208.000	230.000	23.839		
NNSA	146	Y12	2012	Personal Owned Vehicles	POV Passenger Car	Gasoline	85,459		208.000	230.000	6,658.138		
NNSA	146	Y12	2012	Personal Owned Vehicles	POV SUV or Truck	Gasoline	94,519		208.000	230.000	10,504.837		
NNSA	146	Y12	2012	Personal Owned Vehicles	POV SUV or Truck	Diesel	5,888		208.000	230.000	687.429		
NNSA	146	Y12	2012	Personal Owned Vehicles	POV Passenger Car	Hybrid	608		208.000	230.000	24.022		
NNSA	146	Y12	2012	Personal Owned Vehicles	Motorcycle	Gasoline	3,685		208.000	230.000	130.793		

9.1A On-Site MSW

Methodology

Y-12 does not operate the DOE Oak Ridge Reservation (ORR) Landfill. The ORR Landfill is operated under an Environmental Management contract by the East Tennessee Technology Park (ETTP) Contractor. The fugitive emissions from the total quantity of sanitary landfill waste received are reported by ETTP. Y-12 and the Oak Ridge National Laboratory (ORNL) report volumes of waste disposed of in the ORR landfill in PPTRS but do not report the related fugitive emissions for this waste to avoid duplicate reporting of fugitive emissions by ETTP, Y-12 and ORNL. This approach was agreed upon by personnel from DOE Headquarters, local DOE offices, and each respective site prior to establishing the 2008 baseline.

On-Site Landfill Information																						Notes	
PSO	Site #	Site	FY	Mass of Solid Waste Disposed On-site (Short Tons)	Landfill Open Date (Year)	Landfill Close Date (Year)	Carbon dioxide (biogenic) (MT Megagram)	Methane (MT Megagram)	Percentage Uncontrolled Release (CO2 Biogenic)		Percentage Uncontrolled Release (CH4)		Landfill Gas Collection System Efficiency (CH4)		Venting Loss (CH4)		Methotropic Bacteria Oxidation Factor (CH4)		Combustion Oxidation Factor (CO2 Biogenic)		Biogenic $MtCO_2e$	Anthropogenic $MtCO_2e$	Additional Information	SPO Notes
									Site	Default	Site	Default	Site	Default	Site	Default	Site	Default	Site	Default				
NNSA	146	Y12	2012	0						100%		50%		75%		1%		10%		99%	-	-	On-site Landfill MSW data is reported by ETTP per agreement with DOE HQ and site office. Zeros entered by Y-12 to avoid double counting.	SPO Request: Please review and update/confirm. PPTRS Values used to estimate CO2 and CH4 with LandGEM and 40 yr assumption.
NNSA	146	Y12	2011	0						100%		50%		75%		1%		10%		99%	-	-	On-site Landfill MSW data is reported by ETTP per agreement with DOE HQ and site office. Zeros entered by Y-12 to avoid double counting.	SPO Request: Please review and update/confirm. PPTRS Values used to estimate CO2 and CH4 with LandGEM and 40 yr assumption.
NNSA	146	Y12	2008	0						100%		50%		75%		1%		10%		99%	-	-	Data is included in ETTP report	SPO Request: Please provide 2008 data if available
NNSA	146	Y12	2010	0						100%		50%		75%		1%		10%		99%	-	-	Data is included in ETTP report	SPO Request: Please provide 2010 data if available

Methodology

Y-12 does not dispose of sanitary landfill waste in off-site landfills.

Contracted/Off-Site Landfill Information — **Notes**

PSO	Site #	Site	FY	Mass of Solid Waste Disposed Off-site (Short Tons)	Mass of Solid Waste Disposed Off-site (Megagram)	Degradable Organic Carbon (Megagram C/ Megagram Waste)		DOC Anaerobic Digestibility (%)		Methane Correction Factor	Methane % of Landfill Gas (%)		Methane Molecular Weight Conversion	Carbon Dioxide Molecular Weight Conversion	Carbon dioxide (biogenic) (MT Megagram)	Methane (MT Megagram)	Percentage Uncontrolled Release (CO2 Biogenic)		Percentage Uncontrolled Release (CH4)		Landfill Gas Collection System Efficiency (CH4)		Venting Loss (CH4)		Methotropic Bacteria Oxidation Factor (CH4)		Combustion Oxidation Factor (CO2 Biogenic)		Biogenic $MtCO_2e$	Anthropogenic $MtCO_2e$	Additional Information	SPO Notes
						Site	Default	Site	Default		Site	Default					Site	Default	Site	Default	Site	Default	Site	Default	Site	Default	Site	Default				
NNSA	146	Y12			-		0.203		50.0%	1.0		50.0%	1.333	3.667	-	-		100.0%		50.0%		75.0%		1.0%		10.0%		99.0%	-	-		
					-		0.203		50.0%	1.0		50.0%	1.333	3.667	-	-		100.0%		50.0%		75.0%		1.0%		10.0%		99.0%	-	-		
					-		0.203		50.0%	1.0		50.0%	1.333	3.667	-	-		100.0%		50.0%		75.0%		1.0%		10.0%		99.0%	-	-		
					-		0.203		50.0%	1.0		50.0%	1.333	3.667	-	-		100.0%		50.0%		75.0%		1.0%		10.0%		99.0%	-	-		
					-		0.203		50.0%	1.0		50.0%	1.333	3.667	-	-		100.0%		50.0%		75.0%		1.0%		10.0%		99.0%	-	-		
					-		0.203		50.0%	1.0		50.0%	1.333	3.667	-	-		100.0%		50.0%		75.0%		1.0%		10.0%		99.0%	-	-		

