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Site Sustainability Plan
Office of Legacy Management

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List of Abbreviations

AFV	alternative fuel vehicle
AS&T	Applied Science and Technology
B20	biodiesel
Btu	British thermal unit
CAWWT	Converted Advanced Wastewater Treatment
CEDR	Consolidated Energy Data Report
CO_2	carbon dioxide
CRESP	Consortium for Risk Evaluation with Stakeholder Participation
DOE	U.S. Department of Energy
E85	ethanol fuel blend
EISA	Energy Independence and Security Act of 2007
EM	Office of Environmental Management
EMS	Environmental Management System
EO	Executive Order
EPA	U.S. Environmental Protection Agency
EPAct	Energy Policy Act
EPCRA	Emergency Planning and Community Right-to-Know Act of 1986
EPEAT	Electronic Product Environmental Assessment Tool
FAST	Federal Acquisition Statistical Tool
FDCCI	Federal Data Center Consolidation Initiative
FEMP	Federal Energy Management Program
FIMS	Facility Information Management System
FY	fiscal year
GHG	greenhouse gas
GP	Guiding Principle
GSA	U.S. General Services Administration
GSF	gross square feet
HPSB	high-performance and sustainable building
HVAC	heating, ventilation, and air-conditioning
ILA	industrial, landscaping, and agricultural
kBtu/GSF	thousands of British thermal units per gross square foot
LEED	Leadership in Energy and Environmental Design

LM	Office of Legacy Management
LMBC	Legacy Management Business Center
LMS	Legacy Management Support
LTS&M	long-term surveillance and maintenance
MT	metric tons
$MTCO_2$	metric tons of carbon dioxide
NC	New Construction
NECPA	National Energy Conservation Policy Act
NEPA	National Environmental Policy Act
ODS	ozone-depleting substances
OSF	other structure and facility
P.L.	Public Law
PPOA	pollution prevention opportunity assessment
PPTRS	Pollution Prevention Tracking and Reporting System
PUE	power utilization effectiveness
PV	photovoltaic
REC	Renewable Energy Credit
ROI	return-on-investment
SF_6	sulfur hexafluoride
SHPO	state historic preservation office
SOARS	System Operation and Analysis at Remote Sites
SPO	Sustainability Performance Office
SSP	site sustainability plan
SSPP	Strategic Sustainability Performance Plan
STGWG	State and Tribal Government Working Group
T&D	transmission and distribution
U.S.C.	*United States Code*
USFWS	United States Fish and Wildlife Service
USGBC	U.S. Green Building Council
WM/P2	Waste Minimization/Pollution Prevention
WUI	water use intensity

I. Executive Summary

The U.S. Department of Energy (DOE) Office of Legacy Management (LM) is committed to excellence in environmental stewardship. LM's mission is to manage post-closure responsibilities and ensure the future protection of human health and the environment. Currently, LM is responsible for monitoring, testing, inspecting, and maintaining approximately 65,196 acres of land at 87 sites located in 28 states and Puerto Rico, including sites where records and stakeholder support are provided. LM's Environmental Management System (EMS) is a comprehensive method for incorporating life-cycle environmental considerations into all aspects of the LM mission. LM's EMS is a joint program between LM and its prime contractor for the Legacy Management Support (LMS) contract. The EMS helps LM use its finite resources wisely, minimize wastes and adverse environmental impacts, and comply with the laws, regulations, DOE requirements, and other applicable requirements that protect the environment, public health, and resources. The EMS enables LM to implement sustainable environmental stewardship practices that enhance the protection of air, water, land, and other natural and cultural resources affected by DOE operations. Implementing the EMS is integral to LM's mission and to achieving excellence in environmental stewardship.

The purpose of this Site Sustainability Plan is to outline the strategies for managing and implementing various energy-related activities at LM. Unless stated otherwise, all data is reported in fiscal years. This plan reflects progress made toward, and strategies in place for, accomplishing the goals and requirements established by:

- Executive Order (EO) 13514, *Federal Leadership in Environmental, Energy, and Economic Performance*, October 5, 2009.
- EO 13423, *Strengthening Federal Environmental, Energy, and Transportation Management*, January 24, 2007.
- DOE Order 430.1B Chg. 2, *Real Property and Asset Management*, April 25, 2011.
- DOE Order 436.1, *Departmental Sustainability*, May 2, 2011.
- Energy Independence and Security Act of 2007 (EISA), Section 432 (Title 42, *United States Code* [U.S.C.], Section 8253[f]).
- Energy Policy Act of 2005 (EPAct 2005), Public Law (P.L.) 109-58.
- Energy Policy Act of 1992 (EPAct 1992), P.L. 102-486.
- National Energy Conservation Policy Act of 1978 (NECPA), P.L. 95-619.
- DOE Strategic Sustainability Performance Plan (SSPP), October 2011.
- DOE Strategic Sustainability Performance Plan, September 2010.
- Secretary of Energy Dr. Steven Chu, *Installation of Cool Roofs on Department of Energy Buildings, Memorandum for Heads of Departmental Elements*, June 1, 2010.
- Secretary of Energy Dr. Steven Chu, *Management of Fleet Inventory, Memorandum for Under Secretaries, Office of Management (Headquarters Fleet), PMAs, and Headquarters Fleet Managers, Sustainability Performance Office*, January 27, 2011.

- DOE Policy 450.4A, *Integrated Safety Management Policy,* April 25, 2011.
- LM Policy 450.9, *Environment, Safety, and Health Policy*, November 29, 2011.

LM, with its comprehensive approach to fulfilling EO 13514, will advance the DOE sustainability mission with a diverse approach and a concentrated effort toward the goals of 2012 and beyond.

LM's multipronged method of achieving these goals will include training and education to foster behavioral change in the office environment, infrastructure improvements, and an onsite renewable-power-generating project. Priority areas include purchased electricity, fugitive emissions, and fleet vehicles.

To complete the deliverables for these priority areas, LM will work with its EMS team, the EMS core team and EMS program teams, and the LM operations and maintenance staff. In addition, LM will enlist the technical expertise of its scientists and engineers to enable LM to operate sustainably. This fostering of sustainable operations will include continued emphasis on behavior change.

Behavior change is a challenging but potentially rewarding area for sustainability programs. As opposed to physical facility upgrades or technology pursued by functional teams, behavior changes are low- or no-cost actions that employees can carry out themselves. Often, the most difficult step in the change process is the realization that change is needed. Employees need to realize that even though they don't personally receive any savings or aren't penalized for non-participation, their actions can be instrumental in achieving sustainability goals. LM will continue to train, communicate with, and engage employees so that a continued shift in the cultural perception is realized.

The EMS team is jointly led by two EMS sustainability coordinators, one from LM and one from the LMS contractor. They are the points-of-contact for the EMS. Responsibilities of the EMS sustainability coordinators include overseeing the development and implementation of the joint EMS, actively participating in the EMS core team, reporting progress to management, conducting management reviews, facilitating management involvement in the EMS, and generating end-of-year reporting.

The EMS core team includes representatives from applicable programs and projects from LM and LMS contractor management. Their responsibilities include (1) overseeing the development and implementation of the EMS sustainable program teams related to EO 13514, EO 13423, DOE Order 436.1, DOE Order 430.1B Chg. 2, and the DOE SSPP; (2) approving EMS goals; and (3) functioning as the steering committee for management-level decisions.

In 2011, the LM EMS team implemented the new EO 13514 and 2010 SSPP requirements as well as EO 13423. LM also began implementing the new DOE Order 436.1, which replaced DOE Order 430.2B, *Departmental Energy, Renewable Energy and Transportation Management*, and DOE Order 450.1A, *Environmental Protection Program.* Progress on activities related to environmental, energy, and transportation management is evaluated and

reported quarterly. The EMS team is divided into the following nine sustainability program teams and two ancillary teams:

- Electronics Stewardship
- Energy Efficiency and Greenhouse Gas (GHG) Reduction
- Land Stewardship
- Media (ancillary team)
- Renewable Energy
- Sustainable Acquisition
- Sustainable Buildings (including cool roofs and regional planning)
- Training (ancillary team)
- Vehicle and Fuel Management
- Waste Minimization and Pollution Prevention
- Water Conservation

Each EMS program team consists of a team lead, an LM advocate, an LMS contractor senior management advocate, and several other knowledgeable employees. Each program team is responsible for managing and implementing its individual program.

The EMS team's performance assurance report encompasses the nine program teams and compares the status of their activities against the goals that have been established in accordance with the DOE SSPP, overall LM aspects management, and site-specific targets. In 2012, an internal goal is to combine some team meetings to increase efficiency and reduce crossover through combined expertise. This would also reduce the number of meetings and provide a larger forum to resolve complex issues.

The EMS team meets regularly and provides critical input to senior management every 3 months. The input helps establish direction, develop strategies to implement the sustainability programs, provide status updates, and facilitate the successful execution of the sustainability programs across LM. LM will use this Site Sustainability Plan to ensure that the energy management provisions outlined in previously identified requirements are met.

See Table 1 for a summary of 2011 performance and long-term projected performance to attain DOE 2020 goals. See Attachment A for a copy of LM's Environment, Safety, and Health policy.

LM will meet the GHG emission reduction goal of 28 percent, based on LM's known expected decrease in the GHG emissions as a result of reduced energy use. LM has a vision to reduce energy intensity by more than 30 percent by 2015 in support of the GHG reduction requirements.

Table 1. DOE Goal Summary Table

SSPP Goal #	DOE Goal	2011 Site Performance Status	Projected Performance & Contribution	Risk of Non-attainment
1.1	28 percent Scope 1 & 2 GHG reduction by 2020 from a 2008 baseline.	27.4 percent reduction to date.	A 28 percent reduction is planned by 2015.	Low.
1.2	30 percent energy intensity reduction by 2015, from a 2003 baseline.	3.3 percent increase to date. The increase is due to the change in classification of the Piqua, Ohio, Decommissioned Reactor Site buildings to an Other Structure and Facility (OSF). The reclassification reduced LM's building area by 37.6 percent from 2010 to 2011. An energy audit was conducted in 2011 at the Fernald, Ohio, Site.	A 30 percent reduction is planned by 2015.	High. The 37.6 percent reduction in LM's building area will make the goal of 30 percent reduction in energy intensity by 2015 very difficult to achieve.
1.3	Individual buildings or processes metering for 90 percent of electricity (by Oct 1, 2012); for 90 percent of steam, natural gas, and chilled water (by October 1, 2015).	67 percent electrical metering to date. 100 percent natural gas metering to date. No steam or chilled water use by LM.	LM will achieve 90 percent electrical metering by October 1, 2012. LM will achieve 100 percent natural gas metering by 10/1/15. LM will continue installing advanced meters for electricity and standard meters for natural gas.	Low.
1.4	Cool roofs, unless uneconomical, for roof replacements unless project already CD-2 approval. New roofs must have thermal resistance of at least R-30.	One building with a cool roof. In an effort to capture more specific cool-roof data, cool-roof assessments were completed on all existing buildings.	All future new buildings will have cool roofs, if economically feasible. LM will perform a life-cycle cost analysis of cool roofs and identify LM-owned and LM-leased buildings on which it may be economically feasible to install a cool-roof coating, rather than maintaining the roofs in their existing condition.	Low.

Table 1 (continued). DOE Goal Summary Table

SSPP Goal #	DOE Goal	2011 Site Performance Status	Projected Performance & Contribution	Risk of Non-attainment
1.5	7.5 percent of a site's annual electricity consumption from renewable sources by 2013 and thereafter (5 percent 2010 – 2012).	EPAct 2005 goal met. 2.1 percent of annual electricity consumption was from onsite renewables, and 6.8 percent was from purchased renewable energy credits. Note: The 2.1 percent renewable electricity was calculated by dividing the energy generated (shown in Consolidated Energy Data Report [CEDR] Tab 3.3) by energy purchased (shown in Tab 3.2 of the CEDR spreadsheet).	Additional funding would be required to meet this goal using onsite generation. LM will continue green energy purchases of electricity at the Fernald Preserve, Ohio, Site; the Monticello, Utah, Disposal and Processing Sites; and the Grand Junction, Colorado, Site. Additional green energy will be purchased at the Fernald Preserve to achieve the 7.5 percent goal required by EPAct 2005.	Low.
	Every site to have at least one onsite renewable energy generating system by 2010.	Met.	LM reports as one site and has more than one onsite renewable-energy-generating system. LM will continue to pursue onsite projects where feasible.	N/A
1.6	10 percent annual increase in fleet alternative fuel consumption by 2015 relative to a 2005 baseline.	Met.	The 2015 goal has been met. However, LM will continue acquiring alternative fuel vehicles (AFVs) and hybrid vehicles and using E85 (ethanol fuel blend) fuel.	N/A

Table 1 (continued). DOE Goal Summary Table

SSPP Goal #	DOE Goal	2011 Site Performance Status	Projected Performance & Contribution	Risk of Non-attainment
1.7	2 percent annual reduction in fleet petroleum consumption by 2020 relative to a 2005 baseline.	Did not meet.	It will be a major challenge for LM to decrease fleet petroleum consumption by 2 percent compounded annually through 2020, as compared to the 2005 baseline. In 2005, LM had significantly fewer sites and vehicles than at the end of 2011 and alternative fuels were not in use at that time. Through LM's mission, the number of sites will continue to increase. In 2005 we used 30,291 gallons of conventional petroleum fuels at 67 sites, with an average of 452 gallons per site. In 2011 we used 31,703 gallons of conventional fuel at 87 sites, with an average of 364 gallons per site. Alternative fuels were introduced in 2007 and by 2011 we used a total of 3,060 gallons of alternative fuels including E85. By using E85 fuel and hybrid vehicles we have been decreasing our conventional petroleum fuel consumption by 13% per year over a 6 year period.	High.
1.8	75 percent of light-duty vehicle purchases must consist of AFVs by 2015.	Met.	The strategy for replacing 100 percent of light-duty vehicles with AFVs, when it is time to retire them from the fleet, exceeds the requirement of 75 percent AFV acquisition. In 2011, all seven light-duty vehicle acquisitions were AFV E85-fuel vehicles.	Low.

Table 1 (continued). DOE Goal Summary Table

SSPP Goal #	DOE Goal	2011 Site Performance Status	Projected Performance & Contribution	Risk of Non-attainment
1.9	Reduce fleet inventory by 35 percent within the next 3 years relative to a 2005 baseline.	Scheduled not to meet.	On 1/27/2011, Secretary of Energy Dr. Steven Chu proposed that his agency reduce vehicle fleets by 35 percent over 3 years (2012, 2013, and 2014) based on 2005 numbers "without sacrificing either critical mission elements or our commitment to operating in a safe, secure and environmentally sound manner." Since LM's mission is expanding, we will have difficulty meeting this goal. This normalization of data based on a 77% increase in the number of sites verses holding steady on the number of vehicles over a 6 year period.	High. Based on discussions with DOE Headquarters–Fleet, the impact of LM's inability to reduce its inventory will be more than compensated for at the "corporate level" by the reductions in vehicles by the DOE Office of Environmental Management (EM) as EM transitions sites to LM.
	Training and outreach. DOE facility energy managers to be Certified Energy Managers by September 2012.	Identified personnel to pursue becoming Certified Energy Managers.	LM will continue to train additional personnel and create an organizational structure to improve and promote energy efficiency.	Low.
	Sulfur hexafluoride (SF_6) capture program by September 2012. SF_6 is primarily used to insulate electrical equipment such as circuit breakers, transmission lines, transformers and substations. Atmospheric emissions occur during equipment maintenance or from leaks.	LM did not have any SF_6 when baseline was established. LM continues to not have any SF_6 since LM does not manage the maintenance of major electrical equipment such as transmission lines, transformers, or substations that require SF_6 at any LM sites.	LM will check any electrical maintenance contracts to ensure that companies contracted to perform electrical work have a process in place for collecting SF_6 and checking for leaks of SF_6 should LM require that service in the future.	N/A
2.1	13 percent Scope 3 GHG reduction by 2020 from a 2008 baseline.	In 2010 Scope 3 GHGs were reduced by 11.5 percent, while in 2011 a reduction of 8.5 percent was calculated based on the information provided in Tab 3.2 of the CEDR spreadsheet. These reductions exceed the expected targets for both years.	LM will encourage employees to carpool to work, to participate in alternative work-location agreements, and to utilize more video and teleconferencing in lieu of travelling via air.	Low. Since the number of employees is steadily increasing across the country, and since the number of factors considered under Scope 3 is increasing, LM may not be able to sustain this level of reduction.

Table 1 (continued). DOE Goal Summary Table

SSPP Goal #	DOE Goal	2011 Site Performance Status	Projected Performance & Contribution	Risk of Non-attainment
3.1	15 percent of existing buildings larger than 5,000 gross square feet (GSF) to be compliant with the five High-Performance and Sustainable Building (HPSB) Guiding Principles (GP) by 2015.	12.5 percent of existing buildings comply with the GPs. All existing LM-owned and LM-leased buildings have been assessed.	LM is negotiating with the lessors of three leased buildings to pursue building upgrades which would meet the GPs by 2015.	Low.
3.2	All new construction, major renovations, and alterations of buildings greater than 5,000 GSF must comply with the GPs and where the work exceeds $5 million, each are Leadership in Energy and Environmental Design-New Construction (LEED-NC) Gold certification or equivalent.	One new building met or exceeded the requirement for a LEED-NC Gold certification.	All new buildings and major renovations will meet or exceed these requirements.	Low.
4.1	26 percent water intensity reduction by 2020 from a 2007 baseline.	An 88.2 percent reduction in water intensity was achieved in 2011, which exceeds the required minimum reduction of 8 percent by the end of 2011. Water audits were conducted in 2011 at the Grand Junction, Colorado, Disposal Site and the Weldon Spring, Missouri, Site.	LM will continue to track use and performance, and will plan projects to reduce water use intensity through improved use practices and water efficient products. Water audits will continue to be performed to assess water use, and to identify additional water reduction and reuse opportunities.	Low.
4.2	20 percent water consumption reduction of non-potable industrial, landscaping, and agricultural (ILA) water by 2020 from a 2010 baseline.	A 9.39 percent reduction was achieved in 2011, which exceeds the required minimum ILA reduction of 2 percent by 2011 year end. Two efficiency improvements were implemented at the Tuba City, Arizona, Disposal Site in 2011.	LM will continue to track use and performance, and will plan projects to reduce industrial and landscaping water use through improved use practices and water efficient products. Water audits will continue to be performed to assess water use, and to identify additional water reduction and reuse opportunities.	Low.

Table 1 (continued). DOE Goal Summary Table

SSPP Goal #	DOE Goal	2011 Site Performance Status	Projected Performance & Contribution	Risk of Non-attainment
5.1	Divert at least 50 percent of non-hazardous solid waste, excluding construction and demolition debris by 2015.	LM recycled 440,416 pounds of material by the end of 2011. This amount was a diversion of 66.5 percent of solid waste.	The DOE Office of Health, Safety, and Security has modified the definition of debris to include bulk material from road, bridge, and building construction and demolition. It is unclear how to factor in remediation waste as opposed to sanitary waste. This may reduce solid waste diversion and increase construction debris diversion in 2012.	Low to medium.
5.2	Divert at least 50 percent of construction and demolition debris by 2015.	LM diverted 77.3 percent of construction and demolition materials and debris by the end of 2011.	(See comment above.)	Low.
6.1	Procurements meet sustainability requirements and include sustainable acquisition clause (95 percent each year).	100 percent of products and services purchased met sustainability requirements, excluding credit card purchases. All solicitations and subcontracts/purchase orders issued contained the sustainable acquisition clause.	All new purchases of products and services will meet sustainability requirements if those products and services are listed on the U.S. Environmental Protection Agency and U.S. Department of Agriculture sustainable acquisitions lists. All new solicitations and subcontracts/purchase orders will contain the sustainable acquisition clause.	Low.
7.1	All data centers are metered to measure a monthly power utilization effectiveness (PUE); 100 percent by 2015.	50 percent of LM data centers are currently metered.	The remaining data center is scheduled to be metered in fiscal year (FY) 2012.	Low.
7.2	All data centers should have a maximum annual weighted average PUE of 1.4 by 2015.	Separate metering of data processing equipment in the Legacy Management Business Center data center is installed so that LM can accurately measure and improve its PUE.	In 2012, LM will extend separate metering to the Grand Junction, Colorado, Site office data center to measure and improve PUE at that location as well.	Low.
7.3	Electronics Stewardship – 100 percent of eligible personal computers, laptops, and monitors with power management actively implemented and in use by 2012.	All desktop and laptop systems in LM are imaged with Power Management settings configured per the government standard. The controls for power management on all LM systems are “locked down,” which prohibits users from changing these controls.	LM will roll out Windows 7 in 2012, with the appropriate Power Management controls in place and locked down.	Low.

II. Performance Review and Plan Narrative

1.1 Scope 1 and 2 Greenhouse Gas (GHG) Emission Reduction

The U.S. Department of Energy (DOE) 2011 SSPP committed DOE to reduce its GHG Scope 1 and 2 emissions by 28 percent by 2020 as compared to a 2008 baseline.

On the basis of utility invoices, LM produced about 55.6 percent less Scope 1 and 27.1 percent less Scope 2 GHG emissions in 2011 than in 2008. On the basis of metric tons of GHG emissions, combined Scope 1 and 2 emissions were 27.4 percent less in 2011 than in 2008. Since LM reports all sites collectively, one zip code has been used for the reporting. This year, LM evaluated which zip code is most reflective of the electricity use, as a whole. Based on this evaluation, the primary reporting zip code was changed from 81503 to 45030. The change in zip code has caused a corresponding change in the GHG data for Scope 2 and Scope 3 transmission and distribution (T&D) losses, for both the baseline data (2008) and the current data. Data trends reported in the site sustainability plan (SSP) are based on the revised numbers calculated by the Consolidated Energy Data Report (CEDR) after the zip code change. The Scope 1 & 2 performance is reported in Tab 3.2 of the CEDR spreadsheet. LM is ahead of schedule to meet the 28 percent reduction by 2020.

