

FISCAL YEAR 2011 ANNUAL REPORT

Energy Management and Conservation Program



U.S. Environmental Protection Agency

U.S. ENVIRONMENTAL PROTECTION AGENCY

ENERGY MANAGEMENT AND CONSERVATION PROGRAM

FY 2011 ANNUAL REPORT

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FISCAL YEAR (FY) 2011 HIGHLIGHTS

In FY 2011, the U.S. Environmental Protection Agency (EPA) continued 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 energy, water, and waste reduction. EPA once again demonstrated leadership among federal agencies in the challenge to reduce its environmental footprint and promote sustainability.

In FY 2011, EPA focused on: reducing its Scope 1, 2, and 3 greenhouse gas (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 high performance sustainable building requirements; and improving its solid waste diversion rate.

In June 2011, in accordance with the requirements of EO 13514, EPA submitted a revised Strategic Sustainability Performance Plan (SSPP) to the U.S. Office of Management and Budget (OMB) and the Council on Environmental Quality (CEQ). EPA's updated SSPP reiterates the Agency's plans to reduce GHG emissions, energy and water consumption, waste generation, and other resource use, and to incorporate sustainable design and operations across its facilities.

EPA received a score of "green" in every category on its January 2011 OMB Sustainability/Energy scorecard, demonstrating the success of the Agency's comprehensive approach to sustainability. The only area of concern on EPA's July 2011 scorecard was related to Scope 3 emissions, for which EPA achieved a yellow rating. However, EPA expects to achieve green again in this category on its January 2012 scorecard, based on its FY 2011 Scope 3 GHG emissions reductions.

GHG Emissions Down From FY 2008 Baseline

In FY 2011, EPA surpassed its Scope 1 and 2 GHG emissions reduction goal—25 percent by FY 2020 from the FY 2008 baseline. In FY 2011, the Agency reported Scope 1 and 2 GHG emissions of 60,634 metric tons of carbon dioxide equivalent (MTCO_{2e}), which is 56.9 percent lower than its revised FY 2008 emissions baseline. EPA achieved these reductions through major energy efficiency projects at its facilities, improved fleet management practices, and extensive green power purchases, which enabled EPA to reduce its reported Scope 2 GHG emissions under current CEQ guidance.

EPA also committed to reducing the required categories of Scope 3 GHG emissions by 8 percent overall by FY 2020 compared to its FY 2008 baseline. EPA exceeded this goal in FY 2011; its estimated Scope 3 GHG emissions decreased 10 percent compared to the revised FY 2008 baseline. A significant drop in Scope 3 GHG emissions associated with employee business travel accounted for a large portion of this decrease.

Reported Energy Intensity Down 19.9 Percent From FY 2003 Baseline

When accounting for green power and the U.S. Department of Energy's (DOE's) source energy savings credits, EPA's FY 2011 reported energy intensity was 310,860 British thermal units (Btu) per gross square foot (GSF), which is 19.9 percent below the FY 2003 baseline. Without accounting

for green power, EPA's FY 2011 reported energy intensity was 317,848 Btu per GSF, or 18.1 percent below the FY 2003 baseline. EPA met the energy intensity reduction required under EISA and EO 13514—18 percent by the end of FY 2011 compared to an FY 2003 baseline. EPA will continue to closely manage its energy use and plans to continue making significant progress in reducing its energy intensity in FY 2012.

In FY 2011, EPA initiated or completed work on several major energy efficiency capital improvement projects representing more than 50 billion Btu of potential annual energy savings. In addition, the Agency continued to work on several renewable energy projects. In FY 2011, onsite renewable resources such as wind, solar, and geothermal power supplied EPA with 8.8 billion Btu, equivalent to 0.68 percent of the Agency's energy use.

EPA continued to be a leader among federal agencies by offsetting 100 percent of its FY 2011 electricity use with purchased green power and renewable energy certificates (RECs). In addition, in August 2011, EPA signed three separate blanket purchase agreements to secure a total of 265 million kilowatt hours (kWh) of RECs that will offset the Agency's estimated annual electricity use through the end of FY 2012.

EPA exceeded its goal of completing EISA energy assessments at 75 percent of all covered facilities by the end of FY 2011. To date, EPA has completed 78.5 percent of its energy assessments required by EISA and is on track to complete 100 percent of its energy assessments by the end of FY 2012.

Finally, EPA installed advanced metering hardware at five laboratory facilities and one support building in FY 2011, and also awarded advanced metering hardware construction contracts and/or had advanced metering projects under construction at six laboratory facilities. Advanced metering hardware is now installed or under construction to capture 73 percent of Agencywide reportable energy consumption.

Water Intensity Down 15.3 Percent From FY 2007

In FY 2011, EPA's water intensity in reporting laboratories was 29.6 gallons per GSF, which is 15.3 percent lower than its FY 2007 water intensity baseline. EPA's water use rose slightly in FY 2011 compared to FY 2010, due in part to the loss of a major chiller plant at the National Vehicle and Fuel Emissions Laboratory (NVFEL) in Ann Arbor, Michigan, which required EPA to use temporary chillers with single-pass cooling for several months. Despite this increase, however, EPA still far exceeded the EO 13514 requirement to reduce its water intensity—8 percent in FY 2011 compared to the FY 2007 baseline.

Several individual EPA facilities achieved significant water reductions in FY 2011 by completing water conservation projects. Also in FY 2011, EPA conducted water assessments at and reported water conservation project opportunities for four EISA-covered facilities, as well as three non-EISA-covered facilities.

EPA also far exceeded the proposed requirements for reducing industrial, landscaping, and agricultural (ILA) water use set forth in EO 13514. EPA estimates that it used 56,006,852 gallons of nonpotable water for ILA use in FY 2011, which is 58.6 percent lower than its interim FY 2010 baseline.

High Performance Sustainable Buildings Promote Guiding Principles

Using EPA's projected FY 2015 Federal Real Property Profile (FRPP) inventory, 7.8 percent (by number of buildings) of EPA's FRPP buildings measuring greater than 5,000 square feet met the *Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings (Guiding Principles)* in FY 2011. EPA continued to implement its *Building Management Plan Guidelines (BMPG)* at two FRPP facilities in FY 2011: the Environmental Science Center (ESC) in Fort Meade, Maryland, and the Large Lakes Research Station in Grosse Ile, Michigan. EPA also used its *Best Practice (Environmental) Lease Provisions* and green market survey, which it developed and used in conjunction with the U.S. General Services Administration (GSA), during the competitive acquisition process for a new Region 7 Office in Lenexa, Kansas. In FY 2011, EPA staff screened approximately 45 construction projects and lease actions through EPA's GreenCheck process. The GreenCheck process is applied to projects requiring funding in excess of \$85,000, affecting at least 5,000 GSF, or increasing impervious area by more than 5,000 GSF.

In FY 2011, EPA occupied 10 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 four buildings certified Platinum, Gold, or Silver under the LEED for Existing Buildings: Operations & Maintenance (O&M) rating system; a fifth building received Platinum certification under the LEED for Existing Buildings: O&M rating system in early FY 2012. EPA is also pursuing LEED for Commercial Interiors certification at three additional offices. Four office buildings that EPA occupies received the ENERGY STAR® label in 2011; currently, all 10 EPA regional offices have received the ENERGY STAR building label, eight of which received it within the last three years. The Agency also performed sustainable building assessments at six laboratories in FY 2011.

Facility Projects Improve Stormwater Management

EPA's stormwater management efforts continued in FY 2011 in accordance with the requirements set forth in EO 13514, EISA Section 438, and the *Guiding Principles*. In FY 2011, EPA continued implementing sustainable stormwater management projects at its facilities nationwide, including the First Environments Early Learning Center (FEELC) in Research Triangle Park (RTP), North Carolina; the Region 2 Laboratory in Edison, New Jersey; and the Atlantic Ecology Division (AED) Laboratory in Narragansett, Rhode Island.

Solid Waste Diversion Rate at 59 Percent, Surpassed FY 2011 Goal

EO 13514 requires federal agencies to meet a solid waste and construction and demolition waste diversion rate of 50 percent by FY 2015. EPA, once again a leader among federal agencies, adopted a more aggressive waste reduction goal of 55 percent. Through its recycling, reuse, donation, composting, and other waste reduction efforts, EPA has already exceeded this goal. Based on data submitted by EPA facilities, including Headquarters, regional offices, and regional laboratories, the Agency achieved a FY 2011 waste diversion rate of 59 percent.

In FY 2011, EPA conducted a recycling and pollution prevention assessment at its Region 6 Office in Dallas, Texas. The Agency also continued to engage its employees in its solid waste reduction efforts and launched its *Think Beyond the Bin* campaign, which encourages facilities to strengthen their waste diversion efforts by going beyond traditional recycling practices.

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On June 3, 2011, 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. In the FY 2011 update, EPA refined its plans for reducing energy and water consumption, waste generation, and other resource use, and incorporating sustainable design and operations across its facilities. The report details key Agency priorities and strategies for achieving its plans, including GHG emission inventories and reductions through energy efficiency, renewable energy, and transportation management, as well as 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/pubs/index.htm#sspp.

GHG EMISSIONS INVENTORY AND REDUCTION EFFORTS

On January 19, 2011, EPA submitted its comprehensive FY 2008 baseline and FY 2010 GHG emission inventories to DOE's Federal Energy Management Program (FEMP) in accordance with the requirements of EO 13514. EPA has committed to reducing its combined Scope 1 and 2 GHG emissions 25 percent by FY 2020 from the FY 2008 baseline. EPA plans to meet its Scope 1 and 2 GHG emissions reduction goal by reducing energy intensity at its reporting laboratories in the long term and using green power purchases in the short term. More details on the Agency's GHG emission reduction strategies are available in the Agency's SSPP.

In mid-January 2012, EPA completed the submission of its FY 2011 environmental performance data and GHG inventory via the *FEMP Annual GHG and Sustainability Data Report*. EPA also revised the FY 2008 baseline for its GHG emissions inventory; EPA's revised Scope 1 and 2 baseline is 140,809 MTCO₂e, and its revised Scope 3 baseline is 79,738 MTCO₂e (see Appendix A for details). The revised Scope 1 and 2 baseline inventory reflects updated data for fuel consumed in EPA's covered fleet vehicles. EPA's revised Scope 3 baseline inventory reflects updated data for employee business travel and employee commuting. These updates did not have a material impact on EPA's FY 2011 GHG emissions performance relative to the FY 2008 baseline.

