

U.S. Environmental Protection Agency

Energy Management and Conservation Program

Fiscal Year 2013 Annual Report



U.S. ENVIRONMENTAL PROTECTION AGENCY

**ENERGY MANAGEMENT AND CONSERVATION
PROGRAM**

FISCAL YEAR (FY) 2013 ANNUAL REPORT

This Page Intentionally Blank

TABLE OF CONTENTS

Fiscal Year (FY) 2013 Highlights	5
Management and Administration Summary	9
GHG Emissions Inventory and Reduction Efforts	9
Reported Scope 1 and 2 GHG Emission Reductions.....	10
Reported Scope 3 GHG Emissions	11
Optional Sources of Scope 3 GHG Emissions.....	13
Energy Efficiency Performance.....	14
RTP Laboratory Consolidation Efforts.....	15
Reducing Laboratory Ventilation Rates.....	15
Energy Intensity Exclusions.....	16
Life Cycle Cost Analysis	16
EISA Section 432 Implementation— Energy Assessments.....	17
Current Energy Retrofits and Capital Improvement Projects	19
Energy Savings Performance Contracts (ESPCs).....	21
Green Power	22
Onsite Renewables and Distributed Generation	23
Advanced Metering	23
Water Conservation.....	24
EISA Section 423 Implementation— Water Assessments.....	25
Water Conservation Retrofits and Capital Improvements	25
Nonpotable ILA Water.....	26
Sustainable Building Design and High Performance Buildings	27
Upgrading Existing Agency-Owned Buildings to Meet the <i>Guiding Principles</i>	27
Implementing the <i>Guiding Principles</i>	28
GreenCheck.....	28
Green Building Certifications	29
ENERGY STAR Building Label.....	29
Use of ENERGY STAR and Other Energy-Efficient Products.....	30
Zero-Net-Energy Buildings.....	30
Recycling and Waste Diversion	31
Stormwater Management.....	32
On Track for the Future	32

List of Excluded Facilities... .. Appendix A

This Page Intentionally Blank

FISCAL YEAR (FY) 2013 HIGHLIGHTS

In FY 2013, the U.S. Environmental Protection Agency (EPA) once again demonstrated leadership among federal agencies in the charge to reduce its carbon and environmental footprint by continuing to meet or exceed the federal sustainability goals required under Executive Order (EO) 13514 and the Energy Independence and Security Act of 2007 (EISA) for greenhouse gas (GHG) emissions reductions, energy efficiency, water conservation, high performance sustainable buildings, and solid waste diversion.

In FY 2013, EPA focused on: reducing its Scope 1, 2, and 3 GHG emissions; initiating or completing major energy efficiency capital improvement projects; implementing water conservation and stormwater management strategies; assessing and furthering its progress toward meeting the *Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings (Guiding Principles)*; and improving its non-hazardous solid waste diversion rate. EPA received a score of “green” in nearly every category on its January 2013 and June 2013 U.S. Office of Management and Budget (OMB) Sustainability/Energy scorecards, demonstrating the ongoing success of the Agency’s comprehensive approach to sustainability.

In June 2013, in accordance with the requirements of EO 13514, EPA submitted a revised Strategic Sustainability Performance Plan (SSPP) to OMB and the Council on Environmental Quality (CEQ). EPA’s SSPP outlines the Agency’s plans to reduce GHG emissions, energy intensity, water use, solid waste, and other resource use, and to incorporate sustainable design and operations across its facilities.

Scope 1, 2, and 3 GHG Emissions Down From FY 2008 Baseline

In FY 2013, EPA reported Scope 1 and 2 GHG emissions of 60,428 metric tons of carbon dioxide equivalent (MTCO₂e). These emissions are 57.4 percent lower than the Agency’s FY 2008 baseline, which surpasses EPA’s Scope 1 and 2 GHG emissions reduction goal of 25 percent by FY 2020 from the FY 2008 baseline. EPA achieved these reductions by implementing energy efficiency projects at its facilities, improving fleet management practices, and continuing its green power purchase program, which enabled EPA to reduce its reported Scope 2 GHG emissions under current CEQ guidance. EPA anticipates further achievements in this area in FY 2014 as a result of laboratory space consolidations and additional capital improvement projects.

The Agency’s estimated Scope 3 GHG emissions were 42,440 MTCO₂e, which is a decrease of 40.4 percent compared to the FY 2008 baseline. A drop in Scope 3 GHG emissions associated with reduced employee business travel accounted for a significant portion of this decrease.

Energy Intensity Decreases 25.6 Percent From FY 2003 Baseline

EPA's FY 2013 reported energy intensity was 292,308 British thermal units (Btu) per gross square foot (GSF)¹, a reduction in energy intensity of 25.6 percent compared to an FY 2003 baseline, which exceeded the 24 percent energy intensity reduction required under EISA and EO 13423. EPA initiated or completed work on several major energy efficiency projects in FY 2013, which are outlined later in this report, and will continue to closely manage its energy use and make further progress in reducing its energy intensity in FY 2014.

EPA continued to be a leader among federal agencies by offsetting 100 percent of its FY 2013 electricity use with purchased green power and renewable energy certificates (RECs). In September 2013, EPA signed a blanket purchase agreement to secure more than 260 million kilowatt hours (kWh) of RECs. In combination with several additional contracts for delivered green power, this purchase will offset the Agency's estimated annual electricity use through the end of FY 2014.

In FY 2013, EPA completed all EISA-required energy assessments at facilities including, but not limited to: the Andrew W. Breidenbach Environmental Research Center (AWBERC) in Cincinnati, Ohio, and the Main Building and National Computer Center (NCC) at EPA's campus in Research Triangle Park (RTP), North Carolina. Collectively, the facilities for which EPA reported assessment findings in June 2013 represent more than 31 percent of the total energy use of EPA's covered facilities (based on FY 2008 data, per EISA Section 432 guidance). With the completion of these assessments, EPA exceeded the requirement for June 2013, the first year of the second four-year assessment and reporting cycle established by EISA Section 432.

In FY 2013, EPA installed advanced metering hardware and/or had advanced metering projects under construction at three laboratory facilities. Advanced metering hardware is now installed or under construction to capture approximately 72 percent of Agencywide reportable energy consumption.

Water Intensity Drops 38.8 Percent From FY 2007 Baseline

In FY 2013, EPA exceeded the EO 13514 requirement to reduce its water intensity by 12 percent compared to the FY 2007 baseline. EPA's water intensity in reporting laboratories was 21.8 gallons per GSF in FY 2013 (84.4 million total gallons), which is 38.8 percent lower than its FY 2007 water intensity baseline of 35.6 gallons per GSF (136.5 million total gallons).²

Several EPA facilities completed water conservation projects, including elimination of single-pass cooling, construction of condensate recovery systems, and installation of new water-efficient restroom fixtures. EPA also conducted water assessments for 10 EISA-covered facilities in FY 2013.

¹ To encourage combined heat and power (CHP) energy projects that reduce source energy use but may increase site energy use, DOE/FEMP allows agencies with operational CHP projects to apply a credit to their reportable annual energy intensity. EPA's energy savings figures account for this credit. As a result, EPA's actual FY 2013 energy intensity reduction is 0.82 percent lower than this figure.

² The water savings that EPA achieved in FY 2013 were partly due to an unusually cool summer in many parts of the country, which reduced the demand on cooling towers at EPA facilities.

EPA also continued to exceed the requirements for reducing industrial, landscaping, and agricultural (ILA) water use set forth in EO 13514. EPA estimates that it used 6.4 million gallons of nonpotable water for ILA applications in FY 2013, which is 95.3 percent lower than its FY 2010 baseline of 135.2 million gallons.

11.5 Percent of Federal Real Property Profile (FRPP) Inventory Meets *Guiding Principles*

Using EPA's FY 2013 FRPP inventory, six buildings— or 11.5 percent (by number of buildings)— of EPA's FRPP buildings measuring greater than 5,000 square feet met the *Guiding Principles* in FY 2013.³ This progress exceeds the January 2014 OMB goal of 11 percent and demonstrates EPA's commitment to meet the FY 2015 requirement of 15 percent. In FY 2013, EPA internally certified that one additional facility met the *Guiding Principles*: the Agency's Environmental Science Center (ESC) in Fort Meade, Maryland.

Green Certifications Promote High Performance Sustainable Buildings

In addition to internally certifying buildings under the Agency's own set of sustainable building management procedures and policies, EPA uses other systems to benchmark the environmental performance of its real property portfolio. In FY 2013, EPA occupied 11 buildings certified Gold or Silver under the U.S. Green Building Council's (USGBC's) LEED® for New Construction & Major Renovations rating system, as well as nine buildings certified Platinum, Gold, or Silver under the LEED for Existing Buildings: Operations & Maintenance (O&M) rating system. One additional facility received Gold certification under the LEED for Commercial Interiors rating system in FY 2013. Six Headquarters office buildings and all 10 EPA regional offices have earned the ENERGY STAR® label, nine of which received it within the last three years. Three Headquarters buildings and five regional offices renewed their labels in FY 2013.

Facility Projects Improve Stormwater Management

EPA's stormwater management efforts continued in FY 2013 in accordance with the requirements set forth in EO 13514, EISA Section 438, and the *Guiding Principles*. In FY 2013, EPA worked on a stormwater management documentation and infrastructure project at the RTP campus. EPA carefully examines all new projects for stormwater opportunities and requirements.

Solid Waste Recycling Rate Reaches 64.7 Percent

EO 13514 requires federal agencies to meet a non-hazardous solid waste recycling rate of 50 percent by FY 2015. EPA exceeded this requirement in FY 2013 by achieving a recycling rate of 64.7 percent. Several EPA facilities significantly contributed to EPA's non-hazardous solid waste recycling rate increase through their ongoing source reduction, recycling, reuse, donation, composting, and other waste reduction efforts.

³ FRPP buildings are those that EPA owns.

