Interior Energy Management News

Volume 4, Issue 1 ▪ Spring 2016

Evaluating Our Performance

Year End Reporting Shows Progress, Opportunities for Department

Welcome to the Spring 2016 issue of Interior Energy Management News! The Department of the Interior's (DOI) bureaus continue to make progress on Federal sustainability and energy goals. This issue recaps DOI's status on these goals through fiscal year (FY) 2015. The Department evaluates itself after the close of each FY to determine its compliance on a variety of energy-related goals via the annual Greenhouse Gas (GHG) and Sustainability Data Report.

Inside this Issue:

GHG Results

Environmental Achievement Awards

New Guiding Principles

Bureau Notes

Announcements

FY 2015 marked a transition as Federal agencies finalized reporting against goals laid out by previous laws and executive orders. Beginning with the FY 2016 cycle, agencies will track progress and report against the goals specified by EO 13693, "Planning for Federal Sustainability in the Next Decade" (March 2015).

This issue also describes the latest edition of the Guiding Principles for Sustainable Federal Buildings, issued in February 2016, and the changes made from the 2008 Guiding Principles version. Finally, the newsletter discusses several winning entries from DOI's Environmental Achievement Award competition, outlines recent bureau success stories, and provides announcements of upcoming events, data calls, and opportunities.

GHG and Sustainability Data Report Results

DOI's Progress through FY 2015

Each year, DOI bureaus collect energy, water, and greenhouse data through the GHG and Sustainability Data Report. The Department then compiles the reports and submits the results to the Department of Energy (DOE), Council on Environmental Quality (CEQ), and Office of Management and Budget (OMB). The data contained within the report is used to evaluate the Department's compliance with numerous sustainability and energy goals. The paragraphs and charts below show the Department's status on several metrics and detail the composition of the Department's GHG emissions.

In FY 2015, DOI reduced its energy intensity (measured in British thermal units per square foot) 33.3 percent from the FY 2003 baseline. The Energy Independence and Security Act (EISA 2007) required agencies to reduce their energy intensity 30 percent below FY 2003 levels by FY 2015. Beginning in FY 2016, agencies will need to meet an annual 2.5 percent reduction in energy intensity against the new FY 2015 baseline. This goal, set by EO 13693, now extends until FY 2025.

Federal agencies were required to draw 7.5 percent of their facility electricity from renewable resources in FY 2015, a goal which DOI exceeded, with 12.3 percent of its facility electricity coming from renewable resources. Of the 12.3 percent, 9.9 percent represents on-site renewable energy generation including bonus; 0.4 percent

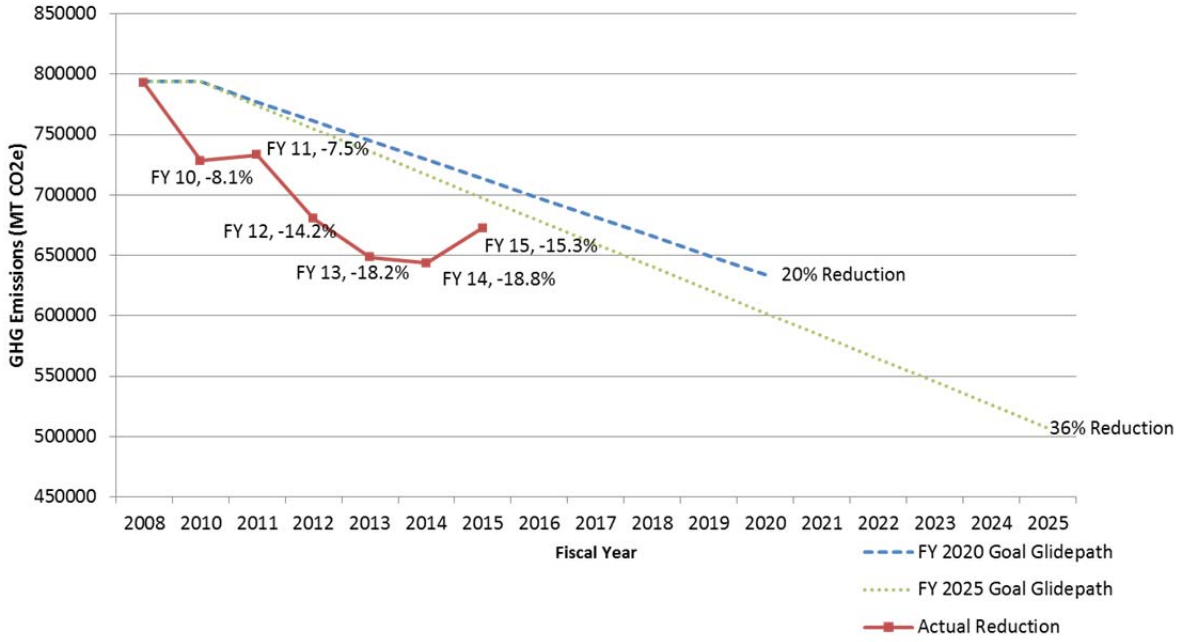
represents renewable electricity purchased through the utility company; and 2 percent represents the purchase of renewable energy certificates. In FY 2016, agencies will be required to draw 10 percent of their facility electricity from renewable sources and 20 percent of their total energy from clean sources – both renewable and alternative energy.[1]