10 Fleet Fuel

PSO	Site Num	Fleet Parent	Fleet Name	Report Year	Agency Group	EPAct-covered Agency	EO-covered Fuel	Fuel Group	Fuel Name	Fuel Type	Fuel State Abbreviation	Vehicle Exemption	Fuel Armored	Fuel Consumption (GGE)	Fuel Consumption (NU)	Fuel Natural Units	Fuel GGE Conversion Factor	Fuel Cost ($)	Diesel From B20	Anthropogenic $MtCO_2e$
NNSA	146	Oak Ridge Offic	BWXT - Y-12	2000	EPACT-Cove	Yes	No	Petroleum	Diesel	DSL	NS	E/ER	No	7962	6942	gallons	1.147	8,608.000	No	73.66160398
NNSA	146	Oak Ridge Offic	BWXT - Y-12	2000	EPACT-Cove	Yes	No	Petroleum	Diesel	DSL	NS	LE	No	1499	1307	gallons	1.147	1,620.000	No	13.86821708
NNSA	146	Oak Ridge Offic	BWXT - Y-12	2000	EPACT-Cove	Yes	No	Petroleum	Gasoline	GAS	NS	LE	No	23156	23156	gallons	1	28,225.000	No	205.1941236
NNSA	146	Oak Ridge Offic	BWXT - Y-12	2000	EPACT-Cove	Yes	Yes	Petroleum	Diesel	DSL	NS	None	No	14371	12529	gallons	1.147	15,535.000	No	132.955402
NNSA	146	Oak Ridge Offic	BWXT - Y-12	2000	EPACT-Cove	Yes	Yes	Petroleum	Gasoline	GAS	NS	None	No	100610	100610	gallons	1	123,750.000	No	891.543478
NNSA	146	Oak Ridge Offic	BWXT - Y-12	2001	EPACT-Cove	Yes	No	Petroleum	Diesel	DSL	NS	E/ER	No	9490	8274	gallons	1.147	11,584.000	No	87.79811879
NNSA	146	Oak Ridge Offic	BWXT - Y-12	2001	EPACT-Cove	Yes	No	Petroleum	Gasoline	GAS	NS	E/ER	No	2376	2376	gallons	1	3,041.000	No	21.05463974
NNSA	146	Oak Ridge Offic	BWXT - Y-12	2001	EPACT-Cove	Yes	Yes	Petroleum	Diesel	DSL	NS	None	No	15035	13108	gallons	1.147	18,352.000	No	139.0984948
NNSA	146	Oak Ridge Offic	BWXT - Y-12	2001	EPACT-Cove	Yes	Yes	Petroleum	Gasoline	GAS	NS	None	No	110778	110778	gallons	1	142,766.000	No	981.6459935
NNSA	146	Oak Ridge Offic	BWXT - Y-12	2002	EPACT-Cove	Yes	No	Petroleum	Diesel	DSL	NS	E/ER	No	10753	9375	gallons	1.147	10,031.000	No	99.48294745
NNSA	146	Oak Ridge Offic	BWXT - Y-12	2002	EPACT-Cove	Yes	No	Petroleum	Gasoline	GAS	NS	E/ER	No	2088	2088	gallons	1	5,399.000	No	18.50256219
NNSA	146	Oak Ridge Offic	BWXT - Y-12	2002	EPACT-Cove	Yes	Yes	Petroleum	Diesel	DSL	NS	None	No	29625	25828	gallons	1.147	17,903.000	No	274.0800073
NNSA	146	Oak Ridge Offic	BWXT - Y-12	2002	EPACT-Cove	Yes	Yes	Petroleum	Gasoline	GAS	NS	None	No	389892	389892	gallons	1	122,137.000	No	3454.981311
NNSA	146	Oak Ridge Offic	BWXT - Y-12	2003	EPACT-Cove	Yes	Yes	Petroleum	Diesel	DSL	TN	None	No	29636	25838	gallons	1.147	70,909.000	No	274.1817754
NNSA	146	Oak Ridge Offic	BWXT - Y-12	2003	EPACT-Cove	Yes	Yes	Petroleum	Gasoline	GAS	TN	None	No	135360	135360	gallons	1	321,648.000	No	1199.476446
NNSA	146	Oak Ridge Offic	Wackenhut Services, Inc. (NNSA)	2003	EPACT-Cove	Yes	No	Alternative	E-85	E85	TN	None	No	3147	4371	gallons	0.72	6,823.000	No	4.202140491
NNSA	146	Oak Ridge Offic	Wackenhut Services, Inc. (NNSA)	2003	EPACT-Cove	Yes	No	Petroleum	Diesel	DSL	TN	LE	No	4547	3964	gallons	1.147	5,376.000	No	42.06723352
NNSA	146	Oak Ridge Offic	Wackenhut Services, Inc. (NNSA)	2003	EPACT-Cove	Yes	No	Petroleum	Gasoline	GAS	TN	LE	No	67758	67758	gallons	1	91,350.000	No	600.4294104
NNSA	146	Oak Ridge Offic	Wackenhut Services, Inc. (NNSA)	2003	EPACT-Cove	Yes	Yes	Petroleum	Gasoline	GAS	TN	None	No	10927	10927	gallons	1	15,773.000	No	96.82830319
NNSA	146	Oak Ridge Offic	BWXT - Y-12	2004	EPACT-Cove	Yes	No	Alternative	E-85	E85	TN	None	No	2417	3357	gallons	0.72	6,449.000	No	3.227382767
NNSA	146	Oak Ridge Offic	BWXT - Y-12	2004	EPACT-Cove	Yes	Yes	Petroleum	Diesel	DSL	TN	None	No	28852	25154	gallons	1.147	37,559.000	No	266.9284851
NNSA	146	Oak Ridge Offic	BWXT - Y-12	2004	EPACT-Cove	Yes	Yes	Petroleum	Gasoline	GAS	TN	None	No	130949	130949	gallons	1	198,343.000	No	1160.388897
NNSA	146	Oak Ridge Offic	Wackenhut Services, Inc. (NNSA)	2004	EPACT-Cove	Yes	No	Alternative	E-85	E85	TN	None	No	456	634	gallons	0.72	1,313.000	No	0.608889757
NNSA	146	Oak Ridge Offic	Wackenhut Services, Inc. (NNSA)	2004	EPACT-Cove	Yes	No	Petroleum	Gasoline	GAS	TN	LE	No	23580	23580	gallons	1	36,420.000	No	208.9513489
NNSA	146	Oak Ridge Offic	Wackenhut Services, Inc. (NNSA)	2004	EPACT-Cove	Yes	Yes	Petroleum	Gasoline	GAS	TN	None	No	11123	11123	gallons	1	18,815.000	No	98.56513374
NNSA	146	Oak Ridge Offic	BWXT - Y-12	2005	EPACT-Cove	Yes	No	Alternative	E-85	E85	TN	None	No	4801	6669	gallons	0.72	15,439.000	No	6.410701144
NNSA	146	Oak Ridge Offic	BWXT - Y-12	2005	EPACT-Cove	Yes	Yes	Petroleum	Diesel	DSL	TN	None	No	31072	27090	gallons	1.147	52,282.000	No	287.4671388
NNSA	146	Oak Ridge Offic	BWXT - Y-12	2005	EPACT-Cove	Yes	Yes	Petroleum	Gasoline	GAS	TN	None	No	129245	129245	gallons	1	264,447.000	No	1145.289105
NNSA	146	Oak Ridge Offic	Wackenhut Services, Inc. (NNSA)	2005	EPACT-Cove	Yes	No	Alternative	E-85	E85	TN	None	No	5899	8193	gallons	0.72	20,729.000	No	7.876843584
NNSA	146	Oak Ridge Offic	Wackenhut Services, Inc. (NNSA)	2005	EPACT-Cove	Yes	No	Petroleum	Diesel	DSL	TN	LE	No	1281	1117	gallons	1.147	2,434.000	No	11.85135829
NNSA	146	Oak Ridge Offic	Wackenhut Services, Inc. (NNSA)	2005	EPACT-Cove	Yes	No	Petroleum	Diesel	DSL	TN	LE	Yes	965	841	gallons	1.147	1,700.000	No	8.927838212
NNSA	146	Oak Ridge Offic	Wackenhut Services, Inc. (NNSA)	2005	EPACT-Cove	Yes	No	Petroleum	Gasoline	GAS	TN	LE	No	67394	67394	gallons	1	149,096.000	No	597.203868
NNSA	146	Oak Ridge Offic	Wackenhut Services, Inc. (NNSA)	2005	EPACT-Cove	Yes	Yes	Petroleum	Diesel	DSL	TN	None	No	9	8	gallons	1.147	16.000	No	0.083264812
NNSA	146	Oak Ridge Offic	Wackenhut Services, Inc. (NNSA)	2005	EPACT-Cove	Yes	Yes	Petroleum	Gasoline	GAS	TN	None	No	17136	17136	gallons	1	37,638.000	No	151.8486138
NNSA	146	Oak Ridge Offic	BWXT - Y-12	2006	EPACT-Cove	Yes	No	Alternative	E-85	E85	TN	None	No	11170	15514	gallons	0.72	46,527.000	No	14.91512847
NNSA	146	Oak Ridge Offic	BWXT - Y-12	2006	EPACT-Cove	Yes	No	Petroleum	Diesel	DSL	TN	E/ER	No	1826	1592	gallons	1.147	3,945.000	No	16.89350526
NNSA	146	Oak Ridge Offic	BWXT - Y-12	2006	EPACT-Cove	Yes	No	Petroleum	Gasoline	GAS	TN	E/ER	No	306	306	gallons	1	727.000	No	2.71158239
NNSA	146	Oak Ridge Offic	BWXT - Y-12	2006	EPACT-Cove	Yes	Yes	Petroleum	Diesel	DSL	TN	None	No	28679	25003	gallons	1.147	67,633.000	No	265.3279503
NNSA	146	Oak Ridge Offic	BWXT - Y-12	2006	EPACT-Cove	Yes	Yes	Petroleum	Gasoline	GAS	TN	None	No	97584	97584	gallons	1	236,388.000	No	864.7289411
NNSA	146	Oak Ridge Offic	Wackenhut Services, Inc. (NNSA)	2006	EPACT-Cove	Yes	No	Alternative	E-85	E85	TN	None	No	5288	7344	gallons	0.72	17,925.000	No	7.060984722
NNSA	146	Oak Ridge Offic	Wackenhut Services, Inc. (NNSA)	2006	EPACT-Cove	Yes	No	Petroleum	Diesel	DSL	TN	LE	No	2179	1900	gallons	1.147	4,732.000	No	20.15933623
NNSA	146	Oak Ridge Offic	Wackenhut Services, Inc. (NNSA)	2006	EPACT-Cove	Yes	No	Petroleum	Gasoline	GAS	TN	LE	No	6257	6257	gallons	1	14,915.000	No	55.44565691
NNSA	146	Oak Ridge Offic	Wackenhut Services, Inc. (NNSA)	2006	EPACT-Cove	Yes	Yes	Petroleum	Diesel	DSL	TN	None	Yes	953	831	gallons	1.147	2,070.000	No	8.816818462
NNSA	146	Oak Ridge Offic	Wackenhut Services, Inc. (NNSA)	2006	EPACT-Cove	Yes	Yes	Petroleum	Gasoline	GAS	TN	None	No	93074	93074	gallons	1	221,882.000	No	824.7641156
NNSA	146	Oak Ridge Offic	BWXT - Y-12	2007	EPACT-Cove	Yes	No	Alternative	Bio-diesel	B20	TN	None	No	2811	2497	gallons	1.126	5,027.000	No	20.80912084
NNSA	146	Oak Ridge Offic	BWXT - Y-12	2007	EPACT-Cove	Yes	No	Alternative	E-85	E85	TN	None	No	13169	18290	gallons	0.72	51,840.000	No	17.58436229
NNSA	146	Oak Ridge Offic	BWXT - Y-12	2007	EPACT-Cove	Yes	No	Petroleum	Diesel	B20	TN	None	No	0	0	gallons	1.126	0.000	Exempt	0
NNSA	146	Oak Ridge Offic	BWXT - Y-12	2007	EPACT-Cove	Yes	No	Petroleum	Diesel	DSL	TN	E/ER	No	1723	1502	gallons	1.147	3,975.000	No	15.94058574
NNSA	146	Oak Ridge Offic	BWXT - Y-12	2007	EPACT-Cove	Yes	No	Petroleum	Gasoline	GAS	TN	E/ER	No	3039	3039	gallons	1	8,216.000	No	26.92973491
NNSA	146	Oak Ridge Offic	BWXT - Y-12	2007	EPACT-Cove	Yes	Yes	Petroleum	Diesel	B20	TN	None	No	11245	9986	gallons	1.126	20,106.000	Covered	83.2438861
NNSA	146	Oak Ridge Offic	BWXT - Y-12	2007	EPACT-Cove	Yes	Yes	Petroleum	Diesel	DSL	TN	None	No	7110	6199	gallons	1.147	16,032.000	No	65.77920175
NNSA	146	Oak Ridge Offic	BWXT - Y-12	2007	EPACT-Cove	Yes	Yes	Petroleum	Gasoline	GAS	TN	None	No	102472	102472	gallons	1	201,252.000	No	908.0433682
NNSA	146	Oak Ridge Offic	Wackenhut Services, Inc. (NNSA)	2007	EPACT-Cove	Yes	No	Alternative	Bio-diesel	B20	TN	None	No	1057	939	gallons	1.126	2,967.000	No	7.824703211
NNSA	146	Oak Ridge Offic	Wackenhut Services, Inc. (NNSA)	2007	EPACT-Cove	Yes	No	Alternative	E-85	E85	TN	None	No	5563	7727	gallons	0.72	21,867.000	No	7.428187974
NNSA	146	Oak Ridge Offic	Wackenhut Services, Inc. (NNSA)	2007	EPACT-Cove	Yes	No	Petroleum	Diesel	B20	TN	None	No	4230	3756	gallons	1.126	11,869.000	Exempt	31.31361834
NNSA	146	Oak Ridge Offic	Wackenhut Services, Inc. (NNSA)	2007	EPACT-Cove	Yes	No	Petroleum	Gasoline	GAS	TN	LE	No	63675	63675	gallons	1	179,617.000	No	564.2483944
NNSA	146	Oak Ridge Offic	Wackenhut Services, Inc. (NNSA)	2007	EPACT-Cove	Yes	Yes	Petroleum	Diesel	B20	TN	None	No	0	0	gallons	1.126	0.000	Covered	0
NNSA	146	Oak Ridge Offic	Wackenhut Services, Inc. (NNSA)	2007	EPACT-Cove	Yes	Yes	Petroleum	Gasoline	GAS	TN	None	No	19450	19450	gallons	1	54,717.000	No	172.353848
NNSA	146	Oak Ridge Offic	BWXT - Y-12	2008	EPACT-Cove	Yes	No	Alternative	Bio-diesel	B20	TN	None	No	5010	4449	gallons	1.126	14,824.000	No	37.08776073
NNSA	146	Oak Ridge Offic	BWXT - Y-12	2008	EPACT-Cove	Yes	No	Alternative	E-85	E85	TN	None	No	13902	19309	gallons	0.72	64,026.000	No	18.56312587
NNSA	146	Oak Ridge Offic	BWXT - Y-12	2008	EPACT-Cove	Yes	No	Petroleum	Diesel	B20	TN	None	No	0	0	gallons	1.126	0.000	Exempt	0
NNSA	146	Oak Ridge Offic	BWXT - Y-12	2008	EPACT-Cove	Yes	No	Petroleum	Diesel	DSL	TN	E/ER	No	2010	1752	gallons	1.147	6,178.000	No	18.59580809
NNSA	146	Oak Ridge Offic	BWXT - Y-12	2008	EPACT-Cove	Yes	No	Petroleum	Gasoline	GAS	TN	E/ER	No	3383	3383	gallons	1	10,163.000	No	29.97804976
NNSA	146	Oak Ridge Offic	BWXT - Y-12	2008	EPACT-Cove	Yes	Yes	Petroleum	Diesel	B20	TN	None	No	20040	17798	gallons	1.126	59,297.000	Covered	148.3510429
NNSA	146	Oak Ridge Offic	BWXT - Y-12	2008	EPACT-Cove	Yes	Yes	Petroleum	Gasoline	GAS	TN	None	No	74193	74193	gallons	1	232,335.000	No	657.452393
NNSA	146	Oak Ridge Offic	Wackenhut Services, Inc. (NNSA)	2008	EPACT-Cove	Yes	No	Alternative	E-85	E85	TN	None	No	7757	10774	gallons	0.72	37,278.000	No	10.35780229
NNSA	146	Oak Ridge Offic	Wackenhut Services, Inc. (NNSA)	2008	EPACT-Cove	Yes	No	Petroleum	Diesel	DSL	TN	LE	No	6292	5486	gallons	1.147	23,702.000	No	58.21135547
NNSA	146	Oak Ridge Offic	Wackenhut Services, Inc. (NNSA)	2008	EPACT-Cove	Yes	No	Petroleum	Gasoline	GAS	TN	LE	No	57001	57001	gallons	1	208,624.000	No	505.1075419
NNSA	146	Oak Ridge Offic	Wackenhut Services, Inc. (NNSA)	2008	EPACT-Cove	Yes	Yes	Petroleum	Gasoline	GAS	TN	None	No	21584	21584	gallons	1	89,904.000	No	191.2640337