In order to achieve this goal, LM will aggressively proceed with projects, operational improvements, and additional actions to meet the GHG requirements. Doing so will involve determining and obtaining funding sources, changing workplace culture, and having LM management emphasize the importance of GHG reduction.

1.1.1 Performance Status

Purchased energy use decreased approximately 27.4 percent from 2008 to 2011 on the basis of 2011 data shown in Tab 3.2 of the CEDR spreadsheet (energy use is nearly proportional to GHG production.)

By increasing the number of flex-fuel vehicles and operating them on cleaner-burning fuels, such as ethanol fuel blend (E85) fuel, LM increased the use of alternative fuel from 0 gallons in the baseline year of 2005 to 3,060 gallons in 2011, thus reducing GHG emissions from vehicles.

LM's System Operation and Analysis at Remote Sites (SOARS) collects data from 16 sites in nine states and transmits the information to servers in Grand Junction, Colorado. Because of SOARS utilization, travel to LM's remote sites has been greatly reduced, and the operation of active remediation systems has been enhanced. Cutting back on travel and detecting operating problems early has conserved energy, helped protect natural resources, and reduced GHG emissions.

1.1.2 Projected Performance

The following performance objectives are expected to take place during the next fiscal year.

- Train existing and new staff members to foster energy efficiency behavior changes in the office environment.

- Install onsite renewable-power-generating projects.
- Continue to make the purchase of Renewable Energy Credits (RECs) a priority.
- Reduce fleet emissions by following better vehicle use guidelines and acquiring additional hybrid and flex-fuel vehicles.
- Pursue the use of biofuels to fuel alternative fuel vehicles (AFVs) and flex-fuel vehicles whenever biofuels are available.
- Complete the Rocky Flats Surface Water Configuration Dam Breach Project at the Rocky Flats, Colorado, Site. Breaching the dams will reduce GHG emissions by eliminating dam maintenance requirements that make vehicle use necessary.
- Continue to expand SOARS, when warranted, to reduce vehicle mileage, reduce GHG emissions, and conserve natural resources.
- Collect and distribute building electrical metering data through SOARS to allow building staff and managers to monitor energy use.

1.2 Energy Intensity Reduction

The National Energy Conservation Policy Act (NECPA), as amended by the Energy Independence and Security Act (EISA) in 2007, requires DOE to reduce its energy intensity by 30 percent by 2015 from a 2003 baseline.

Additionally, the 2010 Strategic Sustainability Performance Plan (SSPP) committed DOE to the following:

- By September 2012, DOE will require the energy manager of every DOE site to attain a Certified Energy Manager qualification. The energy manager position on all sites with greater than 5 million gross square feet (GSF) of buildings shall be a full-time position focused on water, energy, and GHG management.
- By November 2010, DOE will include energy conservation and recycling in employee orientation programs.

1.2.1 Performance Status

LM's current energy intensity, based on its 2011 data entered in Tab 3.2 of the CEDR spreadsheet, is 266 thousand British thermal units per gross square foot (kBtu/GSF). This figure is a 3.3 percent increase as compared to the 2003 baseline of 257 kBtu/GSF, as shown below in Table 2. The historic data utilized for the baseline may be incomplete and needs to be reevaluated. Since the baseline data might not be reflective of true energy intensity at that time, the percent change might not be reflective of the actual trend. Additionally, the annual increase might not be fully attributable to increased intensity, but rather more attributable to a reduction in the building GSF for the LM program. Two structures at the Piqua, Ohio, Decommissioned Reactor Site were reclassified from a building to an Other Structure and Facility (OSF). The reclassification decreased LM's building area by 43,168 GSF, or 37.6 percent, during 2011. Traditionally, the DOE Federal Energy Management Program (FEMP) and the DOE Sustainability Performance Office (SPO) have not permitted correlating changes to the baseline GSF. Thus, the 30 percent intensity reduction goal by 2015 will be very difficult to achieve. Performance related to these goals is reported in the Legacy Management Support (LMS) contractor *Quarterly Performance Assurance Report* and in Tab 3.2 of the CEDR spreadsheet.

LM excludes several buildings from the energy intensity goal. These buildings are fully serviced leased spaces, meaning that the lessor pays the utilities. Attachment B includes the final Facility Information Management System (FIMS) excluded building list and certification letter.

LM has two data centers, one at the Grand Junction, Colorado, Site office and one at the Legacy Management Business Center (LMBC) in Morgantown, West Virginia. Each of the data centers presents a unique set of challenges. LM's participation in the Federal Data Center Consolidation Initiative (FDCCI) has produced several initiatives for greater efficiency in the areas of cooling and general power consumption.

In 2011 the following activities contributed to the effort to reduce energy intensity:

Best Management Practices

- LM continues to use best management practices for energy reduction at several locations, such as setback heating, ventilation, and air-conditioning (HVAC) controls.
- LM developed policies to revise the methods for computer backups and instituted operating-system updates to help reduce electrical energy use.
- The LMS contractor has implemented employee incentive programs to reward exceptional individual and team performance in increasing energy efficiency and water conservation, deploying renewable energy, minimizing waste, reducing utility costs, and reducing GHG emissions.
- LM strengthened the Energy Efficiency and GHG Reduction Program by highlighting it during the first quarter. An article was included in the fall edition of the *ECHOutlook* newsletter addressing energy conservation, and a poster was distributed to help highlight the program. *ECHOutlook* is an internal quarterly newsletter produced by Environmental Management System (EMS) team members to provide current information and ongoing awareness for environmental, safety, and health issues.
- Earth Day outreach programs were implemented to motivate employees to become more efficient in their use of energy and water, to use green products and services whenever possible, and to minimize waste.
- Select managers have results-based energy management as a component of their performance evaluations.

Benchmarking

- Several personnel attended Energy Star Portfolio Manager training in preparation for benchmarking LM utilities in Energy Star Portfolio Manager.
- The LMS contractor entered data for LM facilities into Energy Star Portfolio Manager in preparation for benchmarking facilities in Energy Star Portfolio Manager.

Space Management

- The Hillshire data center located at the Yucca Mountain Office Las Vegas, Nevada, Site was consolidated with the LMBC data center in Morgantown, West Virginia, in 2011. This consolidation also served to reduce energy consumption.

- There was further server reduction via consolidation to virtual machines, continuing the effort that started in 2009.
- The Mound, Ohio, Site office staff was consolidated into the Delta office building at the Fernald, Ohio, Site to reduce electricity consumption associated with operating an additional building.

Audits

- LM conducted an energy audit of the Fernald, Ohio, Site in 2011.
- Audited sites are rotated to ensure that 100 percent of the sites are audited every 4 years to meet the requirements of EISA Section 432.

Certified Energy Managers/Training

- Staff members have been identified to pursue training as Certified Energy Managers.
- Training on energy conservation and recycling are already embedded in the annual EMS training provided to LM and contractor employees. The LMS contractor has included this information in employees' orientation programs. See Tab 3.2 of the CEDR spreadsheet for 2011 training information.
- Select personnel at each site were given training specific to energy and water management programs and will dedicate all, or a substantial portion, of their time to the effective implementation of energy and water management plans.

Deferred Maintenance

- No deferred maintenance was identified.

Cost Savings Reinvestment

- Cost savings from the energy conservation measures are being reinvested at the sites where the savings occurred.

Table 2. LM Energy Consumption

	DOE Goal 2015 (Btu/GSF)	2003[a] (Btu/GSF)	2008 (Btu/GSF)	2009 (Btu/GSF)	2010 (Btu/GSF)	2011[b] (Btu/GSF)	Energy Reduction (percent)
Energy with RECs	178,208	257,137	636,748	236,202	204,311	266,135	-3.3
		2003		2011			
Gross Square Feet		3,215,306[c]		71,629[d]			

Notes:
All values above denote the site-delivered energy, not the source energy.
[a] LM became a DOE office in December 2003. As such, the validity of the 2003 baseline data within DOE (historical ownership and energy data) needs to be reviewed. Since the baseline data might not be reflective of true energy intensity at that time, the percent change might not be reflective of the actual trend.
[b] The gross square footage used to determine Energy Intensity values differs from the gross square footage provided in the FIMS snapshot, because energy use does not occur at all sites. Therefore, the Energy Intensity values estimated in the CEDR and the intensity calculated by LM for the SSP are conflicting.
[c] This baseline number has fluctuated over the past few years due to Facility Information Management System reclassifications, appropriate inclusion of buildings in baseline, and corrections for true building gross square footage.
[d] This number is a decrease of 43,168 square feet from 2010 due to the reclassification of the Piqua, Ohio, Decommissioned Reactor Site buildings to an Other Structure and Facility. See Attachment C for a listing of LM's gross square footage.

Abbreviations:
Btu = British thermal unit
GSF = gross square feet
RECs = Renewable Energy Credits

1.2.2 Projected Performance

LM plans to implement energy efficiency projects through 2015 that may significantly reduce energy intensity as compared to the 2003 baseline. LM selects projects primarily by evaluating life-cycle costs. The projects' initial goals include having a payback time that is less than or equal to 25 years. Tab 3.5 of the CEDR spreadsheet lists projects that, if implemented, have the potential to reduce energy use by more than 30 percent by the end of 2015. Energy conservation efforts are focused on the two largest energy consumers: the Fernald, Ohio, Site and the Tuba City, Arizona, Disposal Site. These groundwater remediation sites offer the most opportunity for energy conservation.

LM plans to do the following:

Best Management Practices

- Reduce energy use at the Fernald, Ohio, Site by shutting down well pumps as the groundwater remediation goals are met and minimizing the operating time of the Converted Advanced Wastewater Treatment (CAWWT) process as the need for groundwater treatment declines.
- Monitor electricity use at the Fernald, Ohio, Site's extraction well #4 to measure the savings from the installation of a variable-speed drive on the pump motor. As cost savings become available, install variable-speed drives on other extraction well pump motors.
- Reduce energy use by updating the water treatment technology at the Tuba City, Arizona, Disposal Site to reduce the amount of energy used to treat groundwater, if funding is obtained.

- Design any new facilities and major renovations that cost more than $5 million to meet U.S. Green Building Council (USGBC) Leadership in Energy and Environmental Design (LEED) Gold certification.
- Design any new facilities and major renovations greater than 5,000 GSF that cost $5 million or less to meet the High-Performance and Sustainable Buildings (HPSB) Guiding Principles (GPs).
- Continue to write results-based energy management requirements into select managers' performance evaluations.
- Continue to initiate and expand outreach and incentive programs to motivate employees to minimize waste, use energy and water more efficiently, and use green products and services.
- Continue to assess energy reduction as a factor in the decision process for maintenance and repairs.

Benchmarking

- Benchmark LM facilities in Energy Star Portfolio Manager.

Audits

- Perform two energy audits in 2012. The proposed locations are (1) the Shiprock, New Mexico, Disposal Site and (2) the Tuba City, Arizona, Disposal Site.
- Continue to perform energy audits of goal subject sites to meet the requirements of EISA Section 432. Audited sites will be rotated to ensure that 100 percent of the sites are audited every 4 years.

Certified Energy Managers/Training

- Have the selected personnel pursue training as Certified Energy Managers.
- Have new employees take the annual EMS awareness training, which includes information on energy conservation and recycling, as part of their orientation within 3 months of starting. LM and contractor employees will continue taking annual EMS training.
- Continue to train additional staff members. Staff members will continue to attend GovEnergy and other workshops or symposiums to enhance their current knowledge base.

Deferred Maintenance

- Remove a restriction in a discharge line at the Fernald, Ohio, Site if funding is obtained. Removing the restriction could reduce electricity used for pumping groundwater.

1.3 Metering

NECPA, as amended by Energy Policy Act of 2005 (EPAct 2005), requires installation of electrical meters by 2012 on all individual buildings with the use of advanced electrical meters to the maximum extent practicable. EISA 2007 added a requirement that all appropriate buildings must also be metered for steam and natural gas by 2016.

The 2011 SSPP requires installation of electricity meters on individual buildings or processes so that these individually metered buildings and processes account for at least 75 percent of a site's total electricity use by October 1, 2011, working toward a goal of 90 percent by October 1, 2012.

The 2011 SSPP requires installation of natural gas, steam and chilled water meters on individual buildings or processes so that these individually metered buildings and processes account for at least 10 percent of a site's utility use by October 1, 2011, working toward a goal of 90 percent by October 1, 2015.

To the maximum extent practical, LM will install metering devices (either advanced or standard) in each building, in other facilities, and on site grounds to measure electricity and natural gas use. LM does not use steam or chilled water, so plans to meter these utilities are not required. While metering of potable water is not required, LM will continue to meter potable water as a best management practice, where cost effective.

1.3.1 Performance Status

LM prepared and issued a metering plan to achieve sustainability goals. In addition, LM identified budgeting needs for 2011, as well as 2012 through 2017. LM uses metering information for benchmarking, reporting, system diagnostics and maintenance, and measurement and verification of savings. Performance related to these goals is reported in the LMS contractor *Quarterly Performance Assurance Report*, in the FIMS database, and in Tab 3.2 of the CEDR spreadsheet.

Electrical

- Advanced electrical metering has been installed at two sites:
  - The Fernald Preserve Visitors Center was fitted individually.
  - An advanced meter was installed on the breaker panel at the Tuba City, Arizona, Disposal Site. However, the panel feeds two buildings.
- An advanced meter was installed at the Fernald, Ohio, Site's CAWWT facility (FIMS OSF).
- A standard electrical meter is installed at the Piqua, Ohio, Decommissioned Reactor Site.

Water

- Standard water metering has been installed at all goal subject sites, except at the Old Rifle, Colorado, Processing Site, where LM determined that installing a meter would neither be cost-effective nor appreciably improve the collection of monitoring data. Only very small quantities of water are used at the Old Rifle, Colorado, Processing Site, where water is brought to the site by a tankard truck of known volume.

Gas

- A standard gas meter exists at the Fernald, Ohio, Site's CAWWT facility, where the one process that uses natural gas takes place. Natural gas is not used for any buildings.

Steam and Chilled Water

- LM has no steam or chilled water systems, so metering is not applicable for LM.

1.3.2 Projected Performance

Electrical

Three meters remain to be installed in buildings. Installation is scheduled for 2012, which will meet the advanced electrical metering requirement.

- In 2012, two advanced electrical meters are scheduled to be installed at the Weldon Spring, Missouri, Site.
- Also in 2012, a second advanced electrical meter will be installed at the Tuba City, Arizona, Disposal Site so that both buildings there can be monitored separately.

Water

- The installation of additional standard water meters is not currently planned at any LM sites. Additional standard meters will be installed in the future if additional meters would add value to LM's water conservation program.

Gas

- No additional actions are planned.

Steam and Chilled Water

- LM has no steam or chilled water systems, so metering is not applicable.

1.4 Cool Roofs

LM will enhance the overall building thermal performance for all new construction and roof replacements, as warranted, by using cool roofs. The cool roofs shall have a thermal resistance of at least R-30, consistent with Secretary of Energy Dr. Steven Chu's memorandum of June 1, 2010.

1.4.1 Performance Status

LM installed a cool roof on the Fernald Preserve Visitors Center in 2008. LM is using the FIMS database to track cool-roof types and total cool-roof GSF.

In 2011, a cool-roof cost analysis was performed for all LM-owned and LM-leased buildings to determine the economic feasibility of cool roofs. Engineering standards for the roofs were based on the DOE-issued *Guidelines for Selecting Cool Roofs*, July 2010, vol. 1.2, which identifies cool-roof specifications for facility improvements and the terms and conditions for new construction.

1.4.2 Projected Performance

In the future, LM will strive to make all new roofs and replacement decisions in compliance with Secretary Chu's goal and the economic feasibility.

Beginning in 2012, in an effort to capture data that are more specific and more accurate, cool-roof assessments will be completed on all existing buildings. These assessments will be coordinated with the scheduling of Facility Condition Assessments. The data collected will include the slope and gross square footage of the existing roof, the type of roof structure, roofing material and insulation specifications, and the age of the building and dates of any replacements or repairs. Information regarding deficiencies, deferred maintenance, or any other pertinent history relating to life-cycle cost analysis will also be recorded during these assessments.

1.5 Renewable Energy

The 2011 SSPP required DOE to have 7.5 percent of its electricity consumption from renewable energy sources by 2013, in accordance with EPAct 2005.

1.5.1 Performance Status

Current renewable energy (electricity) production onsite in 2011 was 116 megawatt hours, which is 2.1 percent of LM's electricity purchases of 5,459 megawatt hours. The existing renewable energy projects are shown in Tab 3.3 of the CEDR spreadsheet. The regulations allow LM to earn double credit for onsite renewable energy generated on either federal or tribal land. Additionally, LM purchased RECs to account for another 6.8 percent of energy use. Therefore, LM's total renewable power percentage for 2011 was 11.0 percent, (2 x 2.1 percent from onsite renewables plus 6.8 percent from purchased RECs). Performance related to this goal is reported in the LMS contractor *Quarterly Performance Assurance Report* and in the CEDR spreadsheet in Tabs 3.3, 3.4, and 3.5.

Significant activities include the following:

- LM strengthened the Renewable Energy Program by highlighting it during the first quarter. An article addressing renewable energy was included in the summer edition of the *ECHOutlook* newsletter, and a poster was distributed to help highlight the program.
- A 51-kilowatt photovoltaic (PV) solar array is currently operating at LM's Tuba City, Arizona, Disposal Site.
- A ground-source heat pump is currently operating at the Fernald, Ohio, Site.
- Onsite solar energy is supplied by 20- to 100-watt solar panels that power SOARS, a system that collects data from remote sites telemetrically. SOARS is in use at 16 LM sites.
- The Rocky Flats, Colorado, Site is completely off grid.
    - — Solar power now operates automated sampling systems, treatment processes, chemical dosing pumps, continuous-duty water pumps, access gates, garage door, and supervisory control and data acquisition systems.
    - — The telemetry system consists of 20 radio-linked monitoring locations running entirely on solar power. The system collects and transmits more than 24,000 instrument readings

in a typical day. All data are forwarded, upon request, through two remote terminal units with cellular modems- these locations run continuously on a single 30W panel and an approximately 50Ah gel battery.

  - Photovoltaic solar power is also used to continuously monitor pool levels, piezometers levels, and inflow/outflow rates at five earthen dams. These data are used for dam safety emergency response, water management decisions, and long-term dam safety evaluations. Each dam generally has several 10/18W panels, each with its own approximately 50Ah battery.

- A wind turbine at the Weldon Spring, Missouri, Site powers renewable energy displays in the Interpretive Center and demonstrates wind power to visitors.
- At the Fernald Preserve, PV solar-powered lighting, a PV solar-powered pump, and a renewable energy display are currently operating.

1.5.2 Projected Performance

The following actions have been proposed for the next 5 years:

- Continue purchasing the RECs needed to meet the 7.5 percent goal.
- Consider renewable energy projects under the Sustainable Buildings Program when a lease or occupancy arrangement expires and a new one is developed.
- Build enough PV solar arrays on site to generate 120 kilowatts of electricity in 2013, which will provide an additional 1.75 percent of the electricity LM uses, if funding is obtained.

1.6 Increase Alternative Fuel Use by 10 Percent Year-Over-Year

Under the 2011 SSPP, DOE is committed to a 10 percent annual increase in fleet alternative fuel use by 2015 relative to a 2005 baseline.

In addition, the LM Vehicle and Fuel Use Program developed a stretch goal to increase the ratio of alternative fuel use to conventional fuel use by 20 percent as compared to the 2009 ratio.

1.6.1 Performance Status

Significant activities include the following:

- LM has consistently exceeded the 10 percent increase in alternative fuel consumption. Status is tracked in the LMS contractor *Quarterly Performance Assurance Report* and the Federal Acquisition Statistical Tool (FAST) database (Scope 1 GHG Mobile Emissions data, in terms of Colorado $_2$, located in Attachment F).
  - Based on the EISA 2007 goal to increase E85 fuel use by 10 percent each year from 2005, LM would need to only use 259 gallons between now and 2015.
  - LM used 3,061 gallons of E85 fuel in 2011.
  - The 2011 E85 fuel use increased by 43 percent as compared to the 2009 ratio.
- In 2011, LM has received AFV waivers for all E85-fuel-capable vehicles, if the vehicles are located at LM sites that have no alternative fuel stations within 5 miles.

- An E85 fuel incentive program was initiated in 2010 and continued in 2011 for the LMS contractor staff, whereby a random drawing of persons using E85 fuel is held monthly and the winner is presented a letter of appreciation and a small award.
- E85 fuel vehicles were designated with stickers so that drivers know what fuel to use, and a listing of local E85 stations was placed in each vehicle.
- At the Grand Junction, Colorado, Site, maps and station listings showing E85 fuel gas stations were placed in all E85 fuel vehicle logbooks.

1.6.2 Projected Performance

- Pursue continuation of the reward program to give LMS contractor personnel an incentive to use E85 fuel.
- Assess the need for AFV waivers in 2012 where E85 fueling stations are unavailable, and apply for waivers as needed.
- Continue tracking E85 fuel use by each vehicle in 2012.
- Continue to monitor the DOE website to determine E85 fuel and biodiesel (B20) fuel availability.

1.7 Reduce Departmental Fleet Petroleum Use by 2 Percent Annually

The 2011 SSPP goal is a 2 percent annual reduction in fleet petroleum consumption by 2020, relative to a 2005 baseline.

1.7.1 Performance Status

LM's mission is to manage post-closure responsibilities and ensure the future protection of human health and the environment. As more sites move into post-closure and legacy management, LM's number of sites and associated use of vehicles will continue to increase, making it difficult for LM to meet the reduction goal. LM's fleet in the baseline year of 2005 was 28 vehicles. The current fleet of 43 vehicles, of which 42 are leased and 1 is owned, are located at 10 sites in eight states and the District of Columbia. This fleet is expected to grow in relation to LM's overall mission since using the fleet vehicles is necessary to the success of the LM mission. Performance related to these goals is reported in the LMS contractor *Quarterly Performance Assurance Report* and in the FAST database (Scope 1 GHG Mobile Emissions data, in terms of carbon dioxide ($CO_{2)}$, located in Attachment F).