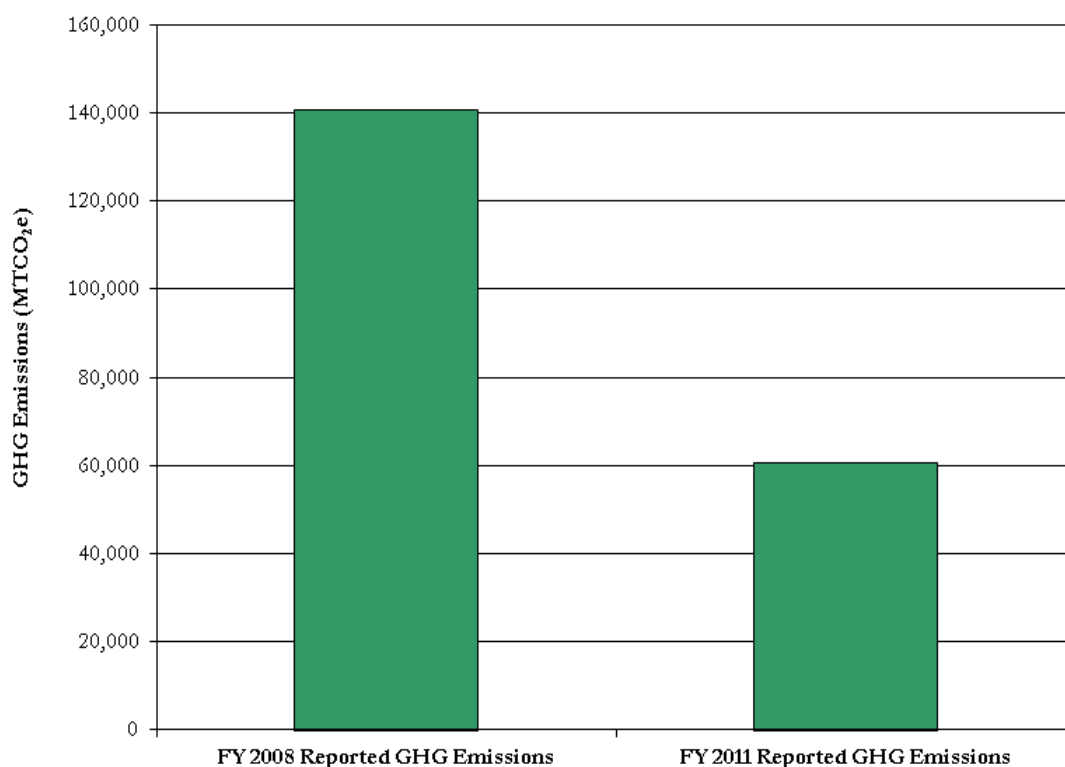
Reported Scope 1 and 2 GHG Emission Reductions

EPA's Scope 1 and 2 GHG Emissions Down 56.9 Percent From FY 2008 Baseline

In FY 2011, EPA reported Scope 1 and 2 GHG emissions of 60,634 MTCO₂e, which is 56.9 percent lower than the Agency's revised FY 2008 emissions baseline (see Figure 1 on page 8). EPA achieved these reductions through energy efficiency projects at its facilities, as well as through its extensive green power purchases, which enable EPA to reduce its reported Scope 2 GHG emissions under

current CEQ guidance. Even when the Agency does not account for green power and REC purchases, EPA's FY 2011 combined Scope 1 and Scope 2 GHG emissions still decreased by 373 MTCO₂e, or approximately 0.3 percent, relative to the Agency's revised FY 2008 baseline.

Figure 1. EPA's Reported Scope 1 and 2 GHG Emissions, FY 2008 and FY 2011



Reported Scope 3 GHG Emissions

EPA's Scope 3 GHG Emissions Down 10 Percent From FY 2008 Baseline

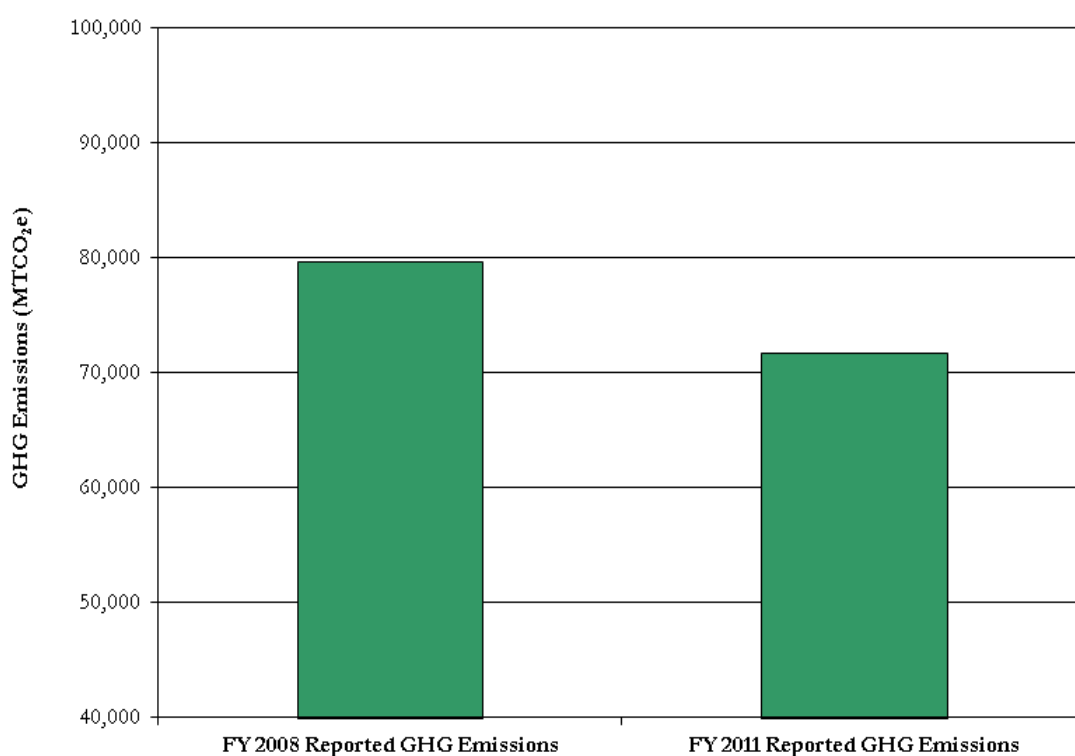
On January 19, 2011, EPA submitted its FY 2008 baseline and FY 2010 Scope 3 GHG emission inventories to FEMP. EPA committed to reducing the required categories of Scope 3 GHG emissions by 8 percent by FY 2020 compared to its revised FY 2008 baseline of 79,738 MTCO₂e.

In FY 2011, EPA's estimated Scope 3 GHG emissions were 71,736 MTCO₂e, a decrease of 9.8 percent from FY 2010 and 10 percent from the revised FY 2008 baseline (see Figure 2 on page 9). EPA also voluntarily reports Scope 3 GHG emissions not currently required by EO 13514. In FY 2011, Scope 3 GHG emissions from energy use at non-reporting facilities were 10.3 percent lower than the revised FY 2008 baseline.

A significant drop in GHG emissions associated with employee business travel—attributed to employees' increased use of newly installed video teleconferencing units, combined with a reduced Agency travel budget in FY 2011—accounted for a large portion of the 10 percent decrease in EPA's Scope 3 emissions in FY 2011. EPA's business air travel emissions were 18.8 percent lower in

FY 2011 than FY 2010 and 23.5 percent lower in FY 2011 than FY 2008. Also, EPA employees increased their average monthly telework hours in FY 2011 by 28.6 percent compared to FY 2009, and by 10.6 percent compared to FY 2010, based on preliminary data as of March 2011.¹ EPA is making a significant commitment to telework, which the Agency hopes will decrease employee commuting and emissions from leased buildings over the next four fiscal years.

Figure 2. EPA's Reported Scope 3 GHG Emissions, FY 2008 and FY 2011



OMB Scorecard on Sustainability/Energy

EPA scored green in every category on its January 2011 OMB Sustainability/Energy scorecard, demonstrating the success of the Agency's comprehensive approach to sustainability. The only area of concern on EPA's July 2011 scorecard was Scope 3 emissions, for which EPA achieved a yellow rating;² however, EPA expects to achieve green again in this category on its January 2012 scorecard, based on the Agency's FY 2011 Scope 3 GHG emissions reductions.

¹ EPA used the Scope 3 Commuter Survey within GSA's Carbon Footprint Tool to quantify the Scope 3 GHG emissions generated from its employees' commuting activities. The Commuter Survey incorporates a set of standardized assumptions, including the conservative assumption that all survey non-responders commute via single occupancy vehicles.

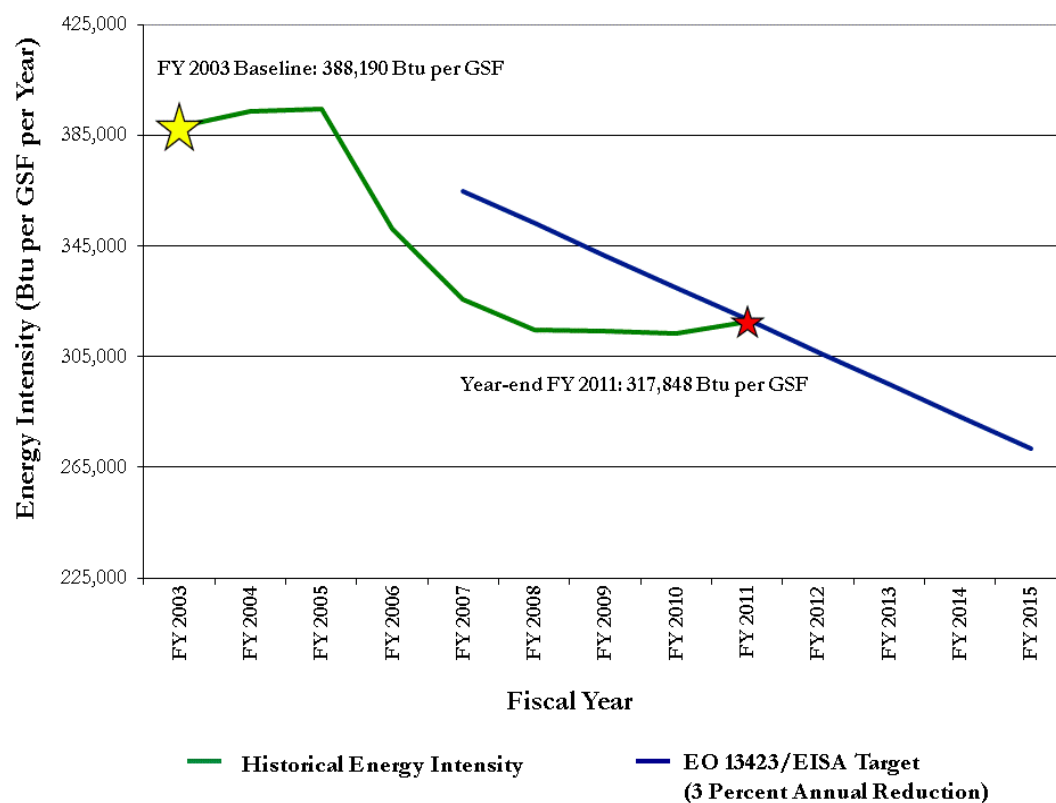
² EPA's budget and staff increased between FY 2008 and FY 2010, which in turn increased the associated business travel and commuter emissions. The significant reductions achieved in business travel emissions in FY 2011, however, exceeded the increases in Scope 3 commuter and business travel emissions between FY 2008 and FY 2010.