10 Fleet Fuel

PSO	Site Num	Fleet Parent	Fleet Name	Report Year	Agency Group	EPAct-covered Agency	EO-covered Fuel	Fuel Group	Fuel Name	Fuel Type	Fuel State Abbreviation	Vehicle Exemption	Fuel Armored	Fuel Consumption (GGE)	Fuel Consumption (NU)	Fuel Natural Units	Fuel GGE Conversion Factor	Fuel Cost ($)	Diesel From B20	Anthropogenic $MtCO_2e$
NNSA	146	Oak Ridge Offic	BWXT - Y-12	2009	EPACT-Cove	Yes	No	Alternative	E-85	E85	TN	None	No	19693	27352	gallons	0.72	37,246.000	No	26.29575872
NNSA	146	Oak Ridge Offic	BWXT - Y-12	2009	EPACT-Cove	Yes	No	Petroleum	Diesel	DSL	TN	E/ER	No	2174	1895	gallons	1.147	2,887.000	No	20.113078
NNSA	146	Oak Ridge Offic	BWXT - Y-12	2009	EPACT-Cove	Yes	No	Petroleum	Gasoline	GAS	TN	E/ER	No	2614	2614	gallons	1	3,139.000	No	23.16364826
NNSA	146	Oak Ridge Offic	BWXT - Y-12	2009	EPACT-Cove	Yes	Yes	Petroleum	Diesel	DSL	TN	None	No	6088	5307	gallons	1.147	10,854.000	No	56.32401972
NNSA	146	Oak Ridge Offic	BWXT - Y-12	2009	EPACT-Cove	Yes	Yes	Petroleum	Gasoline	GAS	TN	None	No	71465	71465	gallons	1	141,560.000	No	633.2785474
NNSA	146	Oak Ridge Offic	Wackenhut Services, Inc. (NNSA)	2009	EPACT-Cove	Yes	No	Alternative	E-85	E85	TN	None	No	8075	11215	gallons	0.72	29,270.000	No	10.78242277
NNSA	146	Oak Ridge Offic	Wackenhut Services, Inc. (NNSA)	2009	EPACT-Cove	Yes	No	Petroleum	Diesel	DSL	TN	LE	No	5369	4681	gallons	1.147	10,672.000	No	49.67208638
NNSA	146	Oak Ridge Offic	Wackenhut Services, Inc. (NNSA)	2009	EPACT-Cove	Yes	No	Petroleum	Gasoline	GAS	TN	LE	No	48818	48818	gallons	1	102,518.000	No	432.5948664
NNSA	146	Oak Ridge Offic	Wackenhut Services, Inc. (NNSA)	2009	EPACT-Cove	Yes	Yes	Petroleum	Gasoline	GAS	TN	None	No	19383	19383	gallons	1	40,714.000	No	171.7601355
NNSA	146	Oak Ridge Offic	BWXT - Y-12	2010	EPACT-Cove	Yes	No	Alternative	E-85	E85	TN	None	No	44988	62483	gallons	0.72	158,364.000	No	60.07178152
NNSA	146	Oak Ridge Offic	BWXT - Y-12	2010	EPACT-Cove	Yes	Yes	Petroleum	Diesel	DSL	TN	None	No	28920	25213	gallons	1.147	80,177.000	No	267.557597
NNSA	146	Oak Ridge Offic	BWXT - Y-12	2010	EPACT-Cove	Yes	Yes	Petroleum	Gasoline	GAS	TN	None	No	75262	75262	gallons	1	222,022.000	No	666.9252087
NNSA	146	Oak Ridge Offic	Wackenhut Services, Inc. (NNSA)	2010	EPACT-Cove	Yes	No	Alternative	E-85	E85	TN	LE	No	23467	32593	gallons	0.72	88,326.000	No	31.33512263
NNSA	146	Oak Ridge Offic	Wackenhut Services, Inc. (NNSA)	2010	EPACT-Cove	Yes	No	Alternative	E-85	E85	TN	None	No	2425	3368	gallons	0.72	9,128.000	No	3.238065043
NNSA	146	Oak Ridge Offic	Wackenhut Services, Inc. (NNSA)	2010	EPACT-Cove	Yes	No	Petroleum	Diesel	DSL	TN	LE	No	39098	34087	gallons	1.147	89,052.000	No	361.7208481
NNSA	146	Oak Ridge Offic	Wackenhut Services, Inc. (NNSA)	2010	EPACT-Cove	Yes	No	Petroleum	Gasoline	GAS	TN	LE	No	23124	23124	gallons	1	60,353.000	No	204.9105594
NNSA	146	Oak Ridge Offic	Wackenhut Services, Inc. (NNSA)	2010	EPACT-Cove	Yes	Yes	Petroleum	Gasoline	GAS	TN	None	No	15179	15179	gallons	1	39,403.000	No	134.5068925
NNSA	146	Oak Ridge Offic	BWXT - Y-12	2011	EPACT-Cove	Yes	No	Alternative	E-85	E85	TN	None	No	21236	29496	gallons	0.72	92,617.000	No	28.35610279
NNSA	146	Oak Ridge Offic	BWXT - Y-12	2011	EPACT-Cove	Yes	Yes	Petroleum	Diesel	DSL	TN	None	No	22677	19772	gallons	1.147	65,840.000	No	209.7995722
NNSA	146	Oak Ridge Offic	BWXT - Y-12	2011	EPACT-Cove	Yes	Yes	Petroleum	Gasoline	GAS	TN	None	No	60251	60251	gallons	1	188,585.000	No	533.9070281
NNSA	146	Oak Ridge Offic	Wackenhut Services, Inc. (NNSA)	2011	EPACT-Cove	Yes	No	Alternative	E-85	E85	TN	LE	No	11465	15924	gallons	0.72	59,237.000	No	15.30903741
NNSA	146	Oak Ridge Offic	Wackenhut Services, Inc. (NNSA)	2011	EPACT-Cove	Yes	No	Alternative	E-85	E85	TN	None	No	1063	1477	gallons	0.72	5,495.000	No	1.419407481
NNSA	146	Oak Ridge Offic	Wackenhut Services, Inc. (NNSA)	2011	EPACT-Cove	Yes	No	Petroleum	Diesel	DSL	TN	LE	No	1528	1332	gallons	1.147	5,689.000	No	14.13651481
NNSA	146	Oak Ridge Offic	Wackenhut Services, Inc. (NNSA)	2011	EPACT-Cove	Yes	No	Petroleum	Diesel	DSL	TN	LE	Yes	33820	29486	gallons	1.147	100,139.000	No	312.8906615
NNSA	146	Oak Ridge Offic	Wackenhut Services, Inc. (NNSA)	2011	EPACT-Cove	Yes	No	Petroleum	Gasoline	GAS	TN	LE	No	40264	40264	gallons	1	164,279.000	No	356.7946188
NNSA	146	Oak Ridge Offic	Wackenhut Services, Inc. (NNSA)	2011	EPACT-Cove	Yes	Yes	Petroleum	Gasoline	GAS	TN	None	No	18552	18552	gallons	1	75,301.000	No	164.3963284
NNSA	146	Oak Ridge Offic	BWXT - Y-12	2012	EPACT-Cove	Yes	No	Alternative	E-85	E85	TN	None	No	26614.08	36964	gallons	0.72		No	35.53736994
NNSA	146	Oak Ridge Offic	BWXT - Y-12	2012	EPACT-Cove	Yes	Yes	Petroleum	Diesel	DSL	TN	None	No	12465.596	10868	gallons	1.147		No	115.3272791
NNSA	146	Oak Ridge Offic	BWXT - Y-12	2012	EPACT-Cove	Yes	Yes	Petroleum	Gasoline	GAS	TN	None	No	40325	40325	gallons	**1**		No	357.335163
NNSA	146	Oak Ridge Offic	Wackenhut Services, Inc. (NNSA)	2012	EPACT-Cove	Yes	No	Alternative	E-85	E85	TN	LE	No	24273.9	33714	gallons	0.72		No	32.41256374
NNSA	146	Oak Ridge Offic	Wackenhut Services, Inc. (NNSA)	2012	EPACT-Cove	Yes	No	Alternative	E-85	E85	TN	None	No	14564.34	20228	gallons	0.72		No	19.44753824
NNSA	146	Oak Ridge Offic	Wackenhut Services, Inc. (NNSA)	2012	EPACT-Cove	Yes	No	Petroleum	Diesel	DSL	TN	LE	No	805.194	702	gallons	1.147		No	7.449369701
NNSA	146	Oak Ridge Offic	Wackenhut Services, Inc. (NNSA)	2012	EPACT-Cove	Yes	No	Petroleum	Diesel	DSL	TN	LE	Yes	31216.752	27216	gallons	1.147		No	288.806333
NNSA	146	Oak Ridge Offic	Wackenhut Services, Inc. (NNSA)	2012	EPACT-Cove	Yes	No	Petroleum	Gasoline	GAS	TN	LE	No	17686.875	17687	gallons	1		No	156.7301268
NNSA	146	Oak Ridge Offic	Wackenhut Services, Inc. (NNSA)	2012	EPACT-Cove	Yes	Yes	Petroleum	Gasoline	GAS	TN	None	No	10612.125	10612	gallons	1		No	94.03807605