- Currently we are reducing conventional petroleum fuel usage on a normalized basis. We are acquiring more E85 capable vehicles, tracking and updating E85 station locations for vehicle users, promoting ride sharing and trip consolidation. Conventional petroleum fuel consumption has dropped by 13% per year. In 2005 we used 452 gallons of conventional petroleum fuel per site. In 2011 we used 364 gallons conventional fuel per site.
- LM has established videoconferencing capabilities at its nine major sites around the country. In addition, virtual-presence meeting software is being used more frequently to reduce travel.
- Two columns were added to the vehicle log to identify and track time use and trips.

- LM strengthened the Vehicle and Fuel Use Program by highlighting it during the third quarter. An article was included in the spring edition of the *ECHOutlook* newsletter to address vehicles and fuel use, and a poster was distributed to help highlight the program.

1.7.2 Projected Performance

- Continue to develop the Vehicle and Fuel Use Program. The Vehicle and Fuel Use team will continue to maintain a list of vehicles, monitor the monthly fuel consumption with detailed spreadsheets, monitor vehicle and fuel type, and take appropriate action to meet program goals for vehicle and fuel use.
- Increase the overall fuel economy of the fleet by continually working with U.S. General Services Administration (GSA) to acquire smaller vehicles, plug-in hybrid vehicles, or other advanced-technology vehicles.
- Identify the most fuel-efficient vehicle for a given task by taking into account miles driven, fuel used, vehicle use, and road type such as off-road conditions.
- Reduce miles through methods such as trip consolidation.
- Consider expanding the shuttle service between the Fernald, Ohio, Site and the Delta office building. The Delta office building houses the majority of the employees who work at the Fernald Preserve. The distance between the two locations is 1.5 miles.
- Continue using videoconferencing and virtual-presence meeting software capabilities at LM's nine major sites around the country to reduce travel.

1.8 AFV Purchases

LM's goal is to acquire AFVs to replace retired light-duty vehicles at least 75 percent of the time which is consistent with the DOE SSPP goal that 75 percent of light-duty vehicle purchases must consist of AFVs by 2015. LM's current strategy, which consists of acquiring an AFV when a fleet vehicle needs to be replaced, exceeds the EPAct 1992 requirement that 75 percent of retired vehicles be replaced with AFVs.

- In 2011, all of the seven vehicles acquired were AFVs.
- AFVs make up 61 percent of LM's fleet of vehicles. The fleet currently consists of 42 GSA-leased vehicles and one special-purpose, diesel vehicle that LM owns. The fleet is comprised of the following:
  - 19 E85 vehicles.
  - 7 diesel vehicles.
  - 10 gasoline vehicles.
  - 7 hybrid vehicles.

1.8.1 Performance Status

Seven light-duty vehicles were replaced in the GSA fleet in 2011. All replacements were alternative fuel hybrid vehicles.

The Vehicle and Fuel Use team provided LM with final recommendations regarding potential distribution and reduction of GSA vehicles; this deliverable was submitted in the fourth quarter of 2011.

1.8.2 Projected Performance

The Vehicle and Fuel Use team will continue to record and track vehicle-related data and produce monthly summary reports that include information regarding AFVs. In addition, data in the FAST report will continue to project a 3-year vehicle acquisition forecast that will include AFVs for all light-duty vehicles.

1.9 Reduction in Fleet Inventory

The DOE 2011 SSPP committed DOE to reduce fleet inventory by 35 percent within the next 3 years relative to a 2005 baseline.

1.9.1 Performance Status

On January 27, 2011, Secretary Chu challenged his agency to reduce vehicle fleets by 35 percent over 3 years (2012, 2013, and 2014) based on 2005 numbers "without sacrificing either critical mission elements or our commitment to operating in a safe, secure and environmentally sound manner."

LM had significantly fewer sites and vehicles in 2005, which is much less than what is projected for the end of 2014. LM currently has 87 sites and is projected to have 102 by the end of 2014; it currently has 43 vehicles and is projected to have 43 by the end of 2014.

Through LM's mission, the number of sites will continue to increase, with the expected programmatic growth, to approximately 130 sites by 2020.

LM assessed the use of vehicles at manned locations.

The 2011 *Office of Legacy Management Fleet Reduction Action Plan* (LMS/S07710) stated that a reduction of fleet size is not recommended based on LM mission and associated growth.

1.9.2 Projected Performance

In discussions with DOE Headquarters, it was predicted that the impact of LM's inability to reduce fleet size will be more than compensated for at the "corporate level" by the reductions in vehicles by the DOE Office of Environmental Management (EM) as EM transitions sites to LM. Since LM's mission is expanding, we will have difficulty meeting this goal. This normalization of data based on a 77% increase in the number of sites verses holding steady on the number of vehicles over a 6 year period shows that we are increasing sites and not increasing vehicles overall. Although most of those transitioned sites are unmanned they are supported by the vehicles from the closest manned site.

LM will continue to assess the use of vehicles at manned sites.

2.1 Scope 3 GHG Emissions Reductions

DOE has committed to reducing its Scope 3 GHG emissions by 13 percent by the year 2015, when compared to a 2008 baseline. An analysis of LM's Scope 3 GHG inventory indicates that priority areas for LM should be employee commuter, business air, and vehicle travel. A current inventory is provided in the CEDR. A revised 2008 Scope 3 GHG emissions spreadsheet to include the use of offsite wastewater treatment is provided in Attachment E.

2.1.1 Performance Status

LM's mission is to manage post-closure responsibilities and ensure the future protection of human health and the environment. In doing so, travel is an integral part of day-to-day activities. LM has taken a number of steps to reduce business travel to the extent practical by consolidating trips, holding video and teleconferences instead of face-to-face meetings, and encouraging business trip carpools and sharing rental cars. To reduce employee commuter travel, LM provides options to periodically work from home and promotes carpooling as part of the effort to reduce Scope 3 GHG emissions.

LM reduced Scope 3 GHG emissions by 11.5 percent in 2010 from the 2008 baseline. In 2011, LM reduced emissions by 8.45 percent from the 2008 baseline. Performance related to these goals is reported in the LMS contractor *Quarterly Performance Assurance Report,* in LM's annual Pollution Prevention Tracking and Reporting System (PPTRS) report, and in the CEDR spreadsheet in Tabs 7.2 through 7.6 and Tabs 8.2 through 8.6. The revised 2008 GHG emissions spreadsheet is located in the CEDR as Tab 9.1.

Employee Commuting

The number of LM and contractor employees increased by about 20 percent in 2011. Because of this increase, LM increased commuter travel and subsequently Scope 3 GHG emissions in the commuter sector. Attempts to reduce commuter travel included the following: LM celebrated a ride-your-bike-to-work week at several sites, promoted carpooling, and permitted periodic work from home for some employees.

LM increased GHG emissions resulting from commuter travel from 838.5 metric tons (MT) of carbon dioxide ($MTCO_2$) in 2008 to 1,152 $MTCO_2$ in 2011. This increase was mainly due to the increased workforce necessary to accomplish its mission. Performance related to this goal is reported in Tab 8.4 of the CEDR spreadsheet.

Business Ground and Air Travel

Business travel is a significant aspect of LM's Scope 3 GHG emissions. The *Guidance for 2012 DOE Site Sustainability Plans* indicated that only contractor data were to be provided for ground and air travel. The LMS contractor significantly decreased the amount of ground and air travel in 2011, when compared to the 2008 baseline.

The LMS contractor decreased the amount of air-travel CO_2 production by 62.7 percent from the 2008 baseline, and decreased the amount of ground-travel CO_2 production by 47.8 percent from the 2008 baseline year. Performance related to this goal is reported in the CEDR spreadsheet in Tabs 8.2 and Tab 8.3, respectively.

In 2011, LM conducted its annual EMS Management Review via videoconferencing, which significantly reduced travel. LM also utilized webinars sponsored by FEMP to enhance job skills without employees having to travel to conferences for additional training.

Transmission and Distribution (T&D) Losses

T&D losses were lower than the 2008 baseline mainly because the Tuba City, Arizona, Disposal Site, one of the largest treatment systems, was not operating during much of 2011. The solar thermal system installed at the Tuba City, Arizona, Disposal Site in 2009 reduced purchased energy use and CO_2 emissions, including T&D losses, by about 10 percent. Upgrading antiquated systems and increasing efficiencies at LM's largest electricity consumer, the Fernald, Ohio, Site, were primary objectives during 2011. Reductions in electrical consumption at the Fernald, Ohio, Site total 28 percent when compared to the 2008 baseline. This also resulted in a significant decrease in T&D losses. Since LM reports all sites collectively, one zip code has been used for the reporting. This year, LM evaluated which zip code is most reflective of the electricity use, as a whole. Based on this evaluation, the primary reporting zip code was changed from 81503 to 45030. The change in zip code has caused a corresponding change in the GHG data for Scope 2 and Scope 3 T&D losses, for both the baseline data (2008) and the current data. Data trends reported in the SSP are based on the revised numbers calculated by the CEDR after the zip code change.

Contracted (Offsite) Wastewater Treatment

Sanitary wastewater from LM facilities is treated off site, with the exception of a leach field system at the Monticello, Utah, Disposal and Processing Sites. Because this data is based on number of employees, there is no way to improve these numbers other than by decreasing the number of employees. Any water efficiencies realized from these systems are not part of this reporting section

For 2011, CO_2 emissions from offsite wastewater treatment were higher than in 2008. This is a result of an increased number of employees. Biogenic CO_2 emissions increased from 1.2 to 2.0 MT, and anthropogenic CO_2 increased from 2.1 to 3.4 MT. Performance related to this goal is reported in Tab 8.5 of the CEDR spreadsheet. The 2008 spreadsheet was revised to incorporate offsite wastewater treatment for 252 employees at that time. This revision is noted in Tab 9.1 of the CEDR spreadsheet and in Attachment E.

Contracted (Offsite) Municipal Solid Waste Disposal

Municipal solid waste, construction waste, and recycled materials are tracked on a quarterly basis. LM has consistently met and exceeded the waste diversion goals since 2009. These actions have resulted in reduced CO_2 emissions in offsite and municipal landfills from LM solid waste.

In 2011, LM reduced CO_2 emissions from solid waste landfills by 18 percent. This reduction is a result of DOE's push to achieve better than 50 percent solid waste diversion from landfills. This past year, LM achieved a total of 66.5 percent solid waste diversion. This diversion was due in part to a promotion for national recycling week celebrated in November 2010 at various sites.

LM promotes recycling and reuse during project planning activities. Waste minimization is a mandatory part of contract language to ensure that all personnel working on LM projects reduce the amount of waste generated and recycle to the extent possible. Office supply reuse centers were established to facilitate sharing office materials instead of purchasing new supplies. 2011 performance related to this goal is reported in the PPTRS.

Fugitive Emissions

Fugitive gases include CO_2, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride (SF_6). By the end of 2009, LM had replaced refrigerants in cooling systems with less harmful alternatives and purchased new refrigerators. DOE also ensured proper removal and recycling of the refrigerant and the refrigerators. Cooling systems are checked annually to ensure proper performance and maintenance. Refrigerants used in fleet car air conditioners are accounted for by GSA and are not included in this report. In 2009, a survey was conducted to determine if SF_6 was used at LM sites. Results from this survey indicated that no SF_6 was used or existed in inventories at that time.

2010 was the first year sites were asked to provide information regarding use and quantities of these gases, so a 2008 gas inventory and amount of total gas use are not available. In 2010, approximately 420 pounds of CO_2 and methane gases were used for field sampling and in laboratories. Approximately 440 pounds of these same gases were used in 2011. These data result in CO_2 emissions of 0.2 MT per year. Efforts to replace the use of CO_2 with compressed air were successful at many sites during 2009. Yet, several sites are hesitant to change practices since air cylinders are large and heavy, and therefore pose lifting and other physical health and safety dangers. Overall, very little methane gas is used at LM sites; it was last measured at 1.6 pounds total. In 2011, methane was only used as a standard in cylinders of calibration gases.

2.1.2 Projected Performance

Employee Commuting

- It is likely that the workforce size will remain about the same or increase slightly during 2012.
- LM will encourage employees to carpool and use public transportation to the extent possible.
- LM will also work to increase telecommuting options through mutual agreements.

Business Ground and Air Travel

- LM and the contractor will continue to use teleconferencing services and virtual-presence software to conduct meetings, and continue to reduce business travel to the extent practical.
- The contractor will develop an incentive program to encourage sharing business rental cars while attending out-of-town meetings and events.

T&D Losses

- The Tuba City site will be down for the first two months of 2012 so energy use and T&D losses will be less than 2008. The solar photovoltaic system installed in 2010 reduced purchased energy use and CO_2 generation by 5–7 percent in 2011.
- Several new energy conservation efforts are underway at the Fernald site that could reduce energy use and T&D losses significantly starting in the third quarter of 2012.
- Because renovations were performed on one of the largest treatment systems, it is expected that T&D losses will remain significantly lower than 2008 baseline CO_2 production in the future, although perhaps not as low as 2011.

Contracted (Offsite) Wastewater Treatment

- If the number of employees at sites continues to increase, these emission totals will also continue to increase.

Contracted (Offsite) Municipal Waste Disposal

- In 2012, LM and the contractor will promote a reduction in purchasing consumable materials, including office supplies.
- Office supply reuse centers will continue to exist to facilitate sharing office materials instead of purchasing new supplies.
- Excess materials will be donated or recycled. These actions and other ongoing recycling efforts should continue to support the reduction of CO_2 emissions from landfills.

Fugitive Emissions

- For 2012, a pollution prevention opportunity assessment (PPOA) will be conducted to determine if a more environmentally friendly gas can be used to replace CO_2 for field sampling without the bulk of compressed air gas cylinders.
- A new SF_6 survey will be conducted to verify that this gas is still not used at LM sites, and an assessment of cooling systems will also be conducted to ensure that routine maintenance is being conducted, and emissions leaks are minimized.

3.1 Existing HPSB Buildings

Regarding HPSB, Section 4.a of DOE Order 436.1 states, “Comply with the sustainability requirements contained in EO 13423, and EO 13514.” Executive Order (EO) 13514 and the 2011 SSPP clarify the goal to be 15 percent of the number of existing buildings and building leases—not square footage—and that only buildings greater than 5,000 GSF are subject to the goal. The 15 percent requirement in EO 13514 and the 2011 SSPP must be met by 2015. EO 13514 and the 2011 SSPP stipulate that progress must continue toward 100 percent compliance for the entire building inventory that is greater than 5,000 GSF.

3.1.1 Performance Status

Two structures at the Piqua, Ohio Decommissioned Reactor Site were reclassified by LM from buildings to Other Structure & Facility (OSF). The structures, totaling 43,168 gsf, were

previously incorporated in LM's building count. They have been removed from LM's building inventory and do not need to be upgraded.

With the Fernald Preserve Visitors Center being awarded USGBC LEED Platinum certification in 2008, 12.5 percent of LM's applicable buildings meet the GPs.

HPSB assessment checklists are updated annually, and any changes affecting a building's compliance score are noted.

3.1.2 Projected Performance

LM continues to monitor its building inventory, and LM identifies and evaluates sites' owned or leased buildings that measure greater than 5,000 GSF and are transitioning to or from LM by 2015. In 2012, LM will encourage and train building occupants to take an active role in learning sustainable principles and building operations that will contribute to conserving resources and creating better work environments.

Existing Buildings

While the Weldon Spring, Missouri, Site's Interpretive Center is still being considered as having potential to meet the GPs by 2015, until funding is secured, committed, and obligated, the status for sustainability of this building has been reprioritized.

In FY 2012, LM has approved funding for the demolition of the Weldon Spring, Missouri Administrative Building. The LM-owned building is 36,030 gsf and is excess to LM's mission needs. Demolition of the Administrative Building will reduce the number of LM buildings subject to HPSB (either LEED or GPs) upgrade requirements.

Leased Facilities

The 2011 SSPP states, "When acquiring new leased space, including build-to-suit lease solicitations, DOE will meet the requirements for leased facilities included in EO 13514 and include a preference for buildings certified as ENERGY STAR per EISA 2007 Section 435, those with LEED Gold certification, and those that use renewable energy to the maximum extent practicable. When entering into renegotiation or extension of existing leases, DOE will include lease provisions that support the HPSB GPs."

In 2011, LM completed assessments of all leased facilities greater than 5,000 GSF. Three of these buildings (the Delta office building at the Fernald, Ohio, Site and two office buildings at the Grand Junction, Colorado, Site office) are, or will soon be, in lease negotiations. Energy efficiency improvements are being incorporated into these buildings as LM works toward meeting the GPs in 15 percent of their building inventory by 2015.

3.2 High-Performance Sustainable Design

To address the requirements in the 2011 SSPP, LM has made a commitment to pursue USGBC LEED Gold certifications and incorporate the GPs into the construction of future buildings, as addressed in the following sections.

HPSB New Construction

EO 13514 (g) (ii) states "that all new construction, major renovation, or repair and alteration of Federal buildings complies with the *Guiding Principles for Federal Leadership in High Performing and Sustainable Buildings . . .*" The 2011 SSPP elaborates: "All new construction, major renovations, and alterations of buildings greater than 5,000 GSF must comply with the GP and where the work exceeds $5 million, each are LEED-New Construction (LEED-NC) Gold certification." All buildings below the $5 million threshold but greater than 5,000 GSF are required to comply with all of the GPs. DOE considers any new building that achieves LEED-NC Gold or better to comply with the requirements of the GPs.

To address these requirements, LM has made a commitment to pursue USGBC leadership in energy and environmental design, including LEED Gold certifications, and incorporate the GPs into the construction of future buildings, as addressed in the following sections.

3.2.1 Performance Status

In 2008, LM constructed one LEED Platinum multiuse facility. In 2009, LM provided additional funds to GSA so that the LMBC in Morgantown, West Virginia, could obtain LEED Gold certification for its records management center. In 2010, the LMBC received Gold certification in both the Core and Shell and Commercial Interiors categories.

3.2.2 Projected Performance

No other new-construction buildings or major renovations that fit the criteria of the requirements are planned. However, if this changes, all new construction or major renovations that cost more than $5 million will be designed to meet USGBC LEED Gold certification, and any buildings that cost $5 million or less will be required to meet the GPs.

3.3 Regional and Local Planning

According to the 2011 SSPP, DOE is to pursue the following actions:

- Participate in regional transportation planning, recognition of existing community transportation infrastructure, and incorporation of such efforts into site policy and guidance documents.
- Ensure that planning efforts for new federal facilities or new leases will include consideration of sites that are pedestrian friendly, are near existing employment centers, are accessible to public transit, and emphasize existing central cities and, in rural communities, existing or planned town centers.
- Identify and analyze impacts from energy use and alternative energy sources in all Environmental Impact Statements and Environmental Assessments for proposals for new or expanded federal facilities under the National Environmental Policy Act (NEPA) of 1969, as amended (Title 42, *United States Code,* Section 4321 et seq. [42 U.S.C. 431 et seq.]).
- Coordinate efforts with regional programs for federal, state, tribal, and local ecosystem, watershed, and environmental management.

- Identify regional transportation planning, ecosystem, watershed, and environmental management initiatives affecting sites, and opportunities to work with local authorities to align energy policies and locate renewable energy infrastructure.
- Continue efforts to assess the state of interaction between sites and their respective local or regional organizations and steps to increase interaction.

As previously mentioned, LM has ongoing activities at more than 87 post-closure sites located in 28 states and Puerto Rico. Due to the relatively small number yet scattered nature of LM employees, LM expends less effort on transportation and facility or infrastructure planning. Rather, more of LM's local and regional planning efforts are focused on ecosystem, watershed, and environmental management. LM recognizes that such legacy activities are local and that stakeholder involvement is integral to LM operations. Additionally, LM also makes great efforts to educate future generations on the historical aspects of the Cold War efforts, the enduring environmental impacts of those activities, and how remediation activities can be performed in a sustainable manner.

3.3.1 Performance Status

Transportation/Facility/Renewable Energy Planning

- An evaluation of public transportation infrastructure near offices in more densely populated areas where LM or its contractors employ at least 10 people was completed in January 2011. Many of the LM sites are unmanned or have only a few people working on location. In addition, several of the manned sites are in remote locations where public transportation is not available.
- LM continues to pursue the potential of placing a PV solar energy system at the Durango, Colorado, Disposal/Processing Site for placement of a PV solar energy system. A NEPA Environmental Assessment that considered impacts related to a PV system was completed and approved in 2011. As part of the NEPA process, LM met with local utility companies, the local county commissioners, local citizens, federal and state regulators, and interested Native Americans. If maximal PV solar energy development, 4.5 megawatts, occurred on the disposal site, this system would support as many as 900 residential homes based on current local energy use. A commercial or private entity would develop, maintain, and operate the PV system; they would also be responsible for equipment removal and surface reclamation activities at the end of the lease. A request for proposals for a 20-year lease with a potential 5-year option was recently released. Because this system will be privately owned, it does not appear in CEDR.

Watershed and Ecosystem Management

- LM participates in a program to protect the local watershed and buried aquifer as part of the Fernald, Ohio, Site natural resource damage settlement. LM, along with the U.S. Department of the Interior and the Ohio Environmental Protection Agency, is a Comprehensive Environmental Response, Compensation, and Liability Act Natural Resource Trustee for the Fernald Preserve. The Natural Resource Trustees initiated the Paddys Run Conservation Project as a means to secure conservation easements within the Paddys Run watershed, which includes most of the Fernald, Ohio, Site. The Natural Resource Trustees have partnered with a local nonprofit conservation trust organization to administer the program. In August 2011, the Natural Resource Trustees received

14 applications totaling over 1,200 acres. This acreage is in addition to the 800 acres from the pilot project that will also be placed under easement. These conservation easements bring the total acreage to more than 2,000 acres potentially protected under the damage settlement funds.