The Department achieved a 9.2 percent reduction in potable water intensity relative to the FY 2007 baseline. This result fell short of the 16 percent required by executive order. The Department' s water intensity appeared to increase from FY 2014 to FY 2015 due to more robust reporting in the Financial and Business Management System (FBMS) and the discovery of leaks (now repaired) at a large facility. The Department remains committed to meeting the water intensity reduction goal and will work to identify issues that may have caused the reported amount of water consumption to increase.

EO 13693 required the Department to re-establish GHG reduction goals for Scope 1&2 and Scope 3 emissions. DOI's targets for GHG reduction are as follows:

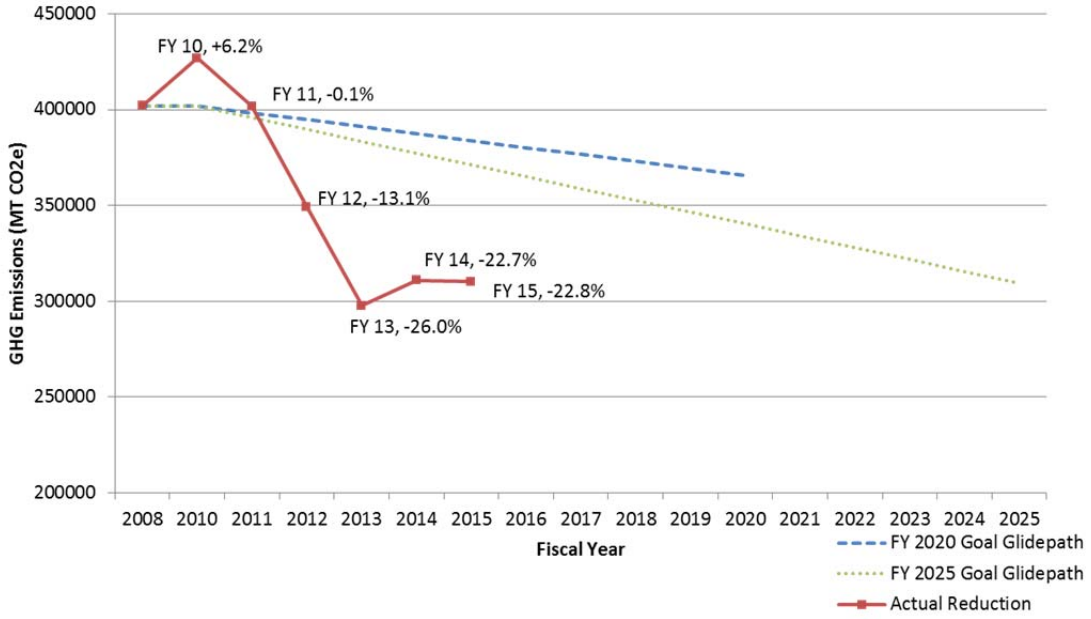
- By FY 2025, DOI will reduce Scope 1&2 emissions 36 percent below FY 2008 levels.
- By FY 2025, DOI will reduce Scope 3 emissions 23 percent below FY 2008 levels.