This Page Intentionally Blank

U.S. Environmental Protection Agency Energy Management and Conservation Program FY 2013 ANNUAL REPORT

In June 2013, EPA submitted to OMB and CEQ an update to its SSPP, a comprehensive, multiyear planning document that identifies targets for reducing Agencywide GHG emissions by FY 2020 and outlines the steps the Agency will take to achieve those reductions. Through this report, EPA outlines its strategy for meeting the federal requirements of EO 13514 by reiterating its plans to reduce energy, water, waste, and other resource use, and to incorporate sustainable design and operations across its facilities. The report details key Agency priorities and strategies for achieving its sustainability goals including: GHG emission reductions, energy efficiency, renewable energy, fleet management, high performance sustainable buildings, regional and local planning, water conservation, recycling and pollution prevention, stormwater management, and sustainable acquisition. EPA's updated SSPP is available at www.epa.gov/greeningepa.

MANAGEMENT AND ADMINISTRATION SUMMARY

The Agency's Senior Sustainability Officer (SSO) for the duties and responsibilities set forth by EO 13514 is the Assistant Administrator for the Office of Administration and Resources Management, Craig E. Hooks, who reports directly to the Administrator. The SSO chairs an Executive Steering Committee, composed of Assistant Administrators and senior regional management, which is charged with overseeing the implementation of sustainability initiatives such as GHG emission reductions and energy efficiency initiatives.

GHG EMISSIONS INVENTORY AND REDUCTION EFFORTS

EPA has maintained an Agencywide GHG emissions inventory since FY 2008. In addition to quantifying direct and indirect emissions associated with energy consumption at the Agency's 35 reporting facilities, EPA's inventory accounts for: mobile emissions from fleet vehicles and equipment; fugitive emissions associated with building fire suppression and mobile air conditioning equipment; and process emissions from laboratory research and other activities. EPA's inventory also accounts for the efforts that the Agency has made to adjust a portion of its GHG emissions through green power and REC purchases.

In accordance with the requirements of EO 13514, EPA committed to reducing its combined Scope 1 and 2 GHG emissions 25 percent by FY 2020 from its FY 2008 baseline of 142,009 MTCO₂e, as well as reducing the required categories of Scope 3 GHG emissions by 8 percent by FY 2020 compared to its FY 2008 baseline of 71,071 MTCO₂e. More details on the Agency's GHG emission reduction strategies are available in the Agency's SSPP.

Reported Scope 1 and 2 GHG Emission Reductions

EPA's Scope 1 and 2 GHG Emissions Have Decreased 57.4 Percent From FY 2008 Baseline

EPA reported Scope 1 and 2 GHG emissions of 60,428 MTCO₂e in FY 2013, which is 9.6 percent lower than the Agency's FY 2012 emissions and 57.4 percent lower than the Agency's FY 2008 baseline of 142,009 MTCO₂e (see Figure 1 below). Even when the Agency does not account for green power and REC purchases, EPA's FY 2013 combined Scope 1 and 2 GHG emissions still decreased by 18,907 MTCO₂e, or 13.3 percent, relative to the Agency's FY 2008 baseline. EPA expects to continue to reduce Scope 1 and 2 GHG emissions in FY 2014 based on future green power and REC purchases and energy efficiency projects at its facilities.

Figure 1. EPA's Reported Scope 1 and 2 GHG Emissions, FY 2008 and FY 2013

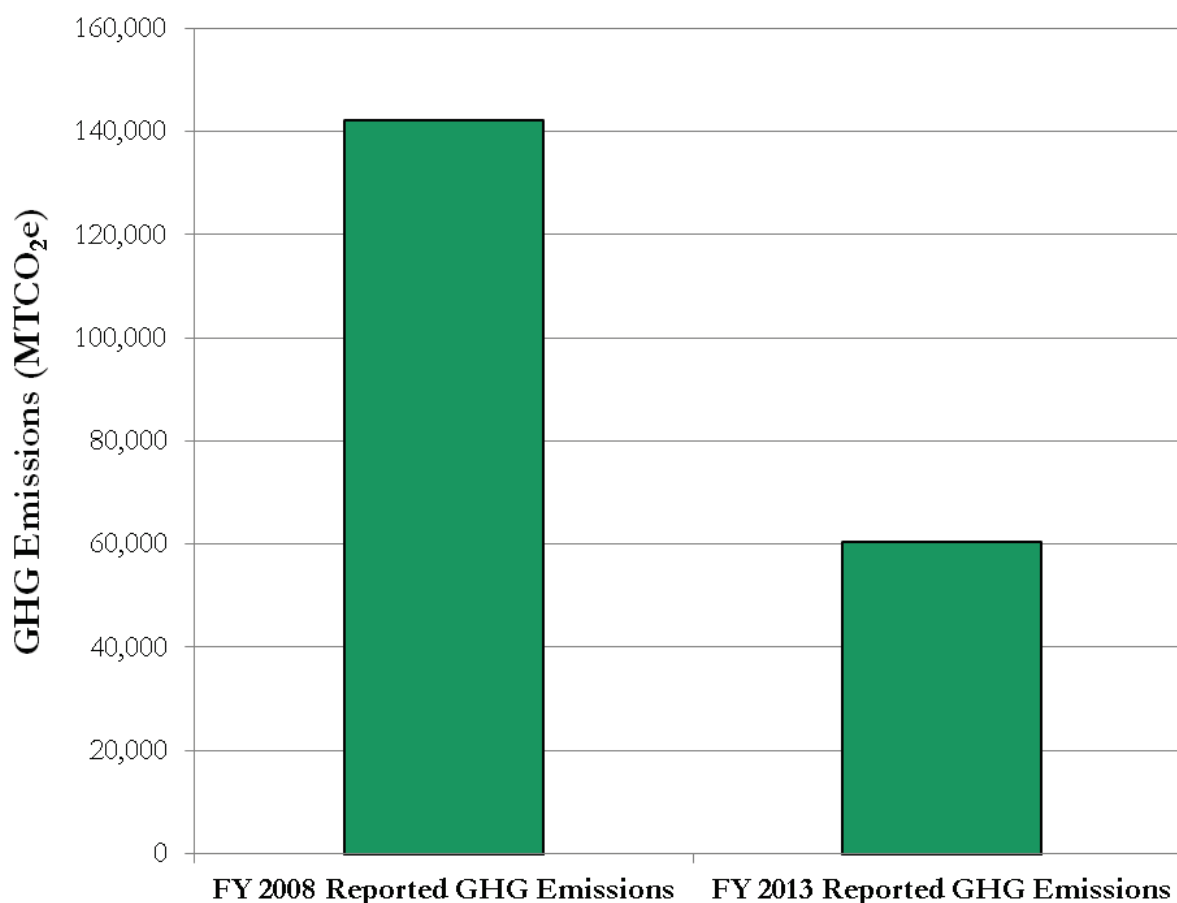
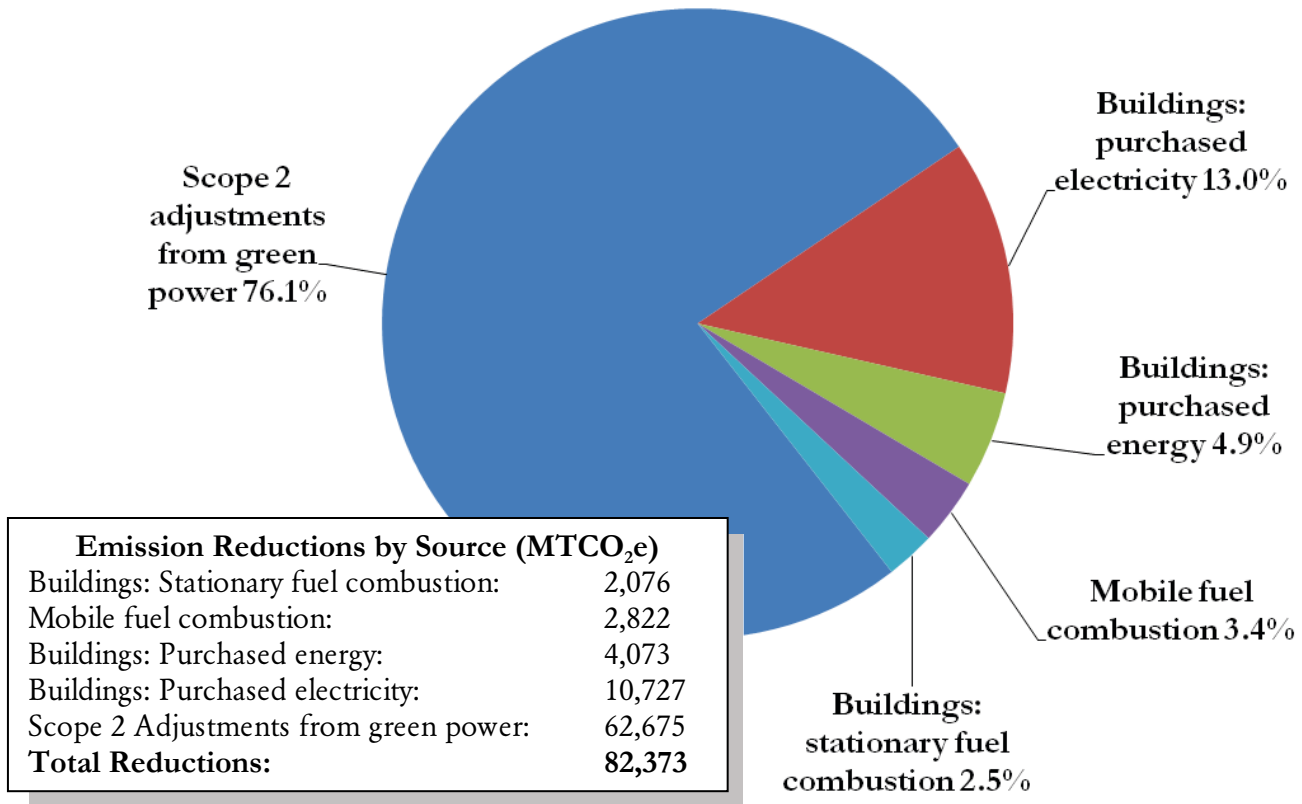


Figure 2. EPA’s Scope 1 and 2 GHG Emission Reductions by Source, FY 2013 Compared to FY 2008



Reported Scope 3 GHG Emissions

EPA’s Scope 3 GHG Emissions Are 40.4 Percent Lower Than FY 2008 Baseline

Scope 3 GHG emissions include indirect emissions from sources that are not owned or directly controlled by EPA but are related to the Agency’s activities, such as employee business travel and commuting, contracted solid waste disposal, and contracted wastewater treatment. EPA’s goal is to reduce the required subset of its Scope 3 GHG emissions by 8 percent by FY 2020 compared to its FY 2008 baseline of 71,071 MTCO₂e. In FY 2013, EPA’s estimated Scope 3 GHG emissions were 42,440 MTCO₂e, a decrease of 11.0 percent from FY 2012 and 40.4 percent from the FY 2008 baseline (see Figure 3 below).

