LMS/S07225

FY 2023
LM Site Sustainability Plan

December 2022

U.S. DEPARTMENT OF ENERGY | Legacy Management

This document has been designed for online viewing.

FY 2023 LM Site Sustainability Plan
Document History

Date	Description of Changes
December 2022	Updated to include fiscal year 2022 performance and fiscal year 2023 planned activities.
December 2021	Updated to include fiscal year 2021 performance and fiscal year 2022 planned activities.
December 2020	Updated to include fiscal year 2020 performance and fiscal year 2021 planned activities.
December 2019	Updated to include fiscal year 2019 performance and fiscal year 2020 planned activities.
December 2018	Updated to include fiscal year 2018 performance and fiscal year 2019 planned activities.
December 2017	Updated to include fiscal year 2017 performance and fiscal year 2018 planned activities.

Contents

Figure

Tables

Abbreviations

AFV	alternative fuel vehicle
AHJ	authority having jurisdiction
AML	Abandoned Mine Lands
BMP	best management practice
CARP	Climate Adaptation and Resilience Plan
C&D	construction and demolition
CEQ	Council on Environmental Quality
CFE	carbon pollution-free electricity
CIA	Confidentiality, Integrity and Availability
COVID-19	coronavirus disease 2019
DCOI	Data Center Optimization Initiative
DEAR	U.S. Department of Energy Acquisition Regulation
DOE	U.S. Department of Energy
E85	ethanol fuel blend
ECHO	Education, Communications, History, and Outreach
ECM	efficiency and conservation measure
EISA	Energy Independence and Security Act of 2007
EMS	Environmental Management System
EnMS	Energy Management System
EO	Executive Order
EPA	U.S. Environmental Protection Agency
EPEAT	Electronic Product Environmental Assessment Tool
ESPC	energy savings performance contract
EUI	energy use intensity
EV	electric vehicle
EVCS	electric vehicle charging station
FAST	Federal Automotive Statistical Tool
FEMP	Federal Energy Management Program
ft^2	square feet
FY	fiscal year
GHG	greenhouse gas
GP	Guiding Principle

GSA	U.S. General Services Administration
GSF	gross square feet
HVAC	heating, ventilation, and air conditioning
IC	Interpretive Center
ILA	industrial, landscaping, and agricultural
ISO	International Organization for Standardization
IT	Information Technology
kW	kilowatts
LBNL	Lawrence Berkeley National Laboratory
LEED	Leadership in Energy and Environmental Design
LM	Office of Legacy Management
LMBC	LM Business Center
LMFSC	LM Field Support Center
LMOC	LM Operations Center
LMS	Legacy Management Support
MES	Mentors for Environmental Scholars
MSW	municipal solid waste
NIST	National Institute of Standards and Technology
PAE	Project or Activity Evaluation
PUE	power utilization effectiveness
RRM	residual radioactive material
SCRS program	Sustainable Climate-Ready Sites program
SOARS	System Operation and Analysis at Remote Sites
SOW	statement of work
SP	Special Publication
STEM	science, technology, engineering, and mathematics
ULP	Uranium Leasing Program
UMTRA	Uranium Mill Tailings Remedial Action
USDA	U.S. Department of Agriculture
VARP	Vulnerability Assessment and Resilience Plan

Executive Summary

The Site Sustainability Plan narrative not only fulfills the requirements of U.S. Department of Energy (DOE) Order 436.1, *Departmental Sustainability*, it also summarizes DOE Office of Legacy Management (LM) accomplishments during the reporting period, as well as plans to further site sustainability and enhance climate mitigation efforts.

Subject matter experts from various functional groups, including Site Operations, Ecology, Sustainability, and Asset Management, worked together to develop LM's first Vulnerability Assessment and Resilience Plan (VARP). LM's diverse and widely distributed portfolio of sites, facilities, and properties made this especially challenging. A total of 65 vulnerability assessments were completed across 9 of 10 U.S. climate regions. LM also contributed to the DOE Climate Adaptation and Resilience Plan Implementation Plan and volunteered to participate in the DOE pilot of the Sustainable Climate-Ready Sites program (SCRS program). LM completed the SCRS program scorecard for the LM program as a whole and for two individual sites.

LM made efforts to enhance its workforce capabilities to develop sustainable and climate-resilient sites by attending trainings offered by other agencies (e.g., performance contracting, Climate Resilience Study, VARP, Facilities Information Management System). This function-specific training will ensure that LM can identify and incorporate sustainability in the early stages of project planning, which will help LM meet DOE goals and targets outlined in Executive Orders.

LM and the Legacy Management Support (LMS) Education, Communications, History, and Outreach (ECHO) team worked diligently to support the communities where LM sites are located. The ECHO team completed many noteworthy tasks, including highlighting LM activities on multiple social media platforms; engaging with communities through science, technology, engineering, and mathematics (STEM) activities; supporting tribal stakeholder and community relations; and reopening LM visitor and interpretive centers.

LM currently protects human health and the environment at 101 sites in 29 states and the territory of Puerto Rico. By the start of fiscal year (FY) 2030, LM is projected to assume responsibility for 29 additional legacy sites. As LM receives more sites and additional scope, it will employ more workers, occupy more workspace, operate more vehicles, conduct more travel, consume more fuel, purchase more personal property, and generate more waste. Conditions of sites at transfer could vary greatly, making it difficult to predict their impact on meeting the sustainability goals and targets stated in this LM Site Sustainability Plan. Potential future activities include management of the Manhattan Project National Historical Park and the East Tennessee Technology Park. Other potential activities include taking responsibility for managing historic records that might be relocated from Germantown, Maryland, to the LM Business Center at Morgantown, West Virginia. Additionally, LM has undertaken several large construction, demolition, investigation, and remediation or reclamation projects at LM-owned sites that have not historically been part of LM's mission. These projects directly impact LM's ability to achieve sustainability goals, including waste diversion, nonfleet fuel, travel, and water use. LM will monitor the impacts to meeting sustainability goals and targets as new sites are added and scope increases, and LM will adjust its Environmental Management System (EMS) accordingly.

LM operates its EMS jointly with the LMS contractor, and both place a priority on sustainability while executing the LM mission and achieving LM goals. In this document, a reference to "LM" represents both LM and the LMS contractor (LM's strategic partner) unless specifically noted otherwise.

Despite the challenges that come with an increase in scope and size, LM met 10 of the sustainability goals, including the following:

- Acquiring three electric vehicles (EVs) to replace petroleum-fueled light-duty vehicles
- Reducing waste sent to landfills by 42% by encouraging recycling
- Procuring 100% green electronics
- Reducing potable water consumption by 25% from FY 2021 by utilizing biobased products for dust control during construction
- Operating 100% of all eligible computers, printers, and monitors in a sustainable manner by implementing sleep modes and automatic duplex printing

LM earned the following six awards for FY 2022 activities:

- FY 2022 High Performance Sustainable Building Award, Weldon Spring Site Interpretive Center (IC)
- GreenSpace Award, Weldon Spring Site IC
- 2022 Sustainable Climate-Ready Sites Program Pilot, Weldon Spring, Missouri, Site
- 2022 Sustainable Climate-Ready Sites Program Pilot, Shirley Bason South, Wyoming, Disposal Site and the Weldon Spring Site
- 2022 Sustainable Climate-Ready Sites Program Pilot, Shirley Basin South disposal site
- Electronic Product Environmental Assessment Tool (EPEAT) award

Although LM did not meet goals such as increasing consumption of clean and renewable energy or increasing alternative fuel consumption, continual effort was made to processes and projects to achieve progress toward those goals.

Meeting the goal of decreasing petroleum consumption is an ongoing challenge for LM because of mission-related activities that require travel to very remote and dispersed locations throughout the United States. LM's Fleet team, along with Asset Management, Facility Management, and Engineering teams, continued planning for the installation of several EV charging stations (EVCSs) at five LM-occupied facilities. Adding the EVCSs and acquiring three EVs will help LM in future years to decrease the risk of nonattainment of this goal.

LM's current owned building inventory is very small, and none of the LM-owned buildings meet the gross square footage threshold of 25,000 square feet. This will remain the case, as LM has cancelled two projects that were scheduled to begin in the next 5 years. While the future growth of LM's facilities is uncertain, any new planned efforts will comply with the *Guiding Principles for Sustainable Federal Buildings and Associated Instructions* and ENERGY STAR standards for leased buildings and will focus on net-zero emissions.

Although LM did not increase the use of clean and renewable energy in FY 2022, LM did submit a Carbon Pollution-Free Energy (CFE) Plan with an established baseline for FY 2022 of 45% CFE. This provided LM with a good start toward reaching 100% CFE by FY 2030.

The Executive Summary Table (see Table ES-1) summarizes LM's efforts to meet the DOE sustainability goals in FY 2022 and LM's plans to decrease the risk of nonattainment of goals in future years. LM's reporting consists of both the FY 2022 performance data entry in the DOE Sustainability Dashboard and this *FY 2023 LM Site Sustainability Plan*.

Table ES-1. Goal Summary Table

DOE Goal	Current FY Efforts	Planned Efforts	Overall Risk of Non-Attainment
Energy Management			
Reduce energy use intensity (Btu per gross square foot) in goal-subject buildings.	LM met this goal of reducing EUI. Much of the decrease is due to the inclusion of the Weldon Spring Site Interpretive Center square footage to the EUI calculation.	LM will look for ways to reduce energy by replacing high-energy end-use equipment and by looking for ways to implement the use of CFE sources.	Medium
EISA Section 432 continuous (4-year cycle) energy and water evaluations.	LM met this goal by completing energy and water audits at the Tuba City, Arizona, Disposal Site.	LM will continue to conduct energy and water audits in FY 2023.	Low
Meter individual buildings for electricity, natural gas, steam, and water, where cost-effective and appropriate.	LM met this goal for FY 2022 by metering all required facilities.	LM will evaluate new buildings and existing buildings for metering opportunities and implement them if cost-effective.	Low
Water Management			
Reduce potable water use intensity (gallons per gross square foot).	LM met this goal of reducing potable water use intensity in FY 2022. LM achieved this by being involved early in project planning to identify ways to reduce the use of potable water.	LM will continue to identify ways to reduce potable water usage with project planning tools and by updating the water management plan and best management practices.	Low
Reduce non-potable freshwater consumption (gallons) for industrial, landscaping, and agricultural.	LM did not meet this goal of reducing nonpotable freshwater consumption. Changes to LM's mission and scope contributed to increased water use to complete projects.	LM will work to decrease use of nonpotable freshwater used during project implementation by recommending solutions during project planning, such as biobased dust suppressants.	High
Waste Management			
Reduce non-hazardous solid waste sent to treatment and disposal facilities.	LM met this goal of reducing waste sent to treatment and disposal facilities. LM reduced waste where possible, but an increase in visitors and staff at LM locations increased overall waste production.	LM will continue to promote waste minimization at LM sites and on LM projects, and LM will reduce, recycle, and compost waste to divert the waste from landfills.	High

Table ES-1. Goal Summary Table (continued)

DOE Goal	Current FY Efforts	Planned Efforts	Overall Risk of Non-Attainment
Reduce construction and demolition materials and debris sent to treatment and disposal facilities.	LM met this goal of reducing C&D material and debris sent to treatment and disposal facilities. Decommissioning and demolition projects generated large amounts of materials that were ineligible for recycling or diversion.	LM will continue to promote waste minimization at LM sites and on LM projects and will reduce, reuse, and recycle waste to divert the waste from landfills. C&D projects are planned for FY 2023 and will divert nonhazardous C&D waste from landfills.	High
Fleet Management			
Reduce petroleum consumption.	LM met this goal of reducing petroleum consumption. As LM implemented the ReEntry Plan, more fieldwork was conducted than in the previous 2 years, however, single occupant vehicle use was lifted.	LM will continue to find ways to reduce petroleum consumption by coordinating fieldwork to reduce the number of trips, utilizing telematics data to determine the best travel route, using video conferencing and telework when possible, and performing pretrip vehicle inspections.	High
Increase alternative fuel consumption.	LM did not meet this goal of increasing alternative fuel consumption. LM's mission and remote locations continue to make the use of alternative fuels a challenge.	LM will continue to educate drivers on the proper use of E85 fuel and how to locate fueling stations. LM will also continue to monitor the E85 fuel infrastructure and the availability to LM locations.	High
Acquire alternative fuel and electric vehicles.	LM met this goal by acquiring three EVs to replace three petroleum-fueled vehicles.	LM will continue to replace vehicles according to the GSA replacement schedule with electric and alternative fuel vehicles as the mission allows.	High
Clean & Renewable Energy			
Increase consumption of clean and renewable electric energy.	LM did not meet this goal in FY 2022. LM's largest producer of clean and renewable energy was offline much of the year.	LM plans to repair existing systems, identify opportunities for installing new systems, and work with utility providers that produce energy using clean and renewable energy sources.	High
Increase consumption of clean and renewable non-electric thermal energy.	N/A	N/A	N/A
Sustainable Buildings			
Increase the number of owned buildings that are compliant with the *Guiding Principles for Sustainable Buildings*.	LM maintained its two eligible buildings.	LM will evaluate owned facilities for opportunities to bring them to net-zero emissions.	Low

Table ES-1. Goal Summary Table (continued)