These targets are ambitious but achievable. As of FY 2015, DOI has reduced its Scope 1&2 GHG[2] emissions 15.3 percent below FY 2008 levels and its Scope 3 GHG emissions 22.8 percent below FY 2008 levels. The figures below illustrate the Department's progress with respect to the old GHG reduction targets set under EO 13514 and the new targets measured in metric tons of carbon dioxide equivalent (MT CO_2e).



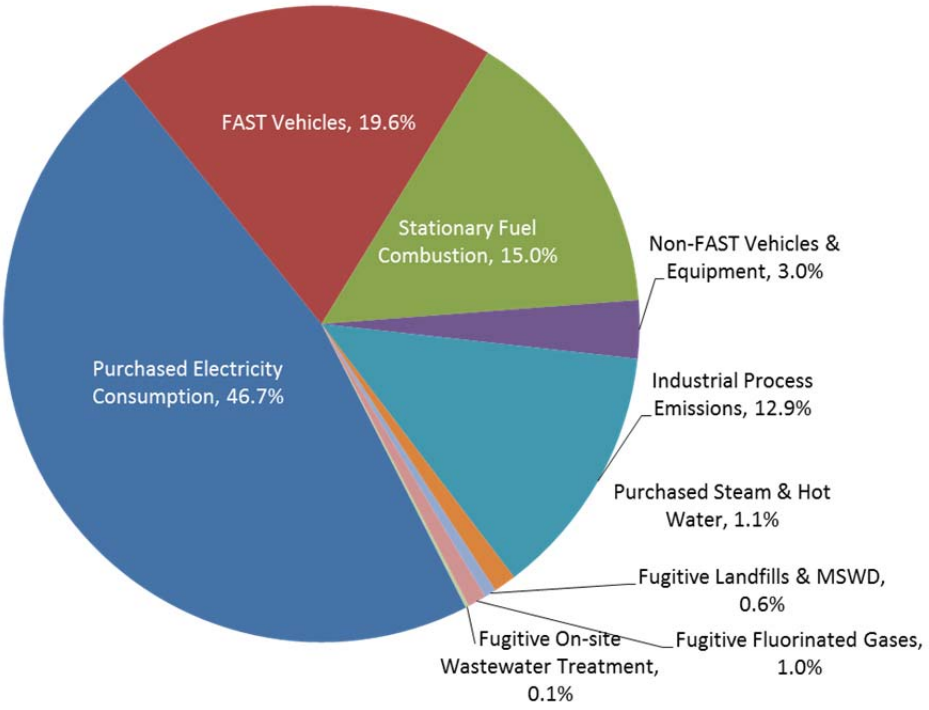
DOI Scope 1&2 GHG Reduction Progress (MT CO_2e)

[1] Alternative energy includes biomass, solar thermal, geothermal, waste heat, and renewable combined heat and power processes; combined heat and power; small modular nuclear reactor technologies; fuel cell energy systems; and energy generation, where active capture and storage of carbon dioxide emissions associated with that energy generation is verified.
[2] Scope 1 GHG emissions include vehicles and equipment, stationary combustion, on-site landfills and wastewater treatment, and fugitive emissions. Scope 2 GHG emissions include purchased electricity, purchased heating and cooling, and purchased steam. Scope 3 GHG emissions include business travel, employee commuting, transmission and distribution losses, and contracted solid waste disposal and wastewater treatment.