Figure 3. EPA's Reported Scope 3 GHG Emissions, FY 2008 and FY 2013

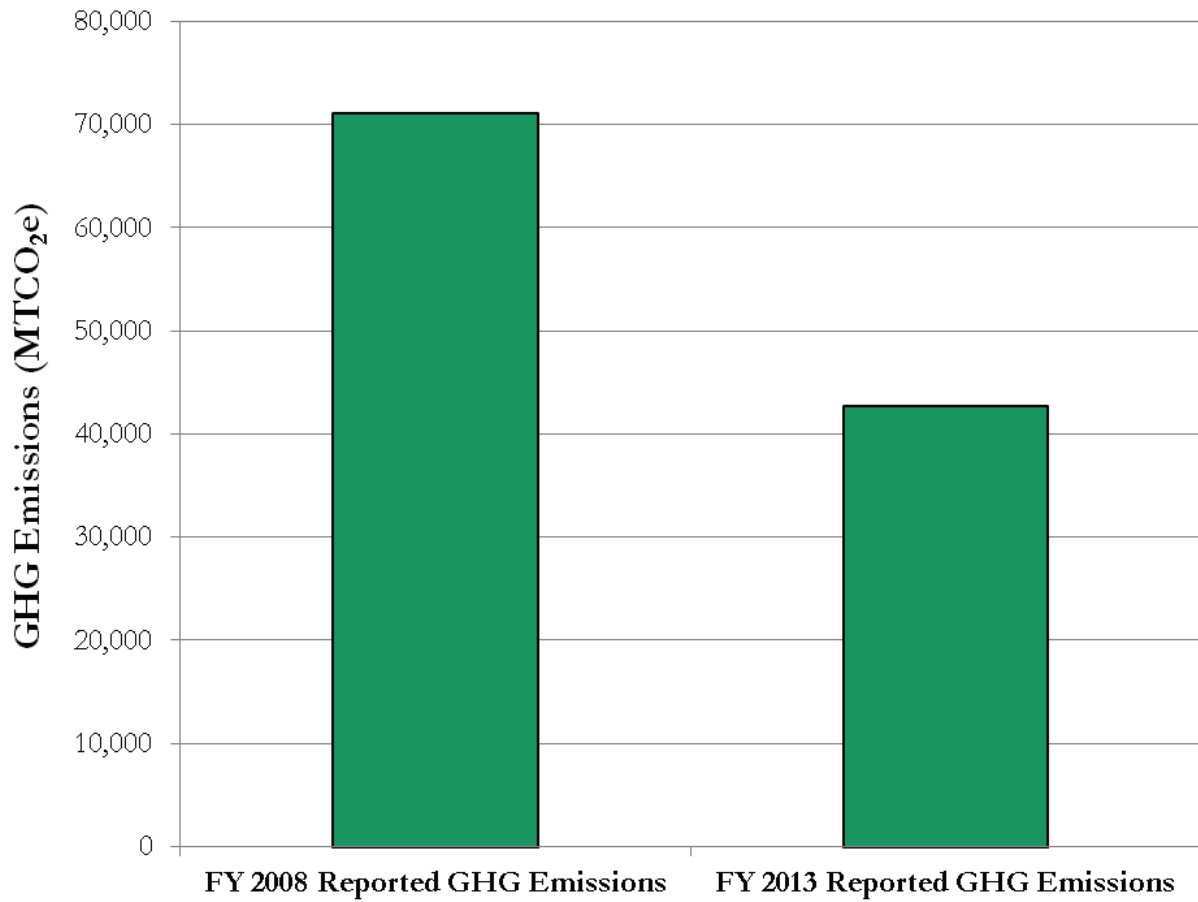
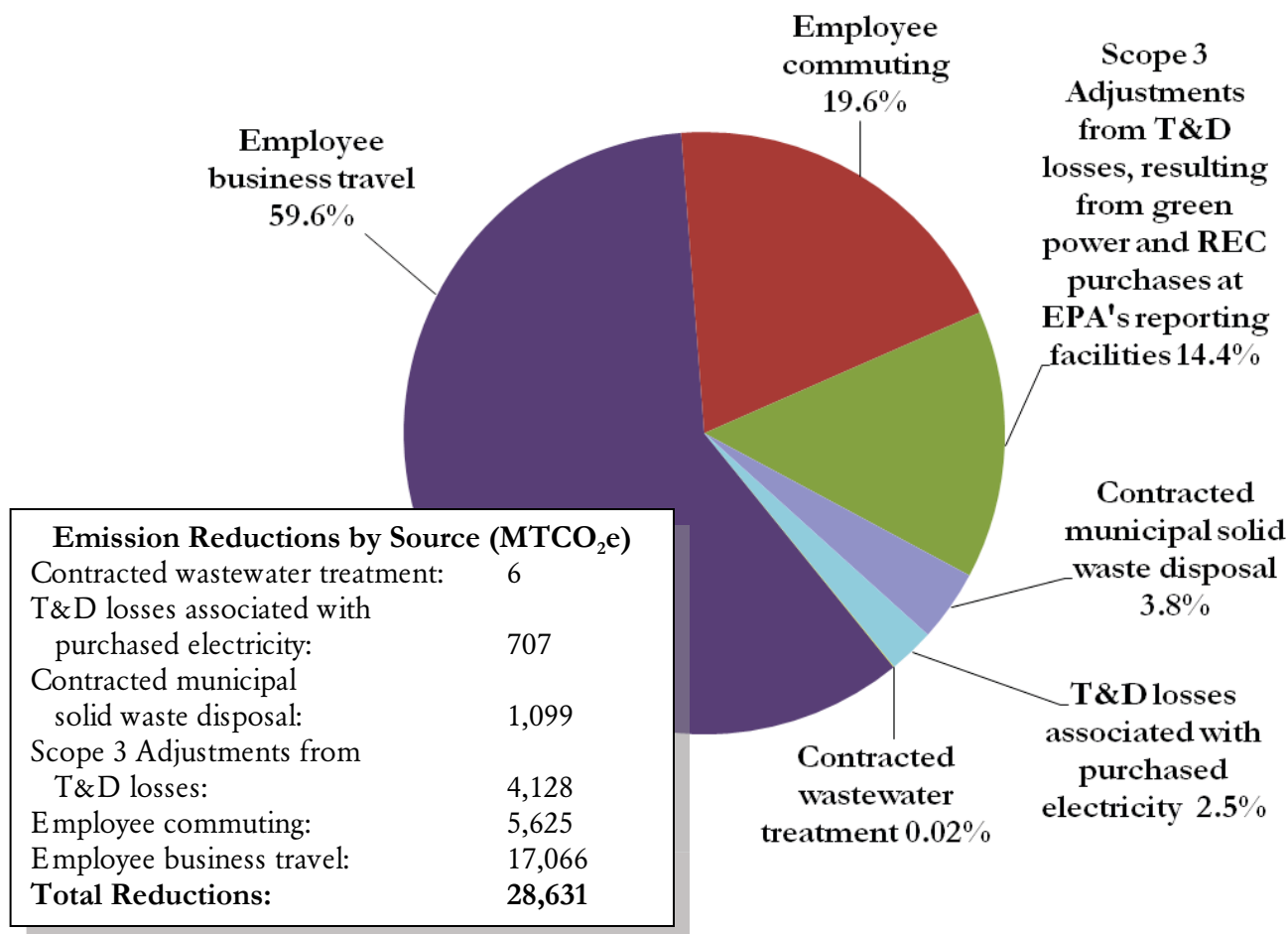


Figure 4. EPA’s Scope 3 GHG Emission Reductions by Source, FY 2013 Compared to FY 2008



Due to a variety of constraints associated with the government shutdown, EPA did not conduct an employee commuting survey for FY 2013. To report the required GHG emissions data for FY 2013, EPA extrapolated results using data from the Agency’s FY 2012 employee commuting survey and actual FY 2013 personnel data.

Optional Sources of Scope 3 GHG Emissions

EPA also voluntarily reports several categories of Scope 3 GHG emissions not currently required by EO 13514. In FY 2013, Scope 3 GHG emissions from energy use at EPA’s non-reporting facilities (i.e., regional offices, Headquarters facilities, warehouses) were 67,851 MTCO₂e, a decrease of 17.8 percent compared to the FY 2008 baseline of 82,539 MTCO₂e. The revised EO 13514 Section 9 *GHG Accounting and Reporting Guidance* (published June 4, 2012) suggests that this source of optional Scope 3 GHG emissions may become mandatory in future years. Having calculated and voluntarily reported these emissions since FY 2010, EPA is prepared to continue reporting these emissions should they become required in the future.