ENERGY EFFICIENCY PERFORMANCE

EPA's Reported FY 2011 Energy Intensity Down 19.9 Percent From FY 2003 Baseline

When accounting for green power and source energy savings credits, EPA's FY 2011 reported energy intensity was 310,860 Btu per GSF, which is 19.9 percent below the FY 2003 baseline. Even without accounting for green power,³ EPA still met the 18 percent reduction required under EISA and EO 13514; the Agency's FY 2011 energy intensity was 317,848 Btu per GSF, or 18.1 percent below the FY 2003 baseline⁴ (see Figure 3 below). EPA will continue to closely manage its energy use and plans to continue making significant progress in reducing its energy intensity in FY 2012.

Figure 3. EPA Annual Energy Intensity Relative to EO 13423/EISA Target



EPA excluded one source of energy consumption—its aquatic research vessel, *Lake Explorer II*—from federal energy performance requirements following the criteria laid out in FEMP's *Guidelines for Establishing Criteria for Excluding Buildings*; more information on this vessel is listed in Appendix C.

³ FY 2011 is the last year federal agencies will receive a green power credit against reported energy use. Green power purchases reduced EPA's FY 2011 reported energy intensity by 1.8 percent.

⁴ Minor historical adjustments to EPA's GSF through verification studies resulted in revisions to EPA's FY 2003 energy intensity baseline. See Appendix B for details.

In addition to the Agency's overall progress, several individual EPA facilities achieved significant energy intensity reductions compared to FY 2010 as a result of recently completed projects. These facilities include the Willamette Research Station (WRS) Laboratory in Corvallis, Oregon (20.9 percent reduction); the National Exposure Research Laboratory (ORD) in Athens, Georgia (16.2 percent reduction); the Gulf Ecology Division (GED) Laboratory in Gulf Breeze, Florida (12.8 percent reduction); the AED Laboratory in Narragansett, Rhode Island (12.3 percent reduction); and the Kansas City Science and Technology Center (STC) in Kansas City, Kansas (10.8 percent reduction).

New Approaches to Energy Conservation

EPA is trying several new approaches to reducing its energy intensity and meeting the aggressive Scope 1 and 2 GHG emissions reduction targets. These strategies include, but are not limited to:

- Fume hood airflow reductions/containment testing at the Andrew W. Breidenbach Environmental Research Center (AWBERC) in Cincinnati, Ohio, based on the new American National Standards Institute (ANSI) Z-9.5 standard.
- Fume hood airflow reduction studies at STC in Kansas City, Kansas; the Region 6 Laboratory in Houston, Texas; the New England Regional Laboratory (NERL) in Chelmsford, Massachusetts; and the GED Laboratory in Gulf Breeze, Florida. These studies focus on the impact of fume hood inserts/retrofits on maintaining containment with lower fume hood airflows, as well as use of the new ANSI Z-9.5 standard.
- Plug load and lighting submetering at AWBERC to understand the increase in energy for heat load-driven (rather than ventilation-driven) laboratories.
- A long-term, Agencywide study to potentially reclassify EPA laboratories by hazard to reduce ventilation requirements in laboratories, particularly air changes per hour.
- Temporary hibernation of laboratory fume hoods, which will allow EPA to maintain research capacity while reducing energy use during off-peak research and transition periods.

More detail on these projects, including anticipated annual energy savings, can be found in Table 1 on page 12.

Current Energy Retrofits and Capital Improvement Projects

EPA has several additional projects underway that will further contribute to the Agency's future energy savings. In FY 2011, EPA continued work on a major infrastructure replacement project (IRP) at its AWBERC facility in Cincinnati, Ohio. EPA completed construction of Phase III and began construction of Phase IV in FY 2011. Phase IV is the last phase of IRP work at the main laboratory building; once complete, EPA will recommission and rebalance the facility's air distribution systems, which will improve the facility's energy efficiency. EPA also began work on Phase V of the IRP in FY 2011; design is now underway, and EPA expects to award the contract for construction in late FY 2012. EPA will award additional IRP work, including a boiler replacement project, after FY 2013, most likely through a utility energy service contract (UESC) or energy savings performance contract (ESPC) mechanism.

Also in FY 2011, EPA continued to emphasize the importance of matching its laboratory infrastructure with current research methods and needs. For example, EPA plans to reduce the number of fume hoods at its AED Laboratory in Narragansett, Rhode Island, from 26 to 18, in conjunction with the replacement of major mechanical systems at the facility. EPA is also pursuing fume hood hibernation projects at the Region 9 Laboratory in Richmond, California, and the Chapel Hill Laboratory in Chapel Hill, North Carolina; EPA will hibernate approximately one-third of the fume hoods at each facility. These projects capture energy savings in laboratory spaces where the fume hood capacity is temporarily not needed.

In FY 2011, EPA initiated plans to move 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 will reduce EPA's owned laboratory inventory GSF, reduce the Agency's rent and utility costs, significantly reduce EPA's GHG Scope 1 and 2 emissions, and reduce EPA's reported energy intensity. As of December 2011, EPA was in the process of procuring a design/build contractor for the laboratory modifications to the Main Building. The consolidation project is expected to be completed by November 2014.

Other significant energy-saving projects underway or completed in FY 2011 include a new heat recovery system and fume hood upgrades at EPA's Main Building in RTP, North Carolina; a boiler burner replacement project at ESC in Fort Meade, Maryland; and an IRP at the AED Laboratory in Narragansett, Rhode Island. Once completed, these capital improvement projects are expected to yield significant energy savings.

In FY 2011, EPA made progress on the energy efficiency efforts listed in Table 1 below, which represent more than 50 billion Btu of total annual energy savings.

Table 1. Energy Conservation Projects Underway or Completed in FY 2011		
<i>Facility</i>	<i>Description of Improvements</i>	<i>Estimated Annual Energy Savings</i>
AED in Narragansett, Rhode Island	Construction of IRP Phase I-1 is expected to be completed in FY 2012. IRP Phase II design is also expected to be awarded in FY 2012. Ultimately, the project will reduce the number of fume hoods from 28 to 16 and decrease the facility's annual energy consumption by 8.4 billion Btu, or 25 percent.	EPA anticipates FY 2012 energy savings of 2.8 billion Btu.
ESC in Fort Meade, Maryland	Awarded burner replacement project in September 2011, which will reduce the boiler's brake horsepower and eliminate excess boiler capacity. The replacement project is expected to be completed in FY 2012.	EPA anticipates energy savings of 3.5 billion Btu per year.
NAREL in Montgomery, Alabama	Completed master plan for IRP in November 2011. Phase I currently under design; award is expected in FY 2013. A future phase is planned and aimed to reduce laboratory fume hoods from 43 to 32 upon completion.	EPA anticipates energy savings of 23.4 percent per year.
	Awarded computer room air conditioning unit replacement project in September 2011.	EPA anticipates energy savings of 2 million Btu per year.

Main Buildings B, D, and E at RTP, North Carolina	Awarded construction for heat recovery system in September 2010; substantial completion expected by the second quarter of FY 2012.	EPA anticipates total energy savings of 16.5 billion Btu, or a 4.5 percent reduction in energy intensity for the facility.
	Awarded contracts for upgrading laboratory and fume hood ventilation controls and installing new fume hood inserts in Buildings D and E. Completion expected in January 2012.	Once the upgrades are completed, EPA expects energy savings of 23.4 billion Btu per year (15.4 billion Btu from Buildings D and E and 8 billion Btu from Building B).
	Awarded contracts for upgrading laboratory and fume hood ventilation equipment and installing new fume hood inserts in Building B. Construction began in November 2011 and should be completed by March 2012.	
National Computer Center (NCC) at RTP, North Carolina	Moved computer rooms from the Main Building to NCC in FY 2011. Work is underway on virtualization, efficient equipment acquisition, server rack consolidation, and new hot aisle containment reconfiguration. Additional work, including installing partitions to more effectively separate the hot and cold aisles, is expected to take place by the end of FY 2013.	Once EPA consolidates and optimizes configuration of its computer and server equipment, the Agency anticipates energy savings of 7.5 billion Btu per year.
Chapel Hill Laboratory in Chapel Hill, North Carolina	Continued terminal box calibration and building automation system repairs. Completion expected in FY 2012.	EPA anticipates energy savings of 2.2 billion Btu per year.
	Completed contracting for pressurization system upgrades and reconstruction of an air handling unit (AHU) in September 2011. The pressurization upgrades are expected to be completed in FY 2012.	EPA anticipates energy savings of 3.4 billion Btu per year.
	Awarded contract in September 2011 to hibernate 12 of 30 fume hoods. Project completion expected by the second quarter of FY 2012.	EPA anticipates significant energy savings once the project is complete.
NVFEL in Ann Arbor, Michigan	Funded replacement of several high-intensity discharge exterior light fixtures with more efficient LED light fixtures in September 2011.	The project is expected to save 143 million Btu in FY 2012.
AWBERC in Cincinnati, Ohio	Continued to work on a multiyear IRP. Completed construction of Phase III in March 2011, and commissioning of the laboratory ventilation system followed. Construction of Phase IV is underway and should be completed by December 2012.	EPA expects the IRP will save 11.6 billion Btu in FY 2012.
	Completed installation of new 600-ton chiller in May 2011. EPA is working on a new sequence of operations for the chiller plant controls and operations. Full implementation should be completed in FY 2012.	EPA anticipates energy savings of 4.3 billion Btu per year.
	Funded fume hood airflow reduction pilot project in accordance with ANSI Z-9.5 standards, which will reduce airflow in fume hoods from 250 cubic feet per minute (cfm) closed/unoccupied to 175 cfm airflow in non-heat-load-dominated laboratories, and will demonstrate fume hood containment at a low duct velocity threshold.	EPA anticipates significant energy savings once the project is complete.