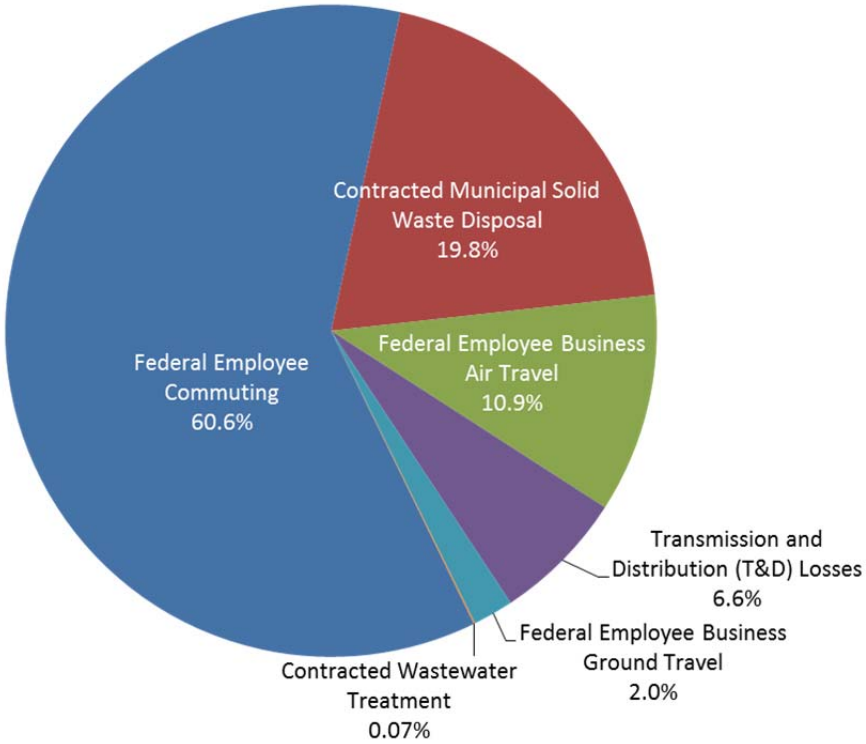


DOI Scope 3 GHG Reduction Progress (MT CO_2e)

Electricity consumption accounts for about 46.7 percent of the Department's Scope 1&2 GHG emissions—more than any other source (see figure below) However, the Department has seen a steady decline in absolute GHG emissions from electricity since it began tracking its GHG output in FY 2010.



DOI FY 2015 Scope 1&2 GHG Emissions



DOI FY 2014 Scope 3 GHG Emissions

In FY 2015, DOI's bureaus invested approximately $19.7 million in direct obligations and awarded approximately $39.3 million through energy savings performance contracts (ESPC) and $1.5 million through utility energy service contracts (UESC). Combined, these investments are nearly 70 percent of DOI's total facility energy costs. It is anticipated that these investments will yield an annual energy savings of more than 65 billion Btus. These investments will help the Department continue to meet its energy and sustainability targets in the coming years.

Environmental Achievement Awards

The annual Environmental Achievement Awards recognize departmental employees and partners who attained exceptional achievements under EO 13693 and for cleaning up contaminated land. Four winning entries in the FY 2015 competition address energy and water management.

Bureau of Reclamation – Animas-La Plata Permanent Operating Facility. The Animas-La Plata Permanent Operating Facility (POF), located in in Southwestern Colorado, has attained a certification of Leadership in Energy and Environmental Design (LEED) Gold. It also meets 100 percent of the Guiding Principles for High Performance and Sustainable Buildings (Guiding Principles) for new construction, as required by

Animas-La Plata Permanent Operating Facility, Durango, CO. Credit: BOR.

Executive Order. The combination of a passive solar wall; a high-efficiency heating, ventilation, and air conditioning (HVAC) system; efficient lighting; and natural lighting provide significant energy savings. Indoor and outdoor water is conserved via efficient

plumbing fixtures and fittings and the use of xeriscape and natural landscaping, which does not require any permanent irrigation. All told, the energy-efficient design is estimated to avoid 52 metric tons of greenhouse gas (GHG) emissions per year, equivalent to the annual emissions of 11 vehicles.

Bureau of Reclamation – Four Corners Construction Office. The Four Corners Construction Office (FCCO) building, New Mexico, became the first BOR remodeling effort to achieve 100 percent of the Guiding Principles. The remodeling of this 33-year old, 21,000 square foot facility included upgrades to the HVAC system, replacement of the insulation, and retrofit of the lighting. Through these efficiencies and others, the facility reduced its energy consumption by 52 percent, resulting in a monthly cost savings of $1,585, and reduced GHG emissions by an estimated 65.9 metric tons per year (equivalent to the annual emissions of 14 cars). The FCCO's remodeling efforts allowed for the combination of two GSA leased spaces into one BOR-managed facility, resulting in an estimated cost savings of $3.81 million over the next 10 years.