DOE Goal	Current FY Efforts	Planned Efforts	Overall Risk of Non-Attainment
Acquisition & Procurement			
Promote sustainable acquisition and procurement to the maximum extent practicable, ensuring all sustainability clauses are included as appropriate.	LM met this goal in FY 2022. LM included sustainability clauses in 100% of new and existing contract actions.	LM will continue to include sustainability clauses in all new contracts to ensure that all products and services are energy efficient, water efficient, biopreferred and biobased, non-ozone depleting and nontoxic or less toxic.	Low
Efficiency & Conservation Measure Investments			
Implement life-cycle cost effective efficiency and conservation measures with appropriated funds and/or performance contracts.	LM met this goal by implementing ECMs with appropriated funds.	LM will evaluate projects for identification of ECMs and potential performance contracts early in the planning activities.	High
Electronic Stewardship & Data Centers			
Electronics stewardship from acquisition, operations, to end-of-life.	LM met this goal in FY 2022. LM demonstrated electronics stewardship by purchasing, operating, and managing its end-of-life electronics in the most environmentally sound manner.	LM will continue to execute established plans and procedures to procure, operate, and manage end-of-life electronics in the most environmentally sound manner.	Low
Increase energy and water efficiency in high-performance computing and data centers.	N/A	N/A	N/A
Adaptation & Resilience			
Implement climate adaptation and resilience measures.	LM met this goal in FY 2022 by completing the site vulnerability assessment and resilience plan.	LM will continue to assess risks to critical assets and implement improvements that will reduce risk.	Low
Multiple Categories			
Reduce Scope 1 & 2 GHG emissions.	LM met this goal. Based on currently available data, LM reduced Scope 1 & 2 GHG emissions by 65% compared to baseline FY 2008.	LM will continue to find ways to decrease purchased energy and water. LM will identify alternative products to replace fugitive gases.	Low
Reduce Scope 3 GHG emissions.	LM met this goal. Based on currently available data, LM reduced Scope 3 GHG emissions by 60% compared to baseline FY 2008.	LM will continue to execute established plans and procedures to reduce the various sources of Scope 3 GHG emissions.	Medium

Abbreviations:
Btu = British thermal units
C&D = construction and demolition
E85 = ethanol fuel blend
ECM = efficiency and conservation measure
EISA = Energy Independence and Security Act of 2007
GHG = greenhouse gas
GSA = U.S. General Services Administration
N/A = not applicable

Introduction

The U.S. Department of Energy (DOE) Office of Legacy Management (LM) is responsible for managing a broad and diverse portfolio of land and assets. In addition to providing long-term surveillance and maintenance at 101 legacy sites, LM manages programs such as the Defense-Related Uranium Mines Program, the Uranium Leasing Program (ULP), and the Applied Studies and Technology Program. LM executes its mission and programmatic activities from 10 occupied facilities in nine states. LM is committed to enhancing sustainable environmental performance as identified in the LM *2020–2025 Strategic Plan* (DOE 2020) and has the following overarching goals:

1. Protect human health and the environment
2. Preserve, protect, and share records and information
3. Safeguard former contractor workers' retirement benefits
4. Sustainably manage and optimize the use of land and assets
5. Sustain management excellence
6. Engage the public, governments, and interested parties

Underlying these overarching goals are LM's triple-bottom-line activities that focus on:

- **Social responsibility:** LM focuses on the safety of staff, the public, and the environment with communication playing an important part.
- **Economic prosperity:** LM promotes business excellence by being fiscally responsible and using best business practices.
- **Environmental stewardship:** LM consults with regulatory agencies and other stakeholders regarding its compliance with environmental laws, regulations, and agreements; its support of energy and environmental justice; and its general consideration of the environmental impacts of all work being performed.

1.0 Energy Management

Energy management covers the LM approach and vision for addressing energy use and intensity, Energy Independence and Security Act of 2007 (EISA) Section 432 benchmarking, facility metering, and nonfleet fuel use. This chapter of energy management now also includes LM's commitment and progress toward carbon-pollution free energy (CFE) and net-zero emissions.

1.1 Energy Usage and Intensity

1.1.1 Energy Usage and Intensity Performance Status

LM continued working toward the DOE goal of reducing energy usage and energy use intensity (EUI) in goal-subject buildings.

1.1.1.1 Energy Usage

Goal-subject energy usage increased slightly by 5.7% in fiscal year (FY) 2022 from FY 2021.

Excluded energy usage decreased 7% in FY 2022 from FY 2021. Most of the excluded energy use is from the Fernald Preserve, Ohio, Site extraction wells. In accordance with the *Guidelines Establishing Criteria for Exclusion Buildings* (DOE 2006), the energy use from those wells is excluded as "Separately-metered energy-intensive loads that are driven by mission and operational requirements, not necessarily buildings, and not influenced by conventional building energy conservation measures." The extraction wells are required by the Comprehensive Environmental Response, Compensation, and Liability Act's Record of Decision for the site.

1.1.1.2 Energy Use Intensity

EUI at goal-subject buildings decreased 47.1% in FY 2022 from FY 2021. LM's EUI in goal-subject buildings is mostly from facility operations, including lighting, heating and cooling systems, and Information Technology (IT) operations. The square footage of goal-subject buildings in FY 2022 was 49,254 square feet (ft^2). An increase in gross square footage of 25,183 ft^2 occurred with the addition of the new Weldon Spring Site Interpretive Center (IC) at the Weldon Spring, Missouri, Site. A slight increase in energy use occurred from relocating personnel from excluded LM-leased space to goal-subject space.

Excluded EUI decreased 53% in FY 2022 from FY 2021. This value is slightly skewed as a result of excluding the Weldon Spring IC square footage in FY 2021. LM leases approximately 163,507 ft^2 of building space and owns only about 88,664 ft^2 of building space. Of the LM-owned building space, 39,657 ft^2 is excluded or non-energy consuming. Leased and other excluded buildings are not included in the EUI calculation.

As a best management practice (BMP), LM continued establishing an Energy Management System (EnMS) using DOE's 50001 Ready program. Manuals are in revision to reflect the implementation of the program. The LM and Legacy Management Support (LMS) environmental and safety policies were updated to include an energy policy. The energy team communicated with staff to introduce the EnMS and how their participation will help LM reach its EUI goals. This is expected to improve cross-organization communication and focus additional attention on identifying and implementing energy conservation measures.

1.1.2 Energy Usage and Intensity Plans and Projected Performance

LM plans to continue implementing an EnMS using DOE's 50001 Ready program as a basis. This includes revising Environmental Management System (EMS) manuals to include EnMS requirements and promoting the EnMS throughout the organization. Increased emphasis will be put on identifying energy conservation measures.

Several major initiatives or changes to missions planned for FY 2023 and beyond will contribute in significant ways to LM's EUI. LM has undertaken several large construction, demolition, investigation, and remediation or reclamation projects at LM-owned sites that have not historically been part of LM's mission. Therefore, the overall risk of nonattainment of this goal is medium. Energy use and EUI will continue to be affected by ongoing increased teleworking, remote work, installation of electric vehicle charging stations (EVCSs), and the expansion of the Fernald Preserve Visitors Center building. LM will continue to explore ways to reduce energy usage and EUI and will purchase bundled green electricity when available and practical.

LM will perform the following planned activities to identify improvements in overall energy usage and energy usage intensity in goal-subject and excluded facilities in FY 2023 and beyond:

- Assess goal-excluded assets, including extraction wells at the Fernald Preserve and the Shiprock, New Mexico, Disposal Site, for feasible energy-efficiency improvements. The Fernald Preserve extraction wells consume about 60% of the total electricity used by LM-owned assets.
- Review condition assessments to assess deferred maintenance and repair activities that were identified. Look for opportunities to increase energy efficiency while improving asset condition.
- Contact lessors of LM-leased assets about implementing feasible energy-efficiency measures and installation of renewable energy.
- Prepare the annual LM site energy comparison report, which provides historical energy information for LM buildings and facilities to help LMS site leads make informed decisions on energy-related projects.
- Continue implementing the EnMS.

The expected impacts of these planned activities will be reduced energy usage and EUI in goal-subject buildings.

1.2 EISA Section 432 Benchmarking and Evaluations

1.2.1 EISA Section 432 Benchmarking and Evaluations Performance Status

LM continued conducting energy and water audits as required by EISA Section 432. These audits help LM meet the overall DOE goal of completing EISA Section 432 continuous (4-year cycle) energy and water evaluations.

A remote energy evaluation was conducted on the Tuba City, Arizona, Disposal Site in accordance with LM's 4-year EISA Section 432 evaluation schedule. The site is on Navajo Nation land and has been mostly unoccupied during the pandemic due to Navajo Nation

policies. No potential energy conservation measures were discovered during the evaluation. The site has 326 kilowatts (kW) of photovoltaic solar panels that supply more than enough power for the site during the day. Grid power is used only at night, and excess power is sent back to the grid.

A remote water evaluation was also conducted for the Tuba City site, in accordance with LM's 4-year EISA evaluation schedule. No major issues were found. In 2022, the site transitioned to an unoccupied site, and water use was minimal during the evaluation.

As BMPs:

- LM sent the annual site energy comparison report to LMS site leads for their information and to help them understand their site's energy consumption in comparison to other LM sites.
- LM benchmarks EISA-covered buildings' utility use in the ENERGY STAR Portfolio Manager.
- LM performs desktop or remote evaluations.

1.2.2 EISA Section 432 Benchmarking and Evaluations Plans and Projected Performance

LM will conduct EISA energy and water evaluations at its EISA Section 432 covered facility sites on a rotating basis, as shown in Table 1. In addition, evaluations provide energy information to site personnel so they can make informed decisions on implementing possible energy conservation measures. The overall risk of nonattainment of this goal is low.

Table 1. Planned EISA Section 432 Evaluations

Planned EISA Section 432 Evaluations at LM Sites		
Year	**Energy Evaluations**	**Water Evaluations**
2023	Grand Junction, CO, Disposal/Processing, Site Mound, OH, Site Pinellas County, FL, Site	Weldon Spring, MO, Site (P) Mound, OH, Site (P)
2024	Fernald Preserve, OH, Site Weldon Spring, MO, Site	Fernald Preserve, OH, Site (P/ILA) Monticello, UT, Disposal and Processing Sites (P)
2025	Monticello, UT, Disposal/Processing Sites Shiprock, NM, Disposal Site	Grand Junction, CO, Disposal/Processing Site (P)
2026	Tuba City, AZ, Site	Tuba City, AZ, Disposal Site (P)

Abbreviations:
ILA = industrial, landscaping, and agricultural
P = potable

Renewed emphasis will be placed on identifying potential energy conservation measures with the implementation of the EnMS. Emphasis will be placed on energy-related items referred to in deferred maintenance reports and condition assessment reports.

Future energy evaluations will include checking past site condition assessment survey reports and deferred maintenance logs. The evaluations also will include interviews with facility management personnel and LMS site leads.

As a BMP, LM will continue to (1) benchmark EISA Section 432 covered facility utility usage in the ENERGY STAR Portfolio Manager and (2) perform desktop evaluations.

The expected impact of these planned activities will be to ensure that 100% of LM sites are evaluated every 4 years to meet the EISA Section 432 requirements.

1.3 Facility Metering

1.3.1 Facility Metering Performance Status

LM continued metering individual buildings for electricity, natural gas, steam, and water, where cost-effective and appropriate to meet the DOE goal. Federal metering guidance requires that buildings larger than 5000 ft^2 be metered. LM has 10 buildings larger than 5000 ft^2, all of which are metered for electricity. LM has 25 buildings less than 5000 ft^2, of which only 8 are metered for electricity. All required buildings are metered under the current federal metering guidance.

Water meters are installed at LM sites where meters have proven to be a cost-effective method for ensuring accurate water use reporting and detecting leaks. Meter readings are documented monthly by site personnel and tracked in a spreadsheet accessible to all responsible team members.

1.3.2 Facility Metering Plans and Projected Performance

LM will continue metering buildings where it is cost-effective to meet the DOE goal. It is anticipated that additional metering will be required to verify energy savings resulting from the implementation of energy conservation measures under the EnMS. Determination of the need for additional metering will be made when energy improvement opportunities are identified. Meters will be needed to establish energy use baselines and to track the effectiveness of implemented energy improvements. The overall risk of nonattainment of meeting the metering goal is low.

LM will perform the following planned activities in FY 2023 and beyond:

- Evaluate local utility companies' implementation of the U.S. Environmental Protection Agency (EPA) Green Button initiative on a periodic basis
- Add metering to buildings where it is cost-effective
- Review forthcoming revised DOE metering guidance and perform a gap analysis against the current LM metering plan
- Investigate the cost of installing additional metering on buildings and other processes that would be advantageous for the EnMS Evaluate metering needs for new sites and buildings in the LM portfolio
- Work with appropriate parties to install separate electric metering in the LM data centers at the LM Business Center (LMBC) at Morgantown, West Virginia, and at the LM Field Support Center (LMFSC) at Grand Junction, Colorado
- Work with appropriate parties to install a System Operation and Analysis at Remote Sites (SOARS)-connected electric meter in the new Weldon Spring Site IC after the 1-year mechanical systems warranty period expires
- Provide annual electricity usage and trending information to LMS site and facility leads so they can see utility performance and make changes, if cost-effective, to improve efficiency

The expected impacts of these planned actions will be to identify methods for potential implementation to reduce energy and water usage at LM facilities.

1.4 Nonfleet Vehicles and Equipment

1.4.1 Nonfleet Vehicles and Equipment Performance Status

LM continued working toward the overall DOE goal of reducing Scope 1 and 2 greenhouse gas (GHG) emissions in FY 2022, including reducing nonfleet fuel use. However, several major initiatives or changes to missions or facilities occurred in FY 2022 that contributed in significant ways to LM's nonfleet fuel use. LM has undertaken several large construction, demolition, investigation, and remediation projects at LM-owned sites that have not historically been part of LM's mission.

Nonfleet vehicles and equipment fuel use increased by almost 2500% in FY 2022 compared to FY 2021. Two projects in particular contributed to this increase. The first was the Amchitka project, which involved fuel used for transporting equipment via a barge to the Amchitka, Alaska, Site on Amchitka Island for a periodic site visit and to perform repairs and investigative fieldwork. The Amchitka site is on a remote island near the western end of the Aleutian Island chain. The Amchitka project involved collection of samples from seven capped mud pits and background locations for geotechnical and chemical analyses, repairs to one of the mud pit caps, repairs to the primary access road, construction of two at-grade low-flow stream crossings, and survey work.