	Funded a laboratory plug load and lighting submetering system to better understand the transition from ventilation demand-controlled laboratories (i.e., fume hood laboratories) to heat load-controlled laboratories (i.e., laboratories loaded with equipment) and associated impacts on the facility's energy performance.	EPA anticipates significant energy savings once the project is complete.
Region 9 Laboratory in Richmond, California	Completed a study for a project that will hibernate up to eight of 30 fume hoods.	EPA anticipates energy savings of 4 million Btu per year.
	Began a project to convert the laboratory from constant volume to VAV in conjunction with a building automation system update and long-term lease renewal. EPA expects to complete and occupy a modern VAV laboratory with appropriately sized infrastructure by the end of FY 2014.	EPA anticipates energy savings of 5 billion Btu per year.
Region 10 Laboratory in Manchester, Washington	Completed a project to replace the constant volume fume hood systems with VAV high performance fume hoods in March 2011. The project is expected to undergo a retrocommissioning effort by the end of FY 2013.	EPA anticipates significant energy savings once the project is complete.
Western Ecology Division (WED) Laboratory in Corvallis, Oregon	Completed design for project to convert existing HVAC system from a constant volume to VAV system. Phase I is expected to get underway in FY 2013.	Once all phases of this project are complete, EPA anticipates savings of 4 billion Btu per year.

Project Funding and Energy Savings Performance Contracts

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. EPA must carefully focus its staff, resources, and funding to maximize programmatic, energy conservation, and infrastructure right-sizing opportunities.

Between the late 1990s and early 2000s, EPA used ESPCs to fund capital improvement projects for two EPA facilities: the Robert S. Kerr Environmental Research Center (ORD Laboratory) in Ada, Oklahoma, and NFVEL in Ann Arbor, Michigan. These ESPCs have yielded significant energy savings and capital investment. In 2007, EPA again evaluated ESPCs to finance laboratory upgrades at several facilities, including its laboratories in RTP, North Carolina, and the Mid-Continent Ecology Division (MED) Laboratory in Duluth, Minnesota. However, EPA decided for various reasons (e.g., lack of bidder interest, poor pricing, split operating control issues) not to pursue alternative financing for these projects.

Many of the Agency's energy-saving projects are often not viable candidates for ESPCs (e.g., due to the extreme age and complexity of mechanical systems, the laboratories' remote locations, and the smaller project sizes). In FY 2012, however, EPA will evaluate the use of ESPCs and UESCs for several large candidate projects, including boiler replacements at AWBERC in Cincinnati, Ohio, and a photovoltaic (PV) installation at the Region 2 Laboratory in Edison, New Jersey. The ESPC for the Region 2 Laboratory would complete a power purchase agreement (PPA) that EPA has been working on for the facility. The Agency is also currently reviewing the feasibility of bundling similar projects at multiple facilities for implementation under a single ESPC.

EISA Section 432 Implementation—Energy Assessments

EPA Completed 78.5 Percent of Energy Assessments Required by EISA, Ahead of Schedule

In FY 2011, for its third round of EISA energy assessments and recommissioning, EPA focused on facilities that represent approximately 23 percent of the total energy use of EPA's covered facilities (based on FY 2008 data, per EISA Section 432 guidance). The Agency collected information on potential energy conservation measures and compiled the associated implementation costs, estimated annual energy savings, and estimated annual cost savings in a comprehensive report submitted to FEMP in June 2011. See Table 2 below for a list of the reported measures. EPA exceeded its goal of completing EISA assessments at 75 percent of all covered facilities by the end of FY 2011. To date, EPA has completed energy assessments at 78.5 percent of its covered facilities and is on track to complete 100 percent by the end of FY 2012.

In addition to energy assessments, in FY 2011, EPA completed recommissioning efforts or had recommissioning underway in the following facilities:

- ORD Laboratory in Ada, Oklahoma
- NVFEL in Ann Arbor, Michigan
- ORD Laboratory in Athens, Georgia
- AWBERC in Cincinnati, Ohio (IRP Phase III)
- WED Laboratory in Corvallis, Oregon
- Region 6 Laboratory in Houston, Texas
- AED Laboratory in Narragansett, Rhode Island
- Pacific Coastal Ecology Branch (CEB) Laboratory in Newport, Oregon
- Main Buildings D and E in RTP, North Carolina

The energy assessments identified a number of potential projects that could further reduce the Agency's energy use, most of which entail recalibration and rebalancing of fume hoods and heating, ventilation, and air conditioning (HVAC) systems.

Table 2. Potential Energy-Saving Projects From FY 2011 EISA Energy Assessments

<i>Facility</i>	<i>Potential Projects</i>	<i>Projected Annual Energy Savings</i>
NAREL in Montgomery, Alabama	Install low-flow VAV fume hoods.	1.3 billion Btu
	Replace interior lighting.	176 million Btu
	Complete controls system and wireless pneumatic thermostat retrofits.	130 million Btu
	Complete exhaust fan consolidation retrofit.	107 million Btu
	Install solar water heating system.	24 million Btu
	Replace task lighting at workstations.	12 million Btu
Main Building in RTP, North Carolina	Replace pressure transducers and supply air inserts to reduce face velocity and replace fume hood seals.	23.4 billion Btu

	Install heat recovery system with glycol piping to capture exhaust heat via heating coils to reduce high-temperature hot water load.	16.5 billion Btu
	Repair hole in Building C to reduce unnecessary conditioning of outside air.	N/A
AWBERC in Cincinnati, Ohio (IRP Phase 4)	Convert existing HVAC system in a section of the laboratories and the building auditorium from a constant volume to VAV system.	11.6 billion Btu
	Replace existing laboratory supply and exhaust valves.	
ORD Laboratory in Ada, Oklahoma	Reduce airflow and establish occupied/unoccupied modes in laboratories.	2.1 billion Btu
	Implement lighting reduction/upgrades, including delamping, T-12 bulb replacement, and occupancy sensors.	680 million Btu
	Activate occupied/unoccupied mode and install variable frequency drive (VFD) of an AHU for soft start.	531 million Btu
	Connect heat rejection-1 condenser to cooling tower and chiller sequencing.	404 million Btu
Region 6 Laboratory in Houston, Texas ⁵	Upgrade laboratory systems to VAV.	8.8 billion Btu
	Reduce laboratory airflow and modify fume hoods.	3.6 billion Btu
	Replace chillers.	1.9 billion Btu
	Establish occupied/unoccupied mode for office outdoor air.	1.4 billion Btu
	Reduce lighting energy.	509 million Btu
	Add VFD to secondary chilled water pumps.	299 million Btu
	Activate free cooling heat exchanger.	101 million Btu
WED Laboratory in Corvallis, Oregon (Infrastructure/Mechanical Systems Upgrade Summary Phase 1A)	Construct a main building annex for additional research functions.	N/A
	Convert existing HVAC system for the main building from a constant volume to VAV system.	

EPA also completed assessments at four non-EISA-covered facilities in FY 2011, including: the Science and Ecosystem Support Division (SESD) Laboratory in Athens, Georgia; the Region 9 Laboratory in Richmond, California; the CEB Laboratory in Newport, Oregon; and the National Exposure Research Laboratory and Radiation and Indoor Environments National Laboratory in Las Vegas, Nevada. These assessments, though not required by EISA, reflect EPA's policy that no major facility will be excluded from EISA energy and water assessment and recommissioning work.

Green Power

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

⁵ EPA is pursuing these upgrades in conjunction with this facility's lease renewal.

EPA continued to be a leader among federal agencies by offsetting 100 percent of its FY 2011 electricity use with purchased green power and RECs. In FY 2006, EPA became the first federal agency to offset 100 percent of its electricity use, and it has continued to do so every year since.

Two REC contracts—one signed in November 2009 for 215 million kWh and another signed in September 2010 for 42 million kWh—supported renewable energy generation from wind, landfill gas, and biomass resources in three states. Combined with four additional contracts for delivered green power and RECs, EPA purchased more than 260 million kWh of renewable energy in FY 2011, enough to offset 100 percent of the Agency’s estimated annual electricity use at its 175 facilities across the country. In addition, in August 2011, EPA signed three separate blanket purchase agreements to secure a total of 265 million kWh of RECs that will offset the Agency’s estimated annual electricity use through the end of FY 2012.

With the promulgation of *Federal Greenhouse Gas Accounting and Reporting Guidance* in FY 2010 and DOE’s development of the *FEMP Annual GHG and Sustainability Data Report* in FY 2011, EPA can now more easily track the impact of its green power purchases from various sources (e.g., solar, wind, biomass) and locations of green power generating units on its Scope 1 and Scope 2 GHG emissions. EPA hopes to use the guidelines and information from the *FEMP Annual GHG and Sustainability Data Report* to maximize the positive impacts of its future green power purchases.

Renewable Energy

EPA Generates 8.8 Billion Btu with Onsite Renewables, Completes Wind and Solar Projects

In FY 2011, onsite renewable resources such as wind, solar, and geothermal power supplied EPA with 8.8 billion Btu of energy, equivalent to 0.68 percent of the Agency’s energy use. EPA’s active onsite renewable energy generation continues to reduce the Agency’s annual energy demand from conventional sources.

In September 2011, EPA completed the installation of a 5-kilowatt (kW) PV array and four 1-kW wind turbines on the roof of the AED Laboratory in Narragansett, Rhode Island. These renewable energy sources complement the existing green roof and will help offset a portion⁶ of the laboratory’s electricity use. In July 2011, EPA completed installation of a new 55-kW, thin-film solar PV system on the roof of Main Building E in RTP, North Carolina. The system was installed as part of a comprehensive roof replacement and is intended to demonstrate and encourage the use of renewable energy to visitors and the local community.

At NAREL in Montgomery, Alabama, EPA installed eight 4.5-kW solar lighting fixtures in the facility’s back parking lot in December 2010. EPA also continued its progress on securing a PPA for the Region 2 Laboratory in Edison, New Jersey, which would fund the installation of a 1,900 kW PV

⁶ Because this was a demonstration project, EPA was not able to develop an accurate estimate of annual electricity generation for the AED Laboratory’s PV array and wind power system. Metering and monitoring equipment, which will allow the AED Laboratory to track the amount of renewable energy generated, is expected to be installed and operational in early FY 2012.

array at the facility. EPA expects to complete several new onsite renewable energy projects in FY 2012 as well.