Four Corners Construction Office, Colorado. Credit: BOR.

Fish and Wildlife Service – Corn Creek Administrative Office and Visitor Center, Desert National Wildlife Refuge. The Visitor Center is a new high-performance, LEED Platinum-certified facility that is designed to achieve net zero energy use. Net-metered solar photovoltaic (PV) arrays totaling 91.5 kilowatts (kW) provide renewable electricity for all energy needs. The HVAC system utilizes a 23.5 ton water-source heat pump. No petroleum products generate heat or electricity. Total annual renewable energy production is approximately 608.3 million British thermal units (MMBTU). Low-flow WaterSense® plumbing fixtures reduce the building's potable water consumption 40.4 percent below current standards, saving approximately 7,100 gallons per year. Xeriscaping with wildlife-friendly native plants and forbs and limited drip irrigation avoids chemical application and reduces outdoor water use by about 84.7 percent or over 663,000 gallons. Overall, the project avoids at least 98 metric tons of GHG emissions annually, the average annual emissions of 21 cars.

Corn Creek Administrative Office and Visitor Center. Credit: Amy Sprunger, FWS.

U.S. Geological Survey – Storm Water Management National Center, National Center. The USGS Storm Water Management Team turned a 50-year-old public transit road at the National Center in Virginia that was prone to flooding and runoff into infrastructure compliant with EISA 2007. As a result of their coordinated efforts with the general Services Administration (GSA), an original construction design that would allow almost 100 percent of stormwater to runoff into streams and rivers became green infrastructure allowing over 95 percent of the stormwater to percolate through the soil. The system has a drainage capacity of 51,500 cubic feet (ft3), which is 30 percent greater than the calculated annual storage need and includes inspection ports to observe if any of the 18 drainage areas are clogged or retaining water. The ability to monitor the drainage areas for repairs results in an easily maintained and sustainable stormwater infiltration system.

USGS National Center. Credit: USGS.

2016 Guiding Principles for Sustainable Federal Buildings

In February 2016, the White House released a new set of Guiding Principles for Sustainable Federal Buildings and a document for determining compliance. This version updates the existing Guiding Principles for High Performance and Sustainable Buildings, which were issued in 2008. EO 13693 requires agencies to achieve compliance with the Guiding Principles in 15 percent of agency buildings greater than 5,000 gross square feet (gsf) by FY 2025.

The 2016 Guiding Principles retain many of the components that were found in the previous version, with some additions and updates, and a few deletions. There are now six guiding principles for new construction (NC)/modernization and existing buildings (EB).

1) Employ Integrated Design Principles (NC/Modernization) / Employ Integrated Assessment, Operation, and Management Principles (EB);
2) Optimize Energy Performance;
3) Protect and Conserve Water;
4) Enhance Indoor Environmental Quality;
5) Reduce the Environmental Impact of Materials; and
6) Assess and Consider Climate Change Risks.

Each Guiding Principle is further broken down into sub-elements. New construction and modernization must meet all the applicable sub-elements, while existing buildings must meet 12 of 18.

Buildings that were certified as having met the 2008 Guiding Principles will be grandfathered into compliance with the 2016 version provided that they continue to meet ongoing requirements such as EISA evaluations, ongoing commissioning, benchmarking, and operating and maintenance requirements. Additionally, these buildings should incorporate the sixth Guiding Principle on Resilience as opportunities arise. For buildings that were under design or in progress towards achieving the 2008 Guiding Principles when the 2016 version was released, please consult the Department for further guidance.

The Guiding Principles are challenging for the Department to meet because of its unique, diverse, and often historic building inventory. Through FY 2015, DOI had achieved compliance with the 2008 Guiding Principles in 4.67% of its buildings greater than 5,000 gsf. In spite of these challenges, the Department remains committed to meeting the sustainable buildings goal of EO 13693. Taking steps towards Guiding Principles compliance improves the energy and water performance and resiliency of our buildings, reduces their environmental impact, and improves the office environment for our workers.