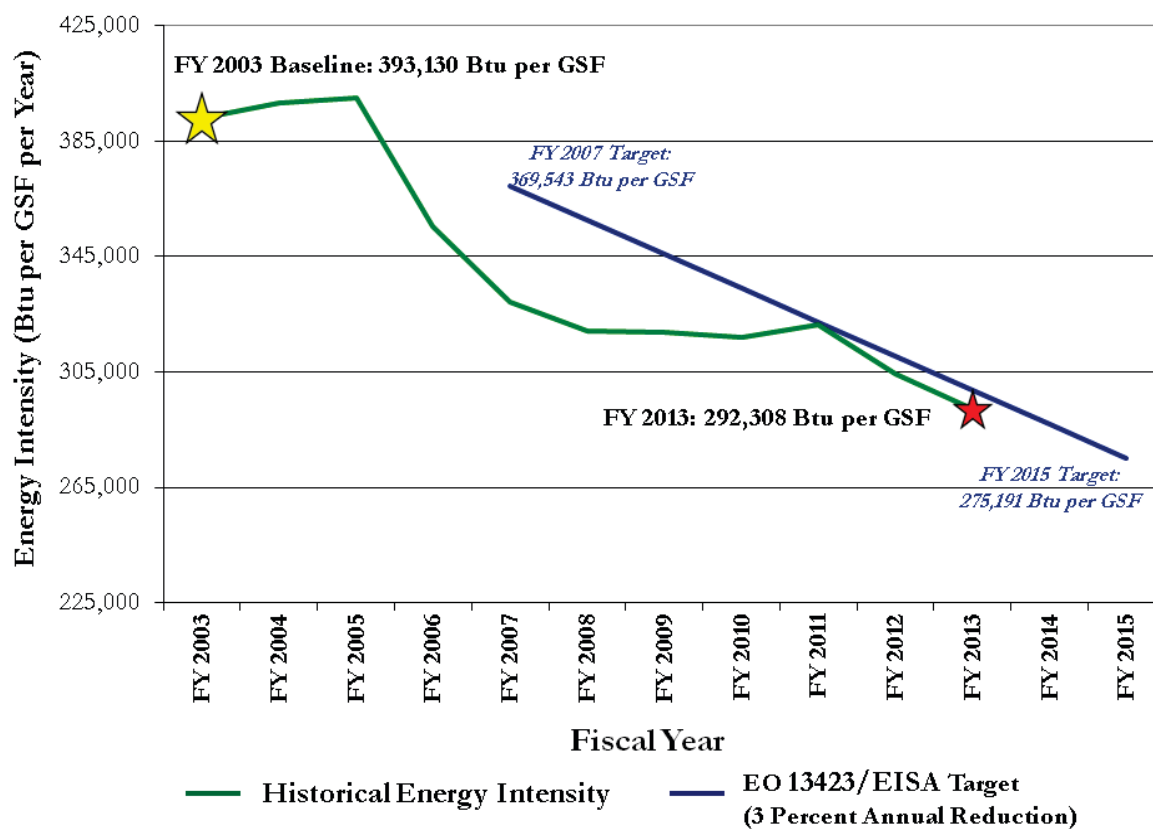
ENERGY EFFICIENCY PERFORMANCE

EPA's FY 2013 Energy Intensity Has Decreased 25.6 Percent From FY 2003 Baseline

EISA and EO 13423 require federal agencies to reduce their energy intensity by 3 percent per year, or 30 percent by FY 2015, compared to an FY 2003 baseline. In FY 2013, EPA exceeded the required 24 percent cumulative energy intensity reduction. EPA's FY 2013 reported energy intensity was 292,308 Btu per GSF, which is 3.9 percent below its FY 2012 energy intensity and 25.6 percent below the FY 2003 baseline (see Figure 5 below). In absolute terms, EPA's FY 2013 energy consumption was 1,143 billion Btu (BBtu) compared to its FY 2003 baseline of 1,462 BBtu.

The Agency's FY 2013 energy intensity includes a site/source energy intensity reduction credit created by the U.S. Department of Energy's Federal Energy Management Program (FEMP) to encourage energy-efficient co-generation projects.⁴ Without this credit, EPA's actual FY 2013 energy intensity was 295,519 Btu per GSF, or 24.8 percent below the FY 2003 baseline. EPA will continue to closely manage its energy use in FY 2014 and expects to meet or exceed the cumulative 30 percent energy intensity reduction requirement by FY 2015.

Figure 5. EPA Annual Energy Intensity Relative to EO 13423/EISA Target



⁴ Co-generation projects increase reported site energy use but decrease source energy use.

Agencywide Energy Intensity and Percent Change from FY 2003 Baseline	
FY 2003 Baseline: 393,130	
FY 2004: 398,373 Btu/GSF: 1.33%	FY 2009: 318,657 Btu/GSF: -18.94%
FY 2005: 400,149 Btu/GSF: 1.79%	FY 2010: 317,209 Btu/GSF: -19.31%
FY 2006: 355,414 Btu/GSF: -9.59%	FY 2011: 321,507 Btu/GSF: -18.22%
FY 2007: 329,331 Btu/GSF: -16.23%	FY 2012: 304,236 Btu/GSF: -22.61%
FY 2008: 319,214 Btu/GSF: -18.80%	FY 2013: 292,308 Btu/GSF: -25.65%

RTP Laboratory Consolidation Efforts

In FY 2013, EPA began construction to relocate its National Health and Environmental Effects Research Laboratory and Reproductive Toxicology Facility (NHEERL/RTF) in RTP, North Carolina, from a leased building into the Agency's existing Main Building on the RTP campus. This consolidation project will significantly cut EPA's Scope 1 and 2 GHG emissions and overall energy consumption, improve space use efficiency in the Main Building, and reduce the Agency's rent and utility costs. As of September 2013, construction was underway for the renovation of 116 existing laboratory modules within the Main Building to accommodate incoming research staff. The consolidation project is expected to be completed by November 2014.

Reducing Laboratory Ventilation Rates

In FY 2013, EPA continued to implement several new approaches to reducing its energy intensity and meeting its aggressive Scope 1 and 2 GHG emissions reduction targets. These strategies include, but are not limited to:

- Use of hibernating fume hoods. These hoods allow laboratory personnel to safely reduce airflows at times when research is not actively being conducted or when open chemicals are not located in the fume hood. Laboratory personnel can quickly and easily return the hoods to full operating mode as needed. At the AWBERC facility in Cincinnati, Ohio, EPA upgraded all eligible variable air volume (VAV) fume hoods with hibernation capabilities in November 2012.
- Use of occupancy sensors to set occupied/unoccupied air change per hour rates in laboratory modules. At the AWBERC facility, EPA implemented occupancy sensors in approximately 265 of 315 laboratory modules. The activation of sensors in all additional eligible laboratories is planned for January 2014.
- Adoption of lower fume hood airflow rates while maintaining safe working environments based on the new American National Standards Institute (ANSI)/American Industrial Hygiene Association (AIHA)/American Society of Safety Engineers (ASSE) Z9.5 standards, which adopt the American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) 110 performance test. EPA has implemented the new lower airflow standards in 18 of 103 fume hoods at AWBERC and plans to implement the changes in all of AWBERC's remaining fume hoods.
- Airflow reduction opportunities associated with biological safety cabinets (BSCs). RTP conducted a BSC minimum flow proof-of-concept study to determine if the existing facility BSCs could be modified to reduce airflow when the units are not in use. The project

confirmed that EPA could modify these units to operate safely at lower airflows with minor alterations and building automation software (BAS) adjustments.

- Safely implementing temporary (and non-automatic) hibernation of laboratory fume hoods, which allows EPA to maintain research capacity while reducing energy use during off-peak hours.

Energy Intensity Exclusions

In FY 2013, EPA excluded one source of energy consumption— its aquatic research vessel, *Lake Explorer II*— from federal energy performance requirements, following the criteria included in FEMP’s *Guidelines for Establishing Criteria for Excluding Buildings*. More information on this vessel is included in Appendix A.

EPA also began to analyze laboratory-specific process energy loads at several facilities in FY 2013 to better understand the energy demand of specialized research compared to base building operations. EPA initiated energy modeling studies at:

- High Bay Laboratory in the Main Building in RTP, North Carolina
- National Vehicle Fuel and Emissions Laboratory (NVFEL) in Ann Arbor, Michigan
- New England Regional Laboratory (NERL) in Chelmsford, Massachusetts
- Region 6 Laboratory in Houston, Texas
- Region 9 Laboratory in Richmond, California
- Region 10 Laboratory in Manchester, Washington

At the RTP High Bay Laboratory and at NVFEL, process energy loads have always represented a large share of energy use and have increased over time due to mission-critical activities, which may obscure these facilities’ operational energy performance. At the request of the U.S. Department of Homeland Security, EPA added high-intensity chemical warfare suites to the Chelmsford, Houston, Richmond, and Manchester laboratories in recent years, adding significant process energy loads that did not exist in FY 2003 and were not included in the FY 2003 energy intensity baseline for these facilities. EPA’s modeling investigations will determine the respective portions of these laboratories’ energy use that are attributable to process energy loads and may be eligible for exclusion from the Agency’s reportable energy intensity under FEMP’s *Guidelines for Establishing Criteria for Excluding Buildings*.

Life Cycle Cost Analysis

EPA has well-established processes to evaluate the economic life cycle costs and return on investment (ROI) for new facilities, major renovations, mechanical system upgrades and replacements, and other facility projects. Through EPA’s Five-Year Capital Investment Plan, Energy Conservation Plan, Water Conservation Strategy, and Buildings and Facilities (B&F) Capital Budgeting Process (also known as the B&F Project Ranking Process), the Agency ranks projects based on financial criteria, including initial investment, energy and operational cost savings, Btu and/or gallons saved per dollar, and potential for reducing facility maintenance.

For new major EPA facilities, GSA-owned buildings being renovated for EPA, or build-to-suit buildings leased by GSA from private landlords for EPA, the Agency performs extensive energy

modeling to ensure compliance with the requirement that new buildings and major renovations perform 30 percent better than the ASHRAE 90.1 standard. During this process, EPA weighs the cost of incremental mechanical system and building envelope investments against the energy cost savings that will result from these investments. The Agency pursues energy efficiency performance beyond the 30 percent better than ASHRAE standard when it can be achieved in a life cycle cost-effective manner.

EISA Section 432 Implementation—Energy Assessments

EPA Completed Energy Assessments of 31 Percent of Covered Facilities as Required by EISA, Ahead of Schedule

From June 2012 through June 2013, EPA conducted a variety of energy assessments and recommissioning for facilities that represented more than 31 percent of the total energy use of EPA’s covered facilities (based on FY 2008 data, per EISA Section 432 guidance), surpassing the FY 2013 requirement of 25 percent. Recognizing that multiple projects from the first round of EISA assessments are in the planning pipeline, and to reduce costs and avoid duplication, at some locations EPA asked facility managers to update past assessments rather than coordinate new onsite assessments via engineering firms. Facilities addressed under this approach in FY 2013 included the Mid-Continent Ecology Division (MED) Laboratory in Duluth, Minnesota, and the Chapel Hill Laboratory in Chapel Hill, North Carolina.