The second project was the demolition of the Reactor Building at the Piqua, Ohio, Decommissioned Reactor Site, which also increased nonfleet vehicle and fuel use. Temporary generators and heavy equipment were needed to complete the work.

LMS staff continued developing better ways to collect and track nonfleet vehicle and equipment fuel use by LM, contractors, and subcontractors. Collecting and tracking nonfleet fuel purchases has been a challenge for several years with changes in accounting software and an increased number of purchases.

1.4.2 Nonfleet Vehicles and Equipment Plans and Projected Performance

LM will continue evaluating reductions in nonfleet vehicles and equipment fuel usage at its sites. This category is dependent on the amount of fieldwork scheduled during the year and is highly variable. The overall risk of nonattainment of this goal is medium, due to mission variability.

LM will perform the following planned activities in FY 2023:

- Monitor the nonfleet vehicle and equipment fuel usage
- Encourage use of energy-efficient generators and equipment
- Continue separate tracking of diesel, gasoline, and propane used for nonfleet vehicles and equipment and continue investigating methods to improve tracking
- Investigate increased usage of electric vehicles (EVs) instead of gasoline-powered vehicles for all-terrain vehicles, carts, and so on
- Develop a process, with site personnel and Procurement and Contracts Management, to evaluate the replacement of fossil-fueled nonfleet vehicles and equipment with electric or other green options

The expected impacts of these planned activities will be to reduce fuel usage and associated Scope 1 GHG emissions.

1.5 Net-Zero and Carbon Pollution-Free Electricity (CFE)

1.5.1 Net-Zero and CFE Performance Status

In FY 2022, LM reviewed and evaluated new Executive Orders, implementing instructions, and guidance on net-zero emission goals. LM drafted a CFE Implementation Plan to help DOE achieve 100% CFE on a net annual basis by 2030, including 50% 24/7 CFE. LM's CFE Implementation Plan was submitted to the DOE Sustainability Performance Division. LM is currently utilizing 44.7% CFE. LM identified several projects for which adding CFE could be beneficial. One identified project is repairing the solar panel system at the Tuba City site. For additional projects, see the CFE Implementation Plan.

During the CFE development process, LM investigated their current electric providers and the possibility of contracting with other electric providers that provide electricity from CFE sources. LM has 11 sites in eight states that use electricity from 10 different electric providers. Two sites are in Ohio, which is a retail-choice electric state and allows for the free market purchase of electricity. The remaining nine sites are in vertically integrated electric utility states, where individual areas each have a monopoly utility that generates, transmits, and distributes electricity, thus limiting contracting options. LM has initiated discussions with Federal Energy Management Program (FEMP) personnel to assist in renegotiating contracts.

1.5.2 Net-Zero and CFE Plans and Projected Performance

LM will continue to review and evaluate new Executive Orders, related implementing instructions, and guidance on net-zero emission goals for implementation in FY 2023 and will revise procedures as needed. A net decrease of electricity use is expected in the future, due to the anticipated reduction in the number of 30-horsepower and 40-horsepower extraction wells at the Fernald Preserve.

LM will perform the following planned activities in FY 2023:

- Continue evaluating ways to increase CFE usage at its sites. This will include completing the repairs to the damaged 285 kW solar panel system at the Tuba City site in 2023.
- Continue to work with FEMP personnel to place contracts with commodity electric providers for the two Ohio sites to increase CFE delivery. The Fernald Preserve in Ohio is by far LM's largest energy user, so negotiating an electric provider contract with significant CFE at that site is crucial in LM meeting the DOE goal.
- Contact electric providers for the remaining sites to check on the availability of green tariffs and other methods to increase CFE delivery.
- Revisit existing renewable energy feasibility studies and investigate installing additional renewable energy sources at LM sites and on LM-owned buildings.
- Evaluate DOE-owned buildings where it might be possible to convert from fossil fuel to CFE electricity for the source energy.
- Finalize installation of a solar-powered EVCS at the Fernald Preserve Visitors Center.

The expected impacts of these planned activities will be to reduce fossil fuel consumption and associated Scope 1 and Scope 2 GHG emissions.

2.0 Water Management

2.1 Water Usage and Management Performance Status

LM worked to meet the DOE goals of reducing potable water use intensity and reducing nonpotable freshwater consumption for industrial, landscaping, and agricultural (ILA) activities. LM met the goal for reducing potable water use intensity in FY 2022. LM did not meet the goal of reducing nonpotable freshwater consumption for ILA activities in FY 2022 due to increased project work. LM also applied stormwater BMPs and required project-specific stormwater controls.

Several major initiatives or changes to missions or facilities occurred in FY 2022 that contributed in significant ways to LM's water use. LM has undertaken several large construction, demolition, investigation, and remediation or reclamation projects at LM-owned sites that have not historically been part of LM's mission.

Major water-consuming end-uses at LM sites include use of sinks, toilets, and drinking fountains, as well as decontamination and dust-suppression activities.

As a BMP, LM considers ways it can reduce, reuse, and recycle both potable and nonpotable water with project-planning tools, such as *Project or Activity Evaluation (PAE)* forms (LMS 1005) and statements of work (SOWs). LM also maintained and followed a water management plan in the LM/LMS *EMS Sustainability Teams Manual* (LM-Manual-3-20.3-1.0, LMS/POL/S11374). Potable water meters are installed at goal-subject sites where they have been proven to be a cost-effective way of ensuring accurate water use reporting and leak detection. Meter readings are recorded monthly by site personnel and tracked in a spreadsheet accessible to all responsible team members.

Note

A copy of the water management plan is available on the DOE Sustainability Dashboard.

Examples of BMPs to conserve water that were implemented during projects in FY 2022 included:

- The use of a dust-suppression additive (DuraBlend™) at the Burro Mines Complex, Colorado, ULP Site reclamation project, to reduce the amount of water needed for fugitive dust control.
- The use of collected surface water in an onsite sediment trap at the L-Bar, New Mexico, Disposal Site for restoring the soil cover associated with a disposal cell cover study.

2.1.1 Potable Water Use Intensity Performance Status

LM decreased its potable water usage at goal-subject sites and buildings by 62% in FY 2022 (141,795 gallons) compared to FY 2021 (372,276 gallons). When taking into consideration both goal-subject sites and buildings and project-specific water usage at LM sites (which are goal excluded), overall potable water usage at LM sites in FY 2022 (338,795 gallons) decreased by

9% compared to FY 2021 (372,276 gallons). The changes in potable water usage are attributed to the following:

- At the Weldon Spring Site, water use was decreased significantly (35,800 gallons in FY 2022 compared to 146,900 gallons in FY 2021) as charging of the fire-suppression system and water line leaks did not occur in FY 2022
- At the Fernald Preserve, potable water use increased (98,634 gallons used in FY 2022 compared to 46,002 gallons used in FY 2021) due to (1) a glycol line break that required recharging the fire-suppression system and (2) a construction project that required significant amounts of water for fugitive dust control
- At the Grand Junction, Colorado, Disposal Site, water use decreased significantly (3192 gallons in FY 2022 compared to 182,900 gallons in FY 2021) as there was no placement of residual radioactive material (RRM) in FY 2022 (significant water usage is required for moisture conditioning and dust suppression during RRM placement and decontamination of equipment after placement)

Project-related activities at nongoal-subject sites in FY 2022 involved potable water usage for ILA and domestic usage purposes, including:

- Approximately 2000 gallons of water used for well drilling, decontamination, cooling bits, and mixing concrete and bentonite at the Shiprock site.
- Approximately 170,000 gallons of water used for building misting, asbestos abatement, and fugitive dust control associated with building demolition at the Piqua, Ohio, Decommissioned Reactor Site.
- Approximately 25,000 gallons of water used for (1) showers, cooking, and laundry for temporary field crew members housed onsite; (2) decontamination of sampling equipment associated with a geotechnical investigation; (3) road repairs; and (4) construction of low-flow stream crossings at the Amchitka, Alaska, Site.

2.1.2 Nonpotable Freshwater Consumption for ILA Activities Performance Status

A significant amount of nonpotable water was used at a reclamation project at the Burro Mines Complex ULP site (605,500 gallons) for fugitive dust control to comply with the stormwater construction permit.

2.1.2.1 Stormwater Controls

Stormwater control measures were implemented by LM to comply with stormwater permitting or EISA Section 438 requirements, or both, and to improve stormwater quality at the following LM sites in FY 2022:

- **Burro Mines Complex ULP site reclamation project**: The purpose of the project was to reduce storm-related erosion that originated from legacy waste rock at the site and that has contributed to the sediment load within the adjacent Dolores River. New sediment basins and riprap channels were installed and revegetation was completed as permanent erosion control measures.

- **Piqua decommissioned reactor site demolition project**: Building demolition and site redevelopment began in May 2022 and will result in a 10% increase in onsite infiltration in compliance with EISA Section 438. Temporary stormwater controls, including sediment wattles, storm inlet protection, and vehicle tracking controls, were installed to minimize stormwater contamination during demolition activities.
- **Fernald Preserve onsite workspace project:** Construction of a modular office trailer and a garage and lab building began in May 2022. Temporary stormwater controls were installed and maintained in accordance with a Construction Stormwater Pollution Prevention Plan.

2.2 Water Usage and Management Plans and Projected Performance

With LM's current policies and procedures in place to reduce potable water use intensity, the overall risk of nonattainment of this goal is low. However, with the major initiatives and changes to missions and facilities scheduled to occur at LM sites in upcoming years, the risk of nonattainment of the goal to reduce nonpotable water use consumption will be high.

The amount of potable water used by occupants during FY 2023 is expected to continue to be lower than before the coronavirus disease 2019 (COVID-19) pandemic as staff continue to telework at a similar rate as in FY 2022.

LM has several planned or ongoing activities scheduled in FY 2023 involving new construction, major renovation, remediation or reclamation, demolition, or decontamination and decommissioning. These activities will require potable or nonpotable water usage at multiple LM sites. LM will employ water conservation efforts such as utilizing cost-effective dust suppression and soil moisture conditioning and blending options. For example, at the Shiprock site, treated process discharge water will be utilized to offset the use of fresh surface and groundwater sources for fugitive dust control. The impact to water use intensity and consumption is expected to be minimal, as these projects are planned to be completed in accordance with all applicable water conservation and stormwater management requirements.

Challenges and obstacles to measuring and obtaining water conservation goals and milestones include the following:

- Some large LM projects, with the most opportunity for water conservation implementation, are performed using interagency agreements. LM water sustainability team leads have little input to those agreements.
- Some of the buildings designated as "covered facilities" have no water usage, which skews water intensity values.
- Most of the LM staff (including LMS contractors) work in leased buildings where LM has limited input or control of the infrastructure or landscaping practices. In these facilities, LM emphasizes and trains staff on water conservation measures as users to decrease potable water consumption.
- Water savings measures identified in water evaluations are referred to site management for implementation. Implementation depends on funding, which may or may not be available.

- Many times, water savings measures are completed on items that are not separately metered, so savings are difficult to verify. When the items are separately metered, savings are verified as needed.
- Water use is often project-dependent and can be inconsistent year to year. Often, there is no way to offset high water usage required to complete a project, resulting in unavoidably variable data.

LM will complete the following activities in FY 2023 to reduce water usage, implement stormwater controls as necessary, and support water conservation measures:

- Continue to track and monitor potable water use intensity and nonpotable ILA water consumption for FY 2023 and beyond to identify opportunities to reuse, recycle, and reduce.
- Continue to utilize and evaluate measures to reduce potable water use intensity.
- Continue to utilize and evaluate measures to reduce nonpotable ILA consumption.
- Ensure early involvement in the project planning process, utilizing tools such as PAE forms and SOWs.
- Continue to evaluate newly acquired LM sites for water conservation opportunities and improvements to stormwater management controls, if applicable.
- Continue to evaluate requirements for site metering of water usage in accordance with Section 1002 of the Energy Act of 2020.
- Ensure involvement with the continued development of the *Weldon Spring Master Plan,* which will address the possibility of future improvements to the landscaping and parking lot.
- Evaluate and compare year to year potable water usage between the old IC and the new IC at the Weldon Spring Site.
- Continue to evaluate cost-effective dust suppression and soil moisture conditioning and blending options to support ongoing water conservation efforts with site project activities.
- Ensure daily visual inspections are conducted during water pipeline replacement projects to proactively address leaks in a timely manner.
- Continue implementing International Organization for Standardization (ISO) Standard 50001, *Energy Management Systems*, which should result in the identification of additional water savings measures.
- Continue to evaluate use of alternative water sources (e.g., gray water, harvested rainwater, reclaimed water, process discharge water) to offset the use of fresh surface and groundwater sources.
- Perform annual water evaluations at the Mound site and Weldon Spring Site to comply with EISA Section 432 and identify opportunities to reduce water usage.
- Complete a comprehensive review and update of the water management plan in the LM/LMS *EMS Sustainability Teams Manual*. LM will incorporate any new requirements and goals outlined in the DOE and Council on Environmental Quality (CEQ) *Implementing Instructions for Executive Order 14057, Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability* (CEQ 2022).

- Develop LM site-specific water balance analysis by August 2023 as required by the *Fiscal Year 2023 Site Sustainability Plan Guidance* (DOE Sustainability Performance Division 2022).
- Continue to participate in water conservation public outreach opportunities, such as the Grand Junction, Colorado, Ute Children's Water Festival held annually in May.

The expected impacts of these activities are to decrease both potable and nonpotable water consumption.