- The Fernald, Ohio, Site has been proposed as a potential reintroduction location for the federally endangered American burying beetle. LM teamed with researchers at the Cincinnati Zoo to conduct a baseline survey for on-property burying beetles. The baseline surveys were conducted in summer 2011 to determine habitat and recovery potential. Three species of burying beetles were observed, indicating good potential for successful release and propagation of the American burying beetle. The U.S. Fish and Wildlife Service will consider these findings in the coming years.
- LM participated with other federal and state agencies as well as private and non-profit entities in a program to remove tamarisk and invasive weeds along the Dolores River in western Colorado. Control of tamarisk along the Dolores River, which is a tributary to the Colorado River, is a key concern of federal and state agencies. Mechanical and manual means were used to remove an estimated 5 acres of tamarisk that occurred over a 50-acre area along the Dolores River. In addition, approximately 15 acres of knapweed were sprayed.
- LM continues to work with local counties and the U.S. Bureau of Land Management offices to control noxious weeds along access roads and on selected LM sites.
- LM, as one of the Natural Resource Damage (NRD) trustees for the Rocky Flats site, has championed NRD activities to purchase additional private mineral estates within the Rocky Flats site boundaries to prevent destruction of the upland prairie habitat overlying those minerals. Several of these parcels will be transferred in the next few months to USFWS for inclusion in the Rocky Flats National Wildlife Refuge. The remaining parcels will transfer at some time in the future.

Environmental Management/Stakeholder Involvement and Collaboration

- LM sponsored a Long-Term Surveillance and Maintenance (LTS&M) Conference with the theme “Managing Today’s Change, Protecting Tomorrow’s Future: A Global Perspective on LTS&M.” Topics included property reuse, renewable energy, engaging the community, partnerships with Native American stakeholders, regulatory updates, groundwater remediation, applied science and technology, disposal cell covers, environmental design, institutional controls, and new science supporting LTS&M.
- LM maintains an extensive distribution list of local stakeholders and elected officials for each site. Stakeholders are updated or contacted as site activities warrant. All stakeholders are able to access public websites for copies of annual or other reports. The Rocky Flats, Colorado, Site and Fernald, Ohio, Sites continue to participate with stakeholder groups in quarterly meetings.
- In 2011, LM organized and provided a public presentation on the status of the long-term surveillance and maintenance and groundwater remediation of the Shiprock, New Mexico, Disposal Site. Approximately 80 local citizens attended the meeting at the Shiprock Chapter House. LM representatives were available to answer questions from the meeting attendees.
- LM continues to coordinate and attend quarterly meetings with representatives of the Navajo Nation and Hopi Tribe. The Shiprock, New Mexico, Disposal Site; the Monument Valley,

Arizona, Processing Site; the Mexican Hat, Utah, Disposal Site; and the Tuba City, Arizona, Disposal Site are on or near Navajo or Hopi Reservations. The quarterly meetings are used to provide the status of site activities and discuss technical issues.

- LM continues to work closely with the Navajo Nation to coordinate water use for irrigation purposes at the Monument Valley, Arizona, Processing Site and the Shiprock, New Mexico, Disposal Site. Water is used to irrigate experimental research plots that use plants to uptake selected contaminants. Navajo Nation staff and Navajo students from the local Diné College irrigate the plots at the Shiprock, New Mexico, Disposal Site. A local Navajo resident adjacent to the Monument Valley, Arizona, Processing Site irrigates the plot on that site.
- In 2011, LM worked with stakeholder groups (the Aleutian Island Pribilof Association, the U.S. Fish and Wildlife Society, and the Alaska Department of Fish and Game) to develop a terrestrial and marine sampling plan for the collection of a variety of marine, biological, and soil samples on and near the Amchitka, Alaska, Site. Extensive cooperation between the stakeholder groups was required. The purpose of the collection was to obtain representative samples that could be tested for selected radionuclides to ensure that food supplies were safe.
- LM's Applied Science and Technology (AS&T) group led a field tour of enhanced attenuation research at the Monument Valley, Arizona, Processing Site for the Southwest Partnership, which consists of state and tribal representatives of abandoned mine land programs for Utah, Colorado, and New Mexico and the Hopi, Crow, and Navajo Nation tribes.
- AS&T met with LM and Colorado State University researchers to brainstorm a possible collaboration on a combined biofuel/phytoremediation study at the New Rifle, Colorado, Disposal/Processing Site.

Environmental Management/Education/Outreach

- LM transferred ownership of a greenhouse at the Tuba City, AZ site to Dine' College, a Navajo-owned community college, at a traditional ceremony on March 26, 2011. The greenhouse was constructed in the 1990s by the University of Arizona to grow native shrubs for revegetation and phytoremediation research at uranium processing sites on the Navajo Reservation. Dine' College will now use the greenhouse for undergraduate student research projects and to grow native plants for revegetation on Navajo land.
- LM teamed with a number of different researchers and naturalists to hold the Fernald Preserve Bioblitz in June 2011. This public outreach event involved cataloging as many species as possible on the property over a 24-hour period. Almost 500 species of plants and animals were inventoried. A wide range of experts participated, including college professors, park naturalists, aquatic stream specialists, botanists, and birders. The event was a successful public outreach program and resulted in several new species records for the site.
- LM continues to work with local groups related to museum collections associated with cultural resource surveys that were conducted prior to remediation at the Rocky Flats, Colorado, Site and Mound, Ohio, Site. LM contributed a $190,000 grant that will be used for cataloguing and indexing records and information related to the Mound, Ohio, Site. LM also oversees a local citizen group that continues to work toward opening a Rocky Flats Cold War Museum in the Denver, Colorado, area.

- At the Weldon Spring, Missouri, Site, an Interpretive Center open to the general public is operated to provide information about the site's environmental cleanup and the LTS&M program. Stakeholders are sent updates, such as the *Annual Site Environmental Report*, and notices of site inspections. Customized field trips are provided for students in kindergarten through 12th grade. Additionally, the staff conducts outreach presentations for organizations that do not have funding to travel to the Interpretive Center. Approximately 24,000 visitors per year visit the site, use the meeting room, visit the Interpretive Center, or were involved in an outreach presentation. Numerous volunteers help maintain a native-plant garden at the site and provide expertise for managing prairie on the site.
- In June 2011, the LM Weldon Spring, Missouri, Site hosted the State and Tribal Government Working Group (STGWG) for a half-day tour of the site to provide insight on the daily operations of an LM site. The event was part of the STGWG 2011 Spring Meeting, held in St. Louis, Missouri. Meeting attendees heard presentations on the history of the site, current groundwater conditions, and performance of the onsite engineered disposal facility. The site tour focused on LM and institutional controls.
- At the Fernald, Ohio, Site, an existing building was converted to a Visitors Center that meets USGBC LEED Platinum standards. Wastewater from the Visitors Center is transferred to a biowetland using solar-powered pumps. An interactive multimedia exhibit on renewable energy teaches visitors how to reduce energy consumption, shows the value of alternative energy sources, and explains LM's demonstrated use of and commitment to alternative energy. A brochure, curriculum, Web page, and interpretive trail signage also provide renewable energy instruction. The Fernald, Ohio, Site participates in the annual Green Energy Ohio solar tour (http://www.greenenergyohio.org/page.cfm?pageId=3) to further showcase its commitment to renewable energy. Numerous site improvements, including the construction of 7 miles of trails, provide access to the site's ecologically restored habitats. Prescribed burns are an important management tool to ensure the continued vitality of the Fernald, Ohio, Site's prairies. The success of the Fernald, Ohio, Site's ecological restoration has made the site a destination for nature observation. Through an expanding outreach effort, LM is working with local schools to encourage the next generation of scientists and engineers. Personnel from the Fernald, Ohio, Site develop and conduct educational programs that have provided hands-on learning experiences for thousands of area students, from elementary through college. Regularly scheduled nature-based educational programs for the general public complement the site's school-based outreach activities.
- An LMS contractor scientist was invited to deliver a presentation at the 2011 U.S. Environmental Protection Agency (EPA) Tribal Colleges and Universities Collaborative Workshop.
- An LMS contractor scientist continues to serve as an invited member of the Consortium for Risk Evaluation with Stakeholder Participation (CRESP) DOE Landfill Partnership. The partnership consists of members of CRESP and regulatory stakeholders from EPA, the U.S. Nuclear Regulatory Commission, DOE, and state agencies.
- LM held an all-hands training in Flagstaff, Arizona. The theme was "Preserving Tribal Knowledge: Learning from the Past, Protecting the Future." Cultural awareness was an important part of the training, and activities included Native American dancers demonstrating music, dance, costumes, and the tradition of storytelling; a presentation (by tribal elders) on Hopi culture, traditions, and history at the Hopi Village of Moenkopi, Arizona; and a tour of the Navajo Museum in Tuba City, Arizona.

- LM continued to mentor and work with students from several universities to conduct research on LM properties and to expand the students' understanding of the environment. Some examples are listed below:
  - LM hosted four interns during the summer of 2011 from colleges across the United States—Diné College, the University of Arizona, Atlanta Metropolitan College, and Howard University. Students were hosted under the Mentorship for Environmental Scholars Program, which is funded by the United Negro College Fund Special Programs Corporation. This program targets historically underrepresented college students within science, technology, engineering, and mathematics fields of study. Summer projects spanned the variety of activities within LM, ranging from a project about risk communication with Native peoples to a project about biouptake of radionuclides within plants growing on cell covers.
  - A scientist funded under LM's AS&T subtask provided educational opportunities for Native American students at Diné College, a community college operated by the Navajo Nation. The scientist trained students in data reduction and statistical analysis for a study of contaminant uptake in plants, and supervised field trips that included tree-core sampling for a dendrochemistry study of historical plume dispersion.
  - An LMS contractor scientist retained adjunct faculty appointments with Vanderbilt University and the University of Arizona, where he serves on graduate committees for students conducting research on ways to improve long-term performance of remedies for uranium mill tailings processing and disposal sites.

3.3.2 Projected Performance

- At LM sites, ensure that site policies and guidance documents reflect their ongoing participation and coordination with local and regional transportation and planning groups.
- Ensure that planning for new federal facilities or new leases includes consideration of sites that are pedestrian friendly, are near existing employment centers, are accessible to public transit, and emphasize existing central cities and, in rural communities, existing or planned town centers.
- Continue to hold quarterly meetings with the Navajo Nation and Hopi Tribe.
- Work more closely with state historic preservation offices (SHPOs) to pursue programmatic agreements that would enhance coordination with SHPOs. Coordination with SHPOs is an ongoing effort for each new ground-disturbing action.
- Continue to encourage public participation and offer educational programs at LM sites with visitor centers.
- Continue educational outreach programs.
- To meet NEPA requirements, continue to evaluate proposed projects for impacts on the physical, biological, and human environments. This evaluation requires consideration of federal, state, and, where applicable, local programs and requirements.
- Continue to pursue the larger-scale control of noxious weeds through coordination with local and regional agencies.

4.0 Water Use Efficiency and Management

To be in line with the 2011 DOE SSPP, LM will reduce water consumption at goal subject sites for the following areas:

- Potable water intensity by no less than 26 percent by 2020 relative to the established 2007 baseline.
- Non-potable freshwater used for industrial, landscaping, and agricultural (ILA) purposes by no less than 20 percent by 2020 relative to the established 2010 baseline.

4.1 Potable Water Intensity Reduction Goal

LM is required to reduce potable water intensity use by 26 percent by 2020 compared to a 2007 baseline.

4.1.1 Performance Status

Performance related to this goal is reported in the LMS contractor *Quarterly Performance Assurance Report* and in Tab 3.2 of the CEDR spreadsheet. The gross square footage used to determine Potable Water Intensity values is different from the gross square footage provided in the FIMS snapshot, because water use does not occur in all the included FIMS square footage. Therefore, the Potable Water Intensity values in the CEDR and SSP conflict. Significant activities include the following:

- 2011 data was tracked for potable water at all LM goal subject sites. As shown in Table 3, a reduction of 88.2 percent was achieved in 2011 as compared to the baseline year of 2007. Table 3 shows the water use performance of LM goal subject sites since 2007.
- LM has implemented water efficiency technologies and practices to achieve, at a minimum, 2 percent or greater annual potable water intensity reductions.
- Water audits were conducted in 2011 at the Grand Junction, Colorado, Disposal/Processing Site and the Weldon Spring, Missouri, Site.
- The Weldon Spring, Missouri, Site was added as an LM goal subject site when its leasing status changed in 2011. The site uses only potable water; non-potable freshwater is not used on the site. A water audit was conducted at this site during 2011 to ensure understanding of water uses, sources, and potential efficiency improvement and reuse opportunities.
- Although the reduction goal was achieved during 2011, use at the Grand Junction, Colorado, Disposal/Processing Site was abnormally high this year due to the episodic nature of operations at the site, and the Monticello, Utah, Disposal and Processing Sites had two water line breaks caused by freezing pipes. Both atypical occurrences added to LM's 2011 potable water use total. These excessive water uses are not expected to recur.
- The Water Conservation Program team sponsored a worker challenge, which coincided with EPA's WaterSense Fix-a-Leak Week, to help workers identify indoor residential water loss in their homes and increase water conservation awareness. An LM-wide water conservation contest was held, and over 50 employees received a WaterSense-certified water spigot for more efficient water aeration and delivery.

- LM strengthened the Water Conservation Program by highlighting it during the second quarter. The winter edition of the *ECHOutlook* newsletter included an article addressing water conservation, and a poster was distributed.
- LM has developed a water management plan.
- LM considered ways to reuse and recycle water.
- LM identified budgeting needs for 2011, as well as for 2012 through 2017.

Table 3. LM Combined-Sites Water Use Since 2007

Fiscal Year (FY)	GSF[a]	Water Use (Gallons)		Potable Water Use Intensity (WUI) Percent Reduction	Non-Potable Freshwater ILA Use (Gallons) Percent Reduction
		Potable	Non-potable Freshwater ILA		
2007	10,992	1,497,098	N/A	N/A – Baseline year	N/A
2008	11,712	1,070,768	N/A	32.9 percent reduction	N/A
2009	22,512	549,462	N/A[b]	82.1 percent reduction	N/A
2010	22,464	80,358	503,336[c]	97.3 percent reduction	N/A – Baseline year
2011	**69,157**	1,112,688	456,093	**88.2 percent reduction**	9.4 percent reduction
2011: Combined-Sites Potable WUI = (1,112,688 ÷ **69,157**) = **16.09**					
Combined-Sites Percent Potable WUI Reduction = [(2007 WUI – 2011 WUI) ÷ 2007 WUI] × 100 percent = [(136.2 – 16.09) ÷ 136.2] × 100 = 88.2 percent reduction					
2011: Combined-Sites Percent Non-potable Freshwater ILA Reduction = [(2010 – 2011) ÷ 2010] × 100 percent = [(503,336 - 456,093) ÷ 503,336] × 100 percent = 9.39 percent reduction					

[a] See Attachment C for a listing of LM's gross square footage. The gross square footage used to determine Potable Water Intensity values is different from the gross square footage provided in the FIMS snapshot, because water use does not occur in all the included FIMS square footage. Therefore, the Potable Water Intensity values in the CEDR and SSP conflict. The values reported above are the correct values for LM's Potable Water Intensity and reduction. In addition, the correct values are provided in Tab 3.2 of the CEDR spreadsheet, highlighted in light blue.

[b] The definition of freshwater was expanded to include non-potable freshwater in mid-2009, so non-potable use was included in the overall water use category. In 2010, direction was given that non-potable water should not be included in the EO 13514 potable water reduction goal but that past years' non-potable use did not have to be eliminated from reported potable use data.

[c] Non-potable freshwater used for ILA was defined with its own goal, for which 2010 is the baseline year.

4.1.2 Projected Performance

- LM will continue to make water use practice improvements and to implement water efficiency improvements identified in past audits.
- LM will continue to consider ways to reuse and recycle water.
- LM will continue to perform water audits of goal subject sites to meet the requirements of EISA Section 432. Audited sites will be rotated to ensure that 100 percent of the sites are audited every 4 years.
- LM will identify and obtain funding for non-potable freshwater efficiency improvements, as needed.

4.2 Non-Potable Freshwater ILA Use Reduction Goal

LM is required to reduce consumption of non-potable ILA water by 20 percent by 2020 from a 2010 baseline.

4.2.1 Performance Status

Performance related to this goal is reported in the LMS contractor *Quarterly Performance Assurance Report* and in Tab 3.2 of the CEDR spreadsheet.

- 2011 data were tracked for non-potable freshwater use for ILA purposes at all LM goal subject sites. As shown in Table 3, a 9.4 percent reduction was achieved in 2011 as compared to the baseline year of 2010, which exceeds the required minimum ILA reduction of 2 percent by the end of 2011. The use reduction equates to a savings of approximately 50,000 gallons of non-potable ILA freshwater in 2011.
- Two efficiency improvements were implemented at the Tuba City, Arizona, Disposal Site in 2011. These efficiencies consisted of replacing an inefficient toilet at the site with a low-water-use toilet, and replacing a leaking emergency eyewash station to eliminate water waste.
- Approximately 99 percent of non-potable freshwater used by LM in 2011 was used for industrial purposes. The remaining percent was used for landscaping.
- LM has developed a water management plan.
- LM has identified budgeting needs for 2012 through 2017.

4.2.2 Projected Performance

- LM will continue to implement non-potable freshwater efficiency improvements as opportunities and funding becomes available.
- The Tuba City, Arizona, Disposal Site is the primary LM user of non-potable freshwater. Operations at the site in both the baseline year of 2010 and in 2011 were highly atypical; thus, there is some uncertainty regarding what the water use will be at the site when it is operating under normal conditions. Normal operations are expected to resume at this site in 2012.
- LM will also continue to use low-water-use landscaping technologies and practices.
- LM is considering ways to reuse and recycle water.
- LM will continue to perform water audits of goal subject sites to meet the requirements of EISA Section 432. Audited sites will be rotated to ensure that 100 percent of the sites are audited every 4 years.
- LM will identify and obtain funding for non-potable freshwater efficiency improvements, as needed.

4.3 Storm Water Management

EISA Section 438 stipulates: “The sponsor of any development or redevelopment project involving a Federal facility with a footprint that exceeds 5,000 square feet shall use site planning,

design, construction, and maintenance strategies for the property to maintain or restore, to the maximum extent technically feasible, the predevelopment hydrology of the property with regard to the temperature, rate, volume, and duration of flow."

4.3.1 Performance Status

The design and construction of the Fernald Preserve Visitors Center in 2008 incorporated storm water management that met or exceeded the requirements of EISA Section 438.

4.3.2 Projected Performance

Future new or upgraded roofs will either be green or use rainwater cisterns. Concrete paving blocks that are designed to infiltrate runoff will be considered for new parking lots. Bioswales will be considered for use adjacent to asphalt roadways and other hard surfaces to facilitate infiltration when future upgrades are planned. The EISA 438 requirement will be put into design procedures for development or redevelopment projects that exceed 5,000 GSF.

5.0 Pollution Prevention and Waste Minimization

In 2011, LM successfully coordinated with the site owner to promote a national recycling week for November 8–12 at the Grand Junction, Colorado, Site. Recycling stations were set up at two locations, and employees were encouraged to bring their recyclables to work. This effort created a greater awareness of the types of materials that are recyclable and the energy and natural resources saved through recycling. Toward the end of 2011, LM and the contractor established office supply reuse centers at every manned site to promote sharing of used office supplies and reduce the purchases of new materials. Excess supplies were donated to schools and nonprofit organizations.

DOE has established the following goals, consistent with the pollution prevention goals outlined in the 2011 SSPP:

- Minimize the generation of waste and pollutants through source reduction.
- Reduce printing paper use and purchase uncoated paper containing at least 30 percent post-consumer fiber.
- Reduce and minimize sources and quantities of toxic and hazardous chemicals and materials acquired, used, or disposed of.
- Implement integrated pest management and other appropriate landscape management practices.
- Increase the use of acceptable alternative chemicals and processes in keeping with LM's procurement policies.
- Decrease the use of chemicals where such decreases will help LM achieve GHG reduction targets.
- Ensure that Sections 301 through 313 of the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA) are fully implemented, as applicable.
- Implement an SF_6 capture program by September 2012 (not applicable to LM).

- Divert at least 50 percent of nonhazardous solid waste, excluding construction and demolition debris, by the end of 2015.
- Divert at least 50 percent of construction and demolition materials and debris by the end of 2015.
- Increase the diversion of compostable and organic material from the waste stream.
- Verify the effectiveness and reliability of sites' clearance-of-property procedures, initiated in September 2011, to identify those materials that cannot be cleared for unrestricted reuse or recycling by September 2012.
- By December 2010, develop a plan for retiring LM printers incapable of duplex printing.

These goals are arranged into two categories—(1) Source Reduction and (2) Waste Minimization—which are discussed in the sections below.

5.1 Source Reduction

Performance related to these source reduction goals is reported in the LMS contractor *Quarterly Performance Assurance Report* and in LM's annual PPTRS report. PPTRS printouts are included as Attachment D.

5.1.1 Performance Status

Performance status activities related to source reduction include the following:

Efforts/Programs

- LM's job-planning process takes into account minimizing the generation of waste and pollutants through source reduction. LM's contracts and subcontracts specifically call out waste minimization and the use of less toxic and more environmentally friendly products and chemicals. Websites to locate these materials and supplies are provided in most requests for proposals and statements of work. Assessments are conducted periodically to ensure that subcontractors are addressing these requirements.
- LM continued to improve chemical-management activities by maintaining accurate inventory management, identifying and sharing excess chemicals, and planning chemical purchases based on need. Chemical inventories are updated quarterly, and each site maintains an accurate material safety data sheets logbook. Examples of chemical reduction and minimization efforts in 2011 include the following:
  - A few cylinders of calibration gases that were no longer needed at the Rocky Flats, Colorado, Site were brought to the Grand Junction, Colorado, Disposal/Processing Site for use.
  - The Grand Junction, Colorado, Disposal/Processing Site lab chemist continually checks and reuses expired standards for noncritical analyses.
  - All sites equipped with labs continue to share reagent grade preservatives with the LMS contractor Environmental Monitoring group.
  - The Tuba City, Arizona, Disposal Site recycled excess chemicals and reagents at a Flagstaff recycling center.