Bureau Notes

Sustainability Updates from around the Bureaus

Bureau of Land Management:

The BLM performed three weeks of sustainability audits at 21 facilities greater than 5,000 square feet located in Idaho, Oregon, and Utah. The ***Salem District Office*** in Oregon replaced 23 toilets, 9 urinals, and 18 faucets with WaterSense® rated

fixtures. The ***Yaquina Head Interpretive Center***, Newport, Oregon, installed high efficiency condensing boilers and installed a new 30 ton air cooled chiller. The BLM also connected 15 facilities with Johnson Controls' Metasys Energy Management systems to the BLM network, allowing remote access for monitoring performance and troubleshooting.

Bureau of Reclamation:

The BOR's ***Alamosa Field Division***, Colorado, retrofitted light fixtures with 1700 Lumin T8 LED lamps, installed approximately 258 LED lamps, and removed unneeded fixtures. This will save on lamp replacements and reduce energy use by approximately 45 percent. The ***Mid-Pacific Construction Office***, in drought-stricken California, replaced a 1,000 square foot irrigated bluegrass lawn with xeriscape. The ***Shasta Maintenance Center***, California, implemented multiple building improvements to achieve energy efficiency and sustainable operations, including installing new windows and insulation.

Fish and Wildlife Service:

In FY 2015, the FWS installed a 10.75 kW PV system at the Laboratory Building at the ***Southwestern Native Aquatic Resources and Recovery Center***, New Mexico. FWS also installed two solar PV systems at ***Chincoteague NWR***, Virginia, including a new 15.4 kW parking canopy and 3.85 kW of additional modules to an existing 15 kW system on the Herbert H. Bateman Education Center building roof. Lastly, FWS constructed an energy-efficient bunkhouse at ***Bitter Lake NWR***, New Mexico, with a super-insulated building envelope, efficient windows, HVAC system, and low-flow water fixtures and toilets.

National Park Service:

The NPS implemented many energy and water conservation measures in FY 2015. ***San Antonio Missions National Historical Park***, Texas, decreased the water consumption of its 18th century Grist Mill by 83 percent by installing a timer to control the amount of water sent to the mill's drive shaft and water wheel. ***Crater Lake National Park***, Oregon, installed energy-efficient furnaces, windows, and doors. ***Independence National Historical Park***, Pennsylvania, retrofitted its central chilled water plant, reducing plant energy use by 50 percent.

Office of Facilities and Administrative Services:

OFAS awarded two phases of an ESPC for the ***Main Interior Building***, Washington, DC. Phase 1 was awarded on March 20, 2015 with an implementation price of $26.1 million; phase 2 was awarded July 28, 2015 with an implementation price of $13.2 million.

FWS Herbert H. Bateman Education Center, Chincoteague NWR. Credit: FWS.

Main Interior Building. Credit: DOI.

NPS San Antonio Missions National Historical Park 18th Century Grist Mill. Credit: NPS.

U.S. Geological Survey:

The USGS's ***Earth Resources Observation Systems Center***, South Dakota, completed an HVAC project to replace air handling units with more efficient models employing fan walls, energy recovery wheels, and motor variable frequency drives. The ***Columbia Environmental Research Center***, Missouri, meanwhile, installed two solar lights over vehicle gate keypads to light up the keypad when dark. The ***Leetown Science Center***, West Virginia, installed automated sensor faucets and low-flow toilets in the maintenance building as well as a water meter.

USGS Earth Resources Observation Systems Center. Credit: USGS

Announcements

(1) Federal Energy and Water Management Awards: The Department submitted six nominations for the 2016 Federal Energy and Water Management Awards. The Department of Energy's Federal Energy Management Program (FEMP), in conjunction with the Federal Interagency Energy Management Task Force, sponsors this annual competition. The awards recognize individuals and teams that have made significant contributions towards energy and water efficiency, sustainability, renewable energy, and vehicle fleet management. Over the past several years, many DOI staff, teams, and facilities have been recognized by these awards for their outstanding efforts. This year, the Department's nominations were:

- ***Sustainability Inspection Compliance Assessment – Safety, Health and the Environment Program*** (BLM, Program Award)
- ***Carl B. Hayden Visitor Center (Glen Canyon Dam)***, Page, Arizona (BOR, Project Award)
- ***Provo Area Office***, Provo, Utah (BOR, Project Award)

- ***Port Louisa NWR Headquarters and Visitor Contact Station***, Iowa (FWS, Project Award)
- ***National Wildlife Refuge System Sustainability Program*** (FWS, Program Award)
- ***National Capital Region Energy Savings Performance Contract*** (NPS, Contracting Award)

Winners will be announced later in the summer and honored at a ceremony in the fall.