3.0 Waste Management

3.1 Waste Management Performance Status

LM focused on reducing the following two types of solid waste that is sent to treatment and disposal facilities: (1) nonhazardous construction and demolition (C&D) material and debris and (2) nonhazardous solid waste that does not include C&D material and debris, which is referred to herein as municipal solid waste (MSW). LM achieved both DOE goals of reducing C&D and MSW sent to treatment and disposal facilities. Waste totals and the diversion totals are shown in Table 2 below.

Several major initiatives or changes to missions or facilities occurred in FY 2022 that contributed in significant ways to LM's C&D waste generation. LM has undertaken several large construction, demolition, investigation, and remediation or reclamation projects at LM-owned sites that have not historically been part of LM's mission. LM found that much of the C&D material and debris associated with those decommissioning and demolition projects was not eligible for recycling due to (1) lead or polychlorinated biphenyls (PCBs) contamination and (2) the DOE Moratorium and suspension of release for recycling of metal from radiation areas.

Table 2. Waste Reduction Percentage for FY 2022

LM's Nonhazardous C&D Waste and MSW Diverted from Landfills in FY 2022			
Nonhazardous Waste Type	**Total Volume (Metric Tons)**	**Diverted Volume (Metric Tons)**	**% Diverted from Landfill**
C&D waste	3566	163	4.6%
MSW (not including any C&D waste)	69	29	42%

As a BMP, LM continued the following:

- Diverting waste whenever possible from landfills through reusing and recycling materials that are generated in the office or used during fieldwork or C&D projects
- Promoting source prevention, waste reduction, and diversion strategies with project and program teams during the early stages of project planning
- Communicating waste reduction, minimization, and recycling messages to employees at least once a year

- Collecting and tracking recycling, waste minimization, and diversion information through data calls two times a year
- Providing recycling receptacles in individual offices and common areas at staffed facilities and at visitor and interpretive centers
- Using and promoting the use of acceptable nontoxic or less-toxic alternative chemicals
- Applying integrated pest management and landscape management practices, such as using biological, cultural, mechanical, and chemical methods (e.g., using less toxic and species-targeted herbicides) to control weed infestations at its sites, when needed
- Composting landscaping materials and stormwater controls (e.g., hay berms) when feasible

Increasing composting volume has been a challenge for LM. Compostable material represents a very small percentage of LM's overall waste stream. Food composting opportunities remained limited due to the office structure because there are no cafeteria services, most staff are still working remotely, and the majority of the offices are leased spaces.

3.1.1 Waste Management Plans and Projected Performance

LM's waste management practices will remain mostly unchanged in FY 2023. Recycling and reuse will continue to be encouraged for nonhazardous MSW and for nonhazardous C&D material and debris with a diversion goal of 50% by FY 2025 and 75% by FY 2030. Risk of nonattainment of these goals is high due to the expansive and remote locations of LM sites and offices and the variety of projects that do not have viable waste or debris diversion options for nonhazardous MSW and for nonhazardous C&D material and debris.

LM will remain committed to eliminating and minimizing waste and reducing pollution. LM will perform the following planned activities:

- Maintain federal and LMS contractor policies for pollution prevention
- Consider ways to reduce, reuse or donate, and recycle materials beginning in early project planning and continue to use project-planning tools (e.g., PAE forms, SOWs) to facilitate waste minimization, sustainable purchasing (including use of recycled-content material), and waste diversion from landfills
- Promote the use of the *Guidance for Implementing Construction Debris and Solid Waste Diversion Strategies* manual (LMS/PLN/S12185), which provides project managers and LM site support personnel with specific source-reduction, recycling, and waste-reduction measures to consider in planning and implementing projects and in operating their sites
- Assess planned purchases, waste streams, and chemical inventories for pollution prevention and waste minimization opportunities
- Increase the use of acceptable nontoxic or less-toxic alternative chemicals and eliminate the acquisition of hazardous chemicals and materials through sustainable purchasing
- Purchase only the appropriate quantities of products needed to perform the work
- Consider ways to improve outreach and education about waste diversion (e.g., recycling, reuse, and reduction) and evaluate waste-diversion opportunities at LM's visitor and interpretive centers
- Share pollution prevention messages throughout the LM complex

- Continue to (1) maintain spreadsheet inventories of recycled and reused materials, chemicals, universal wastes, and solid, hazardous, and radioactive wastes and (2) update the inventories at least two times per year
- Reduce adding herbicide pollutants to the environment by utilizing integrated pest management and landscape management practices, such as biological, cultural, mechanical, and chemical methods, to control weed infestations
- Evaluate nonhazardous waste recycling stations to determine whether changes are needed to increase participation
- Evaluate the *Implementing Instructions for Executive Order 14057 Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability* (CEQ 2022) and update LM policies and procedures as needed

The expected impacts of these planned activities on future fiscal years are continued source reduction, pollution prevention, waste minimization, and waste diversion from landfills.

4.0 Fleet Management

4.1 Fleet Vehicle Inventory

4.1.1 Fleet Vehicle Inventory Performance Status

LM worked toward the DOE goal of acquiring alternative fuel vehicles (AFVs) and EVs. LM also worked toward meeting the requirements of (1) Executive Order (EO) 14008, *Tackling the Climate Crisis at Home and Abroad,* including Section 205, "Federal Clean Electricity and Vehicle Procurement Strategy," and (2) EO 14057, *Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability.* Those Executive Orders aim to achieve a federal government fleet of 100% clean and zero-emission vehicles by 2035 to support revitalization of the federal government's sustainability efforts.

In FY 2022, LM acquired three EVs to support LM's mission. The vehicles are suitable for paved-road transportation from site to site, but they do not have off-road capability. LM studied the use of these vehicles throughout the month of October 2022 to better understand how well their capability and charging capacity can support LM's mission.

Along with the EVs, LM has started purchasing and installing EVCSs at its main five office sites. These EVCSs will be a combination of standalone solar charging stations and more traditional charging stations. These stations are planned to be installed throughout FY 2023.

LM continued to evaluate future EV acquisitions for the existing fleet and proposed additional locations for future EVCSs.

LM continued to follow the *LM/LMS Fleet Management Manual* (LM-Manual-3-13-1.0, LMS/POL/S24625) to ensure optimization of the fleet size in order to accomplish the mission using the smallest, most appropriate vehicles possible. For the purpose of right-sizing the fleet, LM evaluates and monitors utilization reports and metrics, including how often vehicles are rented.

4.1.2 Fleet Vehicle Inventory Plans and Projected Performance

LM will continue to acquire AFVs and EVs conducive to the mission. The overall risk of nonattainment of this goal is high due to LM's mission and technical constraints. A majority of LM's work and mission requires its fleet to travel on unpaved roads, and EVs for that activity are not currently available. Additionally, LM's work requires long-distance travel to remote locations where EVCSs and alternative fuel sources are not available.

The following activities are planned for FY 2023:

- Continue to gather telematics data from Geotab and analyze data on U.S. General Services Administration (GSA) and Archibus/Enterprise Asset Management platforms.
- Continue to right-size the fleet by reducing the number of oversized or underutilized vehicles and replacing them with EVs as needed. Continue installing EVCSs on LM-owned sites.
- Work with landlords to install EVCSs on leased facilities.

The expected impacts of these activities would be to increase the number of AFVs and EVs in LM's fleet.

4.2 Reducing Petroleum Consumption

4.2.1 Reducing Petroleum Consumption Performance Status

Fieldwork in FY 2022 began a more routine schedule after COVID-19 restrictions were lifted. This allowed for carpooling and multi-occupancy vehicles. LM fuel usage in FY 2022 was 26,068 gallons of total fuel, compared to 36,664 gallons of fuel usage during FY 2021, which is a 29% reduction in petroleum consumption.

LM worked toward the DOE goal of reducing petroleum consumption in FY 2022 by:

- Following guidance in the *LM/LMS Fleet Management Manual*.
- Requiring staff to perform daily motor vehicle inspections to identify unsafe conditions or defects that might negatively impact vehicle fuel consumption.
- Promoting anti-idling.
- Working with project teams and using telematics data to determine the best travel routes and eliminate nonessential stops to reduce mileage.
- Identifying the most fuel-efficient vehicle for a given task by considering miles driven, fuel used, intended use, and the types of roads traveled.
- Using carpooling, video conferencing, and telework; combining field activities; and coordinating fieldwork to reduce the number of trips as the mission allows.
- Reporting fuel usage in quarterly *Performance Assurance Measures* reports to increase personnel awareness of fuel usage goals and progress.

4.2.2 Reducing Petroleum Consumption Plans and Projected Performance

LM will continue to seek ways of reducing petroleum consumption, optimizing fleet performance, and increasing alternative fuel usage. The overall risk of nonattainment of the reducing petroleum consumption goal is high due to LM's mission. The anticipated increase in LM's scope and number of sites may affect LM's ability to accomplish the fleet management category goals. LM is expected to receive 29 additional sites for long-term care by FY 2030, according to the LM *Site Management Guide* (LM-Guide-3-20.0-1.0). As additional sites are added, more miles will be driven and business travel will increase in order to accomplish the mission.

The *LM/LMS Fleet Management Manual* describes the details, responsibilities, and guidelines for the maintenance, acquisition, use, and life-cycle management of LM's fleet. LM will continue to evaluate the *Implementing Instructions for Executive Order 14057, Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability* (CEQ 2022), and any forthcoming guidance issued by DOE to update the *LM/LMS Fleet Management Manual* accordingly in FY 2023.

As part of its overall fleet strategy, and after considering the impacts of weather-related events and the COVID-19 restrictions, LM recognizes the necessity of supporting resilience as it performs its mission of long-term stewardship of LM sites. LM will integrate a proactive strategy that recognizes the diverse locations that are part of LM's site portfolio and that will aid in returning the fleet to full operations when disruptions cannot be avoided. This resilience initiative will be integrated into LM's program and will seek to minimize disruptive events by preemptively safeguarding vehicles, fuel availability, and infrastructure. Through focusing on incorporating resilience into fleet planning, LM will protect and maintain fleet operations when disruptions or events prohibit normal operations.

LM will strive to reduce petroleum consumption, to the extent allowed by the LM mission, through ongoing monitoring, ongoing reporting, and the following planned activities:

- Develop and implement a training program for drivers on (1) using EVs and EVCSs and (2) using the Wright Express (WEX) card. This program will focus on new policies that will be based upon the Executive Orders and other requirements referenced herein.
- Develop checklists for using EVs and EVCSs that can be referenced easily by a person assigned to drive these vehicles.
- Encourage staff to perform required daily motor vehicle inspections to identify and report unsafe conditions or defects that might negatively impact a vehicle's fuel usage.
- Work with project teams and use telematics data to determine the best travel routes and eliminate nonessential stops to reduce mileage.
- Identify the most fuel-efficient vehicle for a given task by considering miles driven, fuel used, intended use, and the types of roads traveled.
- Use carpooling, video conferencing, and telework; combine field activities; and coordinate fieldwork to reduce the number of trips, as the mission allows.

- Record and track vehicle-related data and produce monthly and quarterly summary reports that include information regarding AFV and EV acquisitions, mileage, utilization, fuel use, and fuel cost.
- Report fuel usage in quarterly *Performance Assurance Measures* reports and to staff through communications developed by the Education, Communications, History, and Outreach team to increase personnel awareness of fuel usage goals and progress.
- Report data into the Federal Automotive Statistical Tool (FAST), which can forecast LM's need for vehicle acquisitions over 3 years, including AFV and EV acquisitions for all light-duty vehicles.

The expected impacts of these planned activities will be reduced petroleum fuel usage and its associated GHG emissions.

4.3 Increase Alternative Fuel Consumption

4.3.1 Increase Alternative Fuel Consumption Performance Status

LM worked toward the DOE goal of increasing alternative fuel consumption by:

- Educating drivers about the proper use of 85% ethanol fuel blend (E85) fuel and how to use the Mobile Alternative Fuel Station Locator and GSAFleet2Go applications to locate E85 fueling stations.
- Using telematics data to track alternative fuel usage and idling time.
- Monitoring DOE's Energy Efficiency and Renewable Energy website to identify any changes to E85 fuel infrastructure and the availability of E85 fueling locations near LM vehicle garaging locations.
- Using low GHG-emitting vehicles when they are available and do not negatively impact the mission, as required by LM policy. If they are unavailable, and if E85 fuel is available, LM will acquire E85 AFVs.

4.3.2 Increase Alternative Fuel Consumption Plans and Projected Performance

LM will continue to try to acquire light-duty AFVs when appropriate for the mission and when the alternative fuels are readily available. However, LM's fleet vehicles will remain mostly gasoline powered in order to support the off-road capability needs for LM's mission. The overall risk of nonattainment of increasing alternative fuel consumption is high due to LM's mission and the limited availability of AFVs and E85 fueling stations.

To increase alternative fuel consumption, LM will conduct the following planned activities in FY 2023:

- Educate drivers about the proper use of E85 fuel and how to locate E85 fueling stations using the fuel locator applications Mobile Alternative Fuel Station Locator and GSAFleet2Go. An article about vehicle sustainability and fuel usage will be published in the *E2SH&Q Outlook* newsletter.
- Utilize telematics data to track alternative fuel usage and to promote anti-idling.

- Monitor DOE's Energy Efficiency and Renewable Energy website to identify any changes in the E85 fuel infrastructure and the availability of E85 fueling locations near LM vehicle garaging locations.
- Record and track vehicle-related data and produce monthly and quarterly summary reports that include information about AFV and EV acquisitions, mileage, utilization, fuel use, and fuel cost.
- Report data into FAST, which can forecast LM's need for vehicle acquisitions over 3 years, including AFV and EV acquisitions for light-duty vehicles.

The expected impacts of these activities are an increase in LM's use of alternative fuels, which will decrease the consumption of petroleum fuels.