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FIMS' Facility Information																Covered Facility Information								Notes
Site Name	Site	Area	Seq No	Prop ID	Prop Name	Excl Part	Prop Type	GSFT	EC Bldg Fac	EC Metered	Justification	EMS Site	Program	Ownership	Outgrant Ind	Covered or Not Covered?	Estimated Total Energy Used (10^6 x Btu/Yr)	Anticipated or Actual Energy Evaluation Date (MM/YY)	Anticipated or Actual Water Evaluation Date (MM/YY)	Anticipated or Actual Evaluation Type/Level	Retro/Re-Commissioning Assessment	Benchmarking Status	Benchmarking System	Additional Information
Y-12 Site Offic	28001	001	98395	9212	Production		B	442,317	442,317	-		146	NNSA	O	N	Covered	534,210	Jul-12	Jul-12	ASHRAE Level 2	Not Applicable	In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98642	9767-13	Chiller Build		B	20,724	20,724	-		146	NNSA	O	N	Covered	83,313	Apr-11	Apr-11	ASHRAE Level 2	Yes	In Progress	Portfolio Manager	ESPC & EISA
Y-12 Site Offic	28001	001	98639	9767-10	Chiller Build		B	12,000	12,000	-		146	NNSA	O	N	Covered	62,996	Mar-11	Mar-11	ASHRAE Level 2	Not Applicable	In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	207482	9401-07	Steam Plant		B	19,200	19,200	-		146	NNSA	O	N	Covered	997,865	2013	2013	ASHRAE Level 2	Yes	In Progress	Portfolio Manager	ESPC
Y-12 Site Offic	28001	001	98397	9215	Production		B	188,729	188,729	-		146	NNSA	O	N	Covered	53,990	Jan-12	Jan-12	ASHRAE Level 2	Not Applicable	In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98803	9998	Maint., Mac		B	152,134	152,134	-		146	NNSA	O	N	Covered	43,256	Feb-12	Feb-12	ASHRAE Level 2	Not Applicable	In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98634	9767-04	Utilities		B	6,893	6,893	-		146	NNSA	O	N	Covered	40,840	Mar-11	Mar-11	ASHRAE Level 2	Not Applicable	In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98385	9204-02	Production(		B	324,085	324,085	-		146	NNSA	O	N	Covered	38,801	Mar-12	Mar-12	ASHRAE Level 2	Not Applicable	In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	204358	301 BCR	Jack Case O		B	411,837	411,837	-		146	NNSA	C	N	Covered	30,517	Oct-11	Oct-11	ASHRAE Level 2	Yes	In Progress	Portfolio Manager	HPSB
Y-12 Site Offic	28001	001	98375	9201-01	Production(		B	270,988	270,988	-		146	NNSA	O	N	Covered	23,821	Apr-12	Apr-12	ASHRAE Level 2	Not Applicable	In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98801	9995	Plant Labora		B	81,655	81,655	-		146	NNSA	O	N	Covered	23,217	Jan-12	Jan-12	ASHRAE Level 2	Not Applicable	In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98388	9204-02E	Production(		B	172,892	172,892	-		146	NNSA	O	N	Covered	20,308	Jul-12	Jul-12	ASHRAE Level 2	Not Applicable	In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98640	9767-11	Chiller Build		B	4,880	4,880	-		146	NNSA	O	N	Covered	19,149	Sep-12	Sep-12	ASHRAE Level 2	Yes	In Progress	Portfolio Manager	ESPC & EISA
Y-12 Site Offic	28001	001	98379	9201-05	Production (		B	613,642	613,642	-		146	NNSA	O	N	Not Covered	15,424					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98380	9201-05N	Production(		B	78,049	78,049	-		146	NNSA	O	N	Covered	15,354	May-12	May-12	ASHRAE Level 2	Not Applicable	In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98637	9767-08	Chiller		B	4,847	4,847	-		146	NNSA	O	N	Covered	14,990	Apr-11	Apr-11	ASHRAE Level 2	Yes	In Progress	Portfolio Manager	ESPC & EISA
Y-12 Site Offic	28001	001	207178	9720-82	Storage Buil		B	153,001	153,001	-		146	NNSA	O	N	Covered	14,511	2013	2013	ASHRAE Level 2	Yes	In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	208391	1418	East Potable Water Tank		S		-	-		146	NNSA	O		Covered	14,474	2013	2013	ASHRAE Level 2	Yes			
Y-12 Site Offic	28001	001	204359	602 SCA	New Hope (		B	137,758	137,758	-		146	NNSA	C	N	Not Covered	13,514				Yes	In Progress	Portfolio Manager	LEED Certified
Y-12 Site Offic	28001	001	98641	9767-12	Chiller Bldg		B	3,089	3,089	-		146	NNSA	O	N	Not Covered	12,121	2013	2013	ASHRAE Level 2	Not Applicable	In Progress	Portfolio Manager	ESPC & EISA
Y-12 Site Offic	28001	001	98621	9737	Laboratory/(		B	98,017	98,017	-		146	NNSA	O	N	Covered	11,707	Sep-12	Sep-12	ASHRAE Level 2	Yes	In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	133777	9201-05W	Machine Sh		B	70,005	70,005	-		146	NNSA	O	N	Covered	10,727	Jun-12	Jun-12	ASHRAE Level 2	Not Applicable	In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98377	9201-03	Office Build		B	191,978	191,978	-		146	NNSA	O	N	Covered	10,495	May-11	May-11	ASHRAE Level 2	Not Applicable	In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98802	9996	DU Binary		B	34,233	34,233	-		146	NNSA	O	N	Not Covered	9,733					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98366	9110	Office		B	8,634	8,634	-		146	NNSA	O	N	Not Covered	8,817					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98357	9103	Central Con		B	110,248	110,248	-		146	NNSA	O	N	Not Covered	8,464	May-11	May-11	ASHRAE Level 2	Not Applicable	In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	139597	1099 COMMERC	UPF Design		B	65,000	65,000	-		146	NNSA	C	N	Not Covered	7,377							
Y-12 Site Offic	28001	004	98386	9204-03	Isotope Sepa		B	255,656	255,656	-		146	NE	O	N	Not Covered	7,333							
Y-12 Site Offic	28001	001	98381	9202	Dev. Labs. &		B	157,228	157,228	-		146	NNSA	O	N	Not Covered	7,118	Aug-12	Aug-12	ASHRAE Level 2	Not Applicable	In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98123	113C UNION VA	Sample Prep		B	18,450	18,450	-		146	NNSA	C	N	Not Covered	6,616							
Y-12 Site Offic	28001	001	98390	9206	Production		B	57,812	57,812	-		146	NNSA	O	N	Not Covered	6,543					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98387	9204-04	Production (		B	313,771	313,771	-		146	NNSA	O	N	Not Covered	6,299					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98596	9723-25	Changehous		B	18,974	18,974	-		146	NNSA	O	N	Not Covered	5,395					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98374	9119	Office Build		B	73,381	73,381	-		146	NNSA	O	N	Not Covered	3,545	Mar-11	Mar-11	EISA Level 2	Not Applicable	In Progress	Portfolio Manager	
Y-12 Site Offic	28001	003	98378	9201-04	Environmen		B	510,218	510,218	-		146	EM	O	N	Not Covered	3,118							
Y-12 Site Offic	28001	001	98370	9114	Office Build		B	36,901	36,901	-		146	NNSA	O	N	Not Covered	3,019	2013	2013	EISA Level 2	Not Applicable	In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	201391	200 SUMMIT PL/	Records Sto		B	24,585	24,585	-		146	NNSA	C	N	Not Covered	2,885							
Y-12 Site Offic	28001	001	98369	9113	Office Build		B	59,299	59,299	-		146	NNSA	O	N	Not Covered	2,833	Mar-11	Mar-11	EISA Level 2	Not Applicable	In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	208446	2410 CHERAHAL	Pellissippi S		B	32,058	32,058	-		146	NNSA	C	N	Not Covered	2,268							
Y-12 Site Offic	28001	002	98376	9201-02	Fusion Ener		B	324,448	324,448	-		146	SC	O	N	Not Covered	2,224							
Y-12 Site Offic	28001	001	98529	9710-03	Guard Head		B	41,496	41,496	-		146	NNSA	O	N	Not Covered	1,841	2013	2013	EISA Level 2	Not Applicable	In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98538	9720-05	Warehouse		B	69,474	69,474	-		146	NNSA	O	N	Not Covered	1,802					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	125772	9624	Environmen		B	37,372	37,372	-		146	NNSA	O	N	Not Covered	1,658					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98373	9117	Central Con		B	19,648	19,648	-		146	NNSA	O	N	Not Covered	1,508					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98382	9203	Dev. Labs. &		B	31,107	31,107	-		146	NNSA	O	N	Not Covered	1,380	Aug-12	Aug-12	EISA Level 2	Not Applicable	In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98528	9710-02	Fire/Guard I		B	27,673	27,673	-		146	NNSA	O	N	Not Covered	1,227					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	133764	9983-FG	Office Spac		T	1,307	1,307	-		146	NNSA	O	N	Not Covered	1,203							
Y-12 Site Offic	28001	001	133762	9983-FE	Office Spac		T	1,307	1,307	-		146	NNSA	O	N	Not Covered	1,176							
Y-12 Site Offic	28001	001	202393	9225-03	Production I		B	9,260	9,260	-		146	NNSA	O	N	Not Covered	1,074					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98511	9623	Central Poll		B	19,534	19,534	-		146	NNSA	O	N	Not Covered	866					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	133763	9983-FF	Office Spac		T	1,307	1,307	-		146	NNSA	O	N	Not Covered	862							
Y-12 Site Offic	28001	001	98362	9106	Offices		B	15,990	15,990	-		146	NNSA	O	N	Not Covered	794					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	002	98384	9204-01	Fusion Ener		B	210,491	210,491	-		146	SC	O	N	Not Covered	757							
Y-12 Site Offic	28001	001	98371	9115	Office Build		B	16,415	16,415	-		146	NNSA	O	N	Not Covered	728	2013	2013	EISA Level 2	Not Applicable	In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98372	9116	Office Build		B	16,415	16,415	-		146	NNSA	O	N	Not Covered	728	2013	2013	EISA Level 2	Not Applicable	In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98610	9731	Offices & L		B	37,159	37,159	-		146	NNSA	O	N	Not Covered	634					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98383	9203A	Dev. Labs. &		B	13,881	13,881	-		146	NNSA	O	N	Not Covered	616					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98520	9703-15	Storage, Fab		B	13,050	13,050	-		146	NNSA	O	N	Not Covered	579					In Progress	Portfolio Manager	