The Agency collected information on potential energy conservation measures for all facilities evaluated from June 2012 through June 2013 and compiled the associated implementation costs, estimated annual energy savings, and estimated annual cost savings in a comprehensive report submitted to FEMP in June 2013. See Table 1 below for a list of the reported measures.

<i>Facility</i>	<i>Description of Potential Projects</i>	<i>Estimated Annual Energy Savings</i>
Main Building in RTP, North Carolina	Chilled water corrections at central utility plant (CUP), including chiller control upgrades and automation; replacement of chillers 1 and 2 with a variable chiller, water balance system, and return-line repiping; and setpoint adjustments	6.0 billion Btu
	High Bay air and occupancy control	4.4 billion Btu
	Optimization of air handling unit (AHU) system, including airflow reduction and decreased hours of operation	3.1 billion Btu
	Exhaust energy recovery— glycol	1.3 billion Btu
	Lighting reduction in office areas	0.2 billion Btu
	Process water loop improvements	0.4 billion Btu
	Fan shutoff during unoccupied hours	0.1 billion Btu

AWBERC in Cincinnati, Ohio	Dedicated heat recovery chiller	10.4 billion Btu
	Air change rate reduction	4.5 billion Btu
	Recommissioning of chiller plant, including: implementation of process water system; automation of chilled water plant operations; conversion from constant volume chilled water pumping system to a primary/secondary, variable flow pumping system; and chilled water reset schedule	3.3 billion Btu
	Installation of high performance, low velocity fume hoods	3 billion Btu
	Upgrade of exhaust fans to manifold, energy-efficient, mixed-airflow fans with VAV terminals	
	Heat recovery system for exhaust and boiler room combustion air	
	Nighttime setback programming	
	Variable speed drives	2.8 billion Btu
	Boiler replacement	2.0 billion Btu
	Controls optimization including fume hood airflow reductions and calibrations; heating, ventilation, and air conditioning (HVAC) sequencing corrections; and setpoints adjustments	1.1 billion Btu
	Facility lighting upgrade, including interior lighting replacement and office occupancy sensor installation	0.5 billion Btu
	VAV retrofit	0.3 billion Btu
	Information technology cooling retrofit	0.3 billion Btu
	Window replacement	0.1 billion Btu
MED Laboratory in Duluth, Minnesota	Air-to-air energy recovery	5.1 billion Btu
	Building airflow balancing	3.0 billion Btu
	Chilled water system adjustments, including: new pump installation; opening of valve in the decouple pipe; replacement of AHU 3-way valves with 2-way valves; and system rebalancing	0.5 billion Btu
	Differential pressure sensor monitoring	0.1 billion Btu
	Operational adjustments for AHU terminal units	0.1 billion Btu
Chapel Hill Laboratory in Chapel Hill, North Carolina	HVAC upgrades, including: centralized high dilution exhaust fans and variable volume AHUs; energy recovery coils; premium efficient motors; variable volume low-flow fume hoods; replacement of constant volume system with VAV; removal of existing AHU-1A and 1B; and connection of offices supply to AHU-2	20 billion Btu
	Programmable lighting controls for interior and exterior lighting applications	9.6 billion Btu
	Steam system upgrades, including: replacement of existing electric condensate pumps with pressure power pumps; recovery of flash steam where possible for use in building reheat; adjustment of balancing valves on condensate discharge piping; indirect waste receptor or squelching system to lower temperatures of steam condensate discharged into the sanitary sewer; and possible capture and return of humidification steam condensate	5.0 billion Btu

	Control upgrades	4.8 billion Btu
National Computer Center in RTP, North Carolina	Setpoint modification for computer room air conditioning (CRAC) units	3.1 billion Btu
	Optimization of AHU operations and outdoor air reduction	0.7 billion Btu
	Lighting reduction in offices and storage rooms	0.1 billion Btu

EPA is simultaneously focusing on implementing key projects identified during four previous years of assessments and working with the facilities on measurement and verification efforts. EPA will continue to re-evaluate its covered facilities per EISA requirements for further energy- and water-saving opportunities, relying on the expertise of the federal energy managers at these facilities. EPA also plans to conduct energy assessments at four non-covered facilities in FY 2014.

Current Energy Retrofits and Capital Improvement Projects

In FY 2013, several EPA facilities achieved significant energy intensity reductions compared to FY 2012 as a result of recently completed projects, which contributed to the Agency’s overall progress. These facilities include, in descending order of total annual energy consumption:

- AWBERC in Cincinnati, Ohio (16.1 percent reduction)
- Chapel Hill Laboratory in Chapel Hill, North Carolina (15.0 percent reduction)
- National Air and Radiation Environmental Laboratory (NAREL) in Montgomery, Alabama (12.6 percent reduction)
- National Exposure Research Laboratory (NERL) and Radiation and Indoor Environments National Laboratory (R&IENL) in Las Vegas, Nevada (30.9 percent reduction)

In addition, EPA has several projects underway that will contribute to the Agency’s future energy savings. In FY 2013, EPA continued work on a multi-phase infrastructure replacement project (IRP) at its AWBERC facility in Cincinnati, Ohio. Construction of Phase V, which includes upgrading to a VAV HVAC system, replacing old fume hoods with energy-efficient fume hoods outfitted with automatic sash closures, and upgrading building controls for better monitoring and controllability, is expected to be completed by March 2014. EPA also continued significant energy-saving projects at its Main Building in RTP, North Carolina, including a laboratory controls optimization project and laboratory airflow reductions, which are expected to reduce the facility’s energy use by 19 billion Btu per year.

In FY 2013, EPA made progress on the energy efficiency efforts listed in Table 2 below, which represent more than 58 billion Btu of total annual energy savings.

Table 2. Energy Conservation Projects Underway or Completed in FY 2013		
<i>Facility</i>	<i>Description of Improvements</i>	<i>Estimated Annual Energy Savings</i>
AWBERC in Cincinnati, Ohio	Completed the IRP Phase IV construction in December 2012; continued to make progress on Phase V, the last major phase of the IRP, with construction completion expected by March 2014. Phase V involves the	13 billion Btu

	renovation of animal rooms and associated offices, including modifications to exhaust distribution systems.	
	Completed the retrofit of VAV fume hoods to provide hibernation/decommissioning capabilities in November 2012 (this allows fume hoods to operate at dramatically reduced minimum airflows, thus saving energy when the hoods are not in use).	6 billion Btu
	Contracted to commission all five phases of the IRP in FY 2013.	2.6 billion Btu
Main Building in RTP, North Carolina	Completed airflow reductions in Building A Laboratory corridor, animal suite, and cage wash areas.	9 billion Btu
	Completed low-cost measures in Building C, including re-sequencing kitchen fans and providing demand-controlled ventilation for conference rooms.	3.4 billion Btu
	Completed a comprehensive laboratory controls optimization Phase 2 (LCOP-2) at High Bay Laboratory and Building A that included: fume hood control upgrades; decoupling of lights and fume hoods to safely reduce unnecessarily high ventilation rates; and fume hood retrofits to allow containment at lower airflow rates.	1.5 billion Btu
	Completed proof of concept study to safely reduce exhaust airflow for biological safety cabinets during unoccupied hours.	0.8 billion Btu
NCC in RTP, North Carolina	Raised setpoints for CRAC units to 76° Fahrenheit and turned off five of the 12 CRAC units located on the data center floor.	2.8 billion Btu
NHEERL/RTF Consolidation in RTP, North Carolina	Awarded design/build contracts in August 2012 to accommodate the consolidation of laboratory staff and equipment from the NHEERL/RTF facility into the Main Building. Construction is underway and expected to be completed by early summer 2014. Approximately 116 laboratory modules will be remodeled at the Main Building as part of the consolidation. There will be a net increase of 25 new fume hoods and four new biosafety cabinets in the Main Building associated with the consolidation.	EPA anticipates a reduction in laboratory space of approximately 32,200 GSF, as well as rent and utility cost savings. Agency energy intensity should drop slightly (as this metric is normalized by GSF), and Scope 1 and 2 GHG emissions should drop significantly (as this is an absolute metric).
Chapel Hill Laboratory in Chapel Hill, North Carolina	Made progress toward hiring a resource efficiency manager who would be dedicated exclusively to managing energy use at the facility. EPA expects contract execution in May 2014.	4.8 billion Btu
	Hibernated an additional six fume hoods in FY 2013, bringing the total to 14 hibernated fume hoods.	Because this is a constant volume laboratory, EPA only anticipates small energy savings from this effort.
ESC in Fort Meade, Maryland	Completed a burner replacement project in January 2013 after completing final boiler and control tests under full	4.5 billion Btu

	load.	
	Implemented a lighting controls upgrade pilot in select areas of the facility.	0.9 billion Btu
NAREL in Montgomery, Alabama	Completed Phase 1a of an IRP and initiated Phase 1b. The renovation project includes new laboratory and office areas as well as two new AHUs capable of providing HVAC for the entire main laboratory facility. It also includes a new exhaust fan sized to serve the main laboratory fume hoods. The IRP will ultimately reduce fume hood capacity by 25 percent.	3.5 billion Btu
	Completed a boiler replacement in FY 2013.	0.8 billion Btu
	Completed lighting upgrades.	Energy savings data for this project are not available.
NVFEL in Ann Arbor, Michigan	Added additional mission-critical space in FY 2013, including the expansion of a heavy duty vehicle test cell and an addition to vehicle compliance/portable emissions measurement system building.	EPA does not anticipate energy savings from this additional space.
Atlantic Ecology Division (AED) Laboratory in Narragansett, Rhode Island	Continued to make progress on Phase 1 and 2 of the facility's multi-year mechanical system IRP. Completed upgrade of mechanical systems, including replacing boiler and AHUs, and renovated section of chemistry building.	4.5 billion Btu (once Phases 1 and 2 are completed)
NERL in Chelmsford, Massachusetts	Completed the installation of a dry cooler to supplement the process chiller in May 2013.	0.1 billion Btu
Office of Research and Development (ORD) Laboratory in Athens, Georgia	Completed chiller optimization and controls upgrade in March 2013.	0.5 billion Btu
	Completed window replacement in March 2013 to make the building envelop more energy efficient.	Energy savings data for this project are not available.