5.0 Clean and Renewable Energy

5.1 Clean and Renewable Energy Performance Status

LM worked toward the overall DOE goal of increasing the consumption of clean and renewable electric energy by installing renewable energy sources where feasible. In FY 2022, LM's clean and renewable energy sources remained unchanged from previous years. Photovoltaic solar panel systems are used to the extent possible to reduce LM's dependence on carbon sources, and no thermal energy systems are available for LM's use. LM did not meet the DOE goal of increasing consumption of clean and renewable electric energy in FY 2022.

LM's largest renewable energy source is a 285 kW photovoltaic solar panel system at the Tuba City site. In February 2022, the system suffered damage due to an apparent lightning strike. Efforts were initiated to determine repairs necessary, including engaging an electrical engineering firm to evaluate how to bring the system back online and prevent a future occurrence. The system remains offline, which greatly reduced LM's renewable energy production. This system provided 77% of LM's onsite renewable energy production in FY 2021 but provided only 47% in FY 2022.

As a BMP, LM purchased renewable energy certificates (RECs) in FY 2022. Since all LM sites combined are considered one site for the purpose of calculating renewable energy, this allowed LM to achieve 81% renewable energy compared to total energy use.

5.2 Clean and Renewable Energy Plans and Projected Performance

LM will continue investigating ways to increase renewable energy consumption, mainly by installing photovoltaic solar array systems on LM sites and contracting with energy providers that are producing clean and renewable energy. The expected impact is to increase LM's consumption of clean and renewable energy at LM's facilities. LM currently has no plans to install thermal clean energy at LM sites. FY 2022 data have been compared to upcoming site improvements and completed demolition projects, and it is estimated that LM will increase its clean and renewable energy usage.

The risk of nonattainment of this goal is high. Meeting this goal will be impacted by:

- Changes in how clean and renewable energy credits are applied and used.
- Mission changes (e.g., installation of an active water treatment system at the Shiprock site) where additional power will be needed to operate the system.
- Technical constraints keeping the Tuba City site's photovoltaic solar panel system out of service until it can be repaired or replaced, if needed. Historically, this system accounted for 77% of LM's onsite renewable energy.

LM plans to complete the following activities in FY 2023 to increase the consumption of clean and renewable energy:

- Review and update existing renewable energy feasibility studies for LM sites and seek implementation of projects at feasible sites
- Complete evaluations on repairs to the Tuba City site's 285 kW solar panel system
- Evaluate the possibility of purchasing Energy Attribute Certificates
- Investigate the feasibility of replacing items using natural gas equipment in LM-owned facilities with CFE electric equipment
- Consider CFE options for natural gas use in future leases
- Implement strategies outlined in the CFE Implementation Plan
- Work with FEMP personnel to implement contracts with energy suppliers that will supply additional CFE
- Review and update LM policies and plans to incorporate any new requirements and goals outlined in the *Implementing Instructions for Executive Order 14057, Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability* (CEQ 2022)

The expected impacts of these planned activities will be an increase in LM's use of clean and renewable energy.

6.0 Sustainable Buildings

6.1 Sustainable Buildings Performance Status

LM maintained the two eligible buildings that are compliant with the *Guiding Principles for Sustainable Buildings and Associated Instructions* (CEQ 2020):

- The Fernald Preserve Visitors Center at the Fernald Preserve received a Leadership in Energy and Environmental Design (LEED) Platinum certification in 2008 and was reassessed in accordance with the 2016 GPs in 2016.
- The new Weldon Spring Site IC at the Weldon Spring Site was designed to meet the GPs. Occupancy took place in spring 2021. In FY 2022, the IC was fully opened for visitors and staff as part of LM's Reentry Plan. LM received a High-Performance Sustainable Building Award for this building in FY 2022.

There were no major initiatives or changes to missions or facilities in FY 2022 that contributed in significant ways to LM's sustainable building goals. LM's biggest challenge for meeting the GPs is the gross square footage threshold. LM-owned buildings tend to be much smaller than the gross square footage threshold. Additionally, LM owns very few buildings; most of LM's occupied space is in leased spaces.

As a BMP, LM does ensure that ENERGY STAR status is considered in leased buildings larger than 10,000 gross square feet (GSF). In FY 2022, sustainability team members collected the required data for the ENERGY STAR Tenant Space Recognition application for the LM Operations Center (LMOC) at Westminster, Colorado.

LM identifies and looks for ways to reduce energy in new buildings and during renovations of buildings. In FY 2022, LM completed the following actions that could reduce EUI:

- Continued assessing the heating, ventilation, and air conditioning (HVAC) system at the new Weldon Spring IC. The new Weldon Spring IC is a multifunction building that has four classrooms that visiting students use intermittently. Energy modeling performed during design of the building was done using the American Society of Heating, Refrigerating, and Air-Conditioning Engineers Inc. (ASHRAE) building-type "school," which is meant for a full-time student body. This results in excessive air flow and energy use because the new IC classrooms are occupied only intermittently. A year's worth of energy data shows that, based on EUI (i.e., British thermal units per square foot), the new IC is performing satisfactorily compared to the old center. However, the Fernald Preserve Visitors Center, a similar type of building type, has an EUI that is 60% less than the new Weldon Spring IC. The mechanical system in the new IC is being evaluated for adjustments that should result in energy savings. Further analysis is needed to determine how much energy savings will result from the adjustments.
- LM vacated the leased Delta Building near the Fernald Preserve in July 2022. This contributed to reducing Scope 3 GHG emissions and reducing LM leased space by 3.68%. Fieldworkers were relocated to an onsite temporary conex office, and office workers not telecommuting were moved to a contractor office building.

LM had plans for two projects to take place at the LMFSC that would increase the number of LM-owned buildings that meet GPs:

- The Building 7 Annex Temporary Space Project.
- The LMFSC Administration Building Design and Construction Project.

Both of these projects were canceled in FY 2022. LM has extended its 5-year option with the landlord (Riverview Technology Corporation) for the leased buildings at the LMFSC to allow time to investigate other options as LM addresses its changing space needs.

6.2 Sustainable Buildings Plans and Projected Performance

LM will assess and prioritize owned buildings larger than 10,000 GSF on a 4-year cycle for their potential to meet the GPs identified in *Guiding Principles for Sustainable Federal Buildings and Associated Instructions* (CEQ 2020). The overall risk of nonattainment of this goal is low.

The Fernald Preserve Visitors Center, a LEED Platinum-certified building, is undergoing a preliminary design to add approximately 2662 ft^2 to the existing 10,800 ft^2. This will be built to energy efficient standards, and the addition will include a mechanical room for HVAC relocation, mechanical system upgrades, and additional utility and storage space. The building and addition will be reassessed in accordance with Appendix D of the *Guiding Principles for Sustainable Federal Buildings and Associated Instructions* (CEQ 2020) once completed.

The Weldon Spring Master Plan Project has some components, such as sustainable landscape practices and infrastructure improvements, that will comply with the GPs. Demolition of the old IC is anticipated in late calendar year 2022, and demolition of the Programmatic Storage Building is expected to begin in FY 2024.

In addition to the above items, LM will complete the following activities in FY 2023 to meet GPs and net-zero building requirements:

- Reassess existing LM-owned buildings that have met the GPs using the new criteria in Appendix D, "Assessing a Building Using the Guiding Principles for Sustainable Federal Buildings Reassessment Criteria Checklist," in the *Guiding Principles for Sustainable Federal Buildings and Associated Instructions* (CEQ 2020) to ensure that they continue to meet the GPs.
- Continue to consider sustainable improvements that offer the greatest cost efficiency gains at all buildings, instead of at only those buildings that have matched the prior gross square footage threshold.
- Continue to adjust cubicle layouts and office circulation to ensure health and safety for the staff as they return to the offices after the COVID-19 pandemic.
- Continue to apply sustainability practices to the maximum extent possible in new leases for facilities greater than 10,000 rentable ft^2 that are leased by LM, or that are leased by the LMS contractor if there is reimbursement by LM.
- Evaluate opportunities to help LM-owned facilities meet the goal of net-zero emissions, including identifying measures, obtaining cost estimates, and adding funding to future budgets.
- Review resilience solutions provided in the VARP and evaluate for sustainable improvement opportunities in existing facilities.
- Submit an application to EPA in early FY 2023 for an ENERGY STAR Tenant Space certification to recognize sustainability efforts in the LMOC.
- Continue to review guidance and implementing instructions provided by DOE and the CEQ to implement requirements set forth in EO 14057, *Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability*. LM policies and procedures will be updated accordingly.
- Attend trainings that will assist with implementing new guidance and Executive Orders.

The expected impacts of these planned activities will be to contribute to sustainable building goals by evaluating and downsizing LM's footprint, which would (1) contribute to energy savings while adjusting to a changing workforce and (2) help ensure that LM buildings continue to operate efficiently and meet goals through EISA Section 432 evaluations and GP reassessments every 4 years.


Note

See Section 1.0, "Energy Management" of this Site Sustainability Plan for goals and plans that align with Sustainable Buildings and the GPs. These include ongoing benchmarking in ENERGY STAR Portfolio Manager, implementing an EnMS using DOE's 50001 Ready program, and evaluating existing buildings and new building plans for strategies to work toward achieving net-zero emissions and CFE goals.

7.0 Acquisition and Procurement

7.1 Acquisition and Procurement Performance Status

The LM sustainable acquisition team focuses on (1) using sustainable acquisition strategies for service and construction contracts and (2) procuring environmentally sustainable products in accordance with U.S. Department of Energy Acquisition Regulation (DEAR) requirements (Title 48 *Code of Federal Regulations* Chapter 9) and with other applicable DOE and federal procurement policies. In FY 2022, there were no major initiatives or changes to missions or facilities that impacted goal performance.

In FY 2022, LM met the DOE goal of promoting sustainable acquisition and procurement to the maximum extent possible, ensuring that all sustainability clauses are included in contract actions as appropriate. All or 100% of new contract actions, under new and existing contracts, included requirements that the products and services:

- Be energy efficient (i.e., be ENERGY STAR certified or comply with FEMP guidelines, as appropriate).
- Be water efficient (i.e., be certified as water efficient under the EPA WaterSense Program, as appropriate).
- Be biopreferred and biobased (as defined by the U.S. Department of Agriculture [USDA] BioPreferred Program), environmentally preferable (including Electronic Product Environmental Assessment Tool [EPEAT]-registered products), non-ozone-depleting, and nontoxic or less toxic.
- Contain recycled content, including paper containing 30% postconsumer fiber.

LM does not do any subcontracting, so there are no contracts that need to include DEAR or *Federal Acquisition Regulation (FAR)* clauses. As a BMP, the LMS contractor flows these requirements down to their subcontractors.

LM's acquisition and procurement data are tracked manually in Microsoft Excel workbooks by the Sustainable Acquisition team lead. LM does not utilize the Federal Procurement Data System or the System for Award Management to track biobased product purchases or sustainable acquisition contracts. LMS staff continue to experience challenges with data collection using their current accounting software. The team lead is working with IT to develop a more efficient and accurate way to collect these data.

As a success story, LM was recognized as the first winner of the inaugural GreenSpace Award (i.e., a GreenSpace Silver Award in the Conference Room/Auditorium category) for the new Weldon Spring Site IC at the Weldon Spring Site.

7.2 Acquisition and Procurement Plans and Projected Performance

LM's FY 2023 acquisition and procurement practices will remain mostly unchanged from FY 2022. LM will continue to promote sustainable acquisition and procurement to the maximum extent possible. Risk of nonattainment of this goal is low because LM has sufficient management systems and policies in place.

LM will perform the following planned activities:

- Promote sustainable acquisitions and procurement to the maximum extent possible and ensure that 95% of new contract actions, under both new and existing contracts, contain language requiring the supply or use of environmentally preferable or sustainable products and services.
- Use the bimonthly team meetings of the acquisition group to emphasize the federal requirements to acquire designated products (ENERGY STAR, FEMP, WaterSense, BioPreferred Program, EPEAT, etc.) in all procurement actions as applicable.
- Attend the DOE bimonthly sustainable acquisition teleconferences/webinars to stay abreast of what other DOE programs and DOE contractors are doing to purchase sustainable products and services.
- Include the required language to ensure that products and services will be green or sustainable in the LMS contractor's procurement terms and conditions for all commodities and services.
- Ensure that 95% of EPA- and USDA-listed products and services purchased, excluding all purchases made with credit cards, are environmentally preferable or sustainable as subject to certain qualifications.
- Track compliance with the goal of purchasing 95% sustainable products and services and continue using the Sustainable Acquisition Contracts and Biobased Product Purchase Workbooks for reporting.
- Require that purchases of noncompliant energy-efficient products have written preapproval from a subject matter expert.
- Continue working with IT to develop a more efficient and accurate way to collect these data.
- Work with functional groups to conduct a Supply Chain Risk Assessment in accordance with upcoming guidance.
- Evaluate further the guidance in EO 14057, *Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability,* and related implementing instructions as they are issued from DOE. Update LM manuals, policies, and procedures accordingly.

The expected impacts of the planned activities are to meet or exceed the DOE goal of promoting sustainable acquisition and procurement to the maximum extent possible, ensuring that all sustainability clauses are included in contract actions as appropriate.

8.0 Investments: Improvement Measures, Workforce, and Community

The Investments: Improvement Measures, Workforce, and Community chapter of this Site Sustainability Plan was previously called Efficiency and Conservation Measure Investments. The chapter still describes LM implementation of identified efficiency and conservation measures (ECMs) through appropriations and direct obligations, performance contracts, and LM's sustainability-related training and education for employees. It now also includes LM's investment in environmental and economic justice in communities.

8.1 Investments Improvement Measures

8.1.1 Investments Improvement Measures Performance Status

LM continued to pursue ECMs and performance contracts in FY 2022.