Advanced Metering

Advanced Metering Hardware Installed or Under Construction to Capture 73 Percent of Agencywide Reportable Energy Consumption

EISA and the Energy Policy Act of 2005 (EPA 2005) require federal agencies to install advanced metering equipment for electricity, steam, and natural gas to the maximum extent practicable. In accordance with these federal requirements, EPA completed installation of advanced metering hardware at five laboratory facilities and one support building in FY 2011, including the following:

- AWBERC in Cincinnati, Ohio
- Center Hill Facility in Cincinnati, Ohio
- FEELC in RTP, North Carolina
- Main Building in RTP, North Carolina
- NERL in Chelmsford, Massachusetts
- Testing and Evaluation Center (T&E) in Cincinnati, Ohio

In addition, EPA awarded advanced metering hardware construction contracts and/or had advanced metering projects under construction at six laboratory facilities in FY 2011, including the following:

- Chapel Hill Laboratory in Chapel Hill, North Carolina
- ESC in Fort Meade, Maryland
- MED Laboratory in Duluth, Minnesota
- NVFEL in Ann Arbor, Michigan
- ORD Laboratory in Athens, Georgia
- SESD Laboratory in Athens, Georgia

By the end of FY 2011, EPA was capturing approximately 49 percent of its Agencywide reportable energy consumption with advanced metering hardware. Ongoing construction and new construction contracts awarded in FY 2011 will capture an additional 24 percent of Agencywide reportable energy consumption with advanced metering hardware. By the end of FY 2012, EPA will meet the requirements of EPA 2005 by capturing electricity consumption with advanced metering at all facilities where it is cost effective.

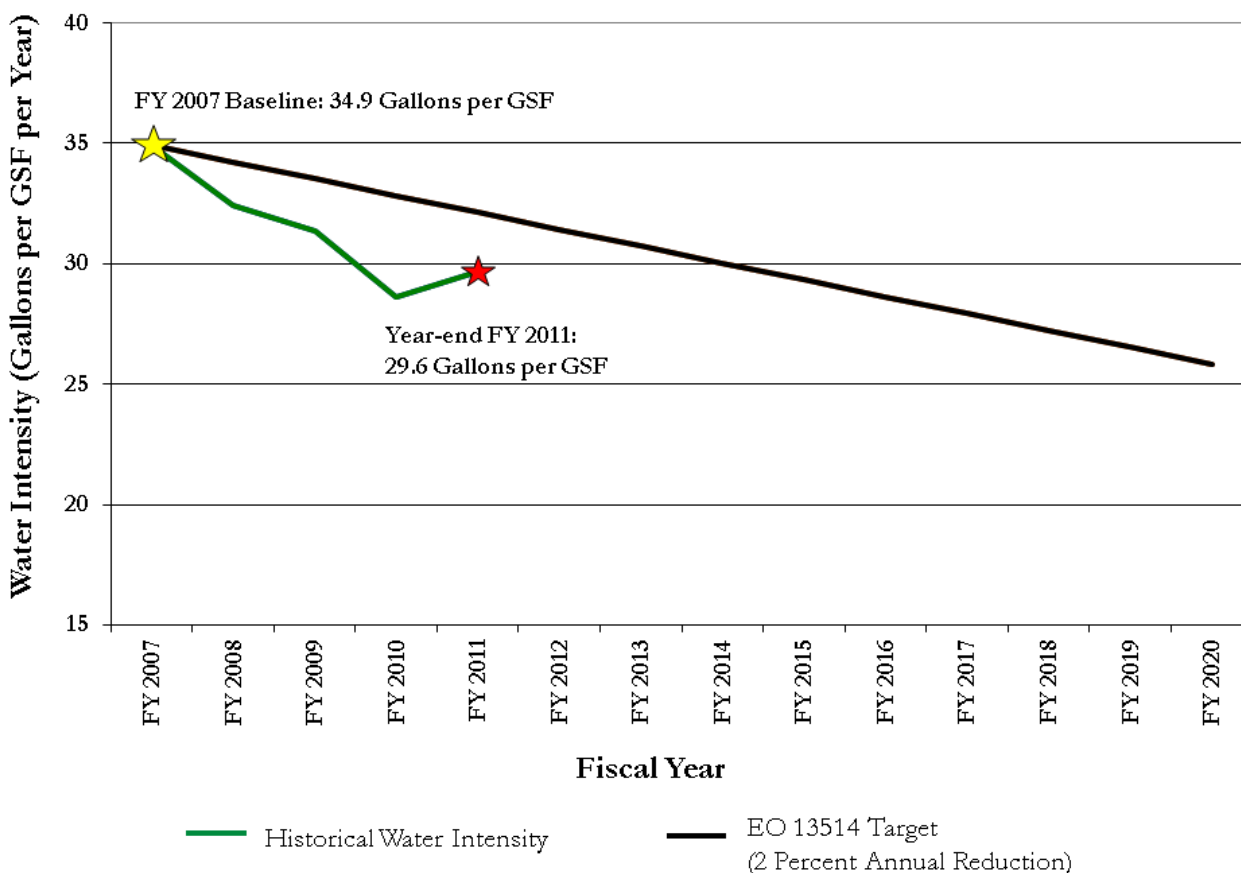
WATER CONSERVATION

EPA Reduces FY 2011 Water Intensity 15.3 Percent From FY 2007 Baseline

In FY 2011, EPA achieved a water intensity of 29.6 gallons per GSF, which is a decrease of 15.3 percent compared with the FY 2007 baseline (see Figure 4 below). Despite starting with a low 34.9 gallons per GSF baseline in FY 2007, EPA continues to far exceed the EO 13514 requirement to

reduce its water intensity 8 percent in FY 2011 from the FY 2007 baseline and is on track to meet the federal requirement in EO 13514 of reducing water intensity by 26 percent by FY 2020 compared to an FY 2007 baseline. EPA's water intensity rose slightly in FY 2011, by 3.4 percent compared to FY 2010, due in large part to the loss of a major chiller plant at NVFEL in Ann Arbor, Michigan, which required the use of temporary chillers with single-pass cooling for several months. This process, as well as ongoing construction activity, increased the facility's water use by more than 6 million gallons in FY 2011 compared to FY 2010; however, EPA expects the facility's water use will decrease in FY 2012.

Figure 4. EPA Water Intensity Relative to EO 13514 Target



Several EPA facilities exceeded their water reduction goals with projects completed in FY 2011. The ORD Laboratory in Athens, Georgia, set out to replace the facility's remaining inefficient faucets, toilets, and urinals with water-efficient models. By completing these projects and focusing on water efficiency throughout the year, the facility was able to reduce its water use by 21.3 percent compared to FY 2010. The GED Laboratory in Gulf Breeze, Florida, completed an AHU condensate recovery project and reduced its water use by 22.2 percent compared to FY 2010. The Large Lakes Research Station in Grosse Ile, Michigan, eliminated single-pass cooling on a piece of obsolete cooling equipment, which resulted in significant FY 2011 water-use reductions.

Other facilities that achieved greater than a 15 percent reduction in water use compared to FY 2010 include:

- NAREL in Montgomery, Alabama
- Region 9 Laboratory in Richmond, California
- Main Laboratory in Corvallis, Oregon
- NHEERL/RTF in RTP, North Carolina
- Chapel Hill Laboratory in Chapel Hill, North Carolina

Water conservation efforts in FY 2011 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.

Water Conservation Retrofits and Capital Improvements

EPA continued or completed water conservation projects in FY 2011, as listed in Table 3 below, which will help to reduce the Agency's annual potable water use. At NAREL in Montgomery, Alabama, and the GED Laboratory in Gulf Breeze, Florida, EPA completed the installation of AHU condensate recovery systems that will collect water for the facilities' cooling towers and reduce water use by approximately 740,000 gallons per year at NAREL and 290,000 gallons per year at the GED Laboratory.

At AWBERC in Cincinnati, Ohio, facility staff replaced a water-cooled ice machine with a machine that does not use single-pass city water for cooling, which will save an estimated 300,000 gallons of water per year. EPA also completed work on an irrigation optimization project at the Region 6 Laboratory in Houston, Texas, which is anticipated to save 170,000 gallons of water per year.

EPA also continued to work on the condensate recovery system at its Main Building in RTP, North Carolina, and completed a cooling tower blowdown project at the RTP campus' central utility plant (CUP). These projects are expected to reduce EPA's CUP water use by approximately 8 million gallons and 5 million gallons per year, respectively. EPA does not report CUP water as part of its potable water consumption and thus, cannot claim credit for the water savings resulting from these projects. Regardless, EPA still pursues these water-saving projects because of its commitment to the environment and the surrounding community, which has experienced droughts in recent years. By reducing its water use, EPA will lower the demand on the public water supply.

EPA expects the water-saving projects completed in FY 2011 will save an estimated 3.2 million gallons of potable water per year. To continue its success, EPA anticipates that projects completed in FY 2012 could save an approximately 3.7 million gallons of potable water per year.

Table 3. Water-Saving Projects by Technology			
<i>Facility</i>	<i>Project</i>	<i>Expected Savings (Approximate)</i>	<i>Status</i>
AED Laboratory in Narragansett, Rhode Island	Installed a stormwater collection system to water the green roof.	2,000 gallons per year	Completed prior to June 2011

	Installed an AHU condensate recovery system.	170,000 gallons per year	Completed prior to June 2011
ORD Laboratory in Athens, Georgia	Replaced remaining inefficient faucets, toilets, and urinals with water-efficient fixtures.	230,000 gallons per year	Completed prior to August 2011
GED Laboratory in Gulf Breeze, Florida	Installed an AHU condensate recovery system on the AHUs in one building, which will feed the cooling towers servicing that building.	290,000 gallons per year	Completed in July 2011
NAREL in Montgomery, Alabama	Installed an AHU condensate recovery system to collect water for the facility's cooling tower, which accounts for 69 percent of the facility's water use.	740,000 gallons per year	Completed in October 2010
Large Lakes Research Station in Grosse Ile, Michigan	Installed 0.5 gallon per minute (gpm) faucet aerators on all lavatory faucets.	14,000 gallons per year	Completed in August 2011
WED Laboratory in Corvallis, Oregon	Installed a new steam sterilizer that does not run continuous tempering water.	240,000 gallons per year	Completed prior to May 2011
Main Building in RTP, North Carolina	Continued work on AHU condensate recovery system. Completed condensate collection systems at the Main Building and installed a pipe to carry the condensate water to the receiving facility. EPA is now working on designing, constructing, and commissioning the condensate water/cooling tower delivery apparatus and control sequence.	8 million gallons per year (when complete)	Ongoing project
	Completed project to capture cooling tower blowdown at the CUP, treat it with reverse osmosis (RO), and reuse it as cooling tower make-up water.	4.8 million gallons per year (when complete)	Completed in FY 2011
	Began conducting a water quality and feasibility analysis regarding the possible use of reclaimed waste water from the sewage treatment plant in the CUP cooling towers.	Not yet fully defined	Study underway
AWBERC in Cincinnati, Ohio	Replaced toilets and urinals on the ground floor with high-efficiency models.	210,000 gallons per year	Completed in December 2010
	Replaced a water-cooled ice maker that ran on city water with an ice maker that does not use single-pass cooling water.	300,000 gallons per year	Completed prior to August 2011
Child Development Center in Cincinnati, Ohio	Replaced an old clothes washer with an ENERGY STAR qualified, high-efficiency clothes washer.	25,000 gallons per year	Completed prior to August 2011
Region 6 Laboratory in Houston, Texas	Upgraded the irrigation system to improve distribution uniformity and improve the irrigation control system.	170,000 gallons per year	Completed in August 2011
	Repaired AHU condensate recovery system to ensure maximum recovery and use.	750,000 gallons per year	Completed in August 2011

EISA Section 423 Implementation—Water Assessments

In FY 2011, EPA completed assessments at and reported water conservation project opportunities for four EISA-covered facilities:

- ORD Laboratory in Ada, Oklahoma
- WED Laboratory in Corvallis, Oregon
- Region 6 Laboratory in Houston, Texas
- NAREL in Montgomery, Alabama

Although not required, EPA also conducted water assessments at three non-EISA-covered facilities in FY 2011, once again demonstrating the Agency's policy that no major facility will be excluded from energy- and water-use assessments.