- LM reviews all chemical procurement requests to ensure that chemicals regulated under EPCRA are tracked, are reduced, or undergo a sustainable-alternatives review. Acceptable alternative chemicals are approved through the procurement and job-planning processes.
- LM currently submits reports for Section 312 of EPCRA for five sites. No EPCRA Section 313 reports are required. An LM-wide battery inventory was completed and is being maintained to ensure that sites are meeting EPCRA requirements for reporting sulfuric acid and lead quantities, if applicable. EPCRA reports are tracked through a monthly update to the regulatory compliance schedule. Procurement tracking is used to help compile data for EPCRA reporting. In addition, a chemical inventory program is in place to track all chemicals at each LM site and ensure that significant changes in chemical quantity or toxicity are evaluated for applicable EPCRA reporting requirements.

Paper Reduction

- Printing continues to be an essential element for conducting mission-related work. Yet, several advances in paper reduction have taken place, such as promoting double-sided printing and using various types of electronic media instead of paper. LM continues to purchase 30 percent or better post-consumer recycled-content paper, and reducing paper use continues to be a priority.
- As part of the process of phasing out single-sided printers, employees were encouraged to transition to network duplex printers. In addition, all non-network single-sided printers reaching end-of-life criteria were recycled and not replaced.

Pest Management/Landscape Management

- LM maintains an ecosystem improvement log that details activities, including requirements to use integrated pest management through the consideration of alternatives to reduce the use of pesticides. Examples include biological controls, plant or animal competition, and less toxic or nontoxic chemical applications.
- The job-planning processes consider the implementation of integrated pest management and other sustainable landscape management practices.

Ozone-Depleting Substances (ODS)

- An LM-wide total ODS reduction of 56 percent was achieved in 2010. In 2011, 9.4 pounds of refrigerant was eliminated because the Mound, Ohio, Site ownership was transferred to the City of Miamisburg, Ohio, and the staff was relocated to the Fernald, Ohio, Site. All future ODS will be reduced as refrigerators and HVAC systems reach the end of their life cycles.
- Annual maintenance for HVAC systems is tracked at each manned site, as is maintenance on GSA vehicle air-conditioning systems and miscellaneous equipment.
- In 2009, LM conducted a survey of SF_6 use at all LM sites, LM determined that SF_6 is not used for any LM operations. LM also determined that no SF_6 is present at LM sites.
- PPOAs have been conducted to identify other ODS and to identify appropriate paths forward to reduce or eliminate ODS emissions.

5.1.2 Projected Performance

Efforts/Programs

- Continue to minimize the use of waste and pollutants through source reduction when planning jobs. Establish a tracking mechanism for these minimization efforts.
- Evaluate chemical redistribution and recycling through local community programs.
- Continue improving the life-cycle approach to chemical management.
- Maintain and continually improve the chemical inventory system.
- Continue reviewing chemical procurement packages to evaluate quantities and recommend greener chemical alternatives.
- Continue to reduce toxic chemicals.
- Complete the annual EPCRA report for applicable sites.
- Maintain a battery inventory and report any applicable hazardous or toxic chemicals under EPCRA requirements, as necessary.
- Maintain and update the regulatory compliance schedule.

Paper Reduction

- Continue to phase out single-sided printers and encourage employees to use network duplex printers.
- Encourage the use of electronic-presentation equipment to minimize hardcopy handouts.
- Encourage the electronic storage of records and files wherever the law allows.
- Continue to procure uncoated printing and writing paper that contains at least 30 percent post-consumer content.
- Continue to utilize technology and encourage behavior to minimize paper use.

Pest Management/Landscape Management

- Continue to maintain an ecosystem improvement log that details activities, including requirements to use integrated pest management through the consideration of alternatives to reduce the use of pesticides. Examples include biological controls, plant or animal competition, and less toxic or nontoxic chemical applications.
- Continue implementing integrated pest management and other appropriate landscape management practices.

Ozone-Depleting Substances

- Continue to replace LM equipment containing ODS as equipment reaches its end-of-use criteria.
- Continue to track existing ODS and, to the extent practicable, replace them with more energy-efficient and environmentally friendly alternatives as equipment approaches the end of its life cycle.
- Continue to maintain awareness of ODS and GHG regulatory changes through the quarterly regulatory review process.
- Conduct a new SF_6 survey to verify that SF_6 gas is still not used at LM sites.
- Conduct an assessment of cooling systems to ensure that routine maintenance is being conducted, and emissions and leaks are minimized.

5.2 Waste Minimization

Performance related to these goals is reported in the LMS contractor *Quarterly Performance Assurance Report* and in LM's annual PPTRS report. PPTRS printouts are included as Attachment D.

5.2.1 Performance Status

Performance status activities related to waste minimization include the following:

Recycling

- In 2011, LM recycled over 440,000 pounds of material, which was a solid waste diversion of 66 percent from municipal landfills. Recycling contracts are in place for all manned sites under LM for waste streams such as electronics, batteries, scrap metal, wood, paper, plastic, glass, aluminum, and cardboard. Specific language was added to statement of work templates to require subcontractors to report solid waste disposal and recycling volumes.
- In 2011, LM diverted 30,600 pounds of debris, which was a diversion of more than 77 percent of debris from landfills. Specific language was added to construction statement of work templates to require subcontractors to report construction and demolition debris disposal and recycling volumes.
- The LMBC in Morgantown, West Virginia, was presented a recycling award in the Government category by the Monongalia County Solid Waste Authority for keeping a large volume of waste out of West Virginia landfills.

Composting

- LM continued to track composting at the Weldon Spring, Missouri, Site and the Fernald, Ohio, Site. In FY 2011, 521 pounds of material was composted from food wastes, and 77,000 pounds of hay was used a soil amendment. The Rocky Flats, Colorado, Site began composting food wastes and coffee grounds this year, and the Grand Junction, Colorado, Site conducted a survey to determine whether it is cost effective to purchase a composter.

Clearance of Property

- LM has a protocol in place for releasing recyclable materials and ensuring that materials from any radiation areas are not released to the public for recycling. LM also has a process in place to ensure that materials that have come in contact with contaminated groundwater are not recycled.

5.2.2 Projected Performance

Recycling

- During the first quarter of 2012, the Waste Minimization/Pollution Prevention (WM/P2) Team will be highlighting their program to reduce, reuse, and recycle materials prior to considering disposal.
- The WM/P2 team will develop a poster, release an article in the *ECHOutlook* newsletter, and send out *E-news* communications promoting reduce, reuse, and recycle opportunities at home and at work.
- Continue to measure sanitary waste and recycling volumes.
- Assess compliance with reporting recycling activities from subcontractors.
- Assess the feasibility of commingling recycling streams.
- Continue Environmental Compliance review of adequate language in the statement of work templates and in the project evaluation forms.
- Improve the data collection process for construction recycling activities.

Composting

- Continue composting at the Fernald, Ohio, Site; the Rocky Flats, Colorado, Site; and the Weldon Spring, Missouri, Site.
- Evaluate results of a survey completed at the Grand Junction, Colorado, Site and, if it is cost-effective, install a composter and implement a composting program.
- Continue educational programs to present composting facts to the public and teach visitors and students the benefits of composting.
- Increase employee awareness of the types of materials that can be composted.
- Assess barriers to and evaluate resources necessary for expanding the composting program.

Clearance of Property

- The existing protocol to allow the removal and recycling of materials and scrap metal from controlled areas will be documented as a procedure and added to the *Environmental Instructions Manual*.
- In addition, training on the above procedure will be provided to Health and Safety personnel, site leads, and Environmental Compliance personnel during 2012.

6.1 Sustainable Acquisition

LM has established the following goals to support sustainable acquisition:

- Ensure that 95 percent of new contract actions, including task and delivery orders under new contracts and existing contracts, require the supply or use of products and services that are energy efficient (Energy Star or FEMP designated), water-efficient, biobased, environmentally preferable (including Electronic Product Environmental Assessment Tool [EPEAT]-registered products), or non-ozone-depleting; contain recycled content; or are nontoxic or less toxic alternatives.
- Update LM affirmative procurement plans (also known as green purchasing plans or environmentally preferable purchasing plans), policies, and programs to ensure that all federally mandated designated products and services are included in all relevant acquisitions.
- LM also commits its sites to strive to make 95 percent of new LM contract actions for products and services, including task/release and blanket orders but excluding all credit card purchases, environmentally preferable, in accordance with EO 13514 and as subject to certain qualifications and limitations.

6.1.1 Performance Status

- LM strengthened the Sustainable Acquisition Program by highlighting it during the fourth quarter. An article was included in the summer edition of the *ECHOutlook* newsletter to address Sustainable Acquisition, and a poster was distributed to help highlight the program. The LMS contractor's "Instructions for Use of the Government Purchase Card" procedures were revised in 2011 to provide more emphasis on tracking sustainable acquisitions. Performance related to these goals is reported in the LMS contractor *Quarterly Performance Assurance Report* and in the LM's annual PPTRS report.
- In 2011, 100 percent of new contract actions, including task and delivery orders under new contracts and existing contracts, required the supply or use of products and services that were energy efficient (Energy Star or FEMP designated), water-efficient, biobased, environmentally preferable (including EPEAT-registered products), or non-ozone-depleting; contained recycled content; or were nontoxic or less toxic alternatives.
- One hundred percent of the computer systems purchased during 2011 were rated Silver or Gold by EPEAT, excluding credit card purchases. This percentage exceeds the requirement in EO 13423 of purchasing 95 percent EPEAT Silver or Gold equipment.
- Currently, all new solicitations and contracts contain requirements for products and services to be energy-efficient (Energy Star or FEMP-designated), water-efficient, biobased, environmentally preferable (including EPEAT-registered products), non-ozone-depleting, and nontoxic or less toxic, and to contain recycled content.
- The current LM affirmative procurement plans, policies, and programs ensure that all federally mandated designated products and services are included in all relevant acquisitions.
- The current procurement process allows for review by a subject matter expert to identify applicable sustainable acquisition requirements.

6.1.2 Projected Performance

- Track compliance with the goal of purchasing 95 percent sustainable products and services (includes tracking for the performance assurance summary and LM's annual PPTRS report).
- Continue to strengthen the requirement for federally mandated designated products in all purchasing programs as necessary.
- Continue to require that purchases of noncompliant energy-efficient products have written preapproval from a subject matter expert.
- Distribute guidelines for purchasing allowances of green products instead of non-green products. These guidelines are awaiting final approval. When approved for distribution, the guidelines generally require green purchases when possible. However, there will be parameters under which requestors will have to seek approval to deviate from purchasing green products.

7.0 Electronics Stewardship and Data Centers

7.1 Data Centers and Electronic Stewardship

For the purposes of the FDCCI, a data center is defined as:

- Any room that is greater than 500 square feet and devoted to data processing, and
- Any room that meets one of the tier (I, II, II, or IV) classifications defined by the Uptime Institute.

In concert with the FDCCI, LM has established the following goals to perform sound electronics stewardship and data center management:

- Continually work to intelligently reduce the energy that computing resources consume.
- Increase or maintain the quantity of electronic assets disposed of through sound disposition practices.
- Ensure that 95 percent of newly purchased computer systems are EPEAT Silver or Gold.

Performance related to these goals is reported in the LMS contractor *Quarterly Performance Assurance Report*, in LM's annual PPTRS report, in Tab 6.1 of the CEDR spreadsheet, and in the DC Pro assessment tool.

7.1.1 Performance Status

In 2011, LM received the 2011 Federal Electronics Challenge Bronze Award.

In accordance with newly established criteria developed by the FDCCI, LM houses two data centers: one at the LMBC in Morgantown, West Virginia, and the other at the Grand Junction, Colorado, Office Site. Significant performance activities include the following:

- In 2011, the Hillshire data center located at the Yucca Mountain Office Las Vegas, Nevada, Site was consolidated with LMBC data center. LM received credit for reduced power consumption via reports filed with the Federal Data Center Consolidation Initiative (FDCCI) organization.

- LM continues to provide information to the FDCCI and follows up on suggested operational changes when feasible.
- LM installed separate electrical metering to monitor data processing equipment at the LMBC data center during 2011. This action was a product of data submitted to the FDCCI.
- LM continues to manage all excess or surplus electronic products in an environmentally responsible manner by:
  - Redeploying equipment to other staff members if it meets LM requirements.
  - Donating equipment to nonprofit organizations, such as schools and community groups, if it does not meet LM requirements.
  - Recycling computers and other devices with no redeemable value.
- All computer systems LM purchases are EPEAT Gold.

7.1.2 Projected Performance

LM is investigating application for the Federal Electronics Challenge Silver Award in 2012. That award measures activities conducted during 2011, including the following types of activities:

- Manage power.
- Optimize the configurations of data centers.
- Monitor power consumption in data centers.
- Minimize the number of systems that exist in general office space.
- Educate users on how they can be conscientious consumers.
- Continue to manage surplus or excess electronic products in an environmentally responsible manner.
- Continue to purchase EPEAT Silver or Gold computer systems.

7.2 Power Utilization Effectiveness

7.2.1 Performance Status

Until 2011, LM lacked the tools necessary for performing power utilization effectiveness (PUE) measurements. Now that separate metering of data processing equipment in the LMBC data center is available, LM can accurately measure and improve its PUE.

7.2.2 Projected Performance

In 2012, LM will extend separate metering to the Grand Junction, Colorado, Site office data center to measure and improve PUE at that location as well.

7.3 Power Management

7.3.1 Performance Status

All desktop and laptop systems in LM are imaged with Power Management settings configured in accordance with the government standard. The controls for power management on all LM systems are "locked down," which prohibits users from changing these controls.

7.3.2 Projected Performance

LM will be rolling out Windows 7 in 2012 with the appropriate Power Management controls in place and locked down.

8 Other Sustainability Goals and Initiatives

8.1 Return-on-Investment (ROI) Evaluation

Performance Status

Based on the ROI criteria and the level of development of scope and implementation cost estimates of the projects listed on Tab 3.5 in the CEDR worksheet, LM will pursue three major renewable energy or energy conservation projects. As noted on Tab 3.5 of the CEDR spreadsheet, all proposed or planned energy projects have undergone technical and economic analysis for consideration during the budget evaluation process.

Initial costs were developed in 2011 to prepare for the Fernald Preserve Pipeline Modification. The project will remove an obstruction from the water line that discharges to the Great Miami River. The obstruction causes higher than necessary extraction well pump discharge pressures, which increases energy use.

Cost savings realized from sustainability efforts at a specific LM site are reused to implement additional sustainability efforts at the same site. For example, money saved from installing a variable drive on Well #4 at the Fernald, Ohio, Site will be used to purchase and install additional variable drives on remaining operating well pumps.

Projected Performance

Currently planned and anticipated site projects are forecast to achieve the DOE goals in renewable energy, alternative fuel use, acquisition of hybrid vehicles, and water reduction by 2015. LM's renewable power percentage for 2011 was 11.0 percent, (2 x 2.1 percent from onsite renewables [LM earns double credit because the renewable energy was generated on either federal or tribal Land] plus 6.8 percent was from purchased RECs). The energy intensity goal of 30 percent reduction by 2015 will be difficult to meet because of the reclassification of the Piqua, Ohio, Decommissioned Reactor Site buildings to one OSF. LM will examine the remaining three identified energy reduction projects that still need additional financial or technical rigor before they are ready to be submitted in the budget. LM will initiate budget requests in 2012 to fund the Fernald Preserve Pipeline Modification. LM will continue to refine the scope and estimated implementation costs, evaluate funding sources for financial and

technical rigor, and seek appropriate funding sources over the next 3 years for those projects that are life-cycle cost-effective. LM's next budget request will be updated to include projects that will allow sustainability goals to be met.

In the future, LM will not only determine the cost-effectiveness of projects but also consider the implementation of new technologies for demonstration purposes, the facilitation of technology transfer, and the reduction of deferred maintenance.

LM integrates funding for long-term sustainability projects in the normal budget process. Costs are submitted in the Integrated Facilities and Infrastructure Crosscut budget and other related budget calls.

8.2 Training

LM continues to train new and existing employees in areas of sustainability. In addition, several employees participate in webinars, workshops, teleconferences, and conferences for more detailed information in their program areas. This information is provided in the CEDR spreadsheet on Tab 3.2.

Training is provided to ensure that all employees:

- Have the knowledge and skills necessary to perform their jobs in an environmentally responsible manner.
- Comply with federal, state, tribal, and local environmental laws, regulations, and permits, and with LMS contractor requirements and policies.
- Increase their awareness of environmental protection practices, pollution prevention, waste minimization, and sustainability opportunities.
- Take appropriate actions in the event of an emergency.

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Attachment A

Environment, Safety, and Health Policy

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Summary of Changes
to
Policy 450.8
Environment, Safety, and Health
Revised Version Issued as Policy 450.9

LM Policy 450.8 Environment, Safety, and Health of 05/29/09, has undergone minor revisions. This Policy has been revised to include a new Executive Order and make revisions for updated DOE Orders that LM abides by. Please replace LM Policy 450.8 with **LM Policy 450.9.**

INITIATED BY: [Insert Office]
NO. OF PAGES/ATTACHMENTS: 2 pages, 0 attachment

U.S. DEPARTMENT OF ENERGY
Legacy Management

POLICY

LM P 450.9

Approved: **11-29-11**

SUBJECT: ENVIRONMENT, SAFETY, AND HEALTH POLICY

1. OBJECTIVE. This policy reaffirms the Department of Energy (DOE), Office of Legacy Management's (LM) commitment to safety of our workers, respect for the environment, and protection of public health and safety through our environment, safety and health (ES&H) program.

2. CANCELLATION. This policy cancels LM P 450.8, *Environment, Safety, and Health Policy*, dated 05-29-09.

3. APPLICABILITY. This Policy applies to all LM contractor and federal employees.

4. REQUIREMENTS. Not Applicable

5. RESPONSIBILITIES. It is the responsibility of all LM personnel to support the ES&H policy to the utmost of their abilities. This policy, as set forth and supported by all members of senior management, will be reviewed annually and updated as necessary. Senior management will ensure that these expectations are made clear and available to all LM personnel, including DOE-LM employees and contractors, research associates, LM stakeholders, and the public.

6. POLICY. It is DOE policy that work be conducted safely and efficiently and in a manner that ensures protection of workers, the public, and the environment. . LM has a diversity of Goals, which support our mission "To manage the Department's post-closure responsibilities and ensure the future protection of human health and the environment." In support of our mission and goals, proper management of the impacts of our operations and facilities on worker and public safety and the environment is essential.

   With this policy, LM is pledging to protect the public, workers, and the environment by complying with all applicable requirements, committing to prevention of pollution, and achieving continual improvement. LM continues to make ES&H an integral part of our day-to-day decision-making and long-term planning processes across all goals, activities

INITIATED BY: [Insert Office]
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and functions by following an Integrated Safety Management System (ISMS) and an Environmental Management System (EMS) that are integrated to the fullest extent practicable. LM will strive to improve our ES&H programs and sustain compliance through the concerted process of continuous performance improvements using performance measurements such as objectives and targets.

7. REFERENCES.

a. DOE Order 436.1, Environmental Sustainability.
b. DOE P 450.4A, Integrated Safety Management Policy.
c. Executive Order 13423, Strengthening Federal Environmental, Energy, and Transportation Management.
d. Executive Order 13514, Federal Leadership in Environmental, Energy, and Economic Performance.

Approved: Original signed by
David W. Geiser **11/29/11**
Director
Office of Legacy Management

Distribution: As required

INITIATED BY: [Insert Office]
NO. OF PAGES/ATTACHMENTS: 2 pages, 0 attachment

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Attachment B

FIMS Excluded Building List and Certification Letter

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Department of Energy
Washington, DC 20585

DOE BUILDING EXCLUSION
SELF-CERTIFICATION FORM
FY 2011

FROM: Office of Legacy Management

TO: Sustainability Performance Office

DATE: 11/29/2011

SUBJECT: SELF-CERTIFICATION FORM FOR THE ENERGY INTENSITY GOAL OF EISA 2007

Each buildings or group of buildings excluded under the criteria for a Part G or Part H exclusion is/are metered for energy consumption and their consumption is reported annually.

If any building has been excluded under the criteria for Part H for impracticability then all practicable energy and water conservation measures with a payback of less than 10 years have been installed. A justification statement that explains why process-dedicated energy in the facility may impact the ability to meet the goal has been provided in the FIMS Report 063.

I certify that the buildings listed on the Excluded Buildings List produced by FIMS as Report 063 dated 14 November 2011 for the Legacy Management Sites on pages 45 through 52 meet the exclusion criteria in *Guidelines Establishing Criteria for Excluding Buildings* published by FEMP on January 27, 2006.

_____
DOE Site Office Official – printed name

Steven R. Schiesswohl
2011.12.01 16:06:05 -07'00'
_____
DOE Site Office Official – signature

_____
Date

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U.S. Department of Energy
Facilities Information Management System
Energy Consuming Excluded Buildings and Trailers List

Program Office **LM**

Site **08024** **Monticello, UT, Disposal and Processing Sites**

Property ID Justification Comments:	Real Property Unique ID	Property Name	Exclusion Part	Property Type	Gross SQFT	Excluded SQFT
MNT-BLDG-STORSHED	208390	Storage Shed	D - Essentially only lighting	Building	240	240
Shared meter						

This report qualifies DOE Owned, DOE Leased, and Contractor Leased buildings and trailers where the Energy Consuming Metered Process (Excluded) Facilities gsft is greater than zero.

U.S. Department of Energy
Facilities Information Management System
Energy Consuming Excluded Buildings and Trailers List

Program Office **LM**

Site **08031** **Pinellas County, FL, Site**

Property ID Justification Comments:	Real Property Unique ID	Property Name	Exclusion Part	Property Type	Gross SQFT	Excluded SQFT
PIN-STAR	143457	STAR Ctr Office Portion of Lease	C - Fully serviced lease	Building	1,613	1,613
Fully serviced lease						

This report qualifies DOE Owned, DOE Leased, and Contractor Leased buildings and trailers where the Energy Consuming Metered Process (Excluded) Facilities gsft is greater than zero.