No life-cycle cost effective ECMs in FY 2022 met the criteria for reinvestment. LM provided all approved fiscal year appropriations, direct obligations, and indirect obligations funding for ECMs, including facility surveys and evaluations in the DOE Sustainability Dashboard. Appropriations and direct obligations are summarized in Table 3 below.

Table 3. LM's Projected Appropriations and Direct Obligations

LM Appropriations and Direct Obligations for FY 2022–FY 2024					
Fiscal year	Obligations for facility energy and water efficiency improvements, including surveys and audits (dollars)	Estimated annual energy savings anticipated from obligations		Estimated annual water savings anticipated from obligations	
		Energy cost savings (dollars)	Energy savings (million Btu)	Water cost savings (dollars)	Water savings (gallons)
Actual FY 2022	$3,151,393	0	0	0	0
Projected FY2023	$11,014,410	0	0	0	0
Projected FY2024	$8,806,983	0	0	0	0

Abbreviation:
Btu = British thermal units

The following ECMs and related activities were implemented in FY 2022 using direct obligations funding:

- Initiated an investigation to (1) determine repairs necessary to bring the 285 kW photovoltaic solar panel system at the Tuba City site back online after damage apparently caused by a lightning strike and (2) prevent a future occurrence. This included engaging an electrical engineering firm to evaluate the system.
- Performed EISA Section 432 water and energy evaluations at the Tuba City site. No ECMs were identified during the evaluations beyond repairing the photovoltaic solar panel system.

- Initiated implementation of ISO 50001, *Energy Management Systems,* using DOE's 50001 Ready program to identify opportunities for ECMs.
- Continued using technologies (such as remote sensing, telemetry, and unmanned aircraft system–based sensors with instruments) to improve site monitoring efforts while reducing costs, natural resource use, and business travel-related GHG emissions.

The following ECMs were cancelled in FY 2022 due to changes with the LM-owned property at the LMFSC:

- Subcontract for a design/build contract to construct a new, more energy and water efficient Administration Building
- Upgrades and renovations to Building 7

LM identified the following new ECMs:

- Evaluation of six HVAC units for modification, repairs, or replacement at the Fernald Preserve

During FY 2022, LM projects did not identify any ECMs that met the monetary requirements for a performance contract. LM evaluated entering a utility service contract with Xcel Energy for EVCSs on LM-owned land at the LMFSC. The LMS contractor applied for and received approval from Xcel Energy for their "Electrification" program in December 2021. This was a 10-year agreement for the program. However, due to changed plans with the LM-owned property in May 2022, plans for new infrastructure and buildings at the LMFSC were cancelled, along with their associated EVCSs.

LM and the LMS contractor worked with the LMFSC landlord to have the landlord provide and install EVCSs on the landlord's property. The LMS contractor also informed the landlord of the Xcel Energy "Electrification" program. The landlord decided not to enter a 10-year contract and the landlord is self-performing the installation of EVCSs via a Supplemental Lease Agreement. The installation is expected to be completed by January 2023.

LM and the LMS contractor also worked with the landlord of the LMOC to have the landlord provide and install EVCSs on their property. The LMS contractor also informed the landlord of the Xcel Energy "Electrification" program, but the landlord opted not to enter a 10-year contract and the landlord is self-performing the installation of the EVCSs via a Supplemental Lease Agreement. The landlord is working with a local authority having jurisdiction (AHJ) and that AHJ's building permit for planning and zoning to see if installation of EVCSs can be done.

As a BMP, several LM staff members took performance contracting courses offered by the FEMP and met with FEMP individuals to get a better understanding of performance contracts and the ability to bundle projects.

Since no projects have been previously done under an energy savings performance contract (ESPC), no measurement and verification of ESPCs was required. As a BMP, LM verifies implemented ECMs during EISA evaluations.

8.1.2 Investments Improvement Measures Plans and Projected Performance

LM will evaluate projects for identification of ECMs and potential performance contracts early in the planning activities. LM does not have any life-cycle cost-effective projects planned in FY 2023 that would be eligible for ESPCs, utility energy service contracts (UESCs), or Power Purchase Agreements (PPAs). Funds are not identified in current or forecasted years for life-cycle cost-effective ECMs that could be completed within the 2-year time constraint (from project identification to completion) for using performance contracts. Additionally, LM ECMs are usually small in dollar amount and do not meet the funding requirements for performance contracts. Typically, LM ECMs are implemented using direct obligations. The overall risk of nonattainment of this goal is high due to finance and technical constraints and the nature of LM sites and activities.

LM will perform the following planned activities:

- Evaluate expanding the usage of new technologies (such as remote sensing, telemetry, and unmanned aircraft system–based sensors with instruments) to improve site monitoring efforts while reducing costs, natural resource use, and business travel–related GHG emissions.
- Pursue additional training on estimating costs, scheduling, and preparing return on investments and simple paybacks.
- Continue to examine reinvestment potential to use realized cost savings from ECMs.
- Prioritize and implement identified ECMs.
- Complete deferred maintenance tasks identified for energy-consuming buildings and facilities annually, as funding allows.
- Evaluate deferred maintenance activities for opportunities to enter utility contracts.
- Determine the cost-effectiveness of projects and consider the implementation of new technologies for demonstration purposes, the facilitation of technology and information transfer, and the accomplishment of deferred maintenance tasks. This includes studying and applying cost-effective new technologies that enhance protectiveness.
- Continue to refine the scope and estimated implementation costs for projects, evaluate funding sources for financial and technical rigor, and seek appropriate funding sources over the next 5 years for those life-cycle cost-effective ECM projects.
- Continue to reinvest cost savings realized from ECMs, where applicable.
- Continue implementation of ISO 50001 using DOE's 50001 Ready program to identify opportunities for ECMs.
- Complete EISA Section 432 energy and water evaluations.

The expected impacts of these activities would be identification of ECMs and the opportunity to enter performance contracts.

8.2 Investments in Workforce

8.2.1 Investments in Workforce Performance Status

To enhance LM's commitment to environmental stewardship, reducing climate change, and increasing sustainability initiatives, LM invested in enhancing LM workforce capabilities and community development in FY 2022 by accomplishing the following:

- Many staff completed required training for environmental compliance, and select field staff completed training to maintain U.S. Department of Transportation hazardous waste and radioactive waste shipper certification
- Staff attended all three webinars of the Sustainability Speaker Series for the Federal Community hosted by the White House Office of the Federal Chief Sustainability Officer
- Staff attended the 2022 Federal Environmental Symposium that was conducted online
- Staff completed the FEMP online course titled "Decarbonization Considerations: Resilience Planning"
- Staff participated in VARP Open Line Help Calls sponsored by the DOE Sustainability Performance Division twice monthly for assistance in development of the VARP assessments
- Staff attended the Emerging Technology Forum: Climate Resilience Study webinar hosted by the Savannah River National Laboratory regarding support for development of VARP assessments for DOE Environmental Management sites
- Staff facilitated initial meetings and then open sessions with LMS site leads to assist them in preparing the risk assessment screening and then facilitated additional open sessions for solution and adaptation development
- Staff completed necessary training to maintain certification for energy manager
- Staff participated in FEMP-sponsored performance contracting training and worked with FEMP personnel to better understand how to bundle projects to qualify for performance contracts
- Subject matter experts attended function-specific training for sustainable buildings, climate resilience and adaptation, energy performance, and waste management

As a BMP, the Resilience team provides VARP information for an internal newsletter available to the whole workforce. Each quarter, a new sustainability or environmental compliance article is prepared for a quarterly newsletter, which is available to the entire workforce.

Another BMP was the development of EMS Orientation training, which included both sustainability and climate-related information for all LM staff to take.

8.2.2 Investments in Workforce Plans and Projected Performance

LM will continue investing in the workforce by encouraging staff to take sustainability, climate adaptation and resiliency, and core competency training.

In addition, LM will perform the following planned activities in FY 2023 and beyond:

- Maintain the certified energy manager's certification

- Identify an additional person to take energy manager training
- Peruse and attend new trainings to assist with implementation of EO 14057, *Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability*
- Continue to provide site leads and managers with information as it becomes available
- Communicate information about upcoming training events to personnel
- Prepare sustainability and climate-related communication information for LM staff
- Continue to inform and educate LMS site and facility leads on performance contracting and Assisting Federal Facilities with Energy Conservation Technologies (AFFECT) funding opportunities
- Take training offered by FEMP

The expected impacts of these planned activities is increased workforce awareness of sustainability and climate-related practices.

8.3 Investments in Community

8.3.1 Investments in Community Performance Status

LM continued to invest in efforts to improve the communities' well-being and equity. Some activities in FY 2022 included:

- Supporting tribal stakeholder participation and community relations with the Navajo Nation and the Hopi Tribe.
- Supporting public awareness and understanding about the long-term management of the four Navajo Nation Uranium Mill Tailings Remedial Action sites.
- Fostering productive communication with tribal stakeholders.
- Hiring a network coordinator to identify, attend, and represent the network at various tribal events where information and resources about the federal agencies' collaborative efforts and services are shared with community members. The coordinator also organizes a monthly conference call among the network to share agency outreach updates.
- Partnering with tribal agencies and schools on the Navajo Nation to promote science, technology, engineering, and mathematics (STEM) education and careers. LM provides informational materials at STEM outreach events.
- Continuing to offer internships through the Mentors for Environmental Scholars (MES) Program. The DOE MES Program recruits, trains, and places interns at DOE laboratories and LM offices across the United States. Annually, the program selects 15 students from traditionally underrepresented organizations, such as Historically Black Colleges and Universities, Hispanic-Serving Institutions, and Tribal Colleges and Universities, to do research and support work for 10 weeks during the summer. The students major in studies integral to the DOE mission.

- Supporting the Navajo Nation Ten-Year Plan. LM interacts with other federal and Navajo agencies through Community Outreach Network meetings. These meetings bring agencies together to accomplish the overall goal of informing and educating community members as a group.
- LM staff at the Fernald Preserve collaborated with the Green Team Youth Program. This program strives to "develop high school students for job readiness in the green industry with training in soft skills, natural resource management, energy efficiency, composting, recreation skills, urban agriculture, and green infrastructure." The teens are employed through the summer to improve and maintain trails, parks, and community spaces in the city of Cincinnati. The students cultivate job skills and a better understanding of their environment along with learning about job opportunities in the green industry.

As a success story, when LM work is required on the Navajo Nation, LM searches the List of Navajo-Owned Certified Businesses to see if there are businesses on the list that can perform the work needed. In FY 2022, LM awarded the Many Devils Wash Decommissioning project on the Shiprock site to a Navajo-owned business in Utah.

An additional success that LM completed in FY 2022 was donating excessed solar panels and associated equipment to a nonprofit company in the Denver metro area. The donation will help the organization continue to increase utilization of renewable energy, safely train people from diverse backgrounds to confidently enter the solar workforce, and create and support equitable policies that further the transition to a clean energy economy.

LM participated in the Navajo Nation STEM-sation Events Impact Students event, both virtually and in person. During these events, LM staff travelled to various communities on the Navajo Nation and demonstrated a variety of hands-on activities for students that promoted STEM careers. The events were held at different high schools throughout the Navajo Nation. In addition, LM participated alongside seven other tribal organizations, schools, and businesses in a virtual STEM-sation event. The Zoom platform was set up by one of the organizations, and students were divided into virtual classrooms. Each presenter had individual time slots and "breakout rooms" to dazzle the students with presentations tailored specifically for this event. LM put together a 9-minute video titled "Go With the Flow" that highlighted the significance of groundwater and how groundwater is treated and tested at the Shiprock site disposal cell.

8.3.2 Investments in Community Plans and Projected Performance

LM plans to continue community investments by incorporating or expanding environmental justice into operations, planning, decision-making, and procurement activities in FY 2023.

LM will perform the following planned activities in FY 2023 and beyond:

- Evaluating guidance and orders on incorporating environmental justice into procurement activities
- Updating manuals, procedures, and plans accordingly, as well as supporting other environmental justice outreach events and activities
- Supporting tribal stakeholder participation and community relations with the Navajo Nation and the Hope Tribe

- Collaborating with the Navajo Nation Abandoned Mine Lands (AML) Reclamation/Uranium Mill Tailings Remedial Action (UMTRA) Department and the Hopi Tribe UMTRA program on outreach activities
- Preparing and participating in STEM activities in nearby communities
- Continuing to support the team that is exploring the need to integrate STEM education into formal and informal learning for indigenous students
- Continuing to search the List of Navajo-Owned Certified Businesses to look for businesses that can perform the work needed on LM sites on Navajo Nation land
- Supporting students through STEM programming in high schools, collaborative internships and mentorships for college students, and employment opportunities for recent graduates
- Informing the public about current and planned activities related to the sites
- Educating the public and soliciting public input about site activities and operations
- Presenting information to correct misperceptions about LM sites
- Providing public access to site information, reports, and other documents
- Promoting use of the LM public website and social media as sources of information
- Conducting community-based site meetings, open houses, and tours
- Continuing to support tribal stakeholder participation and community relations with the Navajo Nation and the Hopi Tribe
- Collaborating with the Navajo Nation AML Reclamation/UMTRA Department and the Hopi Tribe UMTRA program on outreach activities
- Participating and encouraging STEM activities in nearby communities

The expected impacts of these planned activities will be increased community investment in sustainability, environmental justice, and climate-related practices.

9.0 Indirect Emissions

This section focuses on wastewater treatment and all business-related travel, as well as employee commuting and how those affect the LM commitment to decrease GHG emissions. Previous years' Site Sustainability Plans separated these topics into two chapters: (1) travel and commuting and (2) waste management: wastewater treatment.

9.1 Wastewater Treatment

9.1.1 Wastewater Treatment Performance Status

LM continued to use both onsite and offsite wastewater treatment systems in FY 2022. The one onsite wastewater treatment system is at the Fernald Preserve Visitors Center. This system is a biowetland/lagoon treatment system.