(2) EISA Covered Facilities Compliance Tracking System (CTS) – The Energy Independence and Security Act of 2007 (EISA) requires Federal agencies to complete energy and water evaluations of its designated covered facilities annually so that all covered facilities are evaluated once every 4 years. Bureau reporting templates, pre-populated with covered facilities information, evaluation due dates, and previous submissions of evaluation findings, have been forwarded electronically to bureau energy managers. These templates should be updated to incorporate the results of new evaluations for covered facilities with evaluation dates of June 30, 2016 or sooner. Updated templates should be submitted electronically to Mary Heying at mary_heying@ios.doi.gov no later than June 10, 2016.

Implemented Projects: EISA also indicates that Federal agencies may implement any energy or water conservation measure that was identified in the covered facility evaluation that is life cycle cost effective. Project information can be inputted into CTS by bureau energy managers at any time throughout the year either individually by covered facility or through spreadsheet uploads. DOI's Energy Management Program will conduct spreadsheet uploads at the end of each quarter. To participate in this process, please electronically submit completed project templates to Mary Heying no later than March 31st, June 30th, September 30th, and December 31st, 2016. All bureaus should input or provide implemented project data for at least 10 covered facilities semi-annually but no later than June 30th and December 31st.

Benchmarking Metered Buildings: Lastly, EISA requires Federal agencies to annually benchmark individually metered buildings more than 5,000 gsf that are part of a covered facility into Energy Star® Portfolio Manager. To date, the bureaus have reported more than 1,000 buildings within covered facilities that are individually metered for electricity. Of this total, only 320 buildings are currently benchmarked. Please ensure that covered facility buildings benchmarked in Portfolio Manager have been exported into CTS. Benchmarked data can be uploaded any time throughout the year but must be completed no later than December 31, 2016.

DOI's progress on EISA evaluations, implemented projects, and benchmarking is rated semi-annually on the OMB Sustainability/Energy Scorecard. Bureau progress in meeting the above EISA covered facility requirements is incorporated into the DOI Sustainability Organizational Assessment.

(3) President's Performance Contracting Challenge: The Department of the Interior established an agency target of $20 million in energy savings performance contract awards by December 2016. To date, the Department's bureaus and offices have exceeded the target by awarding nearly $85 million in energy savings performance contracts. The most recent award was the $13 million Phase 2 of the ESPC at the ***Main Interior Building***, Washington, DC, in July 2015.

(4) Energy Exchange 2016: The Department of Energy is sponsoring a three-day training event called Energy Exchange 2016, which will take place August 9-11 at the Rhode Island Convention Center in Providence, Rhode Island. It will feature training by project implementation specialists and subject matter experts in addressing the challenges and opportunities of energy consumption, sustainability, energy efficiency, and energy security in and across federal agencies. More details can be found http://energy.gov/eere/femp/energy-exchange.

(5) Training: FEMP continues to expand their selection of training courses. Many of these courses are available on demand here. Many of these courses also will assist Federal energy and facilities personnel in meeting the core competencies of the Federal Buildings Personnel Training Act.

FEMP continues to increase its on demand eTraining courses in partnership with the National Institute of Building Sciences' Whole Building Design Guide to offer online to help federal agencies develop core competencies and comply with energy efficiency, renewable energy, water management and sustainability requirements. The offerings include a seven-part course on renewable energy applications for federal facilities and a five-part course on meeting the Guiding Principles for Sustainable and High Performance Buildings.

(6) Earth Day: On Wednesday, April 20, 2016, DOI, the Office of Personnel Management, and the General Services Administration hosted a tri-agency Earth Day event in Rawlins Park with exhibits from governmental and nongovernmental organizations and a chance to exchange ideas. The Earth Day Network's theme for 2016 is "Trees for the Earth," with a challenge to plant 7.8 billion trees over the next five years.

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