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Site Name	Site	Area	Seq No	Prop ID	Prop Name	Excl Part	Prop Type	GSFT	EC Bldg Fac	EC Metered	Justification	EMS Site	Program	Ownership	Outgrant Ind	Covered or Not Covered?	Estimated Total Energy Used (10^6 x Btu/Yr)	Anticipated or Actual Energy Evaluation Date (MM/YY)	Anticipated or Actual Water Evaluation Date (MM/YY)	Anticipated or Actual Evaluation Type/Level	Retro/Re-Commissioning Assessment	Benchmarking Status	Benchmarking System	Additional Information
Y-12 Site Offic	28001	001	98600	9723-31	Changehous		B	27,532	27,532	-		146	NNSA	O	N	Not Covered	470	2013	2013	EISA Level 2	Not Applicable	In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98365	9109	Office		B	9,788	9,788	-		146	NNSA	O	N	Not Covered	441					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98521	9703-16	Constructio		B	9,614	9,614	-		146	NNSA	O	N	Not Covered	426					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98364	9108	Office Build		B	7,544	7,544	-		146	NNSA	O	N	Not Covered	422					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	133761	9983-FD	Office Spac		T	1,307	1,307	-		146	NNSA	O	N	Not Covered	416							
Y-12 Site Offic	28001	001	98361	9105	Fusion Eng		B	7,667	7,667	-		146	NNSA	O	N	Not Covered	340					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98561	9720-32	Non-Destru		B	30,663	30,663	-		146	NNSA	O	N	Not Covered	209					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98598	9723-27	Changehous		B	11,670	11,670	-		146	NNSA	O	N	Not Covered	199	2013	2013	EISA Level 2	Not Applicable	In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98601	9723-33	Changehous		B	10,771	10,771	-		146	NNSA	O	N	Not Covered	184	2013	2013	EISA Level 2	Not Applicable	In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	203811	9712-01N	North Garag		B	10,509	10,509	-		146	NNSA	O	N	Not Covered	179					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98599	9723-28	Changehous		B	10,252	10,252	-		146	NNSA	O	N	Not Covered	175	2013	2013	EISA Level 2	Not Applicable	In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	203813	9720-94	Record Stor		B	9,437	9,437	-		146	NNSA	O	N	Not Covered	161					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	203812	9712-01S	South Garag		B	9,319	9,319	-		146	NNSA	O	N	Not Covered	159					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98697	9831	Storage Buil		B	18,669	18,669	-		146	NNSA	O	N	Not Covered	153					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98562	9720-33	Storage		B	40,186	40,186	-		146	NNSA	O	N	Not Covered	137					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98407	9401-03	Old Coal Fir		B	62,124	62,124	-		146	NNSA	O	N	Not Covered	134							
Y-12 Site Offic	28001	001	200821	9723-34	Changehous		B	6,700	6,700	-		146	NNSA	O	N	Not Covered	114	2013	2013	EISA Level 2	Not Applicable	In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98493	9423	Material Sto		B	6,263	6,263	-		146	NNSA	O	N	Not Covered	107					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98567	9720-39	Laundry		B	8,193	8,193	-		146	NNSA	O	N	Not Covered	106					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98525	9706-02	Shift Superi		B	27,475	27,475	-		146	NNSA	O	N	Not Covered	94					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98471	9420	Shops		B	27,341	27,341	-		146	NNSA	O	N	Not Covered	93					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98504	9616-07	WEST END		B	26,054	26,054	-		146	NNSA	O	N	Not Covered	89					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	203797	9711-01A	RAD Monit		B	2,173	2,173	-		146	NNSA	O	N	Not Covered	82							
Y-12 Site Offic	28001	001	201424	9712-01	Garage Faci		B	4,697	4,697	-		146	NNSA	O	N	Not Covered	80					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98555	9720-25	Waste Stora		B	17,315	17,315	-		146	NNSA	O	N	Not Covered	59					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98547	9720-16	Maintenanc		B	16,319	16,319	-		146	NNSA	O	N	Not Covered	56					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98543	9720-12	Warehouse		B	15,000	15,000	-		146	NNSA	O	N	Not Covered	51					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	003	98404	9401-02	Plating Shop		B	13,673	-	-		146	EM	O	N	Not Covered	47							
Y-12 Site Offic	28001	001	98556	9720-26	Mercury Stc		B	13,578	13,578	-		146	NNSA	O	N	Not Covered	46					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	002	98403	9401-01	Maintenanc		B	13,454	13,454	-		146	SC	O	N	Not Covered	46							
Y-12 Site Offic	28001	001	98553	9720-22	Storage		B	12,712	12,712	-		146	NNSA	O	N	Not Covered	43					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98590	9723-14	Offices		B	12,532	12,532	-		146	NNSA	O	N	Not Covered	43					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98542	9720-09	Waste Stora		B	12,035	12,035	-		146	NNSA	O	N	Not Covered	41					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	129590	9720-59	Storage		B	11,831	11,831	-		146	NNSA	O	N	Not Covered	40					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98544	9720-13	Y-12 Stores		B	11,000	11,000	-		146	NNSA	O	N	Not Covered	38					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98554	9720-24	Classified T		B	11,192	11,192	-		146	NNSA	O	N	Not Covered	38					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	140466	9811-12	Transformer		B	9,339	9,339	-		146	NNSA	O	N	Not Covered	32					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98625	9744	Utilities		B	9,081	9,081	-		146	NNSA	O	N	Not Covered	31							
Y-12 Site Offic	28001	001	134123	9830-02	Storage Pad		B	8,707	8,707	-		146	NNSA	O	N	Not Covered	30					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	134124	9830-03	Storage Pad		B	8,750	8,750	-		146	NNSA	O	N	Not Covered	30					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	134125	9830-04	Storage Pad		B	8,750	8,750	-		146	NNSA	O	N	Not Covered	30					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	134126	9830-05	Storage Pad		B	8,750	8,750	-		146	NNSA	O	N	Not Covered	30					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	134127	9830-06	Storage Pad		B	8,750	8,750	-		146	NNSA	O	N	Not Covered	30					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	134128	9830-07	Storage Pad		B	8,707	8,707	-		146	NNSA	O	N	Not Covered	30					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98660	9808	Maintenanc		B	7,540	7,540	-		146	NNSA	O	N	Not Covered	26							
Y-12 Site Offic	28001	001	98672	9818	Acid Waste		B	7,561	7,561	-		146	NNSA	O	N	Not Covered	26					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98400	9219	Maintenanc		B	7,370	7,370	-		146	NNSA	O	N	Not Covered	25					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98560	9720-31	RCRA Wast		B	6,611	6,611	-		146	NNSA	O	N	Not Covered	23					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98605	9725	Mach. Tool		B	6,435	6,435	-		146	NNSA	O	N	Not Covered	22					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98549	9720-18	Warehouse		B	6,046	6,046	-		146	NNSA	O	N	Not Covered	21					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98421	9404-05	Paint Shop		B	5,813	5,813	-		146	NNSA	O	N	Not Covered	20					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98659	9805-01	Gas House		B	5,800	5,800	-		146	NNSA	O	N	Not Covered	20					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98551	9720-20	Maint. Shop		B	5,164	5,164	-		146	NNSA	O	N	Not Covered	18					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98749	9981	Physical Tes		B	4,972	4,972	-		146	NNSA	O	N	Not Covered	17							
Y-12 Site Offic	28001	001	98472	9420-01	Sprinkler fit		B	5,042	5,042	-		146	NNSA	O	N	Not Covered	17					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98546	9720-15	Paint Shop		B	5,065	5,065	-		146	NNSA	O	N	Not Covered	17					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	133808	9720-73	Lineman Stc		B	5,062	5,062	-		146	NNSA	O	N	Not Covered	17					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	133792	9811-01	Storage		B	4,917	4,917	-		146	NNSA	O	N	Not Covered	17							
Y-12 Site Offic	28001	001	133800	741-000	Elza Contro		B	4,558	4,558	-		146	NNSA	O	N	Not Covered	16							
Y-12 Site Offic	28001	001	98416	9404-02	Plant & Inst		B	4,585	4,585	-		146	NNSA	O	N	Not Covered	16							