Potential water-saving projects identified at all seven of the facilities are listed in Table 4 below. Looking ahead to FY 2012 and beyond, EPA will work with its facility managers to implement or analyze these projects for feasibility and cost effectiveness.

Table 4. Potential Potable Water-Saving Projects Identified and/or Reported in FY 2011		
<i>Facility</i>	<i>Potential Projects</i>	<i>Projected Savings (Approximate)</i>
CEB Laboratory in Newport, Oregon	Install dual-flush retrofit kits on flushometer valve toilets.	11,000 gallons per year
	Install WaterSense labeled showerheads.	4,000 gallons per year
	Install a new RO system.	400 gallons per year
NAREL in Montgomery, Alabama	Pursue corrective action on the cooling tower's blowdown control system and level control.	1 million gallons per year
	Collect AHU condensate and use it for cooling tower makeup.	740,000 gallons per year
	Improve operation of the RO system.	200,000 gallons per year
	Improve preventative maintenance procedures on float-operated switch associated with vacuum pump.	140,000 gallons per year
	Replace toilets with 1.28 gallons per flush (gpf) models.	60,000 gallons per year
	Replace urinals with 0.5 gpf models.	21,000 gallons per year
Large Lakes Research Station in Grosse Ile, Michigan	Replace old, high-flush-volume toilets with dual-flush models.	33,000 gallons per year
	Replace urinals with high-efficiency models.	13,000 gallons per year
	Install 0.5 gpm faucet aerators on all lavatory faucets.	10,000 gallons per year
ORD Laboratory in Ada, Oklahoma	Fix a leak in unused cooling tower.	515,000 gallons per year
	Collect AHU condensate and use it for cooling tower makeup.	175,000 gallons per year
	Replace older 4.5 gpf toilets in the main building with dual-flush models.	160,000 gallons per year
	Replace urinals with WaterSense labeled models.	118,000 gallons per year
	Replace RO system.	64,000 gallons per year
	Install 0.5 gpm faucet aerators on all lavatory faucets.	35,000 gallons per year

	Replace showerheads with WaterSense labeled models.	14,000 gallons per year
Region 6 Laboratory in Houston, Texas	Fix AHU condensate recovery system so all condensate is being used as cooling tower makeup.	750,000 gallons per year
	Upgrade the irrigation system to improve distribution uniformity and discontinue irrigation on the back lawn.	166,000 gallons per year
	Replace older 4.5 gpf toilets with dual-flush models.	109,000 gallons per year
	Replace urinals with WaterSense labeled models.	28,000 gallons per year
	Replace showerheads with WaterSense labeled models.	3,000 gallons per year
	Retrofit 1.6 gpf toilet in the containment restroom with a dual-flush retrofit kit.	2,000 gallons per year
CEB Laboratory in Newport, Oregon	Install dual-flush retrofit kits on flushometer valve toilets.	11,000 gallons per year
	Install WaterSense labeled showerheads.	4,000 gallons per year
	Install a new RO system.	400 gallons per year
WED Laboratory in Corvallis, Oregon	Install a new steam sterilizer.	237,000 gallons per year
	Develop an effective preventive maintenance program to ensure evaporative coolers operate properly.	130,000 gallons per year
	Collect AHU condensate and use it for cooling tower makeup.	89,000 gallons per year
	Collect RO reject water and use it for cooling tower makeup.	50,000 gallons per year
WRS Laboratory in Corvallis, Oregon	Although no potable water-saving projects were identified at this facility during the water assessment, nonpotable water savings opportunities were identified and are discussed on page 24.	N/A

Nonpotable Industrial, Landscaping, and Agricultural (ILA) Water

As of FY 2011, Seven 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
- ORD Laboratory in Athens, Georgia
- SESD Laboratory in Athens, Georgia
- WRS Laboratory in Corvallis, Oregon
- Main Building in RTP, North Carolina
- NERL in Chelmsford, Massachusetts
- T&E in Cincinnati, Ohio

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. Based on the proposed ILA water guidance issued by CEQ on December 5, 2011, EPA calculated its FY 2010 interim baseline for Agency nonpotable water use to be 135,191,600 gallons. When final reporting guidance is issued by CEQ, EPA will confirm or revise its baseline accordingly.

EPA estimates that it used 56,006,852 gallons of nonpotable water for ILA use in FY 2011. This amount is 58.6 percent lower than the interim FY 2010 baseline, and it meets the 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.

In FY 2011, EPA completed an ongoing project at its WRS Laboratory in Corvallis, Oregon—the Agency's largest nonpotable water user. The project involved reducing and ultimately eliminating a continuous flow of well water to six retired research ponds on site. The project, which was evaluated during a water assessment at the facility in FY 2011, is expected to reduce the facility's nonpotable water use by approximately 110 million gallons, or 82 percent per year.

SUSTAINABLE BUILDING DESIGN AND HIGH PERFORMANCE BUILDINGS

EPA occupies approximately 11 million square feet of space in more than 300 buildings, with this space 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 million square feet in approximately 170 buildings. GSA provides EPA with the remaining 7 million square feet of laboratory, office, and support space, either in GSA-owned facilities or in facilities leased by GSA from private owners.

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

Meeting the Guiding Principles

7.8 Percent of EPA's Projected FY 2015 FRPP Inventory Meets the Guiding Principles

EO 13514 requires that 15 percent of an agency's FRPP inventory (by number of buildings) meet the *Guiding Principles* by FY 2015; however, this requirement only applies to buildings of 5,000 or more square feet. EPA has 51 buildings at 18 locations in its projected FY 2015 FRPP inventory (see Appendix D) that are subject to this requirement. At the end of FY 2011, 7.8 percent of the buildings (four buildings) in EPA's projected FY 2015 FRPP inventory met the *Guiding Principles*.

EPA expects that its Large Lakes Research Station in Grosse Ile, Michigan, will meet the *Guiding Principles* by the end of FY 2012. This will increase EPA's FRPP buildings meeting the *Guiding Principles* to 9.8 percent, which is two-thirds of the way to meeting the requirement. EPA hopes that ESC in Fort Meade, Maryland, will also meet the *Guiding Principles* by the end of FY 2012. This would bring EPA's FRPP buildings meeting the *Guiding Principles* to 11.8 percent. In FY 2011, EPA helped these two pilot facilities begin meeting the *Guiding Principles* by developing 12 new policies, procedures, or plans for building O&M that address *Guiding Principles* requirements.

Building Sustainability Assessments

Since FY 2009, OMB and the Office of the Federal Environmental Executive (OFEE) have required building sustainability assessments to evaluate FRPP facilities against the *Guiding Principles*. In FY 2011, EPA performed assessments at the following facilities:

- ORD Laboratory in Ada, Oklahoma
- Region 10 Laboratory in Manchester, Washington
- Region 2 Laboratory in Edison, New Jersey
- WED Laboratory in Corvallis, Oregon
- WRS Laboratory in Corvallis, Oregon
- CEB Laboratory in Newport, Oregon

The assessments focused on how each facility employs integrated O&M principles, optimizes energy performance, protects and conserves water, enhances indoor environmental quality, and reduces the environmental impact of materials. EPA's assessment team determined that the six facilities assessed in FY 2011 have been proactive in their approaches to sustainability and are already meeting many of the *Guiding Principles*. The team identified opportunities for improvement, including developing comprehensive building O&M plans, moisture control strategies, and ozone-depleting compound phase-out plans and creating procurement policies to track the selection of low-emitting, recycled-content, and biobased materials. By the end of FY 2011, EPA had conducted sustainability assessments of 49 buildings greater than 5,000 GSF, plus an additional three leased laboratories not in the projected FY 2015 FRPP inventory. This effort represents 96 percent of EPA's projected FY 2015 FRPP inventory by number of buildings (98 percent by GSF).

Building Management Plan Guidelines

In January 2010, in response to the building sustainability assessment findings, EPA developed its *Building Management Plan Guidelines* (BMPG), a comprehensive set of sustainable building management practices for both EPA-owned and GSA-owned or -leased facilities. The BMPG are used to help facilities assess and update their existing plans or develop new plans that meet the requirements of the *Guiding Principles*.

In FY 2011, EPA piloted the implementation of the BMPG at two FRPP facilities: ESC in Fort Meade, Maryland, and the Large Lakes Research Station in Grosse Ile, Michigan. EPA is soliciting feedback on the BMPG and the implementation process from these facilities and will continue this practice as the process moves forward, leveraging the “on-the-ground” experience of the facility managers to efficiently turn policy into practice. Once lessons learned are incorporated into the document and implementation process, EPA will apply the process to additional FRPP facilities.

Strategic Plans

Although EPA was not required to submit an updated *Sustainable Building Implementation Plan* (SBIP) in FY 2011, the Agency continued to refine its SBIP so that the document can serve as an internal reference for the Agency's long-term sustainability goals. More details on EPA's sustainability strategy are available in the Agency's SSPP.

GreenCheck

GreenCheck is a process EPA uses to formally identify environmental performance goals for each new EPA facility, significant construction project, and lease of EPA-occupied space. These goals include meeting the requirements of EAct 2005 (which requires federal buildings to be designed to achieve energy consumption levels that are at least 30 percent below the American Society of Heating, Refrigerating, and Air-Conditioning Engineers [ASHRAE] 90.1-2007 standard), EO 13514, the *Guiding Principles*, EISA, and EO 13423, 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 feedback from reviews.