U.S. Department of Energy
Facilities Information Management System
Energy Consuming Excluded Buildings and Trailers List

Program Office **LM**

Site **08034** **Rocky Flats, CO, Site**

Property ID Justification Comments:	Real Property Unique ID	Property Name	Exclusion Part	Property Type	Gross SQFT	Excluded SQFT
RFS03	204031	Rocky Flats Office Space	C - Fully serviced lease	Building	13,010	13,010
utilities paid by Lessor						

This report qualifies DOE Owned, DOE Leased, and Contractor Leased buildings and trailers where the Energy Consuming Metered Process (Excluded) Facilities gsft is greater than zero.

U.S. Department of Energy
Facilities Information Management System
Energy Consuming Excluded Buildings and Trailers List

Program Office **LM**

Site **08035** **Rifle, CO, Disposal/Processing Site**

Property ID Justification Comments:	Real Property Unique ID	Property Name	Exclusion Part	Property Type	Gross SQFT	Excluded SQFT
RFO-TRLR-ERSP	207375	Single Wide Trailer - ERSP	B - Privately owned	Trailer	672	672
Rental Agreement						

This report qualifies DOE Owned, DOE Leased, and Contractor Leased buildings and trailers where the Energy Consuming Metered Process (Excluded) Facilities gsft is greater than zero.

U.S. Department of Energy
Facilities Information Management System
Energy Consuming Excluded Buildings and Trailers List

Program Office **LM**

Site **08052** **Fernald, OH, Site**

Property ID Justification Comments:	Real Property Unique ID	Property Name	Exclusion Part	Property Type	Gross SQFT	Excluded SQFT
FER01	203707	Delta Building	C - Fully serviced lease	Building	10,108	10,108
Lease						

This report qualifies DOE Owned, DOE Leased, and Contractor Leased buildings and trailers where the Energy Consuming Metered Process (Excluded) Facilities gsft is greater than zero.

U.S. Department of Energy
Facilities Information Management System
Energy Consuming Excluded Buildings and Trailers List

Program Office **LM**

Site **08066** **Grand Junction, CO, Site**

Property ID Justification Comments:	Real Property Unique ID	Property Name	Exclusion Part	Property Type	Gross SQFT	Excluded SQFT
GJO-BLDG-B2 Fully Service Lease	208140	RTC Lease-Building2	C - Fully serviced lease	Building	1,684	1,684
GJO-BLDG-STORSHED Meter exists on leased building	207408	Storage Shed	F - Lease some energy provided	Building	336	336
GJO-BLDG-B12 Fully Services Lease	208138	RTC Lease-Building12	C - Fully serviced lease	Building	4,443	4,443
GJO-BLDG-B32 Fully Serviced Lease	208137	RTC Lease-Building32	C - Fully serviced lease	Building	4,616	4,616
GJO-TRLR-RECORDSTOR Shared meter	208493	RECORDS STORAGE CONTAINER	F - Lease some energy provided	Trailer	320	320
GJO-BLDG-B810 rent includes all utilities	204554	RTC Lease-Building810	C - Fully serviced lease	Building	25,495	25,495

This report qualifies DOE Owned, DOE Leased, and Contractor Leased buildings and trailers where the Energy Consuming Metered Process (Excluded) Facilities gsft is greater than zero.

U.S. Department of Energy
Facilities Information Management System
Energy Consuming Excluded Buildings and Trailers List

Program Office **LM**

Site **08066** **Grand Junction, CO, Site**

Property ID Justification Comments:	Real Property Unique ID	Property Name	Exclusion Part	Property Type	Gross SQFT	Excluded SQFT
GJO-BLDG-B12A	208136	RTC Lease-Building12A	C - Fully serviced lease	Building	6,757	6,757
Fully Service Lease						
GJO-BLDG-B938	208135	RTC Lease-Building938	C - Fully serviced lease	Building	19,834	19,834
Fully Service Lease						

This report qualifies DOE Owned, DOE Leased, and Contractor Leased buildings and trailers where the Energy Consuming Metered Process (Excluded) Facilities gsft is greater than zero.

U.S. Department of Energy
Facilities Information Management System
Energy Consuming Excluded Buildings and Trailers List

Program Office **LM**

Site **08069** **Las Vegas, NV, Site**

Property ID Justification Comments:	Real Property Unique ID	Property Name	Exclusion Part	Property Type	Gross SQFT	Excluded SQFT
LVS-BLDG-CANYONCNTR Fully-Service Lease	209421	NV Office Lease - Canyon Center	C - Fully serviced lease	Building	4,923	4,923

This report qualifies DOE Owned, DOE Leased, and Contractor Leased buildings and trailers where the Energy Consuming Metered Process (Excluded) Facilities gsft is greater than zero.

Attachment C

LM’s List of Buildings and Gross Square Footage Used for Reporting

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Office of Legacy Management
Buildings Included on EMS Reports

Site	Property Name	Property ID	GSF	Incl. in Water Baseline (FY2007)	Water Baseline (sq. ft.)	Water FY2008 (sq. ft.)	Water FY2009 (sq. ft.)	Water FY2010 (sq. ft.)	Water FY2011 (sq. ft.)	Water Notes	Incl. in Energy Baseline (FY2003)	Energy Baseline (sq. ft.)	FY2008 Energy (sq. ft.)	FY2009 Energy (sq. ft.)	FY2010 Energy (sq. ft.)	FY2011 Energy (sq. ft.)	Energy Notes	FY2010 Existing Building	FY2010 Existing Building (sq. ft.)	FY2011 Existing Building (sq. ft.)	Reason for Building Exclusion
Column Totals		**Totals**	**2,636,384**		**10,579**	**10,579**	**22,512**	**22,464**				**3,176,227**	**26,374**	**72,206**	**114,797**				**190,666**		
Durango, CO, Disposal/Processing Site																					
Durango, CO, Disposal/Processing Site	Storage Shed	DUD-BLDG-STORSHED	100	no						no potable water use	no						OSF	no			Less than 5,000 GSF
Fernald, OH, Site																					
Fernald, OH, Site	Restoration Storage Shed	FER-BLDG-RESTSTORSHED	450	no						no potable water use	no			450	600	600	incorrectly reported previously	no			Less than 5,000 GSF
Fernald, OH, Site	Warehouse (Old D.O. Bldg.) 18P	FER-BLDG-DO18P	900	no						no potable water use	no			900	900	900		no			Less than 5,000 GSF
Fernald, OH, Site	Warehouse (Old Comm. Bldg) 23B	FER-BLDG-COMM23B	750	no						no potable water use	no			750	750	750		no			Less than 5,000 GSF
Fernald, OH, Site	Visitor Center Building	FER-BLDG-VISITORCNTR	10,800	no			10,800	10,800	10,800	Not included in FY 07 or FY 08 data. FY 09 water use at the new Visitor Center will be included for Fernald. The FY 09 sq. ft. and water use data (first year) will be added to the baseline to adjust the baseline for future comparisons.	yes	10,800	10,000	10,800	10,800	10,800		yes	10,800	10,800	
Fernald, OH, Site	Grndwtrsys	FER-OSFS-GRNDWTRSYS		yes	7,200	7,200	7,200	7,200	7,200		yes	7,200	7,200	0	0	0	OSF (total gross square footage is 12,757 which includes 7,200 previously known as 51A, but called CAWWT) Part G exclusion.	no			OSF
Fernald, OH, Site	Delta Building Lease	FER01	10,108	no						Fully-Serviced Lease	no						Fully-Serviced Lease	yes	10,108	10,108	Fully-Serviced Lease
Fernald, other											yes	680,579	6,980	0	0	0	Buildings were removed as part of remediation. Additional buildings were included as part of an OSF CAWWT (51A, 18Q, 18R, 18S, 18VH, 18V1, and CWWHouse)	no			OSF
Grand Junction, CO, Disposal/Processing																					
Grand Junction, CO, Disposal/Processing Site	Decontamination Building A	GRJ-BLDG-DECON	1,272	yes	1,272	1,272	1,272	1,272	1,272	See also information for the GJDS trailer (under separate spreadsheet tab). The sq. ft. for both the trailer (662 sq. ft) and Decon Building A (1,272 sq. ft) used for this site's water data is 1,934 sq. ft. No changes since baseline year.	no			1,272	1,272	1,272		no			Less than 5,000 sq. feet
Grand Junction, CO, Disposal/Processing Site	Storage Building D	GRJ-BLDG-STORAGE	1,308	no						no potable water use	no			1,308	1,308	1,308		no			Less than 5,000 sq. feet
Grand Junction, CO, Disposal/Processing Site	Three Sided Storage Shed	GRJ-BLDG-3SIDED STOR	1,280	no						no potable water use	no			1,280	1,280	1,280		no			Less than 5,000 sq. feet
Grand Junction, CO, Disposal/Processing Site	Storage Shed	GRJ-BLDG-STORSHED	64	no						no potable water use	no			64	64	64		no			Less than 1,000 GSF
Grand Junction, CO, Disposal/Processing Site	Single Wide Trailer, Building B	GRJ-TRLR-OFFICE	720	yes	662	662	720	720	720	Potable water used in this trailer. See information pertaining to Decon Building A (under separate spreadsheet tab). The sq. ft. for both the trailer (720 sq. ft) and Decon Building A (1,272 sq. ft) used for this site's water data is 1,992 sq. ft.	no			720	720	720		no			Less than 5,000 GSF
Grand Junction, CO, Site																					
Grand Junction, CO, Office Site	Storage Shed	GJO-BLDG_STORSHED	336	no						no potable water use	no				336	336	Added in 2010	no			Less than 5,000 GSF
Grand Junction, CO, Office Site	Records Storage Container	GJO-TRLR-RECORDSTOR	320	no						no potable water use	no						Fully-Serviced Lease	no	320	320	Less than 5,000 GSF. Fully Serviced Leased
Grand Junction, CO, Office Site	RTC Lease-Building12	GJO-BLDG-B12	4,443	no						Fully-Serviced Lease	no						Fully-Serviced Lease	no	4,443	4,443	Less than 5,000 GSF. Fully Serviced Leased
Grand Junction, CO, Office Site	RTC Lease-Building12A	GJO-BLDG-B12A	6,757	no						Fully-Serviced Lease	no						Fully-Serviced Lease	yes	6,757	6,757	Fully-Serviced Lease
Grand Junction, CO, Office Site	RTC Lease-Building2	GJO-BLDG-B2	1,684	no						Fully-Serviced Lease	no						Fully-Serviced Lease	no	1,684	1,684	Less than 5,000 GSF. Fully Serviced Leased
Grand Junction, CO, Office Site	RTC Lease-Building32	GJO-BLDG-B32	4,616	no						Fully-Serviced Lease	no						Fully-Serviced Lease	no	4,616	4,616	Less than 5,000 GSF. Fully Serviced Leased
Grand Junction, CO, Office Site	RTC Lease-Building810	GJO-BLDG-B810	25,495	no						Fully-Serviced Lease	no						Fully-Serviced Lease	yes	25,495	25,495	Fully-Serviced Lease
Grand Junction, CO, Office Site	RTC Lease-Building938	GJO-BLDG-B938	19,834	no						Fully-Serviced Lease	no						Fully-Serviced Lease	yes	19,834	19,834	Fully-Serviced Lease
Las Vegas, NV, Site																					
Las Vegas, NV, Site	NV Office Lease-Canyon Center	LVS-BLDG-CANYONCNTR	4,923	no						Fully-Serviced Lease	no						Fully-Serviced Lease	no	4,923	4,923	Less than 5,000 GSF. Fully Serviced Leased
Monument Valley, AZ, Processing Site																					
Monument Valley, AZ, Processing Site	Storage Shed 1	MON-BLDG-STORSHED1	72	no						no potable water use	no						OSF	no			Less than 5,000 GSF
Monument Valley, AZ, Processing Site	Storage Shed 2	MON-BLDG-STORSHED2	48	no						no potable water use	no						OSF	no			Less than 5,000 GSF
Monticello, UT, Disposal and Processing Sites																					
Monticello, UT, Disposal and Processing Sites	Triple Wide Trailer	MNT01-TR	1,800	yes	725	725	1,800	1,800	1,800	The sq. ft. reported in the FY08 Exec. Plan and on previous reports was incorrectly reported as 725. The actual (corrected) building size information currently used is 1,800 sq. ft. No physical changes were made to the size of the building.	no			1,800	1,800	1,800		no			Less than 5,000 GSF
Monticello, UT, Disposal and Processing Sites	Storage Hopper	MNT-OSFS-STORHOP	725	no						no potable water use	no			725	0	0	Actually a storage hopper converted to OSF in FY2010	no			Less than 5,000 GSF
Monticello, UT, Disposal and Processing Sites	STORAGE SHED	MNT-BLDG-STORSHED	240	no						no potable water use	no				240	240	Added in 2010	no			Less than 5,000 GSF
Mound, OH Site																					
Mound, OH Site				no						Mound buildings were not included in baseline because site belonged to EM. Currently determining whether to include the LM building as a site for potable water use tracking purposes.	no						Mound buildings were not included in baseline because site belonged to EM. Transfer to LM is imminent.				
Pinellas County, FL, Site																					
Pinellas County, FL, Site	Storage Shed 1	PIN-BLDG-STORSHED1	120	no						no potable water use	no			120	120	120	powered but not individually metered	no			Less than 5,000 GSF
Pinellas County, FL, Site	Storage Shed 2	PIN-BLDG-STORSHED2	120	no						no potable water use	no			120	120	120	powered but not individually metered	no			Less than 5,000 GSF
Pinellas County, FL, Site	Star Ctr Office Lease	PIN-STAR	1,613	no						Fully-Serviced Lease								no			Less than 5,000 GSF. Fully-Serviced Lease
Piqua, OH Decommissioned Reactor																					
Piqua, OH Decommissioned Reactor	Storage Vault	PIQ-OSFS-STORAGVAULT	43,168							In FY11, LM reclassified the Piqua Buildings (PIQ-BLDG-ADMIN; PIQ-BLDG-REACTORCON) as an OSF. Per the FIMS User Guide the unit of measurement required for this asset type is captured in cubic feet (455,626).					43,168	0	Exclusion G	yes	43,168	0	Reclassifed by LM as OSF. Previously included as 2 separate buldlings totalling 43,168 gsf.
Rifle, CO, Disposal/Processing Site																					
Rifle, CO, Disposal/Processing Site	Single Wide Trailer (rented)	RFO-TRLR-ERSP	672	yes	720	720	720	672	672	Old Rifle Processing Site trailer new in June 2008. Sq ft and water use added to baseline information as adjustment for comparison purposes. Square footage adjusted in FY10 per additional source documentation provided.	no						rental agreement	no			Less than 5,000 GSF
Rocky Flats, CO Site																					
Rocky Flats, CO Site	Other Buildings		2,426,033	no						Previously demolished.	yes	2,426,033		0	0	0	Total area in 2003 was 2,427,101 square feet. All except one building demolished between 2003 and 2008. Only renewable energy used for this building.	no			Previously demolished.
Rocky Flats, CO Site	Equipment Storage Building	RFS-BLDG-EQUIPSTOR	1,068	no						no potable water use	yes	1,068		1,068	1,068	1,068	Only renewable energy used for this building.	no			Less than 5,000 sq. feet
Rocky Flats, CO Site	Rocky Flats Office Space	RFS03	13,010	no						Fully-Service Lease	no						Fully-Serviced Lease	yes	13,010	13,010	Fully-serviced lease
Tuba City, AZ, Disposal Site																					
Tuba City, AZ, Disposal Site	Control Building	TUB-BLDG-CONTROL	1,018	no						Non-potable water used at Tuba City site. Water would require treatment prior to use.	yes	1,018	1,018	1,018	1,018	1,018		no			Less than 5,000 sq. feet
Tuba City, AZ, Disposal Site	Greenhouse	TUB01-GH	0	no						Non-potable water used at Tuba City site. Water would require treatment prior to use.	yes	761		761	0	0	Transferred to Tribe	no			Less than 5,000 sq. feet
Tuba City, AZ, Disposal Site	Shop/Laboratory Building	TUB-BLDG-SHOPLAB	1,176	no						Non-potable water used at Tuba City site. Water would require treatment prior to use.	yes	1,176	1,176	1,176	1,176	1,176		no			Less than 5,000 sq. feet
Tuba City, AZ, Disposal Site	Treatment System	TUB-OSFS-TREATSYS	0	no							no					0	Exclusion G				
Tuba City, AZ, Disposal Site	Storage Shed	TUB-BLDG-STORSHED1	282	no						no potable water use	no			282	282	282	No power	no			Less than 5,000 sq. feet
Tuba City, AZ, Disposal Site	Storage Shed 2	TUB-BLDG-STORSHED2	282	no						no potable water use	no				282	282	Added in FY2010. No power.	no			Less than 5,000 sq. feet
Weldon Spring, MO, Site																					
Weldon Spring, MO, Site	Administration Building	WEL-BLDG-ADMIN	36,030	no			0	0	36,030	See also information for Interp Cntr (under separate spreadsheet row). Weldon Spring buildings were not included in baseline because buildings were outgranted out to Lindenwood University. Became LM buildings in FY2011. Potable water used in this building. The sq. ft. for both the Admin Bldg (36,030 sq. ft) and Interpretive Center (10,663 sq. ft) used for this site's water data is 46,693 sq. ft.	yes	36,030		36,030	36,030	36,030		yes	36,030	36,030	

Office of Legacy Management
Buildings Included on EMS Reports

Site	Property Name	Property ID	GSF	Incl. in Water Baseline (FY2007)	Water Baseline (sq. ft.)	Water FY2008 (sq. ft.)	Water FY2009 (sq. ft.)	Water FY2010 (sq. ft.)	Water FY2011 (sq. ft.)	Water Notes	Incl. in Energy Baseline (FY2003)	Energy Baseline (sq. ft.)	FY2008 Energy (sq. ft.)	FY2009 Energy (sq. ft.)	FY2010 Energy (sq. ft.)	FY2011 Energy (sq. ft.)	Energy Notes	FY2010 Existing Building	FY2010 Existing Building (sq. ft.)	FY2011 Existing Building (sq. ft.)	Reason for Building Exclusion
Weldon Spring, MO, Site	Interpretive Center	WEL-BLDG-INTERPCNTR	10,663	no			0	0	10,663	See also information for Admin Bldg (under separate spreadsheet row). Weldon Spring buildings were not included in baseline because buildings were outgranted out to Lindenwood University. Became LM buildings in FY2011. Potable water used in this building. The sq. ft. for both the Admin Bldg (36,030 sq. ft) and Interpretive Center (10,663 sq. ft) used for this site's water data is 46,693 sq. ft.	yes	9,478		9,478	10,663	10,663		yes	9,478	10,663	
Weldon Spring, MO, Site	Leachate Collection & Removal Facility	WEL01-LCRS	1,284	no						no potable water use	yes	1,284		1,284	0	0	Exclusion G	no			Less than 5,000 sq. feet
Weldon Spring, MO, Site	Storage Shed	WEL01-SS	800	no						no potable water use	yes	800		800	800	800		no			Less than 5,000 sq. feet

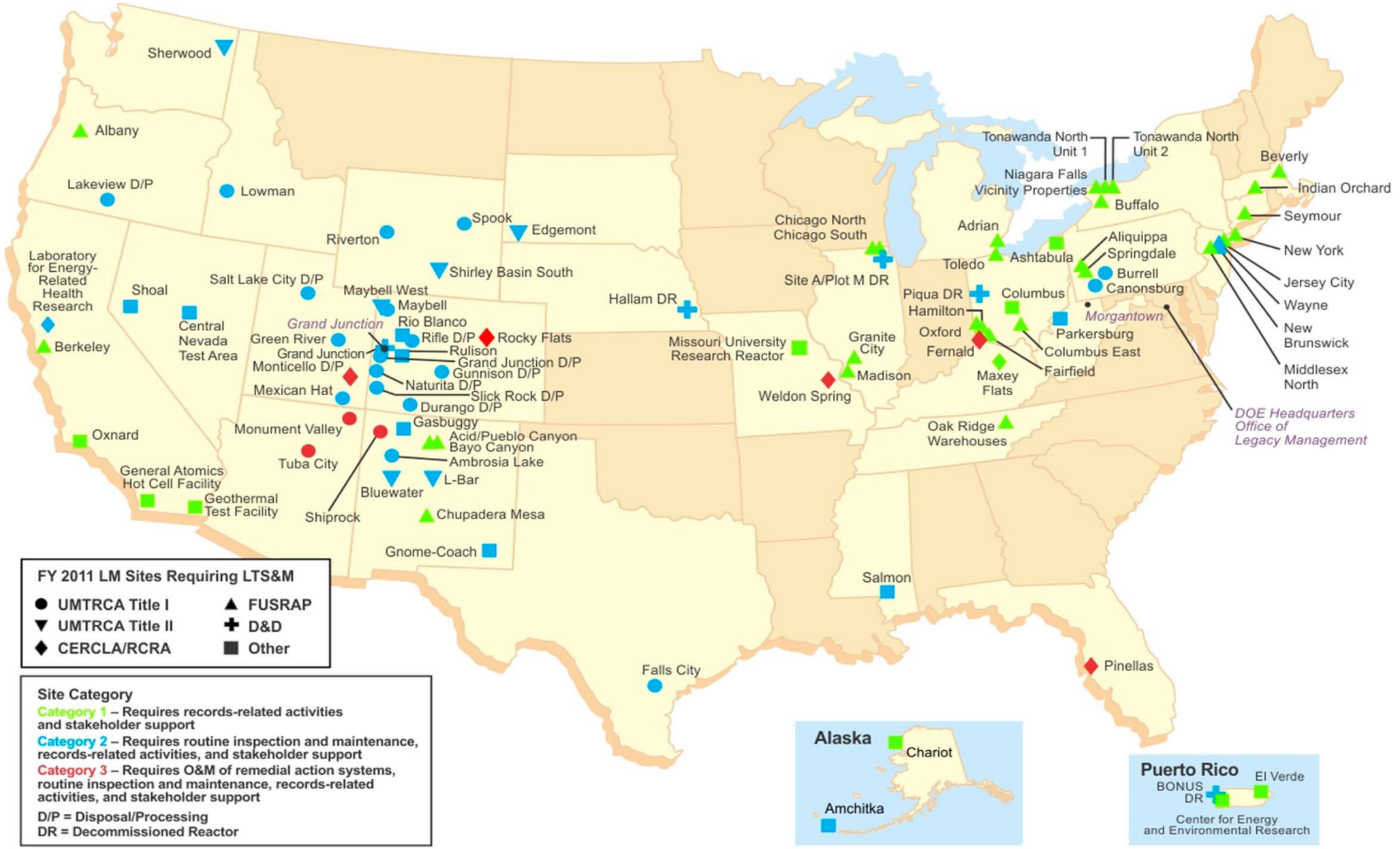
Notes:
Some OSFs are part of remedial systems. The area (in SF) is identified as zero on this page, but energy used by the system is identified in other data reports.
This baseline number has fluctuated over the past few years due to FIMS reclassifications, appropriate inclusion of buildings in baseline, and corrections for true building SF. Confirmation of the actual number is underway.