Energy Savings Performance Contracts (ESPCs)

As with many federal agencies, EPA has limited capital funds to maintain existing laboratory infrastructure, replace aging infrastructure, and reconfigure existing research laboratory space to meet mission-critical needs. When appropriate, EPA considers ESPCs as a potential funding source for energy-saving projects, if they enable the Agency to reduce the burden of up-front capital costs. Although many of the Agency's energy-saving or renewable energy projects are often not viable candidates for ESPCs (due to the advanced age and complexity of mechanical systems, the laboratories' remote locations, and the smaller project sizes), EPA continues to evaluate its pipeline of future energy projects for performance contracting opportunities.

In FY 2013, EPA evaluated a potential ESPC project at its Cincinnati, Ohio, AWBERC Laboratory, involving the replacement of two aging steam boilers with a new heating system proposed by the ESPC's energy service company (ESCO). Upon completing the preliminary assessment phase of the ESPC process, EPA determined that the technical and financial specifications of the ESCO's proposal were not in the Agency's best interest. The significant decrease in the price of natural gas since 2011 made the project less cost-effective. As a result, EPA did not further pursue the opportunity.

EPA is in the process of awarding a 20- to 25-year ESPC at the Region 2 Laboratory in Edison, New Jersey, involving a photovoltaic (PV) installation. With a capacity of up to 2 megawatts (MW), the proposed system would provide the Edison laboratory with more than 40 percent of its electricity through renewable sources. In FY 2013, EPA completed a procurement package with the Defense Logistics Agency, which included pricing and technical proposal requirements, and received proposals from multiple ESCOs. EPA expects to award the ESPC in FY 2014, once detailed negotiations with the preferred vendor are complete.

Green Power

EPA Continues to Offset 100 Percent of Electricity Use With Green Power

In FY 2006, EPA became the first federal agency to offset 100 percent of its electricity use with green power. In FY 2013, EPA continued to be a leader among federal agencies by offsetting 100 percent of its estimated FY 2013 electricity use with purchased green power and RECs for the eighth consecutive year.

In September 2012, EPA procured a blanket purchase agreement for a total of more than 246 million kWh of RECs that supported renewable energy generation from wind, landfill gas, and biomass resources in twelve states, including Arkansas, Florida, Idaho, Indiana, Kansas, Louisiana, Missouri, Nebraska, North Dakota, Oklahoma, Wisconsin, and Wyoming. Combined with three additional contracts for delivered green power and RECs, EPA purchased more than 247 million kWh of renewable energy in FY 2013, enough to offset 100 percent of the Agency's estimated annual electricity at its 175 laboratories and offices across the country.

In an effort to maximize the positive impacts of its green power purchases, EPA began using a solicitation strategy in FY 2013 to procure a portion of its total RECs from regions of the United States where renewable energy generation would displace electricity generated from the highest GHG-emitting conventional power plants, thus enabling EPA to have a greater impact on GHG emission reductions. EPA used the Emissions & Generation Resource Integrated Database (eGRID), its comprehensive source of data on the environmental characteristics of nearly all electric power generated in the United States, to quantify the impact of green power purchases from different regions on the Agency's Scope 1 and Scope 2 GHG emissions. EPA anticipates this targeted REC purchasing strategy will enable the Agency to continue reducing Scope 2 GHG emissions from purchased electricity in the future.

EPA signed a blanket purchase agreement for more than 260 million kWh of RECs in September 2013, which represents 100 percent of EPA's estimated FY 2014 conventional electricity consumption in its offices, laboratories, and support buildings. In the event the Agency purchases more than enough RECs to offset 100 percent of estimated Agencywide electricity use in a given year, EPA is exploring the ability to utilize "spillover" RECs in future years. This accounting refinement would increase the efficiency of EPA's green power purchasing strategy while cutting costs.

Onsite Renewables and Distributed Generation

EPA installs onsite renewable energy systems at its facilities where practical and cost-effective. These systems help the Agency diversify its energy supply and reduce energy losses from transmission and distribution. In FY 2013, onsite renewable resources such as wind, solar, and geothermal power supplied EPA with 5.8 billion Btu, equivalent to 0.46 percent of the Agency's energy use. Among the Agency's numerous onsite renewable energy installations are:

- A ground source heat pump (GSHP) at the Robert S. Kerr Environmental Research Center in Ada, Oklahoma.
- A 100-kilowatt (kW) solar roof at the NCC in RTP, North Carolina.
- A 55-kW, thin-film solar PV system on the roof of the Main Building E, and a 52.5-kW solar PV system on the roof of the Main Building B in RTP, North Carolina.
- A 5-kW solar PV array and four 1-kW wind turbines on the roof of the AED Laboratory in Narragansett, Rhode Island.
- Eight 4.5-kW PV parking lot lighting fixtures at NAREL in Montgomery, Alabama.
- Solar hot water heating systems at the Region 2 Laboratory in Edison, New Jersey, and the ORD Laboratory in Athens, Georgia.

Planned onsite renewable projects include a 2-MW solar PV installation for the Region 2 Laboratory in Edison, New Jersey, as part of an ESPC.

Advanced Metering

Advanced Metering Hardware Installed or Under Construction to Capture 72 Percent of Agencywide Reportable Energy Consumption

The Energy Policy Act of 2005 (EPAAct 2005) and EISA require federal agencies to install advanced metering equipment for electricity (by FY 2012), and steam and natural gas (by FY 2016) to the maximum extent practicable, considering return on investment and other criteria. Approximately 72 percent of EPA laboratories' energy use was measured by advanced metering hardware by the end of FY 2013.

EPA is currently designing or constructing advanced metering projects in association with major infrastructure replacements at three laboratories:

- NAREL in Montgomery, Alabama
- AED Laboratory in Narragansett, Rhode Island
- Western Ecology Division (WED) Laboratory in Corvallis, Oregon

As a stand-alone project, the installation of advanced metering at these locations was not cost-effective. Advanced metering became economically feasible, however, when combined with major IRPs.

In FY 2014, EPA will continue to work toward capturing electricity consumption with advanced metering at all facilities where it is cost-effective to do so.

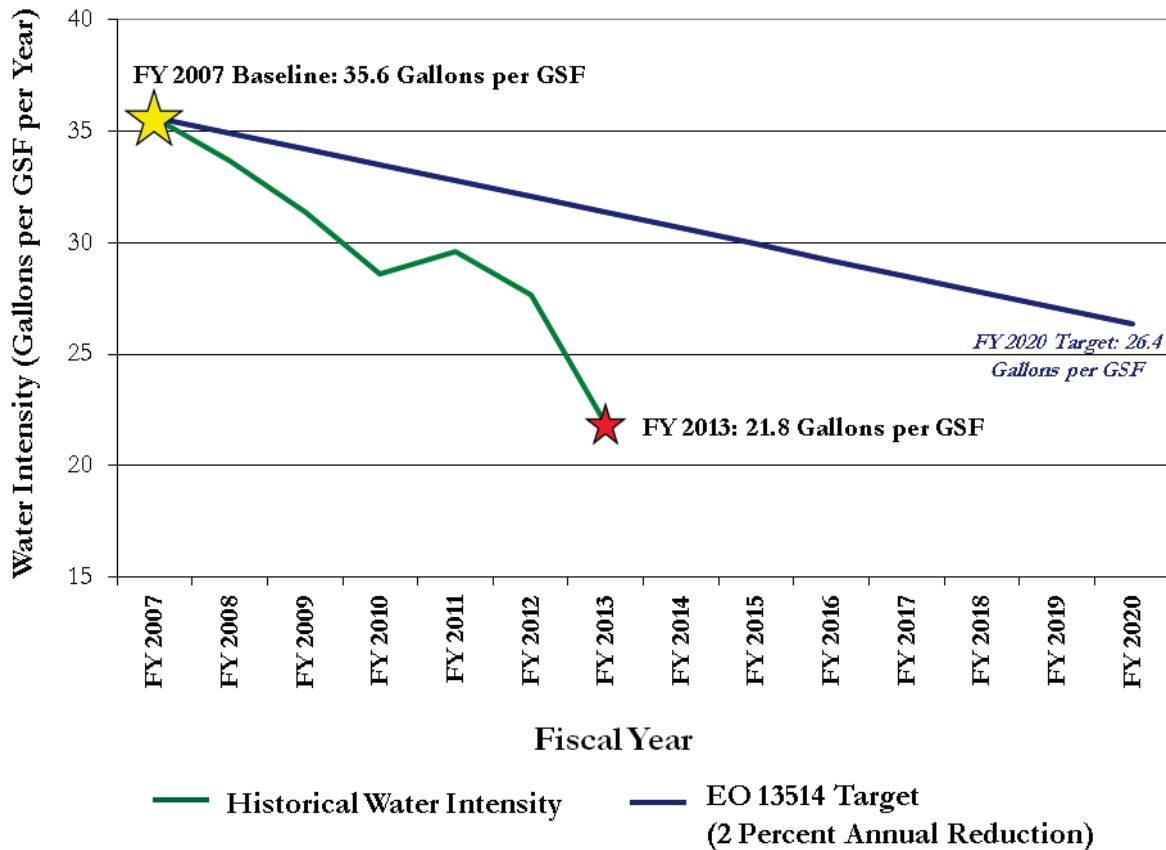
WATER CONSERVATION

EPA's FY 2013 Water Intensity Is 38.8 Percent Lower Than FY 2007 Baseline

EO 13514 requires federal agencies to reduce their potable water intensity by 2 percent per year through FY 2020, based on an FY 2007 baseline. Despite starting with a low 35.6 gallons per GSF baseline in FY 2007, EPA continued to exceed the annual EO 13514 requirement for FY 2013 and is on track to meet the FY 2020 federal requirement.