In FY 2011, EPA staff screened approximately 45 construction projects and lease actions through the GreenCheck process. In addition, all projects requiring funding in excess of \$85,000, affecting at least 5,000 GSF, or increasing impervious area by more than 5,000 GSF qualified for a full GreenCheck review.

Improving Performance of New GSA-Provided Buildings

EPA compiles its *Best Practice (Environmental) Lease Provisions*—lease provisions overlaid on GSA's standard Solicitation for Offers template—to develop new lease solicitations that help ensure compliance with EO 13514, the *Guiding Principles*, EISA, EO 13423, and EAct 2005. In addition, EPA developed a green market survey in FY 2010 to supplement GSA's customary market research for lease procurements. Using the survey, GSA gathers information on existing building energy performance, LEED certifications, water use, green cleaning, and other environmental factors. Working with GSA, EPA uses the results of the survey to understand whether the local building market can meet EPA's green building requirements and maintain adequate market competition.

In FY 2011, EPA used the *Best Practice (Environmental) Lease Provisions* and the green market survey during the competitive acquisition process for the new Region 7 Office in Lenexa, Kansas, and also employed the tools in prior years during the leasing processes for its Region 9 Office in San Francisco, California; Region 10 Office in Seattle, Washington; and the Caribbean Environmental Protection Division (CEPD) Office in San Juan, Puerto Rico.

Green Building Certifications

EPA strives to continuously improve the environmental performance of all its facilities, whether new or existing buildings. EPA takes advantage of the LEED green building certification program, a widely known and accepted tool in real estate markets, in its efforts to reduce its environmental footprint. Virtually all major new building acquisitions initiated by EPA since 1997, whether EPA-owned or GSA-owned or -leased, have been certified under the LEED for New Construction rating system. As of FY 2011, EPA occupied 10 buildings certified Gold or Silver under this rating system. In addition, four of EPA's leased office buildings have achieved LEED Platinum, Gold, or Silver certification under the LEED for Existing Buildings: O&M rating system; a fifth building, the Potomac Yard Two EPA Headquarters Building in Arlington, Virginia, was certified Platinum under the LEED for Existing Buildings: O&M rating system in early FY 2012.

As of FY 2011, tenant buildout and improvement projects are under design or construction at the following EPA facilities:

- Region 7 Office in Lenexa, Kansas—EPA expects the facility will receive Gold certification under the LEED for New Construction rating system and Platinum certification under the LEED for Existing Buildings: O&M rating system.
- Region 9 Office in San Francisco, California—This facility is currently LEED certified to the Gold level under the LEED for Existing Buildings: O&M rating system; EPA expects the facility to be recertified to the Platinum level and also earn Gold certification under the LEED for Commercial Interiors rating system.
- Region 10 Office in Seattle, Washington—This facility is currently LEED certified to the Platinum level under the LEED for Existing Buildings: O&M rating system; EPA expects the facility to also earn Gold certification under the LEED for Commercial Interiors rating system.
- CEPD Office in San Juan, Puerto Rico—This facility is expected to earn Gold certification under the LEED for Commercial Interiors rating system.

ENERGY STAR

EPA requires all new major office leases to obtain the ENERGY STAR label for buildings after their first year of operation and also requires all new leases for major office buildings to achieve the ENERGY STAR label every three years, where market conditions make it feasible. EPA's goal is for all its large offices, including regional offices and Headquarters buildings, to be ENERGY STAR labeled, current within the last three years.

The following EPA buildings earned the ENERGY STAR label in 2011:

- Region 1 Office in Boston, Massachusetts
- Region 9 Office in San Francisco, California
- Potomac Yard One EPA Headquarters Building in Arlington, Virginia
- Ariel Rios EPA Headquarters Building in Washington, D.C.

In addition, eight EPA regional offices and one Headquarters building received the ENERGY STAR label prior to 2011:

- Region 2 Office in New York, New York (2010)
- Region 3 Office in Philadelphia, Pennsylvania (2010)
- Region 4 Office in Atlanta, Georgia (2010)
- Region 5 Office in Chicago, Illinois (2007)⁷
- Region 6 Office in Dallas, Texas (2010)
- Region 7 Office in Kansas City, Kansas (2010)
- Region 8 Office in Denver, Colorado (2008)
- Region 10 Office in Seattle, Washington (2010)

⁷ In January 2012, GSA began to recertify the building housing EPA's Regional 5 Office as an ENERGY STAR labeled building.

- Region 10 Washington Operations Office in Lacey, Washington (2005)
- Potomac Yard Two EPA Headquarters Building in Arlington, Virginia (2010)

As of 2011, all 10 EPA regional offices have achieved the ENERGY STAR label, eight of which were received within the last three years.

Carbon-Neutral Facilities

EO 13514 requires that, beginning in 2020, all new federal buildings entering the planning process be designed to achieve net-zero energy standards by 2030. Net-zero energy means the building produces as much energy as it uses over the course of a year. EPA plans to meet this requirement for all construction projects it initiates starting in 2020. Well ahead of the curve, though, EPA already has three carbon-neutral facilities in its inventory. Carbon-neutral facilities, which offset 100 percent of their energy use through onsite renewable energy or RECs, are a first-step toward net-zero energy.

The Agency's first carbon-neutral laboratory, the ORD Laboratory in Ada, Oklahoma, installed a GSHP system, uses VAV laboratory ventilation to reduce fossil fuel use on site, and purchases RECs to offset its remaining electricity use. In addition, EPA's current Region 7 Office in Kansas City, Kansas, and the GED Laboratory in Gulf Breeze, Florida, are both all-electric, carbon-neutral facilities that purchase enough RECs to offset their conventional electricity use.

Designing for Reduced Fossil Fuel Generation

In accordance with EISA, new federal buildings or federal buildings undergoing major renovation must also be designed to reduce fossil fuel-generated energy consumption by 65 percent by FY 2015 and meet at least 30 percent of hot water demand with solar hot water heating. In an effort to meet this requirement, EPA is exploring the installation of GSHPs at the WED Laboratory in Corvallis, Oregon, and the Region 6 Laboratory in Houston, Texas. In addition to offsetting fossil fuel-generated energy consumption at these facilities, the GSHP projects will provide EPA with valuable lessons learned (e.g., economics/investments, climate ranges, hybrid versus full GSHP systems) that it can apply to future GSHP projects at other facilities.

STORMWATER MANAGEMENT

EPA's stormwater management efforts continued in FY 2011 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 strategies for landscape irrigation. 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 (GI/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.

In FY 2011, EPA continued implementing sustainable stormwater management and GI/LID projects at its facilities nationwide. At FEELC in RTP, North Carolina, EPA began installing a cistern system that will use captured rainwater to irrigate the facility's gardens. One 1,550-gallon cistern was installed in December 2010, and planning is underway for the installation of a second cistern in FY 2012. At the Region 2 Laboratory in Edison, New Jersey, EPA completed the installation of 65 permeable concrete parking spaces that will filter pollutants and reduce the volume of stormwater runoff entering the local storm sewer system. In spring 2011, EPA enhanced the green roof of its AED Laboratory in Narragansett, Rhode Island, which was initially completed in 2009, by adding a 1,200-gallon cistern that captures excess stormwater runoff through drains in the green roof, allowing the facility to reuse this water for irrigation during dry periods.

Also in FY 2011, EPA completed a stormwater management plan for the WED Laboratory in Corvallis, Oregon. This document outlines the Agency's strategy for improving stormwater management at the facility. Such efforts might include green roofs, permeable pavement/pavers, and rain gardens in all future construction projects, as well as installing a main stormwater detention basin. Phase I of the WED IRP design, which was recently completed, includes extensive pervious paving and a rain garden, among other LID features.

RECYCLING AND POLLUTION PREVENTION

EPA Achieves a Solid Waste Diversion Rate of 59 Percent in FY 2011

Based on data submitted by EPA facilities, including Headquarters, regional offices, and regional laboratories, the Agency achieved a 59 percent waste diversion rate in FY 2011. EO 13514 requires federal agencies to meet a solid waste and construction and demolition waste diversion 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 waste diversion goal of 55 percent. EPA surpassed this goal in FY 2011 and is on track to continue to exceed it again in the coming years.

Launching Think Beyond the Bin

Employee engagement, education, and awareness played a large role in helping EPA achieve its FY 2011 solid waste reduction success. EPA launched its *Think Beyond the Bin* campaign in FY 2011 as a way to encourage facilities to further strengthen their waste diversion efforts and go beyond traditional recycling practices. *Think Beyond the Bin* replaced EPA's Strive for 45 campaign after the Agency met the 45 percent diversion rate required by EO 13423. Also during FY 2011, EPA held a webinar to highlight successful composting programs at the Region 9 Laboratory in Richmond, California, and the Region 8 Office in Denver, Colorado, and to encourage other facilities to consider adding a composting program. In FY 2012, two EPA Headquarters buildings (EPA East and West and Ariel Rios North and South) will participate in a pilot composting program, which EPA and GSA worked together to develop in FY 2011. Compostable materials will be collected in the pantries and taken off site for composting.

Recycling and Pollution Prevention Assessments

In FY 2011, EPA conducted a recycling and pollution prevention assessment at its Region 6 Office in Dallas, Texas. The assessment reviewed the facility's existing waste reduction program, highlighted its successes, identified and provided opportunities for improvement, collected best practices to share with other facilities on the EPA intranet and the Greening EPA website, and collected recycling metrics to factor into the Agencywide recycling rate.

ON TRACK FOR THE FUTURE

EPA is continually working to improve its efforts to be a model of sustainability for other federal agencies. In FY 2012, the Agency will continue to focus on improving its GHG emission inventories and reducing its GHG emissions. EPA will continue to pursue new energy efficiency projects and complete ongoing ones, leading to reductions in energy intensity as well as GHG emissions. These efforts, together with projects in areas such as green power, water conservation, green buildings, advanced metering, and waste diversion, will continue EPA's leadership 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 2011 environmental performance, consult EPA's *FEMP Annual GHG and Sustainability Data Report* submission to DOE.