End of FY	Number of LM Sites	Refr.	Notes
2003	33	a	Baseline for Energy data
2004	63	a	LM established Dec. 15, 2003
2005	67	a	Baseline for Fleet data
2006	70	b	
2007	71	b	Baseline for Water data
2008	83	b	Baseline for GHG data
2009	85	b	
2010	87	b	
2011	87	b	
2012			

References:

a. Office of Legacy Management - The First Five Years FY 2004-2008

b. LM Site Mangement Guide (aka Blue Book)


Sherwood
Albany
Lakeview D/P
Lowman
Riverton
Spook
Edgemont
Shirley Basin South
Laboratory for Energy-Related Health Research
Shoal
Salt Lake City D/P
Maybell West
Maybell
Central Nevada Test Area
Grand Junction
Rio Blanco
Green River
Rifle D/P
Rocky Flats
Grand Junction
Rulison
Grand Junction D/P
Monticello D/P
Gunnison D/P
Naturita D/P
Mexican Hat
Slick Rock D/P
Durango D/P
Berkeley
Gasbuggy
Monument Valley
Acid/Pueblo Canyon
Bayo Canyon
Oxnard
Tuba City
Ambrosia Lake
General Atomics Hot Cell Facility
L-Bar
Bluewater
Geothermal Test Facility
Shiprock
Chupadera Mesa
Gnome-Coach
Hallam DR
Missouri University Research Reactor
Weldon Spring
Chicago North
Chicago South
Site A/Plot M DR
Granite City
Madison
Tonawanda North Unit 1
Tonawanda North Unit 2
Niagara Falls Vicinity Properties
Buffalo
Adrian
Toledo
Ashtabula
Aliquippa
Springdale
Burrell
Canonsburg
Piqua DR
Columbus
Hamilton
Morgantown
Oxford
Parkersburg
Fernald
Columbus East
Fairfield
Maxey Flats
Oak Ridge Warehouses
Beverly
Indian Orchard
Seymour
New York
Jersey City
Wayne
New Brunswick
Middlesex North
DOE Headquarters Office of Legacy Management
Salmon
Falls City
Pinellas
FY 2011 LM Sites Requiring LTS&M
UMTRCA Title I
UMTRCA Title II
CERCLA/RCRA
FUSRAP
D&D
Other
Site Category
Category 1 – Requires records-related activities and stakeholder support
Category 2 – Requires routine inspection and maintenance, records-related activities, and stakeholder support
Category 3 – Requires O&M of remedial action systems, routine inspection and maintenance, records-related activities, and stakeholder support
D/P = Disposal/Processing
DR = Decommissioned Reactor
Alaska
Chariot
Amchitka
Puerto Rico
BONUS DR
El Verde
Center for Energy and Environmental Research

Attachment D

PPTRS Printouts

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Pollution Prevention Tracking and Reporting System

Site Name: Office of Legacy Management
FY: 2011

Data Collection Menu

System Name	Status	Last Modified By	Last Modified Date
Site/Project Profile	Complete	ddepinho	11/22/2011
Electronics Data	Approved	tribeiro	11/30/2011
Waste & Toxics	Approved	tribeiro	11/30/2011
Contract Tracking	Approved	tribeiro	11/30/2011
Priority Products	2 Item(s) Completed	DePinho, Darlene	DePinho, Darlene
Accomplishments / Awards	1. Not Started	1. N/A	1. N/A
Waste Generation Data	1. Lead PSO: LM - Approved	1. tribeiro	1. 11/30/2011

Last updated October 1, 2011
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Pollution Prevention Tracking and Reporting System

Guidance

Office of Legacy Management

Site / Project Profile

Site Name: Office of Legacy Management

Lead PSO: LM

Other PSOs with reportable activities at this site:
--Select--
EE
EM
FE
NE
NA
PM
RW
SC
MA

Note: Please keep holding the CTRL key to make a multiple selection.

DOE Point of Contact Information:

DOE Point of Contact: Tracy Ribeiro

DOE Phone #: 970-248-6621 (nnn) nnn-nnnn or nnn-nnn-nnnn

DOE Email Address: tracy.ribeiro@lm.doe.gov

DOE Fax #: 970-248-6023

DOE Employee Address:
DOE Office of Legacy Management
Grand Junction Office

Contractor Point of Contact Information:

Company Name: S.M. Stoller

Contractor Point of Contact: Darlene DePinho

Contractor Phone #: 970-248-6576 (nnn) nnn-nnnn or nnn-nnn-nnnn

Contractor Email Address: darlene.depinho@lm.doe.gov

Contractor Fax #: 970-248-6040

Contractor Address:
2597 Legacy Way (formerly B3/4 Road)
Grand Junction, CO 81503

Additional Questions

Indicate local, state, regional, and/or national awards (not including DOE/NNSA recognition) received during the reporting period for environmental sustainability and environmental compliance efforts:

Check Spelling

The LM Business Center (LMBC) in Morgantown was presented a recycling award in the government category by the Monongalia County Solid Waste Authority for keeping a large amount of waste out of West Virginia landfills.
DOE-LM received the Federal Electronics Challenge Bronze Award.

Check Validation Submit

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Pollution Prevention Tracking and Reporting System

Guidance

Site Name: Office of Legacy Management
FY: 2011

This record has been approved by tribeiro at 11/30/2011 and cannot be edited. If this data is incorrect, please contact P2 Support at 800-473-4375 or email to p2support@eh.doe.gov

ELECTRONICS

EPEAT Purchases Data Entry

	Desktop Computers # of Units	CRT Monitors # of Units	LCD Monitors # of Units	Laptop Computers # of Units
EPEAT - Registered (Bronze)	0	0	0	0
EPEAT - Registered (Silver)	0	0	12	2
EPEAT - Registered (Gold)	24	0	95	69
Not EPEAT - Registered	0	0	2	0

Electronics Reuse & Recycling Data Entry

Electronics Recycling:

Conversion factors: Use the average measures below to convert gross weights into number of units for P2 reporting. These values are used by the Federal Electronics Challenge and authorized by the EPA.

CPU - 27 lbs
CRT Monitor - 14" - 15 lbs, 15" - 17 lbs, 17" - 25 lbs, 20" - 70 lbs
LCD Monitor - 25 lbs
Laptop - 7 lbs

Did your site dispose of any mixed electronics (not segregated by type)?	No

How did your site manage computer equipment taken out of service in fiscal year 2011?

	Desktop Computers # of units	CRT Monitors # of units	LCD Monitors # of units	Laptop Computers # of units
Transferred or Donated for Reuse:	0	0	0	0
Sent for Recycling:	0	0	0	0
Sent for Disposal (e.g., Landfill Facilities):	0	0	0	0

	Printers # of units	Multifunction devices (MFDs) # of units	Televisions # of units	Servers # of units	Cellular/mobile telephones # of units	Personal digital assistants (PDAs) # of units
Transferred or Donated for Reuse:	0	0	0	0	0	0
Sent for Recycling:	0	0	0	0	0	0
Sent for Disposal (e.g., Landfill Facilities):	0	0	0	0	0	0

If your site did not segregate electronics by product type prior to disposition, please indicate the gross weight sent to each of the following:

Transferred or Donated for Reuse:	8.362429 mt
Sent for Recycling:	2.714297 mt
Sent for Disposal:	0 mt

Note: DO NOT include items segregated by product type. These should be reported in the previous section.

Additional Questions

1. How many computers and monitors are in use at your organization?

525 Desktop computers; 0 CRT Monitors; 622 LCD Monitors; 369 Laptop/notebook computers;

2. Are ENERGY STAR® power management features enabled on non-exempt computers (desktops and laptops/notebooks) and/or monitors at your organization? Yes

If yes, estimated percentage of enabled non-exempt monitors: 100 %

3. Are eligible computers, printers, copiers, and multifunction devices at your organization set to default to double-sided printing? Yes

4. Estimated percentage of eligible computers set to double-sided printing by default: 100 %

5. Estimated percentage of eligible printers, copiers and multifunction devices set to double-sided printing by default: 100 %

6. Number of printers, copiers and multifunction devices incapable of duplex printing: 0

7. If your organization sent electronic equipment to be recycled, which of the following did you use? (Check all that apply.)

- [x] Responsible Recycling (R2) or e-Stewards Certified Recycler
- [ ] UNICOR
- [ ] Manufacturer Take-Back Program (for EPEAT registered products)
- [ ] Manufacturer Take-Back Program (for non-EPEAT registered products)
- [ ] Defense Reutilization and Marketing Service (DRMS)
- [ ] Other (e.g., a local non-certified recycler)

If you checked “Manufacturer Take-Back Program (for non-EPEAT registered products),” “DRMS,” or “Other”. What, if any, due diligence measures did your organization take to ensure that the equipment was recycled in an environmentally sound manner? (Check all that apply.)

- [ ] Conducted onsite review of the recycler
- [ ] Relied on onsite review conducted by another federal facility or agency
- [ ] Other, please specify:

General Comments:

Approved and Lock | Submit

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Pollution Prevention Tracking and Reporting System

Guidance

Site Name: Office of Legacy Management
FY: 2011

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Waste and Toxics Management Data Entry

Please report your site's/facility's waste generation by waste type and disposal method in the table below.

Waste Type	Disposal Method	Amount (metric tons)
Construction and Demolition (C & D) debris consist of bulky, heavy materials, such as concrete, wood, metals, glass, and salvaged building components generated during the construction, renovation, and demolition of buildings, roads, and bridges.	Landfilled	4.1
	Diverted	13.9
Municipal Solid Waste (MSW) (not including C& D) consist of unwanted materials, such as trash and organics that are generated by normal housekeeping activities and are not considered hazardous, radioactive, or covered under the Toxic Substance Control Act (TSCA).	Landfilled **off-site**	100.4
	Landfilled on-site	0
	Waste-to-energy (not a subset of diverted)	0
	Total diverted (excluding composting)	164.5
	Composted **off-site** (subset of diverted)	0.02
	Composted on-site (subset of diverted)	35.1
Material and debris generated from posted radiological areas including wastes identified by regulatory agreement as potentially contaminated with hazardous or radioactive constituents.	Landfilled only	17112.5
OPTIONAL REPORTING CATEGORY - Special waste types (listed wastes, characteristic wastes, universal wastes and mixed wastes).	Landfilled	0.07
	Diverted	0.34

If your site's waste is handled by another site, it is important that both sites indicate this relationship in the PPTRS reporting. Please ensure that the reporting does not double-count (or disregard) the waste quantities.

Describe any planned activities (for example, new composting program, major construction initiative) that will impact site performance in this area in the appropriate section of your Site's Sustainability Plan (SSP).

Comments:

This data is for all legacy management sites and offices under DOE-LM purview, but not including the Forrestal Building.

Additional Questions

1. Please describe any actions your site has taken to verify whether materials reported as "diverted from the waste stream' are actually being handled appropriately. For example, list any site visits, audits, or follow-up activities conducted on recycling contractors.

DOE-LM ensured battery recycler is approved by GSA and used local municipal landfill for recycling other universal wastes and hazardous materials. The municipal landfill has certified recycling procedures.

2. Please describe your site's progress in achieving its toxic chemical reduction goals. Include description of the chemicals being targeted, the reduction goals, reductions achieved to date, and next steps, if any.

DOE-LM maintained chemical inventories and all chemicals were reused/recycled to the extent possible through site-to-site chemical sharing programs and site-specific recycling programs.

3. Does your site have an integrated pest management program that covers buildings and grounds?

Yes

If not, please explain:

LM has an integrated pest management program that covers DOE-owned facilities. Leased offices and grounds are not covered under this program.

Approved and Lock | Submit

Pollution Prevention Tracking and Reporting System

Guidance

Site Name: Office of Legacy Management
FY: 2011

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Sustainable Acquisition Data Entry
Contract Actions

Type of Contract	Number of New Contract Actions*	Number Reviewed	Number without Sustainable Acquisition opportunity	Number meeting Sustainable Acquisition requirements	Description of Review Methodology and Findings
Construction	3	3	0	3	Reviewed all subcontracts issued. Only three construction contracts issued. All three met Sustainable Acquisition
Custodial	1	1	0	1	Reviewed all subcontracts issued. Only one custodial contract issued. It met Sustainable Acquisition requirements.
Other Contract Types. Optional (please describe)	0	0	0	0	

**Note: The total number of contract actions (2nd column) should be both those compliant with and those not compliant with EO 13514 .*

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Pollution Prevention Tracking and Reporting System

Guidance

Site Name: Office of Legacy Management
FY: 2011

This form has been completed

Data Entry - OFFICE - Electronic Equipment – Computers

Leadership Goal: 95% of purchases meet one or more of the following:

Desktop/Notebooks

- D+- EPEAT Gold More Info

Thin Client

- ENERGY STAR or EPEAT More Info Or More Info

Met in This Year	% Achieved	Criterion Met	Data Gathering Process Description, including quantities reviewed and compliant
(•) Yes ( ) No	97.89 %	95% of purchases were EPEAT Gold	Reviewed requisition logs and purchase orders. 95 desktops and laptops puchased. 93 were EPEAT

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Pollution Prevention Tracking and Reporting System

Guidance

Site Name: Office of Legacy Management
FY: 2011

This form has been completed

Data Entry - OFFICE - Electronic Equipment –Computer Monitors

Leadership Goal: 95% of purchases meet the following:

- D+-EPEAT Gold More Info

Met in This Year	% Achieved	Criterion Met	Data Gathering Process Description, including quantities reviewed and compliant
○ Yes ◉ No	87.5 %	87.5% of monitors were EPEAT Gold	Reviewed requisition logs and purchase orders. 112 monitors purchased. 110 monitors were EPEAT Silver

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Pollution Prevention Tracking and Reporting System

Guidance

PSO: LM
FY Year: 2011

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Site Name: Office of Legacy Management
FY: 2011

Waste Type	Routine Waste		Cleanup/Stabilization Waste	
High Level Waste (Liquid)	0	m3	0	m3
High Level Waste (Solid)	0	m3	0	m3
Transuranic Waste (Liquid)	0	m3	0	m3
Transuranic Waste (Solid)	0	m3	0	m3
Mixed Transuranic Waste (Liquid)	0	m3	0	m3
Mixed Transuranic Waste (Solid)	0	m3	0	m3
Low Level Waste (Liquid)	0	m3	0	m3
Low Level Waste (Solid)	0	m3	1474.9	m3
Mixed Low Level Waste (Liquid)	0	m3	0	m3
Mixed Low Level Waste (Solid)	0	m3	0	m3
RCRA Regulated	0.07	mt	0	mt
State Regulated	0	mt	0	mt
TSCA Regulated	0	mt	0	mt
Mixed TSCA	0	mt	0	mt

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Please explain the difference ....

We are asking you to explain the differences (increase/decrease) in waste generation amounts reported for the year 2011 which differ from 2010 reported amounts by more than 20 percent.

After you have finished all entering text on this page, you must scroll to the bottom of the page and press the **SUBMIT** button to save your changes.

If there is no explanation then leave the text box blank and press submit.

Waste type: Cleanup/Stablilization - Low Level Waste
PSO: LM
Reported in 2010: 6089.76
Reported in 2011: 1474.9
Please provide an explanation for the difference:

```
DOE-LM had a decrease in remediation activities at the Rocky Flats site.
Based on the definition of radioactive material provided in the PPTRS
guidance, material defined as "residual radioactive" or "11e.2" is included in
```

Waste type: Routine - RCRA Waste
PSO: LM
Reported in 2010: 0.2
Reported in 2011: 0.07
Please provide an explanation for the difference:

```
DOE-LM excessed more hazardous chemicals, and reused/recycled more hazardous
chemicals at several sites.
```

Submit

Attachment E

Revised 2008 Offsite Wastewater Treatment Process GHG Emissions

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Waste Water Treatment Process Type	Target Subject Federal Employees Served	Percentage
Contracted Centralized WWTP with Anaerobic Digestion	252.0	
Contracted Centralized WWTP with Nitrification / Denitrification	92.0	36.5%
Contracted Centralized WWTP without Nitrification / Denitrification	160.0	63.5%
Contracted Effluent Discharge to Rivers and Estuaries with Nitrification / Denitrification	92.0	36.5%
Contracted Effluent Discharge to Rivers and Estuaries without Nitrification / Denitrification	160.0	63.5%
Contracted Wastewater Treatment Lagoons	0.0	0.0%

Process Type	GHG Type	Composition	Population Served by the WWTP	Workdays per Year	Fraction Allocated to Facility	Per Capita Digester Gas Produced per Day	Unit of Measure	Fraction CH4 in Biogas	Density of CH4 (Standard Conditions)	Unit of Measure	Total Quantity Emitted by Type	Unit of Measure	Combustion Oxidation Factor	HHV	Unit of Measure	Energy Content of Methane Combusted	Unit of Measure	Combustion Emission Factor	Unit of Measure	Total Quantity Emitted by Type	Unit of Measure	GWP by Type	Unit of Measure	Total Quantity Emitted by Type	Unit of Measure
Contracted Centralized WWTP with Anaerobic Digestion	Carbon dioxide (biogenic)	CO2												0.0438	MMBtu/Kg CH4	23.9	MMBtu	0.052070	MT CO2/MMBtu	1.2	MT CO2			1.2	MT CO2 (biogenic)
	Methane	CH4	252.0	300.00	0.6	1.0	CUFT / Person / Day	65.0%	0.019	kg / CUFT	552.370946	kg CH4	98.7%	0.0438	MMBtu/Kg CH4	23.9	MMBtu	0.000003	MT CH4/MMBtu	0.0	MT CH4	21	CO2e	0.0	MT CO2e
	Nitrous oxide	N2O												0.0438	MMBtu/Kg CH4	23.9	MMBtu	0.000001	MT N2O/MMBtu	0.0	MT N2O	310	CO2e	0.0	MT CO2e

Sub-Total CO2e	0.0	MT
Sub-Total CO2 (biogenic)	1.2	MT

Process Type	GHG Type	Composition	Population Served by WWTP with N/D	Workdays per Year	Fraction Allocated to Facility	N2O Emission Factor for a WWTP	Unit of Measure	Total Quantity Emitted by Type	Unit of Measure	Unit Conversion	Unit of Measure	Total Quantity Emitted by Type	Unit of Measure	Total Quantity Emitted by Type	Unit of Measure	GWP by Type	Unit of Measure	Total Quantity Emitted by Type	Unit of Measure
Contracted Centralized WWTP with Nitrification / Denitrification	Nitrous oxide	N2O	92.0	300.00	0.6	0.019	g / Person / Day	317.3	g	0.000001	MT / g	0.000317303	MT N2O	0.0	MT N2O	310	CO2e	0.1	MT CO2e

Sub-Total CO2e	0.1	MT
Sub-Total CO2 (biogenic)		MT

Process Type	GHG Type	Composition	Population Served by WWTP without N/D	Workdays per Year	Fraction Allocated to Facility	N2O Emission Factor for a WWTP	Unit of Measure	Total Quantity Emitted by Type	Unit of Measure	Unit Conversion	Unit of Measure	Total Quantity Emitted by Type	Unit of Measure	Total Quantity Emitted by Type	Unit of Measure	GWP by Type	Unit of Measure	Total Quantity Emitted by Type	Unit of Measure
Contracted Centralized WWTP without Nitrification / Denitrification	Nitrous oxide	N2O	160.0	300.00	0.6	0.009	g / Person / Day	252.4	g	0.000001	MT / g	0.000252352	MT N2O	0.0	MT N2O	310	CO2e	0.1	MT CO2e

Sub-Total CO2e	0.1	MT
Sub-Total CO2 (biogenic)		MT

Process Type	GHG Type	Composition	Population Served by WWTP with N/D	Workdays per Year	Fraction Nitrogen & BOD Allocated to Facility	Per capita Nitrogen Load	Unit of Measure	Nitrogen uptake for cell growth	Unit of Measure	Per capita BOD_5 produced per day	Unit of Measure	Total N produced	Unit of Measure	Effluent Emission Factor	Unit of Measure	N2O to N2 Ratio	Plant Nitrification / Denitrification Factor	Unit Conversion	Unit of Measure	Total Quantity Emitted by Type	Unit of Measure	GWP by Type	Unit of Measure	Total Quantity Emitted by Type	Unit of Measure
Effluent Discharge to Rivers and Estuaries for WWTP with Nitrification / Denitrification	Nitrous Oxide	N2O	92.0	300.00	0.6	0.026	kg N / Day	0.05	kg N / kg BOD5	0.09	kg BOD5 / Day	356.0	kg N	0.005	kg N2O-N / kg sewage-N Produced	1.6	0.7	0.001	MT / kg	0.0	MT N2O	310	CO2e	0.3	MT CO2e