No major initiatives or changes to missions occurred in FY 2022 that contributed in significant ways to LM's wastewater management performance. LM's wastewater treatment-associated GHG emission levels are largely associated with the number of users at the offices and visitor and interpretive centers and did not significantly affect LM's wastewater treatment GHG emissions.

LM did not have a specific quantifiable performance goal associated with wastewater treatment. It is challenging to calculate GHG emissions from wastewater treatment as LM does not operate the offsite municipal wastewater treatment plants that serve the majority of employees. Calculations are based on the number of users at offices and visitors and interpretive centers, which, for 2022, were not operating at full capacity. LM generated more GHG from wastewater treatment facility sources in FY 2022 due to LM's Reentry Plan with staff being allowed to work in the offices and the reopening of visitor and interpretive centers in April 2022.

LM's wastewater treatment BMPs are discussed in Section 9.1.2, "Wastewater Treatment Plans and Projected Performance."

9.1.2 Wastewater Treatment Plans and Projected Performance

LM will continue to use both onsite and offsite wastewater treatment systems in FY 2023. With LM's Reentry Plan in place, an increase in staff presence at LM facilities and visitors at LM's visitor and interpretive centers, as COVID-19 pandemic restrictions are lowered, will increase the amount of offsite wastewater treated in FY 2023. However, this increase should not be significant as it is expected that LM's staff Reentry Plan will continue to allow alternative work schedules (e.g., working remotely full-time or part-time) and staffing in LM facilities might not reach pre-COVID-19 levels.

At the Fernald Preserve, onsite wastewater treatment is also expected to increase in FY 2023 when staff occupy the onsite workspaces and the Converted Advanced Wastewater Treatment system aboveground wastewater holding tank is taken offline. These changes will increase the amount of wastewater flowing to the biowetland.

GHG emissions are calculated by estimating the number of users at LM-managed locations and visitor and interpretive centers. One challenge that LM faces, as COVID-19 pandemic restrictions are lowered, is how to accurately track the number of staff at each facility due to the alternative work schedules.

LM's scope, and the number of sites LM maintains, will continue to increase over the next 20 years, and with the increase in sites, there will be an increase in staff. These increases will directly impact the wastewater volume needing treatment.

LM will continue to minimize wastewater to the extent possible and will perform the following planned activities:

- Continue to implement water conservation practices where appropriate, such as encouraging employees to not excessively run tap water while washing dishes, to help reduce the volume of wastewater generated

- Evaluate the potential of contacting wastewater treatment facilities to see if they are making any changes to address emissions reduction in accordance with the implementing guidance and evaluate if there are any measures that could be taken to improve LM-managed systems
- Evaluate implementing instructions for EO 14057, *Catalyzing Clean Energy Industries and Jobs Through Federal Sustainabilit*y and update LM plans, policies, procedures, and manuals as applicable
- Continue to implement potable water conservation practices to reduce the quantity of generated wastewater
- Gain a better understanding of GHG emissions generated from the wastewater treatment systems and facilities that LM uses

The expected impact of these planned activities on future fiscal years is continued source reduction, pollution prevention, and wastewater minimization.

9.2 Business Travel and Employee Commuting

9.2.1 Business Travel and Employee Commuting Performance Status

During FY 2022, as COVID-19 pandemic restrictions were lowered, LM implemented its Reentry Plan and all LM offices, visitor centers, and interpretive centers were reopened to full capacity. Additionally, LM lifted COVID-19 travel restrictions in FY 2022, allowing in-person meetings, conferences, and trainings. This resulted in a significant increase in employee commuting and business-related ground and air travel.

There was no specific quantifiable performance goal to report for travel and commuter emissions, but because this category is directly dependent on staff travel and commuting, which increased, it is assumed that GHG emissions were also increased.

9.2.1.1 Business Ground and Air Travel

Neither LM's business ground travel nor air travel data were available at the time of this document's publication; only LMS contractor data were available. The LMS contractor did not meet the reducing Scope 3 GHG emissions goal in FY 2022 as compared with FY 2021. It is estimated that LM's FY 2022 travel-related Scope 3 GHG emissions and performance also increased compared to FY 2021.

LM's general activity scope expanded to include demolition and construction projects and reclamation and investigation projects at various LM sites (Amchitka site; Burro Mines Complex ULP site; Fernald Preserve; Piqua site; Shiprock site), which contributed in significant ways to LM's business-related ground and air travel. Because of the nationwide distribution of LM's staffed and unstaffed sites, travel remained a necessary component of LM's day-to-day activities and was required to achieve LM's mission in FY 2022.

LM implemented the following BMPs to reduce travel:

- Encouraged combining different functional activities into one trip
- Consolidated work at adjacent or en route remote sites into one trip

- Carpooled to the extent possible to conduct ground business travel
- Utilized videoconferences, teleconferences, and instant messaging in place of in-person meetings and trainings
- Shared business rental cars or used mass transit while attending out-of-town meetings and events, when feasible

9.2.1.2 Employee Commuter Travel

LM conducted a logic-driven commuter survey of all LM staff to obtain commuter data. LM used a Survey Monkey survey to collect employee commuting habits for FY 2022. Survey Monkey provides an easy-to-use platform for creating, distributing, and taking logic-driven surveys. LM achieved an 87% response rate for the commuter survey. A copy of the commuter survey was submitted to the DOE Sustainability Dashboard.

In FY 2022, LM began planning the installation of EVCSs for staff and public use and deployed EVs at several LM locations. Having EVCSs available for employee use will help reduce GHG emissions associated with employee commuting.

LM implemented the following BMPs to reduce employee commuting:

- Allowed flexible workweeks to reduce commuting time (e.g., four 10-hour days) and worked to increase telecommuting options through mutual alternative work agreements
- Allowed remote work to continue, as appropriate
- In addition, at the LMOC, federal employees were eligible for reduced prices on public bus passes as part of a transit subsidy program

9.2.2 Business Travel and Employee Commuting Plans and Projected Performance

Travel will remain an integral part of performing LM's mission and efforts to reduce GHG emissions will continue into FY 2023. The ability to achieve reductions in Scope 3 GHG emissions in FY 2023 and beyond will mostly depend on business-related ground and air travel. The overall risk of nonattainment of this goal in FY 2023 is high.

9.2.2.1 Business Ground and Air Travel

The increase in business-related ground and air travel will likely continue into FY 2023 as travel is back to pre-COVID-19 status. LM staff are once again allowed to share business vehicles and use various forms of mass transit, which could result in a slight decrease in Scope 3 GHG emissions from travel.

LM will perform the following planned activities in FY 2023 to reduce Scope 3 GHG emissions resulting from ground and air business travel:

- Continue using the BMPs described above.
- Evaluate travel and commute data collection methods.
- Evaluate and implement methods to eliminate, consolidate, and reduce business-related ground and air travel.

- Pursue installation of additional SOARS systems where it is cost-effective and maintain operation of existing SOARS systems to help reduce travel associated with site data collection.
- Enhance job skills through virtual seminars and trainings rather than through in-person trainings. The availability of webinar-style training that was developed as a result of the COVID-19 pandemic is likely to continue to increase.
- Share business rental cars or use mass transit while attending out-of-town meetings and events.
- Evaluate and revise existing travel policies to address ways to minimize Scope 3 GHG from business travel and employee commuting, which has increased with the removal of COVID-19 travel restrictions.
- Continue ridesharing to sites requiring fieldwork and combining multiple site visits into one trip (if possible) instead of making multiple site visits at different times.
- Evaluate renting EVs and ways to increase alternative fuel use through travel.

9.2.2.2 Employee Commuting

The increase in commuter travel will likely continue into FY 2023 with the increased staff presence at LM offices. However, it is unlikely that LM commuter travel will return to pre-COVID-19 levels.

LM will perform the following activities to reduce employee commuting and reducing contributions to Scope 3 GHG emissions:

- Evaluate how communication occurs to encourage employees to carpool and to use public transportation to the extent possible during their commutes to work.
- Complete the installation of EVCSs.
- Establish Scope 3 GHG reduction goals based on the *Implementing Instructions for EO 14057 Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability* (CEQ 2022) and DOE targets. Update policies and procedures accordingly to achieve new goals.
- Continue to track all travel sources monthly through coordination with the LMS Finance group and update datasheets at least once per year. The LMS contractor experiences challenges obtaining data from the finance system in an efficient manner. The LMS Finance group is working on adjusting to an internal system that will track data more specifically to EMS reporting needs.
- In FY 2023, LM will revise and re-release the survey used to collect data in FY 2022.

The expected impacts of these planned activities are to decrease LM's contribution to Scope 3 GHG emissions.

10.0 Fugitives and Refrigerants

10.1 Fugitives and Refrigerants Performance Status

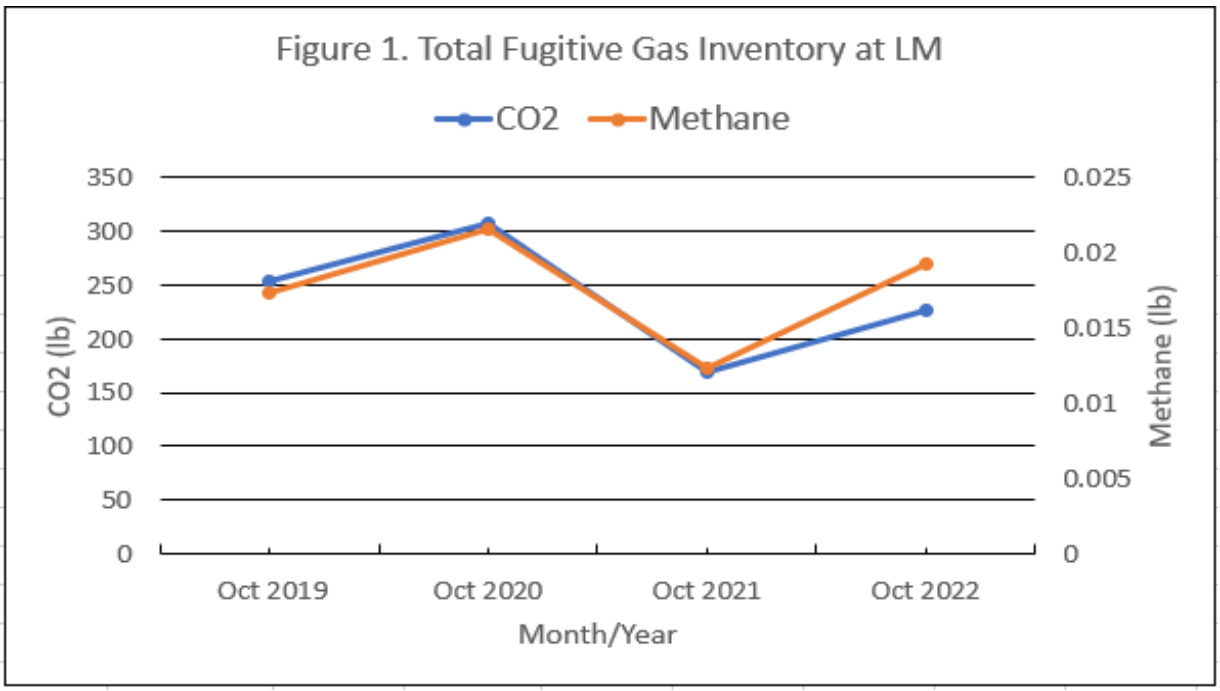
LM continued to work toward the overall DOE goal of reducing Scope 1 GHG emissions by reducing the purchasing and use of fugitive gases and refrigerants. There is no specific quantifiable performance goal to report on for fugitive gases and refrigerant emissions, which are only two of many contributors to LM's overall Scope 1 GHG total emissions.

In FY 2022, the use of fugitive gases and refrigerants continued to be a relatively small part of LM's overall operations and represented a small fraction of overall anthropogenic carbon dioxide-equivalent emissions for the organization.

No major initiatives or changes to missions occurred in FY 2022 that contributed in significant ways to LM's fugitive or refrigerant GHG emissions performance. A slight change in the use of refrigerants from FY 2021 to FY 2022 is the result of demolition activities at the Piqua site. As a result, LM has met this goal of decreasing Scope 1 GHG emissions.

10.1.1 Fugitives Performance Status

Fugitive gases used and stored at LM sites are used for groundwater monitoring and instrument calibration activities conducted by field staff. The amount of carbon dioxide and methane in storage at the end of FY 2022 is similar to the amount in storage at the end of FY 2019, before the COVID-19 pandemic. Regular sampling activities continued in FY 2022, and gases were purchased to restock LM's gas inventory. Figure 1 shows the inventory of fugitive gases at LM sites in FY 2022 as compared to previous years.



Abbreviations: CO2 = carbon dioxide, lb = pounds

Figure 1. Total Fugitive Gas Inventory at LM

10.1.2 Refrigerants Performance Status

LM's inventory and use of refrigerants is limited to commercial refrigerators, air conditioning systems, coolers, and drinking fountain coolers. Whenever possible, refrigerants are replaced with equipment that contain less-toxic alternative chemicals or alternative equipment not containing fugitive refrigerants. During FY 2022, demolition activities at the Piqua site resulted in a net decrease in the quantity of refrigerant gases included in LM's refrigerant equipment inventory (e.g., air conditioning units, cooled drinking fountain units, refrigerators), as replacement equipment was not needed.

10.1.3 Other Ozone-Depleting Substances Performance Status

LM did not use or maintain fluorinated gases in its inventory in FY 2022.

10.2 Fugitives and Refrigerants Plans and Projected Performance

LM's FY 2023 fugitive gas and refrigerant management practices will remain mostly unchanged from FY 2022. Fugitive gas-consuming activities (e.g., sampling and calibration) and use of refrigerant equipment (e.g., refrigerators, cold water drinking fountains, and air conditioning units) will continue to be minimal in FY 2023. No fluorinated gases will be added to LM's inventory. The overall risk of nonattainment of this goal is low.