Through water-saving measures and capital improvement projects, EPA achieved a water intensity of 21.8 gallons per GSF in FY 2013, which is a decrease of 38.8 percent compared with the FY 2007 baseline (see Figure 6 below). This reduction is 26.8 percent greater than the cumulative reduction required by FY 2013. In absolute terms, EPA used 84.4 million gallons in FY 2013 compared to 136.5 million gallons in FY 2007. EPA's water use also fell 5.8 gallons per GSF in FY 2013, or 21.0 percent, compared to FY 2012.

Figure 6. EPA Water Intensity Relative to EO 13514 Target



Agencywide Water Intensity and Percent Change from FY 2007 Baseline	
FY 2007 Baseline: 35.6 gal/GSF	
FY 2008: 33.7 gal/GSF: -5.52%	FY 2011: 29.6 gal/GSF: -16.96%
FY 2009: 31.4 gal/GSF: -12.00%	FY 2012: 27.6 gal/GSF: -22.46%
FY 2010: 28.6 gal/GSF: -19.70%	FY 2013: 21.8 gal/GSF: -38.78%

For example, the Testing and Evaluation (T&E) Center in Cincinnati, Ohio, cut its water use by significantly reducing the use of single-pass cooling on a water-source heat pump. The Robert S. Kerr Environmental Research Center in Ada, Oklahoma, was able to reduce its water use by installing an AHU condensate recovery system, retrofitting its toilets with more efficient models, and adding faucet aerators.

EPA's FY 2013 water conservation efforts were guided by the Agency's Water Conservation Strategy, which outlines water reduction projects and goals for facilities and is discussed in more detail in the Agency's SSPP, as well as in reports from the facility water assessments EPA undertook.

EISA Section 423 Implementation—Water Assessments

From June 2012 through June 2013, EPA completed water assessments at 10 facilities:

- AWBERC, T&E, Center Hill, and Child Development Center in Cincinnati, Ohio
- Main Building, NCC, and Child Care facility in RTP, North Carolina
- Chapel Hill Laboratory in Chapel Hill, North Carolina
- Region 2 Laboratory in Edison, New Jersey
- MED Laboratory in Duluth, Minnesota

In FY 2014 and beyond, EPA will analyze projects identified for these facilities for feasibility and cost effectiveness and work with its facility managers to implement them.

Water Conservation Retrofits and Capital Improvements

EPA continued or completed numerous water conservation projects in FY 2013, as listed in Table 3 below, which helped to significantly reduce the Agency's annual potable water use. EPA estimates that projects completed in FY 2013 will save approximately 4.9 million gallons of potable water per year.

Table 3. Water Conservation Projects Underway or Completed in FY 2013		
<i>Facility</i>	<i>Description of Improvements</i>	<i>Estimated Annual Water Savings</i>
T&E in Cincinnati, Ohio	Significantly reduced the use of single-pass cooling on a water source heat pump.	2.8 million gallons
Region 8 Laboratory in	Completed optimization of the facility's irrigation system.	730,000 gallons

Golden, Colorado		
Robert S. Kerr Environmental Research Center in Ada, Oklahoma	Completed the installation of dual-flush toilets to replace 3.5-gallon-per-flush (gpf) toilets, dual-flush handle retrofit kits on 1.6 gpf toilets, 0.5-gallon-per-minute (gpm) faucet aerators, WaterSense® labeled showerheads and urinals, an air handler condensate recovery system, and reverse osmosis system meters. In FY 2014, EPA plans to replace the reverse osmosis system with a more efficient system.	690,000 gallons
AWBERC in Cincinnati, Ohio	Eliminated single-pass cooling water on a cold water booster pump.	300,000 gallons
NERL in Chelmsford, Massachusetts	Installed 0.5 gpm faucet aerators and completed a condensate recovery system.	219,000 gallons
Science and Technology Center (STC) Laboratory in Kansas City, Kansas	Rerouted air handler condensate directly to the cooling tower.	137,000 gallons

Nonpotable ILA Water

EO 13514 set requirements for reducing ILA water use by 2 percent per year through FY 2020, compared with an FY 2010 baseline, even if the water used for these purposes is nonpotable, fresh water. In accordance with the *Federal Agency Implementation of Water Efficiency and Management Provisions of EO 13514*, EPA calculated its FY 2010 baseline for Agency nonpotable water use to be 135,191,600 gallons.

As of FY 2013, five EPA facilities use nonpotable ILA water from sources such as lakes, creeks, and wells for purposes such as irrigation, agricultural research, and process cooling. These facilities include:

- MED Laboratory in Duluth, Minnesota
- NERL in Chelmsford, Massachusetts
- ORD Laboratory in Athens, Georgia
- Science and Ecosystem Support Division Laboratory in Athens, Georgia
- Willamette Research Station in Corvallis, Oregon

EPA estimates that these facilities used a combined 6.4 million gallons of nonpotable water for ILA use in FY 2013. This amount is 95.3 percent lower than the FY 2010 baseline of 135.2 million gallons, and it exceeds the reduction requirements set forth in EO 13514. EPA will continue assessing each facility's nonpotable water use through its EISA water assessments and will continue reducing the Agency's nonpotable water use where possible.

SUSTAINABLE BUILDING DESIGN AND HIGH PERFORMANCE BUILDINGS

EPA occupies more than 11 million square feet of space in more than 300 individual buildings nationwide. EPA promotes energy and resource efficiency, waste reduction, pollution prevention, indoor air quality, and other environmental factors both during new construction and in existing buildings owned by the Agency or leased by GSA.

Transforming EPA's existing buildings to facilities that meet federal high performance sustainable building standards is complex work. EPA uses a multi-pronged approach that includes energy and water conservation projects, lighting system controls upgrades, scheduled recommissioning, ventilation and thermal comfort testing and improvements, and stormwater management system upgrades. The Agency has also developed Building Management Plan Templates— a comprehensive set of sustainable building management procedures and policies that represent best practices, minimum requirements, conformance assurance processes, and performance standards that help ensure high performance sustainable building operations.

For new major lease acquisitions, EPA works with GSA to acquire high performance sustainable buildings that exceed the environmental performance of the facilities being replaced. EPA has developed a variety of strategies to help GSA meet these objectives. More details on these strategies are available below and in the Agency's SSPP.

Upgrading Existing Agency-Owned Buildings to Meet the *Guiding Principles*

11.5 Percent of EPA's FY 2013 FRPP Inventory Meets the *Guiding Principles*, Exceeding EO 13514 Requirements

EPA's laboratory and office spaces are divided among FRPP and non-FRPP buildings. An agency's FRPP inventory consists of agency-owned or directly leased buildings; EPA's FRPP inventory consists of about 4.3 million square feet in approximately 170 buildings. GSA provides EPA with the remaining 6.9 million square feet of laboratory, office, and support space, either in GSA-owned facilities or in facilities leased by GSA from private owners. EO 13514 requires that 15 percent of an agency's FRPP inventory (by number of buildings) meet the *Guiding Principles* by FY 2015.⁵

At the end of FY 2013, six buildings— or 11.5 percent— in EPA's FY 2013 FRPP inventory met the *Guiding Principles*. This progress exceeds the January 2014 OMB goal of 11 percent and is three-quarters of the way to meeting the FY 2015 requirement. The six buildings are:

- ESC in Fort Meade, Maryland
- NCC in RTP, North Carolina
- Child Care facility in RTP, North Carolina
- Gulf Ecology Division (GED) Laboratory Building 67 in Gulf Breeze, Florida

⁵ This requirement only applies to buildings that are 5,000 square feet or larger. EPA has 52 buildings at 18 locations in its projected FY 2015 FRPP inventory that are subject to this requirement.

- AWBERC Annex II in Cincinnati, Ohio
- Large Lakes Research Station (LLRS) in Grosse Ile, Michigan

Implementing the *Guiding Principles*

To improve the environmental performance of EPA facilities so that they meet the *Guiding Principles*, EPA must coordinate numerous facility upgrades, including:

- Energy and water conservation projects
- Lighting controls upgrades
- Irrigation system curtailments or removals
- Stormwater management improvements
- Commissioning
- Verification that appropriate ventilation and thermal comfort standards are met
- Development of Building Management Plans

In September 2013, the ESC in Fort Meade, Maryland, became EPA's second facility to meet the *Guiding Principles* under EPA's internal certification system. This followed EPA's 2012 certification of the LLRS in Grosse Ile, Michigan, which was EPA's first existing building to meet the *Guiding Principles* for Sustainable Existing Buildings requirements (December 2008 version). In FY 2014, EPA will continue to work closely with facility staff at two other facilities— the Agency's AED Laboratory in Narragansett, Rhode Island; and the Robert S. Kerr Environmental Research Center in Ada, Oklahoma— where *Guiding Principles* implementation efforts are underway.

With multiple facilities now having used and customized the Building Management Plan Guidelines (BMPGs), EPA believes the BMPGs are an understandable, educational, and value-added tool that will improve the environmental operating performance of the Agency's facilities. The BMPGs represent an appropriate and efficient path toward helping EPA's existing buildings meet the *Guiding Principles*.

GreenCheck

GreenCheck is a process EPA uses to formally identify environmental performance goals for each new EPA facility, significant renovation/construction project, and lease of EPA-occupied space. These goals include meeting the requirements of EPA Act 2005, EO 13423, EISA, the *Guiding Principles*, and EO 13514, as well as the Agency's own policies as reflected in its *Best Practice (Environmental) Lease Provisions* and updated *Architecture and Engineering Guidelines*. EPA updates the GreenCheck checklist periodically to incorporate new requirements and address lessons learned from reviews.

All projects requiring funding in excess of \$85,000 and affecting at least 5,000 GSF (or increasing impervious area by more than 5,000 GSF) qualify for a full GreenCheck review. In FY 2013, EPA staff screened 10 major construction projects and lease actions through the GreenCheck process. To fulfill its commitment to auditing five percent of GreenCheck forms annually, EPA reviewed the Region 9 Office renovation in 2013 to ensure that all applicable sustainable acquisition requirements were included in the design documents.