Sub-Total CO2e	0.3	MT
Sub-Total CO2 (biogenic)		MT

Process Type	GHG Type	Composition	Population Served by WWTP with N/D	Workdays per Year	Fraction Nitrogen & BOD Allocated to Facility	Per capita Nitrogen Load	Unit of Measure	Nitrogen uptake for cell growth	Unit of Measure	Per capita BOD_5 produced per day	Unit of Measure	Total N produced	Unit of Measure	Effluent Emission Factor	Unit of Measure	N2O to N2 Ratio	Plant Nitrification / Denitrification Factor	Unit Conversion	Unit of Measure	Total Quantity Emitted by Type	Unit of Measure	GWP by Type	Unit of Measure	Total Quantity Emitted by Type	Unit of Measure
Effluent Discharge to Rivers and Estuaries for WWTP without Nitrification / Denitrification	Nitrous Oxide	N2O	160.0	277.00	0.7	0.026	kg N / Day	0.05	kg N / kg BOD5	0.09	kg BOD5 / Day	667.1	kg N	0.005	kg N2O-N / kg sewage-N Produced	1.6	0.0	0.001	MT / kg	0.0	MT N2O	310	CO2e	1.6	MT CO2e

Sub-Total CO2e	1.6	MT
Sub-Total CO2 (biogenic)		MT

Process Type	GHG Type	Composition	Population Served by the Lagoons	Workdays per Year	Fraction BOD Allocated to Facility	Per capita BOD_5 produced per day	Unit of Measure	Fraction of BOD_5 Removed by Primary Treatment	Maximum CH_4 Production Capacity	Unit of Measure	CH_4 Correction Factor for Anaerobic Systems	Fraction of Lagoon BOD_5 Removal	Total Quantity Emitted by Type	Unit of Measure	Unit Conversion	Unit of Measure	Total Quantity Emitted by Type	Unit of Measure		Total Quantity Emitted by Type	Unit of Measure	GWP by Type	Unit of Measure	Total Quantity Emitted by Type	Unit of Measure
Contracted Wastewater Treatment Lagoons	Methane	CH4	0.0	300.00	0.6	0.09	kg BOD5 / Day	0.3	0.6	kg CH4 / kg BOD5	0.8	1.0	0	kg CH4	0.001	MT / kg	0	MT		0	MT CH4	21	CO2e	0.0	MT CO2e

Sub-Total CO2e	0.0	MT
Sub-Total CO2 (biogenic)		MT

Total CO2e	2.1	MT CO2e
Total CO2 (biogenic)	1.2	MT Biogenic CO2

Total CO2e	2.1	MT
Total CO2 (biogenic)	1.2	MT

Source 1: *U.S. EPA, Inventory of U.S. Greenhouse Gas Emissions and Sinks, see at: http://www.epa.gov/climatechange/emissions/usinventoryreport.html*
Source 2: *Local Government Operations Protocol (LGO Protocol), Chapter 10, see at: http://www.theclimateregistry.org/resources/protocols/local-government-operations-protocol/*

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Attachment F

Scope 1 GHG Mobile Emissions Data

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EO 13514 Section 9 GHG Reporting Data Elements Templates

Scope 1 Mobile Emissions: FAST

FAST Default Methodology

Step 1

Fuel Group	Fuel	Fuel Type	Fuel Category	Annual Consumption Domestic	Annual Consumption International	Total Annual Consumption	Unit of Measure	Cost	Unit of Measure	Unit Cost	Unit of Measure	GGE Conversion	Fuel Consumption (NU)	Unit of Measure
Petroleum	Diesel	DSL	Standard	5,073.0	0.0	5,073.0	GGE	$18,589.0	$	3.7	$/GGE	1.147	4,422.8	Gallons
Petroleum	Diesel	DSL E/ER	E/ER	0.0	0.0	0.0	GGE	$0.0	$		$/GGE	1.147	0.0	Gallons
Petroleum	Diesel	DSL LE	LE	0.0	0.0	0.0	GGE	$0.0	$		$/GGE	1.147	0.0	Gallons
Petroleum	Gasoline	GAS	Standard	26,522.0	0.0	26,522.0	GGE	$88,186.0	$	3.3	$/GGE	1.000	26,522.0	Gallons
Petroleum	Gasoline	GAS E/ER	E/ER	0.0	0.0	0.0	GGE	$0.0	$		$/GGE	1.000	0.0	Gallons
Petroleum	Gasoline	GAS LE	LE	0.0	0.0	0.0	GGE	$0.0	$		$/GGE	1.000	0.0	Gallons
Petroleum	LPG	LPG	Standard	0.0	0.0	0.0	GGE	$0.0	$		$/GGE	0.740	0.0	Gallons
Petroleum	LPG	LPG E/ER	E/ER	0.0	0.0	0.0	GGE	$0.0	$		$/GGE	0.740	0.0	Gallons
Petroleum	LPG	LPG LE	LE	0.0	0.0	0.0	GGE	$0.0	$		$/GGE	0.740	0.0	Gallons
Alternative	Biodiesel	B100	Standard	0.0	0.0	0.0	GGE	$0.0	$		$/GGE	1.015	0.0	Gallons
Alternative	Biodiesel	B100 E/ER	E/ER	0.0	0.0	0.0	GGE	$0.0	$		$/GGE	1.015	0.0	Gallons
Alternative	Biodiesel	B100 LE	LE	0.0	0.0	0.0	GGE	$0.0	$		$/GGE	1.015	0.0	Gallons
Alternative	Biodiesel	B20	Standard	0.0	0.0	0.0	GGE	$0.0	$		$/GGE	1.126	0.0	Gallons
Alternative	Biodiesel	B20 E/ER	E/ER	0.0	0.0	0.0	GGE	$0.0	$		$/GGE	1.126	0.0	Gallons
Alternative	Biodiesel	B20 LE	LE	0.0	0.0	0.0	GGE	$0.0	$		$/GGE	1.126	0.0	Gallons
Alternative	CNG	CNG	Standard	0.0	0.0	0.0	GGE	$0.0	$		$/GGE	0.830	0.0	Hundred Cubi
Alternative	CNG	CNG 2400	Standard	0.0	0.0	0.0	GGE	$0.0	$		$/GGE	0.180	0.0	Gallons at 2400 psi
Alternative	CNG	CNG 2400 E/ER	E/ER	0.0	0.0	0.0	GGE	$0.0	$		$/GGE	0.180	0.0	Gallons at 2400 psi
Alternative	CNG	CNG 2400 LE	LE	0.0	0.0	0.0	GGE	$0.0	$		$/GGE	0.180	0.0	Gallons at 2400 psi
Alternative	CNG	CNG 3000	Standard	0.0	0.0	0.0	GGE	$0.0	$		$/GGE	0.225	0.0	Gallons at 3000 psi
Alternative	CNG	CNG 3000 E/ER	E/ER	0.0	0.0	0.0	GGE	$0.0	$		$/GGE	0.225	0.0	Gallons at 3000 psi
Alternative	CNG	CNG 3000 LE	LE	0.0	0.0	0.0	GGE	$0.0	$		$/GGE	0.225	0.0	Gallons at 3000 psi
Alternative	CNG	CNG 3600	Standard	0.0	0.0	0.0	GGE	$0.0	$		$/GGE	0.270	0.0	Gallons at 3600 psi
Alternative	CNG	CNG 3600 E/ER	E/ER	0.0	0.0	0.0	GGE	$0.0	$		$/GGE	0.270	0.0	Gallons at 3600 psi
Alternative	CNG	CNG 3600 LE	LE	0.0	0.0	0.0	GGE	$0.0	$		$/GGE	0.270	0.0	Gallons at 3600 psi
Alternative	CNG	CNG E/ER	E/ER	0.0	0.0	0.0	GGE	$0.0	$		$/GGE	0.830	0.0	Hundred Cubi
Alternative	CNG	CNG LE	LE	0.0	0.0	0.0	GGE	$0.0	$		$/GGE	0.830	0.0	Hundred Cubi
Alternative	E-85	E85	Standard	3,060.0	0.0	3,060.0	GGE	$9,979.0	$	3.3	$/GGE	0.720	4,250.0	Gallons
Alternative	E-85	E85 E/ER	E/ER	0.0	0.0	0.0	GGE	$0.0	$		$/GGE	0.720	0.0	Gallons
Alternative	E-85	E85 LE	LE	0.0	0.0	0.0	GGE	$0.0	$		$/GGE	0.720	0.0	Gallons
Alternative	LNG	LNG	Standard	0.0	0.0	0.0	GGE	$0.0	$		$/GGE	0.660	0.0	Gallons at 14.
Alternative	LNG	LNG E/ER	E/ER	0.0	0.0	0.0	GGE	$0.0	$		$/GGE	0.660	0.0	Gallons at 14.
Alternative	LNG	LNG LE	LE	0.0	0.0	0.0	GGE	$0.0	$		$/GGE	0.660	0.0	Gallons at 14.

Step 1 (cont.), Step 2, Step 3, Step 5, Step 6

Fuel Type	Total MMBTU Consumed	Biogenic CO2 Emission Factor	Unit of Measure	Anthropogenic CO2 Emission Factor	Unit of Measure	CH4 Emission Factor	Unit of Measure	N2O Emission Factor	Unit of Measure	Total Quantity Emitted Biogenic CO2	Total Quantity Emitted Anthropogenic CO2	Total Quantity Emitted CH4	Total Quantity Emitted N2O	Unit of Measure
DSL	634.1			74.0	kg CO2/MM	0.000106	kg CH4/MM	0.000164	kg N2O/MMBtu		46,899.9	0.1	0.1	kg
DSL E/ER	0.0			74.0	kg CO2/MM	0.000106	kg CH4/MM	0.000164	kg N2O/MMBtu		0.0	0.0	0.0	kg
DSL LE	0.0			74.0	kg CO2/MM	0.000106	kg CH4/MM	0.000164	kg N2O/MMBtu		0.0	0.0	0.0	kg
GAS	3,315.3			70.2	kg CO2/MM	0.001918	kg CH4/MM	0.002035	kg N2O/MMBtu		232,796.9	6.4	6.7	kg
GAS E/ER	0.0			70.2	kg CO2/MM	0.001918	kg CH4/MM	0.002035	kg N2O/MMBtu		0.0	0.0	0.0	kg
GAS LE	0.0			70.2	kg CO2/MM	0.001918	kg CH4/MM	0.002035	kg N2O/MMBtu		0.0	0.0	0.0	kg
LPG	0.0			63.0	kg CO2/MM	0.003000	kg CH4/MM	0.000600	kg N2O/MMBtu		0.0	0.0	0.0	kg
LPG E/ER	0.0			63.0	kg CO2/MM	0.003000	kg CH4/MM	0.000600	kg N2O/MMBtu		0.0	0.0	0.0	kg
LPG LE	0.0			63.0	kg CO2/MM	0.003000	kg CH4/MM	0.000600	kg N2O/MMBtu		0.0	0.0	0.0	kg
B100	0.0	73.8	kg CO2/MMBtu			0.001100	kg CH4/MM	0.000110	kg N2O/MMBtu	0.0	0.0	0.0	0.0	kg
B100 E/ER	0.0	73.8	kg CO2/MMBtu			0.001100	kg CH4/MM	0.000110	kg N2O/MMBtu	0.0	0.0	0.0	0.0	kg
B100 LE	0.0	73.8	kg CO2/MMBtu			0.001100	kg CH4/MM	0.000110	kg N2O/MMBtu	0.0	0.0	0.0	0.0	kg
B20	0.0	14.8	kg CO2/MMBtu	59.2	kg CO2/MM	0.000305	kg CH4/MM	0.000153	kg N2O/MMBtu	0.0	0.0	0.0	0.0	kg
B20 E/ER	0.0	14.8	kg CO2/MMBtu	59.2	kg CO2/MM	0.000305	kg CH4/MM	0.000153	kg N2O/MMBtu	0.0	0.0	0.0	0.0	kg
B20 LE	0.0	14.8	kg CO2/MMBtu	59.2	kg CO2/MM	0.000305	kg CH4/MM	0.000153	kg N2O/MMBtu	0.0	0.0	0.0	0.0	kg
CNG	0.0			53.0	kg CO2/MM	0.001000	kg CH4/MM	0.000100	kg N2O/MMBtu		0.0	0.0	0.0	kg
CNG 2400	0.0			53.0	kg CO2/MM	0.001000	kg CH4/MM	0.000100	kg N2O/MMBtu		0.0	0.0	0.0	kg
CNG 2400 E/ER	0.0			53.0	kg CO2/MM	0.001000	kg CH4/MM	0.000100	kg N2O/MMBtu		0.0	0.0	0.0	kg
CNG 2400 LE	0.0			53.0	kg CO2/MM	0.001000	kg CH4/MM	0.000100	kg N2O/MMBtu		0.0	0.0	0.0	kg
CNG 3000	0.0			53.0	kg CO2/MM	0.001000	kg CH4/MM	0.000100	kg N2O/MMBtu		0.0	0.0	0.0	kg
CNG 3000 E/ER	0.0			53.0	kg CO2/MM	0.001000	kg CH4/MM	0.000100	kg N2O/MMBtu		0.0	0.0	0.0	kg
CNG 3000 LE	0.0			53.0	kg CO2/MM	0.001000	kg CH4/MM	0.000100	kg N2O/MMBtu		0.0	0.0	0.0	kg
CNG 3600	0.0			53.0	kg CO2/MM	0.001000	kg CH4/MM	0.000100	kg N2O/MMBtu		0.0	0.0	0.0	kg
CNG 3600 E/ER	0.0			53.0	kg CO2/MM	0.001000	kg CH4/MM	0.000100	kg N2O/MMBtu		0.0	0.0	0.0	kg
CNG 3600 LE	0.0			53.0	kg CO2/MM	0.001000	kg CH4/MM	0.000100	kg N2O/MMBtu		0.0	0.0	0.0	kg
CNG E/ER	0.0			53.0	kg CO2/MM	0.001000	kg CH4/MM	0.000100	kg N2O/MMBtu		0.0	0.0	0.0	kg
CNG LE	0.0			53.0	kg CO2/MM	0.001000	kg CH4/MM	0.000100	kg N2O/MMBtu		0.0	0.0	0.0	kg
E85	382.5	58.2	kg CO2/MMBtu	10.5	kg CO2/MM	0.001223	kg CH4/MM	0.000399	kg N2O/MMBtu	22,251.6	4,028.9	0.5	0.2	kg
E85 E/ER	0.0	58.2	kg CO2/MMBtu	10.5	kg CO2/MM	0.001223	kg CH4/MM	0.000399	kg N2O/MMBtu	0.0	0.0	0.0	0.0	kg
E85 LE	0.0	58.2	kg CO2/MMBtu	10.5	kg CO2/MM	0.001223	kg CH4/MM	0.000399	kg N2O/MMBtu	0.0	0.0	0.0	0.0	kg
LNG	0.0			53.0	kg CO2/MM	0.001000	kg CH4/MM	0.000100	kg N2O/MMBtu		0.0	0.0	0.0	kg
LNG E/ER	0.0			53.0	kg CO2/MM	0.001000	kg CH4/MM	0.000100	kg N2O/MMBtu		0.0	0.0	0.0	kg
LNG LE	0.0			53.0	kg CO2/MM	0.001000	kg CH4/MM	0.000100	kg N2O/MMBtu		0.0	0.0	0.0	kg

Step 7 and totals

Fuel Type	GWP Factor for CO2	GWP Factor for CH4	GWP Factor for N2O	Unit of Measure	Total Quantity Emitted (CO2e)	Unit of Measure	Total Quantity Emitted (MT CO2e)	Unit of Measure	Total Cost (Thou. $)	Annual GHG Target Subject Emissions	Annual GHG Target Excluded Emissions	Annual GHG International Emissions	Unit of Measure	Total Biogenic CO2 Emissions	Unit of Measure
DSL	1	21	310	CO2e	46,933.6	kg CO2e	46.9	MT CO2e	18.6	46.9		0	MT CO2e		MT CO2
DSL E/ER	1	21	310	CO2e	0.0	kg CO2e	0.0	MT CO2e	0.0		0.0	0.0	MT CO2e		MT CO2
DSL LE	1	21	310	CO2e	0.0	kg CO2e	0.0	MT CO2e	0.0		0.0	0.0	MT CO2e		MT CO2
GAS	1	21	310	CO2e	235,021.5	kg CO2e	235.0	MT CO2e	88.2	235.0		0	MT CO2e		MT CO2
GAS E/ER	1	21	310	CO2e	0.0	kg CO2e	0.0	MT CO2e	0.0		0.0	0.0	MT CO2e		MT CO2
GAS LE	1	21	310	CO2e	0.0	kg CO2e	0.0	MT CO2e	0.0		0.0	0.0	MT CO2e		MT CO2
LPG	1	21	310	CO2e	0.0	kg CO2e	0.0	MT CO2e	0.0	0.0		0.0	MT CO2e		MT CO2
LPG E/ER	1	21	310	CO2e	0.0	kg CO2e	0.0	MT CO2e	0.0		0.0	0.0	MT CO2e		MT CO2
LPG LE	1	21	310	CO2e	0.0	kg CO2e	0.0	MT CO2e	0.0		0.0	0.0	MT CO2e		MT CO2
B100	1	21	310	CO2e	0.0	kg CO2e	0.0	MT CO2e	0.0	0.0		0.0	MT CO2e	0.0	MT CO2
B100 E/ER	1	21	310	CO2e	0.0	kg CO2e	0.0	MT CO2e	0.0		0.0	0.0	MT CO2e	0.0	MT CO2
B100 LE	1	21	310	CO2e	0.0	kg CO2e	0.0	MT CO2e	0.0		0.0	0.0	MT CO2e	0.0	MT CO2
B20	1	21	310	CO2e	0.0	kg CO2e	0.0	MT CO2e	0.0	0.0		0.0	MT CO2e	0.0	MT CO2
B20 E/ER	1	21	310	CO2e	0.0	kg CO2e	0.0	MT CO2e	0.0		0.0	0.0	MT CO2e	0.0	MT CO2
B20 LE	1	21	310	CO2e	0.0	kg CO2e	0.0	MT CO2e	0.0		0.0	0.0	MT CO2e	0.0	MT CO2
CNG	1	21	310	CO2e	0.0	kg CO2e	0.0	MT CO2e	0.0	0.0		0.0	MT CO2e		MT CO2
CNG 2400	1	21	310	CO2e	0.0	kg CO2e	0.0	MT CO2e	0.0	0.0		0.0	MT CO2e		MT CO2
CNG 2400 E/ER	1	21	310	CO2e	0.0	kg CO2e	0.0	MT CO2e	0.0		0.0	0.0	MT CO2e		MT CO2
CNG 2400 LE	1	21	310	CO2e	0.0	kg CO2e	0.0	MT CO2e	0.0		0.0	0.0	MT CO2e		MT CO2
CNG 3000	1	21	310	CO2e	0.0	kg CO2e	0.0	MT CO2e	0.0	0.0		0.0	MT CO2e		MT CO2
CNG 3000 E/ER	1	21	310	CO2e	0.0	kg CO2e	0.0	MT CO2e	0.0		0.0	0.0	MT CO2e		MT CO2
CNG 3000 LE	1	21	310	CO2e	0.0	kg CO2e	0.0	MT CO2e	0.0		0.0	0.0	MT CO2e		MT CO2
CNG 3600	1	21	310	CO2e	0.0	kg CO2e	0.0	MT CO2e	0.0	0.0		0.0	MT CO2e		MT CO2
CNG 3600 E/ER	1	21	310	CO2e	0.0	kg CO2e	0.0	MT CO2e	0.0		0.0	0.0	MT CO2e		MT CO2
CNG 3600 LE	1	21	310	CO2e	0.0	kg CO2e	0.0	MT CO2e	0.0		0.0	0.0	MT CO2e		MT CO2
CNG E/ER	1	21	310	CO2e	0.0	kg CO2e	0.0	MT CO2e	0.0		0.0	0.0	MT CO2e		MT CO2
CNG LE	1	21	310	CO2e	0.0	kg CO2e	0.0	MT CO2e	0.0		0.0	0.0	MT CO2e		MT CO2
E85	1	21	310	CO2e	4,086.0	kg CO2e	4.1	MT CO2e	10.0	4.1		0	MT CO2e	22.3	MT CO2
E85 E/ER	1	21	310	CO2e	0.0	kg CO2e	0.0	MT CO2e	0.0		0.0	0.0	MT CO2e	0.0	MT CO2
E85 LE	1	21	310	CO2e	0.0	kg CO2e	0.0	MT CO2e	0.0		0.0	0.0	MT CO2e	0.0	MT CO2
LNG	1	21	310	CO2e	0.0	kg CO2e	0.0	MT CO2e	0.0	0.0		0.0	MT CO2e		MT CO2
LNG E/ER	1	21	310	CO2e	0.0	kg CO2e	0.0	MT CO2e	0.0		0.0	0.0	MT CO2e		MT CO2
LNG LE	1	21	310	CO2e	0.0	kg CO2e	0.0	MT CO2e	0.0		0.0	0.0	MT CO2e		MT CO2

Total CO2e		**286.0**	MT CO2e

Total CO2e	**286.0**	MT CO2e		**286.0**	**0.0**	**0.0**	MT CO2e	**22.3** MT CO2

Source 1: *U.S. DOE, Federal Energy Management Program, Section 9, Technical Support Document*
Source 2: *U.S. EPA Climate Leaders Program, Technical Guidance, Optional Emissions from Commuting, Business Travel, and Product Transport, see: http://www.epa.gov/stateply/documents/resources/commute_travel_product.pdf*
Source 3: *U.S. DOE, Federal Energy Management Program, See at: http://www1.eere.energy.gov/femp/docs/energydatareportfy09.xls*

EF Assumption Average Vehicle Year -	2005	*2005*	*2005*	*2005*
Vehicle Type -	Gasoline Lig	*Gasoline Light-*	*Gasoline Light-Duty Truck*	*Diesel Light-Duty Truck*
Control Technology -	LEV	*LEV*	*LEV*	*Advanced*
MPG -	16.2	*16.2*	*16.2*	*16.2*

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