LM remains committed to reducing GHG emissions associated with fugitives and refrigerants and plans to conduct the following activities in FY 2023:

- Evaluate implementing instructions for EO 14057, *Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability,* as they become available and update LM policies and plans as needed to meet new DOE goals
- Look for improvement opportunities and, when possible, acquire less-toxic alternative chemicals or choose alternative equipment not containing fugitive gases or refrigerants
- Inspect chemical containers, gas cylinders, and refrigerant equipment in accordance with manufacturer's guidelines and as necessary to reduce potential spills and leaks
- Remove unneeded gases or equipment from inventory and dispose of them in an environmentally compliant manner
- Evaluate data center cooling systems to determine whether alternatives can be used
- Replace aged equipment containing hydrofluorocarbons in accordance with the manufacturer's replacement schedule or as equipment breaks and needs to be replaced (e.g., refrigerators, air conditioning systems)
- Maintain inventories of fugitive gases and refrigerants and update the inventories at least once per year
- Evaluate the capability of LM's current data systems (e.g., Archibus) to track fugitive gas and refrigerant use over a reporting period and provide appropriate data for sustainability reporting

The expected impacts of these planned activities are continued maintenance of, or a very slight reduction in, fugitive gases and refrigerants emissions in future fiscal years.

11.0 Electronics Stewardships and Data Centers

11.1 Electronics Operations

11.1.1 Electronics Operations Performance Status

LM met the DOE goal of electronics operations stewardship through operations in FY 2022 by enabling power management on 100% of eligible equipment. There were no major initiatives or changes to missions or facilities in FY 2022 that contributed in significant ways to LM's electronics operations.

As BMPs to reduce power usage, LM:

- Continued implementing a network group policy to administer power management on all desktop and laptop systems. The policy was extended to digital displays and printers and cannot be altered by users. The policy included automatically powering down hard drives and displays when systems sit unused for a predetermined amount of time.
- Enabled automatic duplex printing on all eligible devices (e.g., computers, printers, scanners, multifunction devices).
- Monitored and measured server usage and adjusted equipment accordingly for optimal utilization. Whenever possible, physical servers are created as virtual machines, which allows a single physical server to perform the work of several servers.
- Streamlined and eliminated excess and underused applications.
- Ensured that all procured electronic equipment had an EPEAT rating of Gold, Silver, or Bronze. Purchasing EPEAT products improves electronics operations and energy efficiencies.

11.1.2 Electronics Operations Plans and Projected Performance

LM's FY 2023 electronic operations will remain mostly unchanged from FY 2022. LM will continue enabling power management capabilities on eligible equipment to ensure the attainment of electronic stewardship goals The overall risk of nonattainment of this goal is low.
In addition, LM will perform the following planned activities:

- Continue phasing out physical hardware servers and replacing them with more electronically efficient virtual machine technology whenever possible. A variety of benefits are realized, including a smaller footprint, reduced cooling and overall power requirements, and a reduction in the volume of electronic components in operation.
- Pursue efficient use of desktop, laptop, and notebook systems, merging use where possible to reduce the number of devices in operation. Minimize the number of systems existing in general office space, including the number of duplicate desktop, laptop, or notebook computer systems.
- Phase out locally attached, personal use printers. This goal is made easier by the secure printing option now available on all network-managed multifunction devices at all locations. The growing use of shared network devices will contribute to the ongoing reduction of paper, printing supplies, and power usage.

- Install separate meters on the data center at the LMBC.
- Continue procuring energy-efficient electronics in FY 2023 that meet the EPEAT Gold, Silver, or Bronze standards.
- Enable automatic duplexing capabilities by default on eligible equipment to ensure attainment of electronic stewardship goals.

The expected impacts of these planned activities are to optimize energy usage in electronic operations.

11.2 Electronics End-of-Life

11.2.1 Electronics End-of-Life Performance Status

In FY 2022, LM met the DOE goal of electronic stewardship through electronics end-of-life by managing 100% of its end-of-life electronics through environmentally sound disposition options. LM remained committed to using environmentally sound disposition options (reuse or recycling) to manage end-of-life electronics during FY 2022. There were no major initiatives or changes to missions or facilities in FY 2022 that contributed in significant ways to LM's used electronics disposition practices.

11.2.2 Electronics End-of-Life Plans and Projected Performance

LM remains committed to implementing environmentally sound disposition options for used electronics in FY 2023 and beyond. LM's electronics end-of-life management practices are expected to remain unchanged from those used in FY 2022. The overall risk of nonattainment of this goal is low.

Procedures identified in the *Personal Property Manual* (LM-Manual-3-13-2.0, LMS/POL/S24628) require that all personal property excess actions involve LMS Personal Property personnel. Used electronics are disposed of in the following order:

- Transferred within LM.
- Posted to the GSA's GSAXcess website, where the electronics can be:
  - Transferred to other federal agencies.
  - Donated through appropriate avenues (e.g., GSA's Computers for Learning Program, eligible state nonprofit organizations).
- Offered for sale to the public via GSAauctions.gov.
- Recycled through reputable electronics recyclers.

In addition, LM will perform the following planned activities:

- Evaluate implementing instructions for EO 14057, *Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability,* as they become available.
- Continue to track and manage electronics end-of-life data. LM's IT, Personal Property, and Waste Minimization and Pollution Prevention sustainability teams will continue to develop and refine the process for tracking and disposing of used electronic equipment.

- Monitor appropriate electronics reuse and recycling opportunities and choose reuse over recycling when possible.
- Ensure that data contained on any reused, recycled, or disposed equipment are properly sanitized using LM established procedures.
- Continue to instruct and reinforce with all staff that used electronics must be reused and recycled following established processes instead of being disposed of as waste.
- Ensure that used electronics accumulated for recycling are managed in accordance with applicable requirements and BMPs.
- Ensure that electronics recyclers are legitimate, certified, and employ legal and environmentally sound disposition practices before any electronics are sent to them for recycling.
- Ensure that the equipment in the end-of-life electronics inventory is disposed of promptly to minimize the accumulation of excessive quantities of used electronics at LM sites.
- Donate electronics through appropriate avenues established to facilitate reuse, such as GSA's Computers for Learning Program (https://computersforlearning.gov/) and eligible state and nonprofit organizations.
- Track and manage all LM electronics reuse data.
- Track and manage all LM electronics recycling data.
- Dispose of 100% of unneeded electronics in an environmentally sound manner through eligible reuse and recycling.

The expected impacts of these planned activities are to appropriately manage all used electronics through reuse and recycling.

11.3 Data Center Strategies

11.3.1 Data Center Strategies Performance Status

In FY 2022, the Electronics Stewardship Team continued working with the LM Site Facilities team to install separate electrical metering in the primary data center at the LMBC. The goal is to accurately measure the data center's power utilization effectiveness (PUE).

There were no major initiatives or changes to missions or facilities in FY 2022 that contributed in significant ways to LM's data center strategies.

As a BMP, LM continued monitoring data center server utilization statistics to look for opportunities for combining server functions.

11.3.2 Data Center Strategies Plans and Projected Performance

In FY 2023, LM will continue to work with GSA and the landlord on installing separate metering for the primary data center at the LMBC.

LM will continue to effectively utilize power associated with new or existing data centers to ensure attainment of the PUE target. Overall risk of nonattainment of this goal is low. LM will continue to work with GSA and the landlord on installing separate metering for the primary data center at the LMBC.

LM also plans to complete the following planned activities in FY 2023:

- Optimize the configuration of LM's data centers by monitoring data center power consumption in accordance with federal Data Center Optimization Initiative (DCOI) standards, through LM's ongoing server virtualization effort
- Observe and follow all guidance and metrics as determined by DCOI standards
- Evaluate the potential benefits of installing separate metering at the data center at the LMFSC
- Evaluate the potential benefits of installing a backup generator at the LMFSC to provide power to the data center during power outages

The expected impacts of these activities will be continued decreased energy usage through effective power use.

11.4 Electronics Acquisition

11.4.1 Electronics Acquisition Performance Status

LM met the DOE goal of electronic stewardship through electronics operations. LM ensures that all procured electronic equipment has an EPEAT rating of Gold, Silver, or Bronze. As a result, LM earned the EPEAT Green Purchaser Award in FY 2022 for the eighth consecutive time. The EPEAT program provides a method for evaluating the impact that electronic equipment has on the environment. Approximately 88% of LM's eligible electronic equipment acquired in FY 2022 was ranked EPEAT Gold.

LM follows the manufacturer's life-cycle guidance, replacing older, inefficient servers with up-to-date equipment.

There were no major initiatives or changes to missions or facilities in FY 2022 that contributed in significant ways to LM's electronics acquisition.

11.4.2 Electronics Acquisition Plans and Projected Performance

LM's FY 2023 electronics acquisition practices will remain unchanged from FY 2022. LM plans to continue procuring EPEAT-registered products at current compliance levels in accordance with DOE requirements. The overall risk of nonattainment of this goal is low.

LM will conduct the following planned activities in FY 2023:

- Manage purchases of electronic products in an environmentally responsible manner
- Require that purchases of noncompliant products have written approval from a subject matter expert

The expected impacts of these activities will be to continue to achieve goals related to electronics acquisition.

12.0 Adaptation and Resilience

12.1 Adaptation and Resilience Performance Status

LM worked toward the DOE goal of implementing climate adaptation and resilience measures.

LM met the DOE goal by completing the following activities:

- Completed the LM 2022 VARP and uploaded it to the DOE Sustainability Dashboard
- Performed a risk screening of all LM Category 2 and 3 sites and occupied offices
- Identified solutions to protect high-risk assets and infrastructure
- Continued collaboration with Lawrence Berkeley National Laboratory (LBNL) on climate resilience
- Provided LM information for the DOE *2021 Climate Adaptation and Resilience Plan* (CARP) (DOE 2021) to the DOE Sustainability Performance Division

As a BMP, LM staff attended trainings, conferences, and webinars to learn how to complete the VARP, perform risk assessments, identify solutions, and better understand climate change. Additionally, LM utilized a cross-functional approach with various subject matter experts, LMS site leads, and LMS program leads to provide better data when developing the VARP and risk solutions. Due to the large number of LM sites, LM chose not to use the FEMP Technical Resilience Navigator.

LM completed the following activities in FY 2022 to protect critical infrastructure and to provide adequate energy and water supplies, facility operations, information and communication technology capability, and transportation availability:

- Utilized the Facilities Information and Management System to develop a list of sites with mission-critical assets. The data were incorporated into the database created by the LMS contractor to house all the LBNL climate data provided to date.
- Compiled a list of sites with secondary sources and incorporated the preliminary erosion risk ranking into the climate risk evaluations.
- Continued to collect soil information from online sources about site drainage basins, with an initial focus on sites with disposal cells. The data will be used to evaluate erosion potential at site drainage basins.
- Maintained an emergency generator at the LMBC, which houses the primary data center for LM.
- Continued to evaluate risk at the secondary data center at the LMFSC.
- Continued to use the Confidentiality, Integrity and Availability (CIA) triad model in the LM Cybersecurity program, and incorporated CIA model principles in policies, procedures, and National Institute of Standards and Technology (NIST) Special Publication (SP) 800-53 testing controls to maintain availability of IT services.
- Utilized SOARS monitoring systems at remote sites to collect data. This increases personnel and transportation availability and reduces business travel and GHG emissions.

- Continued the Emergency Management Watch Office and Duty Officer Program to ensure that the Watch Office is available 24 hours per day, 7 days a week, 365 days a year to answer and respond to emergency incidents. Implemented the Watch Office Daily Update, which provides information about wildfires or severe weather that could affect LM sites.
- Continued to allow LM staff to work remotely due to the COVID-19 pandemic. Separately, remote work was applied successfully in events of loss of power or water and extreme weather events.

12.2 Adaptation and Resilience Plans and Projected Performance

LM plans to continue working toward the DOE goal of implementing climate adaptation and resilience measures to reduce risk to critical assets and infrastructure and to provide adequate energy and water supplies, facility operations, information and communication technology capability, and transportation availability. The risk of nonattainment of this goal is low.

During FY 2023, the following activities are planned:

- Continue to assess the risk of energy and water supplies to LM's 10 main occupied facilities.
- Continue to evaluate whether to add backup power at the secondary data center at the LMFSC.
- Evaluate resilience solutions identified in the DOE Sustainability Dashboard's Resilience Solution Tracking for future planning and implementation.
- Continue to perform required site inspections and additional, event-based inspections as needed.
- Evaluate the capabilities of current SOARS monitoring stations, prioritize sites with stations for upgrades, and prioritize sites without stations for system installation.
- Continue upgrading the Emergency Management program to ensure that the LM program can successfully respond to changing conditions, emergencies, and disruptions in service.
- Review and update planning documents, procedures, and policies based on the recommendations and solutions identified in the VARP and LBNL analysis.
- Establish an Emergency Operations Center, either virtually or using a current LM office location, as a central location for coordinating response to an operational emergency.
- Continue to use the CIA triad model in LM's Cybersecurity program and incorporate CIA into policies, procedures, and NIST SP 800-53 testing controls to maintain availability of IT services.
- Recommend changes to the baseline aerial survey schedule to prioritize sites most likely to be impacted by climate change.
- Continue to evaluate how climate change might impact the remedies at LM Category 2 and 3 sites in the event that critical infrastructure (e.g., disposal cell covers, dams, landfills, monitoring equipment, and engineering controls) are damaged or compromised. Track progress on vulnerability solutions and update the DOE Sustainability Dashboard's Resilience Solution Tracker when required.
- Provide updates to the DOE CARP when requested.
- Continue taking resilience-planning training.

The expected impacts of these activities will be to increase climate adaptation and resilience measures to reduce risk and to provide resources to ensure continuous operations for LM's mission.