Green Building Certifications

EPA often utilizes USGBC's LEED green building certification program as one of many tools for acquiring high performance green buildings and ensuring their continued performance. EPA has extensive experience with the LEED for New Construction and LEED for Commercial Interiors rating systems. Periodic recertification under the LEED for Existing Buildings: O&M rating system is also required throughout the term of the building's rental when leasing from GSA.

Major new building construction projects initiated by EPA since 1997, whether EPA-owned, GSA-owned, or GSA-leased, that have been certified under the LEED for New Construction rating system include:

- AWBERC Annex II in Cincinnati, Ohio
- Child Care facility in RTP, North Carolina
- GED Laboratory Building 67 in Gulf Breeze, Florida
- NCC in RTP, North Carolina
- NERL in Chelmsford, Massachusetts
- Potomac Yard One in Arlington, Virginia
- Potomac Yard Two in Arlington, Virginia
- Region 1 Office in Boston, Massachusetts
- Region 7 Office in Lenexa, Kansas
- Region 8 Office in Denver, Colorado
- STC in Kansas City, Kansas

In FY 2013, the Caribbean Environmental Protection Division (CEPD) in Guaynabo, Puerto Rico, received Gold certification under the LEED for Commercial Interiors rating system, and both the William J. Clinton Building North and South in Washington, D.C., and the La Plaza Building C in Las Vegas, Nevada, were certified Silver under the LEED for Existing Buildings: O&M rating system. EPA moved into its new Region 7 Office building in Lenexa, Kansas, in FY 2013; this facility has already begun its performance period for the LEED for Existing Buildings: O&M rating system.

As of FY 2013, approximately 28 percent (by GSF) of EPA's owned or leased buildings are certified either under EPA's own internal certification system for existing buildings that meet the *Guiding Principles*, the LEED for New Construction rating system, LEED for Commercial Interiors rating system, or the LEED for Existing Buildings: O&M rating system.

Looking ahead to FY 2014, EPA's Region 7 Office in Lenexa, Kansas, is also targeting Gold certification under the LEED for New Construction rating system (having already received the Silver certification) and Platinum under the LEED for Existing Buildings: O&M rating system.

ENERGY STAR Building Label

Since 2003, EPA has required all large, newly leased buildings to have earned the ENERGY STAR building label prior to lease award or within 18 months of the completion date for new construction. EPA now also requires all new leases for major office buildings to qualify for the ENERGY STAR label every three years, where market conditions make it feasible. EPA's goal, on an ongoing basis, is

for all its large offices, including regional offices and Headquarters buildings, to have earned the ENERGY STAR building label within the last three years.

Six EPA Headquarters facilities have earned the ENERGY STAR label in the last three years:

- William J. Clinton North and South Headquarters Building in Washington, D.C. (2011)
- William J. Clinton East, West, and Connecting Wing in Washington, D.C. (2012)
- Potomac Yard One EPA Headquarters Building in Arlington, Virginia (2013)
- Potomac Yard Two EPA Headquarters Building in Arlington, Virginia (2013)
- Franklin Court Building in Washington, D.C. (2013)
- 1310 L Street Headquarters Building (2012)

In addition, as of FY 2013 all EPA regional offices have earned the ENERGY STAR label:

- Region 1 Office in Boston, Massachusetts (2012)
- Region 2 Office in New York, New York (2012)
- Region 3 Office in Philadelphia, Pennsylvania (2013)
- Region 4 Office in Atlanta, Georgia (2013)
- Region 5 Office in Chicago, Illinois (2012)
- Region 6 Office in Dallas, Texas (2013)
- Region 7 Office in Lenexa, Kansas (2011)
- Region 8 Office in Denver, Colorado (2008)
- Region 9 Office in San Francisco, California (2013)
- Region 10 Office in Seattle, Washington (2013)

Of these facilities, all but one earned the ENERGY STAR label within the last three years.

Use of ENERGY STAR and Other Energy-Efficient Products

EPA currently tracks and reports the purchase of ENERGY STAR qualified, FEMP-designated, and Electronic Product Environmental Assessment Tool (EPEAT)-registered personal computers, notebook computers, and monitors. As a result of the recent expansion of the EPEAT Program to include imaging equipment and televisions, EPA is broadening its tracking and reporting system to account for the Agency's progress toward the 95 percent EPEAT acquisition goal inclusive of imaging equipment and televisions.

Zero-Net-Energy Buildings

EO 13514 requires that, beginning in 2020, all new federal buildings entering the planning process be designed to achieve zero-net-energy status by 2030. Zero-net-energy means the building produces as much energy as it uses over the course of a year and produces no net GHG emissions. Ideally, to achieve zero-net-energy status, a building must first greatly reduce its energy use through attentive design and construction (for new buildings) and deep retrofits (for existing buildings). EPA prefers to meet remaining energy needs through onsite renewable energy sources or, if that

approach is impractical, by acquiring renewable energy from offsite sources. EPA plans to follow this approach for all new building designs starting in 2020.

EPA has achieved zero-net-energy status for one facility through this approach. The Robert S. Kerr Environmental Research Center in Ada, Oklahoma, essentially eliminated onsite fossil fuel combustion for heating and cooling by installing a GSHP system via an ESPC in 2004 and by using VAV laboratory ventilation. The facility offsets its conventional electricity use with purchased RECs.

Two other EPA facilities also meet criteria for zero-net-energy buildings: the Region 7 Office in Lenexa, Kansas, and the GED Laboratory in Gulf Breeze, Florida. These facilities operate using electricity only. In other words, with the exception of emergency generator fuel use, no fossil fuels are combusted onsite for facility heating and cooling. In FY 2013, EPA purchased enough RECs to offset the facilities' estimated annual electricity consumption.

RECYCLING AND WASTE DIVERSION

EPA's Recycling Rate Reaches 64.7 Percent in FY 2013

Based on data submitted by EPA facilities, including Headquarters, regional offices, and regional laboratories, the Agency achieved a 64.7 percent solid waste recycling rate in FY 2013, recycling 1,819 tons of materials and diverting 362 tons of organic waste from landfills. EO 13514 requires federal agencies to meet a non-hazardous solid waste recycling rate of 50 percent by FY 2015. Through its recycling, reuse, donation, composting, and other waste reduction efforts, EPA has already exceeded this goal. As a result, the Agency set a more aggressive, internal recycling goal of 55 percent. EPA surpassed this goal in FY 2013 and is on track to continue to exceed it again in the coming years.

In FY 2013, EPA refined its recycling rate calculation methodology to align with current best practices. This minor modification did not have a material impact on the Agency's historical recycling performance.

Several EPA facilities significantly contributed to EPA's increased non-hazardous solid waste recycling rate, including:

- AED Laboratory in Narragansett, Rhode Island: 91.6 percent
- Robert S. Kerr Environmental Research Center in Ada, Oklahoma: 88.5 percent
- EPA's campus in Cincinnati, Ohio: 83.5 percent
- NVFEL in Ann Arbor, Michigan: 80.1 percent

EPA anticipates it will continue to increase its Agencywide recycling rate in FY 2014.

STORMWATER MANAGEMENT

Stormwater runoff in urban areas is one of the leading sources of water pollution in the United States. EPA has worked closely with other federal agencies to develop technical guidance on stormwater management, and the Agency is committed to implementing designs at its facilities that satisfy EISA requirements through green infrastructure/low impact development (LID) projects. EPA has adopted its Office of Water *Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects* for all new construction and major renovation projects greater than 5,000 square feet to ensure EISA Section 438 compliance.

The A Wing addition at EPA's Main Building in RTP, North Carolina, associated with the RTF consolidation into the Main Building, will include a 1,500-square foot bio-retention area to treat stormwater runoff and meet EISA Section 438 requirements.

EPA's stormwater management efforts will continue in FY 2014 in accordance with the requirements set forth in EO 13514, EISA Section 438, and the *Guiding Principles*, which require EISA compliance and implementation of outdoor potable water use reduction strategies for landscape irrigation.

ON TRACK FOR THE FUTURE

EPA is continually working to reduce its GHG emissions, energy intensity, water conservation, solid waste, and other resource use; to incorporate sustainable design and operations across its facilities; and to be a model of sustainability for other federal agencies. In FY 2014, the Agency will continue to build on these efforts by focusing on GHG emissions reduction efforts; pursuing new energy efficiency projects and completing ongoing ones; and focusing on projects in areas such as green power, green buildings, advanced metering, water conservation, and waste diversion. EPA will continue to be a leader among federal agencies in the challenge to promote sustainability and reduce the environmental impact of its facilities and operations. For additional data on the Agency's FY 2013 environmental performance, see EPA's *Annual GHG and Sustainability Data Report*.



Appendix A: List of Excluded Facilities

**For Submittal With EPA's
Energy Management and Conservation Program
FY 2013 Annual Report**

This Page Intentionally Blank

APPENDIX A – LIST OF EXCLUDED FACILITIES

Table A-1. List of Excluded Facilities		
<i>Facility</i>	<i>Explanation</i>	<i>FY 2013 Energy Consumption</i>
Research Vessel, Mid-Continent Ecology Division (MED) Laboratory, Duluth, Minnesota	A research vessel based out of the MED Laboratory in Duluth, Minnesota, consumes energy when it is docked; this is known as “cold iron energy.” FEMP’s <i>Guidelines for Establishing Criteria for Excluding Buildings</i> , dated January 27, 2006, states that “Federal ships that consume ‘Cold Iron Energy’ (energy used to supply power and heat to ships docked in port),” are “assumed to already be excluded from the energy performance requirements of Section 543” of EPLA 2005. Therefore, EPA is reporting the energy consumed by this vessel in FY 2013 in the Energy Goal Excluded category of the <i>GHG and Sustainability Data Report</i> accompanying this narrative. The energy consumed by this vessel was, however, included in the Agency’s Scope 1 and 2 GHG emissions calculations per the EO 13514 <i>Federal Greenhouse Gas Accounting and Reporting Guidance</i> .	39,263 kWh