Site Name	Site	Area	Seq No	Prop ID	Prop Name	Excl Part	Prop Type	GSFT	EC Bldg Fac	EC Metered	Justification	EMS Site	Program	Ownership	Outgrant Ind	Covered or Not Covered?	Estimated Total Energy Used (10^6 x Btu/Yr)	Anticipated or Actual Energy Evaluation Date (MM/YY)	Anticipated or Actual Water Evaluation Date (MM/YY)	Anticipated or Actual Evaluation Type/Level	Retro/Re-Commissioning Assessment	Benchmarking Status	Benchmarking System	Additional Information
Y-12 Site Offic	28001	001	98415	9404-18	Demineraliz		B	4,760	4,760	-		146	NNSA	O	N	Not Covered	16							
Y-12 Site Offic	28001	001	98748	9980	Process Buil		B	4,361	4,361	-		146	NNSA	O	N	Not Covered	15							
Y-12 Site Offic	28001	001	98548	9720-17	Warehouse/		B	4,314	4,314	-		146	NNSA	O	N	Not Covered	15							
Y-12 Site Offic	28001	001	98799	9990-03	Coal Sampli		B	4,463	4,463	-		146	NNSA	O	N	Not Covered	15							
Y-12 Site Offic	28001	001	98425	9404-09	Rubber Shoj		B	4,057	4,057	-		146	NNSA	O	N	Not Covered	14							
Y-12 Site Offic	28001	001	133786	9720-58	Recycle Fac		B	4,243	4,243	-		146	NNSA	O	N	Not Covered	14							
Y-12 Site Offic	28001	001	98405	9401-04	Waste Mat.		B	3,755	3,755	-		146	NNSA	O	N	Not Covered	13							
Y-12 Site Offic	28001	001	98406	9401-05	Production S		B	3,922	3,922	-		146	NNSA	O	N	Not Covered	13					In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98577	9720-53	Maintenanc		B	3,800	3,800	-		146	NNSA	O	N	Not Covered	13							
Y-12 Site Offic	28001	001	98409	9404-10	Pumphouse,		B	3,380	3,380	-		146	NNSA	O	N	Not Covered	12							
Y-12 Site Offic	28001	001	98506	9616-09	Steam Plant		B	3,400	3,400	-		146	NNSA	O	N	Not Covered	12							
Y-12 Site Offic	28001	001	98558	9720-28	PCB Waste		B	3,635	3,635	-		146	NNSA	O	N	Not Covered	12							
Y-12 Site Offic	28001	001	98503	9616-06	Liquid Wast		B	3,286	3,286	-		146	NNSA	O	N	Not Covered	11							
Y-12 Site Offic	28001	001	98568	9720-41	Storage-Salv		B	3,310	3,310	-		146	NNSA	O	N	Not Covered	11							
Y-12 Site Offic	28001	001	98571	9720-47	Storage She		B	3,360	3,360	-		146	NNSA	O	N	Not Covered	11							
Y-12 Site Offic	28001	001	98570	9720-46	Storage		B	3,026	-	-		146	NNSA	O	N	Not Covered	10							
Y-12 Site Offic	28001	001	98606	9727-03	Utilities		B	2,916	2,916	-		146	NNSA	O	N	Not Covered	10							
Y-12 Site Offic	28001	001	133797	9999-06	Electrical Sv		B	3,008	3,008	-		146	NNSA	O	N	Not Covered	10							
Y-12 Site Offic	28001	001	98800	9993	Storage		B	2,527	2,527	-		146	NNSA	O	N	Not Covered	9							
Y-12 Site Offic	28001	001	98417	9404-20	Laborer Sha		B	2,751	2,751	-		146	NNSA	O	N	Not Covered	9							
Y-12 Site Offic	28001	001	128438	9404-24	Fire Water I		B	1,043	1,043	-		146	NNSA	O	N	Not Covered	9							
Y-12 Site Offic	28001	001	98502	9616-05	Aux Storage		B	2,622	2,622	-		146	NNSA	O	N	Not Covered	9							
Y-12 Site Offic	28001	002	98492	9422	Helium Com		B	2,671	-	-		146	SC	O	N	Not Covered	9							
Y-12 Site Offic	28001	001	202699	9733-05	Office Build		B	13,322	13,322	-		146	NNSA	O	N	Not Covered	8	2012	2012			In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98805	9999-03	Demineraliz		B	2,447	2,447	-		146	NNSA	O	N	Not Covered	8							
Y-12 Site Offic	28001	001	141262	9999-08	Switchgear I		B	2,332	2,332	-		146	NNSA	O	N	Not Covered	8							
Y-12 Site Offic	28001	001	140463	9720-32A	Shredder Fa		B	2,112	2,112	-		146	NNSA	O	N	Not Covered	7							
Y-12 Site Offic	28001	001	98747	9977-01	Helium Faci		B	2,100	2,100	-		146	NNSA	O	N	Not Covered	7							
Y-12 Site Offic	28001	001	98789	9983-94	Physical The		T	2,160	2,160	-		146	NNSA	O	N	Not Covered	7							
Y-12 Site Offic	28001	001	140518	9983-GX	EXERCISE		T	2,400	2,400	-		146	NNSA	O	N	Not Covered	7							
Y-12 Site Offic	28001	001	98517	9702	Telephone &		B	1,860	1,860	-		146	NNSA	O	N	Not Covered	6							
Y-12 Site Offic	28001	001	98658	9805	Special Mat		B	1,623	1,623	-		146	NNSA	O	N	Not Covered	6							
Y-12 Site Offic	28001	001	98667	9815	Nitrate Facil		B	1,722	1,722	-		146	NNSA	O	N	Not Covered	6							
Y-12 Site Offic	28001	001	142004	743-000	Oil Handling		B	1,750	1,750	-		146	NNSA	O	N	Not Covered	6							
Y-12 Site Offic	28001	001	98607	9727-04	Utilities		B	1,752	1,752	-		146	NNSA	O	N	Not Covered	6							
Y-12 Site Offic	28001	001	98398	9217	Manufacturi		B	1,442	1,442	-		146	NNSA	O	N	Not Covered	5							
Y-12 Site Offic	28001	001	98512	9625	Kathbar Bld		B	1,336	1,336	-		146	NNSA	O	N	Not Covered	5							
Y-12 Site Offic	28001	001	98413	9404-16	Utilities, 94(		B	1,526	1,526	-		146	NNSA	O	N	Not Covered	5							
Y-12 Site Offic	28001	001	98414	9404-17	Pumphouse,		B	1,395	1,395	-		146	NNSA	O	N	Not Covered	5							
Y-12 Site Offic	28001	001	205456	9720-95	Lineman's S		B	1,350	-	-		146	NNSA	O	N	Not Covered	5							
Y-12 Site Offic	28001	001	205455	9720-96	Linemans St		B	1,350	-	-		146	NNSA	O	N	Not Covered	5							
Y-12 Site Offic	28001	001	205457	9720-97	Lineman's S		B	1,350	-	-		146	NNSA	O	N	Not Covered	5							
Y-12 Site Offic	28001	001	98663	9811-06	Dry Ash Ha		B	1,546	1,546	-		146	NNSA	O	N	Not Covered	5							
Y-12 Site Offic	28001	001	127349	9811-07	Ash Handlir		B	1,363	1,363	-		146	NNSA	O	N	Not Covered	5							
Y-12 Site Offic	28001	001	133691	9983-88	Office Traile		T	1,344	1,344	-		146	NNSA	O	N	Not Covered	5							
Y-12 Site Offic	28001	001	133774	9983-FS	Office Spac		T	1,440	1,440	-		146	NNSA	O	N	Not Covered	5							
Y-12 Site Offic	28001	002	97633	XF1301	Barn D		B	8,650	8,650	-		146	SC	O	Y	Not Covered	5							
Y-12 Site Offic	28001	002	97632	XF1302	Shed D Butl		B	2,028	2,028	-		146	SC	O	Y	Not Covered	5							
Y-12 Site Offic	28001	001	98626	9752	Utilities		B	1,182	1,182	-		146	NNSA	O	N	Not Covered	4							
Y-12 Site Offic	28001	001	98643	9768	Utilities		B	1,243	1,243	-		146	NNSA	O	N	Not Covered	4							
Y-12 Site Offic	28001	001	98664	9812	Tank Pit		B	1,190	1,190	-		146	NNSA	O	N	Not Covered	4							
Y-12 Site Offic	28001	001	98399	9217-01	Filter House		B	1,267	1,267	-		146	NNSA	O	N	Not Covered	4							
Y-12 Site Offic	28001	001	141865	9404-03A	Utilities Bui		B	1,063	1,063	-		146	NNSA	O	N	Not Covered	4							
Y-12 Site Offic	28001	001	98557	9720-27	Reactive Me		B	1,299	1,299	-		146	NNSA	O	N	Not Covered	4							
Y-12 Site Offic	28001	001	202681	9723-35	Conference		B	1,080	1,080	-		146	NNSA	O	N	Not Covered	4							
Y-12 Site Offic	28001	001	133815	9811-02	Tanker Tran		B	1,129	1,129	-		146	NNSA	O	N	Not Covered	4							
Y-12 Site Offic	28001	001	133816	9811-03	Tanker Tran		B	1,047	1,047	-		146	NNSA	O	N	Not Covered	4							
Y-12 Site Offic	28001	001	133817	9811-04	Tanker Tran		B	1,112	1,112	-		146	NNSA	O	N	Not Covered	4							
Y-12 Site Offic	28001	001	127342	9983-BN	Building, M		T	1,043	1,043	-		146	NNSA	O	N	Not Covered	4							
Y-12 Site Offic	28001	001	98580	9722	OFFICE & I		B	960	960	-		146	NNSA	O	N	Not Covered	3							

Site Name	Site	Area	Seq No	Prop ID	Prop Name	Excl Part	Prop Type	GSFT	EC Bldg Fac	EC Metered	Justification	EMS Site	Program	Ownership	Outgrant Ind	Covered or Not Covered?	Estimated Total Energy Used (10^6 x Btu/Yr)	Anticipated or Actual Energy Evaluation Date (MM/YY)	Anticipated or Actual Water Evaluation Date (MM/YY)	Anticipated or Actual Evaluation Type/Level	Retro/Re-Commissioning Assessment	Benchmarking Status	Benchmarking System	Additional Information
Y-12 Site Offic	28001	001	98673	9819	Maintenanc		B	835	835	-		146	NNSA	O	N	Not Covered	3							
Y-12 Site Offic	28001	001	98412	9404-13	Pumphouse,		B	953	953	-		146	NNSA	O	N	Not Covered	3							
Y-12 Site Offic	28001	001	98559	9720-30	Storage		B	792	792	-		146	NNSA	O	N	Not Covered	3							
Y-12 Site Offic	28001	001	127348	9727-04A	Annex Build		B	977	977	-		146	NNSA	O	N	Not Covered	3							
Y-12 Site Offic	28001	001	98611	9732-01	General Sho		B	754	754	-		146	NNSA	O	N	Not Covered	3							
Y-12 Site Offic	28001	001	98194	9811-09	Transfer Sta		B	756	756	-		146	NNSA	O	N	Not Covered	3							
Y-12 Site Offic	28001	001	98670	9817-01	Fire Trainin		B	824	824	-		146	NNSA	O	N	Not Covered	3							
Y-12 Site Offic	28001	001	98668	9816	Training		B	633	633	-		146	NNSA	O	N	Not Covered	2							
Y-12 Site Offic	28001	001	98804	9999	Motor Gene		B	454	454	-		146	NNSA	O	N	Not Covered	2							
Y-12 Site Offic	28001	001	98418	9404-21	Pumphouse,		B	536	536	-		146	NNSA	O	N	Not Covered	2							
Y-12 Site Offic	28001	001	98515	9701-05	Post 15		B	640	640	-		146	NNSA	O	N	Not Covered	2							
Y-12 Site Offic	28001	001	98581	9722-02	Emergency		B	663	663	-		146	NNSA	O	N	Not Covered	2							
Y-12 Site Offic	28001	001	98671	9817-02	Fire Trainin		B	617	617	-		146	NNSA	O	N	Not Covered	2							
Y-12 Site Offic	28001	001	98693	9828-01	Bag Filter S		B	557	557	-		146	NNSA	O	N	Not Covered	2							
Y-12 Site Offic	28001	001	98695	9828-03	Bag Filter H		B	568	568	-		146	NNSA	O	N	Not Covered	2							
Y-12 Site Offic	28001	001	133766	9983-FJ	Office Spac		T	480	480	-		146	NNSA	O	N	Not Covered	2							
Y-12 Site Offic	28001	001	98510	9622	Warehouse/		B	218	218	-		146	NNSA	O	N	Not Covered	1							
Y-12 Site Offic	28001	001	98579	9721	Office Trail		T	157	157	-		146	NNSA	O	N	Not Covered	1							
Y-12 Site Offic	28001	001	98656	9803	Utilities		B	174	174	-		146	NNSA	O	N	Not Covered	1							
Y-12 Site Offic	28001	001	98674	9820	Electrical St		B	408	408	-		146	NNSA	O	N	Not Covered	1							
Y-12 Site Offic	28001	001	98746	9977	Utilities		B	248	248	-		146	NNSA	O	N	Not Covered	1							
Y-12 Site Offic	28001	001	98507	9616-10	Bulk Sulphu		B	438	438	-		146	NNSA	O	N	Not Covered	1							
Y-12 Site Offic	28001	001	98516	9701-06	Post 5		B	163	163	-		146	NNSA	O	N	Not Covered	1							
Y-12 Site Offic	28001	001	98565	9720-37	Storage/Em		B	230	230	-		146	NNSA	O	N	Not Covered	1							
Y-12 Site Offic	28001	001	133809	9720-74	90 Day - Sta		B	195	195	-		146	NNSA	O	N	Not Covered	1							
Y-12 Site Offic	28001	001	139675	9720-80	LSF MAINT		B	240	240	-		146	NNSA	O	N	Not Covered	1							
Y-12 Site Offic	28001	001	98583	9722-04	Generator B		B	406	406	-		146	NNSA	O	N	Not Covered	1							
Y-12 Site Offic	28001	001	98585	9722-06	Guard Supp		B	247	247	-		146	NNSA	O	N	Not Covered	1							
Y-12 Site Offic	28001	001	133789	9724-03	Radio Repe		B	187	187	-		146	NNSA	O	N	Not Covered	1							
Y-12 Site Offic	28001	001	98628	9754-03	Gas Station		B	346	346	-		146	NNSA	O	N	Not Covered	1							
Y-12 Site Offic	28001	001	98638	9767-09	Transformer		B	211	211	-		146	NNSA	O	N	Not Covered	1							
Y-12 Site Offic	28001	001	98654	9802-01	Steam Static		B	151	151	-		146	NNSA	O	N	Not Covered	1							
Y-12 Site Offic	28001	001	98655	9802-02	Steam Static		B	151	151	-		146	NNSA	O	N	Not Covered	1							
Y-12 Site Offic	28001	001	98694	9828-02	Probe House		B	193	193	-		146	NNSA	O	N	Not Covered	1							
Y-12 Site Offic	28001	001	98711	9949-38	Guard Towe		B	160	160	-		146	NNSA	O	N	Not Covered	1							
Y-12 Site Offic	28001	001	98712	9949-39	Post 23a		B	40	40	-		146	NNSA	O	N	Not Covered	1							
Y-12 Site Offic	28001	001	98731	9949-70	Guard Towe		B	224	224	-		146	NNSA	O	N	Not Covered	1							
Y-12 Site Offic	28001	001	207049	9949-BA	Explosive D		B	159	159	-		146	NNSA	O	N	Not Covered	1							
Y-12 Site Offic	28001	001	207050	9949-BB	Explosive D		B	156	156	-		146	NNSA	O	N	Not Covered	1							
Y-12 Site Offic	28001	001	207061	9949-BC	Explosive D		B	156	156	-		146	NNSA	O	N	Not Covered	1							
Y-12 Site Offic	28001	001	133705	9983-AZ	WTSD Sam		T	363	363	-		146	NNSA	O	N	Not Covered	1							
Y-12 Site Offic	28001	001	133707	9983-BD	Truck Drive		T	294	294	-		146	NNSA	O	N	Not Covered	1							
Y-12 Site Offic	28001	001	133708	9983-BE	Tank Farm (		T	294	294	-		146	NNSA	O	N	Not Covered	1							
Y-12 Site Offic	28001	001	133727	9983-CC	Lineman's B		T	160	160	-		146	NNSA	O	N	Not Covered	1							
Y-12 Site Offic	28001	001	203806	9983-HF	Decon Show		T	375	375	-		146	NNSA	O	N	Not Covered	1							
Y-12 Site Offic	28001	001	205683	9983-HJ	Decon Trail		T	160	160	-		146	NNSA	O	N	Not Covered	1							
Y-12 Site Offic	28001	001	98794	9984-A	Radio Comr		B	171	171	-		146	NNSA	O	N	Not Covered	1							
Y-12 Site Offic	28001	001	98807	9999-05	Guard Supp		B	250	250	-		146	NNSA	O	N	Not Covered	1							
Y-12 Site Offic	28001	001	98808	9999-07	Guard Supp		B	249	249	-		146	NNSA	O	N	Not Covered	1							
Y-12 Site Offic	28001	001	98657	9804	Utilities		B	130	130	-		146	NNSA	O	N	Not Covered	0							
Y-12 Site Offic	28001	001	133818	9826	Truck Scale		B	90	-	-		146	NNSA	O	N	Not Covered	0							
Y-12 Site Offic	28001	001	98797	9989	So2 Monito		B	48	48	-		146	NNSA	O	N	Not Covered	0							
Y-12 Site Offic	28001	001	98798	9990	Monitoring		B	80	80	-		146	NNSA	O	N	Not Covered	0							
Y-12 Site Offic	28001	001	98431	9416-11	Utilities, 94		B	44	44	-		146	NNSA	O	N	Not Covered	0							
Y-12 Site Offic	28001	001	98432	9416-12	Utilities, 94		B	126	126	-		146	NNSA	O	N	Not Covered	0							
Y-12 Site Offic	28001	001	98434	9416-14	Utilities, 94		B	44	44	-		146	NNSA	O	N	Not Covered	0							
Y-12 Site Offic	28001	001	98436	9416-16	Utilities, 94		B	44	44	-		146	NNSA	O	N	Not Covered	0							
Y-12 Site Offic	28001	001	98438	9416-18	Utilities, 94		B	50	50	-		146	NNSA	O	N	Not Covered	0							
Y-12 Site Offic	28001	001	98440	9416-20	Valve Hous		B	90	-	-		146	NNSA	O	N	Not Covered	0							
Y-12 Site Offic	28001	001	98441	9416-21	Utilities, 94		B	44	44	-		146	NNSA	O	N	Not Covered	0							

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Site Name	Site	Area	Seq No	Prop ID	Prop Name	Excl Part	Prop Type	GSFT	EC Bldg Fac	EC Metered	Justification	EMS Site	Program	Ownership	Outgrant Ind	Covered or Not Covered?	Estimated Total Energy Used (10^6 x Btu/Yr)	Anticipated or Actual Energy Evaluation Date (MM/YY)	Anticipated or Actual Water Evaluation Date (MM/YY)	Anticipated or Actual Evaluation Type/Level	Retro/Re-Commissioning Assessment	Benchmarking Status	Benchmarking System	Additional Information
Y-12 Site Offic	28001	001	98603	9724-01	Breakroom I		B	298	298	-		146	NNSA	O	N	Not Covered	0							
Y-12 Site Offic	28001	001	133790	9724-05	Transmitter		B	87	87	-		146	NNSA	O	N	Not Covered	0							
Y-12 Site Offic	28001	001	98613	9732-03	Painter Faci		B	2,447	2,447	-		146	NNSA	O	N	Not Covered	0							
Y-12 Site Offic	28001	001	98649	9770-06	Storm Sewe		B	129	129	-		146	NNSA	O	N	Not Covered	0							
Y-12 Site Offic	28001	001	98650	9770-07	EST Transp		B	108	108	-		146	NNSA	O	N	Not Covered	0							
Y-12 Site Offic	28001	001	141833	9770-10	CEM #1		B	106	106	-		146	NNSA	O	N	Not Covered	0							
Y-12 Site Offic	28001	001	141834	9770-11	CEM #2		B	106	106	-		146	NNSA	O	N	Not Covered	0							
Y-12 Site Offic	28001	002	98391	9207	Biology		B	256,660	-	-		146	SC	O	N	Not Covered	0							
Y-12 Site Offic	28001	002	98393	9210	Mammalian		B	64,737	-	-		146	SC	O	N	Not Covered	0							
Y-12 Site Offic	28001	002	200803	9207A	9207 Annex		B	8,108	-	-		146	SC	O	N	Not Covered	0							
Y-12 Site Offic	28001	002	98612	9732-02	Storage Buil		B	480	480	-		146	SC	O	N	Not Covered	0							
Y-12 Site Offic	28001	002	98624	9743-02	Pigeon Quar		B	2,371	-	-		146	SC	O	N	Not Covered	0							
Y-12 Site Offic	28001	002	98636	9767-06	Utilities		B	400	-	-		146	SC	O	N	Not Covered	0							
Y-12 Site Offic	28001	002	133775	9767-07	Utilities		B	393	-	-		146	SC	O	N	Not Covered	0							
Y-12 Site Offic	28001	003	98396	9213	Developmer		B	23,635	-	-		146	EM	O	N	Not Covered	0							
Y-12 Site Offic	28001	001	98363	9107	Office Build		B	11,632	11,632	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	98367	9111	Office-Engi		B	13,717	13,717	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	98368	9112	Office-Engi		B	11,804	11,804	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	204192	9124	Storage Buil		B	400	400	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	98745	9976	Utilities		B	2,797	2,797	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	201506	115 UNION VALI	Materials St		B	28,800	28,800	-		146	NNSA	C	N	Not Covered								
Y-12 Site Offic	28001	001	204614	1501-01	Old Elza Co		B	2,975	2,975	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	98125	1501-03	Switchyard (		B	294	294	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	133778	9201-01W	Assembly Fa		B	6,499	6,499	-		146	NNSA	O	N	Not Covered						In Progress	Portfolio Manager	
Y-12 Site Offic	28001	001	98444	9416-24	Utilities, 94		B	64	64	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	98446	9416-26	Fire Protecti		B	44	44	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	98447	9416-27	Fire Protecti		B	96	96	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	98448	9416-28	Fire Protecti		B	149	149	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	98451	9416-31	Fire Protecti		B	162	162	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	98452	9416-32	Water Treat		B	200	200	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	98453	9416-33	Fire Protecti		B	200	200	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	98455	9416-35	Water Treat		B	229	229	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	98456	9416-36	Sprinkler Va		B	36	36	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	98457	9416-37	Sprinkler Va		B	43	43	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	98458	9416-38	Sprinkler Va		B	36	36	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	133802	9416-39	Sprinkler Va		B	52	52	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	134111	9416-40	Sprinkler Va		B	52	52	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	98459	9416-41	Sprinkler Va		B	94	94	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	133780	9416-42	Sprinkler Va		B	57	57	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	134112	9416-43	Sprinkler Va		B	52	52	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	133781	9416-44	Sprinkler Va		B	75	75	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	133782	9416-45	Valve House		B	49	49	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	133783	9416-46	Valve House		B	54	54	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	98462	9417-08	Old Dechlor		B	144	144	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	98463	9417-09	Dechlorinati		B	100	100	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	203977	9417-10	System 1 De		B	78	78	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	203978	9417-11	System 2/3 I		B	108	108	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	133784	9418-10	Vacuum Pur		B	80	80	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	98473	9422-01	Monitoring		B	78	78	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	98474	9422-02	Monitoring		B	62	62	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	98475	9422-03	Monitoring		B	78	78	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	98476	9422-04	Chlorine Ch		B	63	63	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	98477	9422-05	Storage		B	62	62	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	98478	9422-06	Monitoring		B	62	62	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	140460	9422-07	Storage		B	62	62	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	140461	9422-08	Monitoring		B	62	62	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	140462	9422-09	Storage		B	62	62	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	98482	9422-10	Storm Drain		B	62	62	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	98483	9422-11	Storage		B	62	62	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	98484	9422-12	Monitoring		B	62	62	-		146	NNSA	O	N	Not Covered								

Site Name	Site	Area	Seq No	Prop ID	Prop Name	Excl Part	Prop Type	GSFT	EC Bldg Fac	EC Metered	Justification	EMS Site	Program	Ownership	Outgrant Ind	Covered or Not Covered?	Estimated Total Energy Used (10^6 x Btu/Yr)	Anticipated or Actual Energy Evaluation Date (MM/YY)	Anticipated or Actual Water Evaluation Date (MM/YY)	Anticipated or Actual Evaluation Type/Level	Retro/Re-Commissioning Assessment	Benchmarking Status	Benchmarking System	Additional Information
Y-12 Site Offic	28001	001	98485	9422-13	Storage		B	62	62	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	98486	9422-14	Monitoring		B	62	62	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	98487	9422-15	Storage		B	62	62	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	98488	9422-16	Storm Drain		B	64	64	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	98489	9422-17	Monitoring		B	64	64	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	98490	9422-18	Monitoring		B	120	120	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	134114	9422-20	Monitoring		B	64	64	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	133803	9423-02	Meter Build		B	224	224	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	133804	9424-01	Foam House		B	359	359	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	133805	9424-02	Foam House		B	357	357	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	133806	9424-03	Foam Bldg.		B	360	360	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	98496	9610-01	Flammable S		B	147	147	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	98498	9610-03	Flammable S		B	656	656	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	98701	9949-04	Post 25		B	61	61	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	98702	9949-05	Post 2 (Nort		B	28	28	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	98703	9949-07	Post 9		B	144	144	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	98704	9949-17	Post 3		B	80	80	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	98708	9949-29	Post 32		B	34	34	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	98306	9949-35	Guard Towe		B	49	49	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	138854	9949-36	Guard Towe		B	36	36	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	138846	9949-37	Guard Towe		B	121	121	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	98718	9949-45	Guard Towe		B	160	160	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	138850	9949-47	Guard Towe		B	49	49	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	138851	9949-48	Guard Towe		B	49	49	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	138852	9949-49	Guard Towe		B	49	49	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	134130	9949-50	Guard Towe		B	100	100	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	133821	9949-51	Guard Towe		B	49	49	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	98720	9949-52	Post 13		B	251	251	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	138849	9949-59	Guard Towe		B	49	49	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	98722	9949-61	Post 1		B	42	42	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	98723	9949-62	Post 1		B	105	105	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	98724	9949-63	Post 10		B	42	42	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	98725	9949-64	Post 10		B	105	105	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	98729	9949-68	Post 14		B	36	36	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	98730	9949-69	Post 14		B	104	104	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	98732	9949-71	Post 8		B	78	78	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	98733	9949-72	Post 8b		B	78	78	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	98734	9949-73	Post 8c		B	55	55	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	98735	9949-74	Guard Towe		B	110	110	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	98736	9949-75	Post 24		B	66	66	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	98737	9949-76	Guard Towe		B	110	110	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	98738	9949-77	Post 33		B	55	55	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	98739	9949-78	Post 33a		B	65	65	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	98740	9949-79	Post 17		B	66	66	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	98741	9949-80	Post 33b		B	65	65	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	140468	9949-83	Post 33 Brea		T	427	427	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	203617	9949-86	Post 23n		B	24	24	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	143442	9949-89	New Hope F		B	64	64	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	143443	9949-90	Security Sup		B	64	64	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	143444	9949-91	Checkpoint		B	64	64	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	143445	9949-92	Post 33 Ped		B	64	64	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	203619	9949-93	Post 8 Pedes		B	48	48	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	204191	9949-98	Portal 20		B	48	48	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	204479	9949-AE	Guard Porta		B	48	48	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	204480	9949-AG	Guard Porta		B	48	48	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	204396	9949-AN	Canine Facil		B	120	120	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	207259	9949-AP	Guard Towe		B	80	80	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	207260	9949-AR	Guard Towe		B	80	80	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	207261	9949-AS	Guard Towe		B	80	80	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	207262	9949-AT	Guard Towe		B	80	80	-		146	NNSA	O	N	Not Covered								

11 EISA Section 432 Compliance Path

Site Name	Site	Area	Seq No	Prop ID	Prop Name	Excl Part	Prop Type	GSFT	EC Bldg Fac	EC Metered	Justification	EMS Site	Program	Ownership	Outgrant Ind	Covered or Not Covered?	Estimated Total Energy Used (10^6 x Btu/Yr)	Anticipated or Actual Energy Evaluation Date (MM/YY)	Anticipated or Actual Water Evaluation Date (MM/YY)	Anticipated or Actual Evaluation Type/Level	Retro/Re-Commissioning Assessment	Benchmarking Status	Benchmarking System	Additional Information
Y-12 Site Offic	28001	001	207033	9949-AY	Canine Facil		B	120	120	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	207034	9949-AZ	Canine FAci		B	80	80	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	209449	9949-BG	Guard Supp		B	800	800	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	001	98743	9959-01	Storage		B	106	106	-		146	NNSA	O	N	Not Covered								
Y-12 Site Offic	28001	002	98647	9770-02	Radiation Sc		B	155	-	-		146	SC	O	N	Not Covered								
Y-12 Site Offic	28001	002	134132	9990-02	Perimeter A		B	64	64	-		146	SC	O	N	Not Covered								
Y-12 Site Offic	28001	003	136058	9616-11	Y702027 Ol		B	4,968	4,968	-		146	EM	O	N	Not Covered								
Y-12 Site Offic	28001	003	98519	9703-14	Post 3-Soutl		B	123	-	-		146	EM	O	N	Not Covered								
Y-12 Site Offic	28001	003	134121	9720-45	Liquid Orga		B	2,190	2,190	-		146	EM	O	N	Not Covered								
Y-12 Site Offic	28001	003	98578	9720-60	Solid Storag		B	13,780	13,780	-		146	EM	O	N	Not Covered								
Y-12 Site Offic	28001	003	125770	9809-01	Waste Stora		B	1,564	1,564	-		146	EM	O	N	Not Covered								
Y-12 Site Offic	28001	003	98688	9825-01	Waste Stora		B	1,608	1,608	-		146	EM	O	N	Not Covered								
Y-12 Site Offic	28001	003	98689	9825-02	Waste Stora		B	1,608	1,608	-		146	EM	O	N	Not Covered								
Y-12 Site Offic	28001	003	134129	9840-04	Drum Clean		B	312	312	-		146	EM	O	N	Not Covered								
Y-12 Site Offic	28001	003	133731	9983-CG	WTSD Sam		T	150	150	-		146	EM	O	N	Not Covered								
Y-12 Site Offic	28001	003	133738	9983-CQ	WTSD Sam		T	198	198	-		146	EM	O	N	Not Covered								
Y-12 Site Offic	28001	003	140515	9983-GU	EMWMF C		T	2,160	2,160	-		146	EM	O	N	Not Covered								
Y-12 Site Offic	28001	003	140516	9983-GV	EMWMF O		T	4,200	4,200	-		146	EM	O	N	Not Covered								
Y-12 Site Offic	28001	003	133796	9999-02	Motor Gene		B	266	-	-		146	EM	O	N	Not Covered								