Appendix A: Revision to FY 2008 Scope 1, 2, and 3 GHG Baselines

**For Submittal With EPA's
Energy Management and Conservation Program
FY 2011 Annual Report**

FEMP Energy and GHG Reporting Tool: Results Summary

FY 2008

Scope and Category	Total Quantity Emitted GHG Target Subject (MT CO2e)	Total Quantity Emitted GHG Target Excluded (MT CO2e)	Total Quantity Emitted International (MT CO2e)	Total Quantity Emitted (MT CO2e)	Total Quantity Emitted Biogenic CO2 (MT)
Scope 1: Stationary Combustion: EISA 2007 Goal Subject and Excluded Building Energy Consumption	21,725.8	0.0	0.0	21,725.8	0.0
Scope 1 Mobile Emissions: Vehicles and Equipment	3,075.4	0.0	0.0	3,075.4	0.0
Scope 1 Mobile Emissions: FAST	3,763.5	1,444.9	0.0	5,208.4	329.5
Scope 1 Fugitive Emissions: Fugitive Fluorinated Gases and Other Fugitive Emissions	2,025.3	0.0	0.0	2,025.3	
Scope 1 Fugitive Emissions: On-site Wastewater Treatment***	0.0			0.0	0.0
Scope 1 Fugitive Emissions: On-site Landfills and Municipal Solid Waste Facilities***	0.0			0.0	0.0
Scope 1: Industrial Process Emissions By Process	531.4	0.0	0.0	531.4	
Subtotal Scope 1	31,121.3	1,444.9	0.0	32,566.3	329.5
Scope 2: Purchased Electricity Consumption	73,030.6	0.0	0.0	73,030.6	0.0
Scope 2: Purchased Renewable Energy Biomass Emissions	0.0			0.0	0.0
Scope 2 Indirect Emissions: Purchased Steam and Hot Water (Includes Transmission and Distribution Losses)	10,896.1	0.0	0.0	10,896.1	0.0
Scope 2 Indirect Emissions: Purchased Chilled Water (Includes Transmission and Distribution Losses)	13,362.0	0.0	0.0	13,362.0	0.0
Scope 2: Indirect Emissions: Purchased CHP Electricity, Steam & Hot Water	12,399.4	0.0	0.0	12,399.4	
Subtotal Scope 2	109,688.1	0.0	0.0	109,688.1	0.0
Scope 2: Reductions from Renewable Energy Use	0.0			0.0	
Subtotal Scope 1 & 2	140,809.4	1,444.9	0.0	142,254.4	329.5
Scope 3: Transmission and Distribution (T&D) Losses	4,810.6	0.0	0.0	4,810.6	0.0
Scope 3: Biomass Generated with No RECs	0.0	0.0		0.0	0.0
Scope 3: Federal Employee Business Air Travel**	17,391.6			17,391.6	
Scope 3: Federal Employee Business Ground Travel***	9,345.7			9,345.7	
Scope 3: Federal Employee Commuting***	46,186.5			46,186.5	
Scope 3: Contracted Wastewater Treatment***	86.0			86.0	55.0
Scope 3: Contracted Municipal Solid Waste Disposal***	1,917.8			1,917.8	606.3
Scope 3: Renewable Energy Generated with No RECs	0.0			0.0	
Subtotal Scope 3	79,738.2	0.0	0.0	79,738.2	661.3
Total	220,547.6	1,444.9	0.0	221,992.5	990.8

*Domestic Only

**GHG Target Subject Only

***GHG Target Subject Domestic Only



Appendix B: Revision to FY 2003 Energy Intensity Baseline

**For Submittal With EPA's
Energy Management and Conservation Program
FY 2011 Annual Report**

FY 2003 ENERGY DATA BASELINE WORKSHEET - EXISTING ON RECORD

Agency: EPA Prepared by: Evan Snyder
Date: 12/29/2010 Phone: 202-564-0358

EXECUTIVE ORDER 13123 REPORTING CATEGORIES				
1-1. Standard Buildings/Facilities				
Energy Type	Consumption Units	Annual Consumption	Annual Cost (Thou. \$)	Site-Delivered Btu (Billion)
Electricity	MWH	0.0	\$0.0	0.0
Fuel Oil	Thou. Gal.	0.0	\$0.0	0.0
Natural Gas	Thou. Cubic Ft.	0.0	\$0.0	0.0
LPG/Propane	Thou. Gal.	0.0	\$0.0	0.0
Coal	S. Ton	0.0	\$0.0	0.0
Purch. Steam	BBtu	0.0	\$0.0	0.0
Other	BBtu	0.0	\$0.0	0.0
Total Costs:			\$0.0	0.0
Standard Buildings/Facilities (Thou. Gross Square Feet)		0.0	Btu/GSF:	#DIV/0!
1-2. Industrial, Laboratory, Research, and Other Energy-Intensive Facilities				
Energy Type	Consumption Units	Annual Consumption	Annual Cost (Thou. \$)	Site-Delivered Btu (Billion)
Electricity	MWH	133,707.1	\$7,844.1	456.2
Fuel Oil	Thou. Gal.	525.7	\$513.9	72.9
Natural Gas	Thou. Cubic Ft.	354,470.1	\$2,604.7	365.5
LPG/Propane	Thou. Gal.	9.8	\$18.3	0.9
Coal	S. Ton	0.0	\$0.0	0.0
Purch. Steam	BBtu	13.1	\$526.1	13.1
Other	BBtu	534.5	\$5,257.8	534.5
Total Costs:			\$16,764.8	1,443.1
Energy-Intensive Facilities (Thou. Gross Square Feet)		3,713.9	Btu/GSF:	388,561
1-3. Exempt Facilities				
Energy Type	Consumption Units	Annual Consumption	Annual Cost (Thou. \$)	Site-Delivered Btu (Billion)
Electricity	MWH	0.0	\$0.0	0.0
Fuel Oil	Thou. Gal.	0.0	\$0.0	0.0
Natural Gas	Thou. Cubic Ft.	0.0	\$0.0	0.0
LPG/Propane	Thou. Gal.	0.0	\$0.0	0.0
Coal	S. Ton	0.0	\$0.0	0.0
Purch. Steam	BBtu	0.0	\$0.0	0.0
Other	BBtu	0.0	\$0.0	0.0
Total Costs:			\$0.0	0.0
Exempt Facilities (Thou. Gross Square Feet)		0.0	Btu/GSF:	#DIV/0!

ENERGY POLICY ACT 2005 REPORTING CATEGORIES				
EPACT Goal-Subject Buildings/Facilities				
Energy Type	Consumption Units	Annual Consumption	Annual Cost (Thou. \$)	Site-Delivered Btu (Billion)
Electricity	MWH	133,707.1	\$7,844.1	456.2
Fuel Oil	Thou. Gal.	525.7	\$513.9	72.9
Natural Gas	Thou. Cubic Ft.	354,470.1	\$2,604.7	365.5
LPG/Propane	Thou. Gal.	9.8	\$18.3	0.9
Coal	S. Ton	0.0	\$0.0	0.0
Purch. Steam	BBtu	13.1	\$526.1	13.1
Other	BBtu	534.5	\$5,257.8	534.5
Total Costs:			\$16,764.8	1,443.1
EPACT Goal Buildings/Facilities (Thou. Gross Square Feet)		3,713.9	Btu/GSF:	388,561
EPACT Excluded Facilities				
Energy Type	Consumption Units	Annual Consumption	Annual Cost (Thou. \$)	Site-Delivered Btu (Billion)
Electricity	MWH	0.0	\$0.0	0.0
Fuel Oil	Thou. Gal.	0.0	\$0.0	0.0
Natural Gas	Thou. Cubic Ft.	0.0	\$0.0	0.0
LPG/Propane	Thou. Gal.	0.0	\$0.0	0.0
Coal	S. Ton	0.0	\$0.0	0.0
Purch. Steam	BBtu	0.0	\$0.0	0.0
Other	BBtu	0.0	\$0.0	0.0
Total Costs:			\$0.0	0.0
EPACT Excluded Facilities (Thou. Gross Square Feet)		0.0	Btu/GSF:	#DIV/0!

ALL FACILITIES COMBINED				
Energy Type	Consumption Units	Annual Consumption	Annual Cost (Thou. \$)	Site-Delivered Btu (Billion)
Electricity	MWH	133,707.1	\$7,844.1	456.2
Fuel Oil	Thou. Gal.	525.7	\$513.9	72.9
Natural Gas	Thou. Cubic Ft.	354,470.1	\$2,604.7	365.5
LPG/Propane	Thou. Gal.	9.8	\$18.3	0.9
Coal	S. Ton	0.0	\$0.0	0.0
Purch. Steam	BBtu	13.1	\$526.1	13.1
Other	BBtu	534.5	\$5,257.8	534.5
Total Costs:			\$16,764.8	1,443.1
All Facilities (Thou. Gross Square Feet)		3,713.9	Btu/GSF:	388,561

FY 2003 ENERGY DATA BASELINE WORKSHEET - REVISED BASELINE

Agency: EPA Prepared by: Evan Snyder
Date: 12/5/2011 Phone: 202-564-0358

EXECUTIVE ORDER 13123 REPORTING CATEGORIES				
1-1. Standard Buildings/Facilities				
Energy Type	Consumption Units	Annual Consumption	Annual Cost (Thou. \$)	Site-Delivered Btu (Billion)
Electricity	MWH	0.0	\$0.0	0.0
Fuel Oil	Thou. Gal.	0.0	\$0.0	0.0
Natural Gas	Thou. Cubic Ft.	0.0	\$0.0	0.0
LPG/Propane	Thou. Gal.	0.0	\$0.0	0.0
Coal	S. Ton	0.0	\$0.0	0.0
Purch. Steam	BBtu	0.0	\$0.0	0.0
Other	BBtu	0.0	\$0.0	0.0
Total Costs:			\$0.0	0.0
Standard Buildings/Facilities (Thou. Gross Square Feet)		0.0	Btu/GSF:	#DIV/0!
1-2. Industrial, Laboratory, Research, and Other Energy-Intensive Facilities				
Energy Type	Consumption Units	Annual Consumption	Annual Cost (Thou. \$)	Site-Delivered Btu (Billion)
Electricity	MWH	133,707.1	\$7,844.1	456.2
Fuel Oil	Thou. Gal.	525.7	\$513.9	72.9
Natural Gas	Thou. Cubic Ft.	354,470.1	\$2,604.7	365.5
LPG/Propane	Thou. Gal.	9.8	\$18.3	0.9
Coal	S. Ton	0.0	\$0.0	0.0
Purch. Steam	BBtu	13.1	\$526.1	13.1
Other	BBtu	534.5	\$5,257.8	534.5
Total Costs:			\$16,764.8	1,443.074
Energy-Intensive Facilities (Thou. Gross Square Feet)		3,717.4	Btu/GSF:	388,190
1-3. Exempt Facilities				
Energy Type	Consumption Units	Annual Consumption	Annual Cost (Thou. \$)	Site-Delivered Btu (Billion)
Electricity	MWH	0.0	\$0.0	0.0
Fuel Oil	Thou. Gal.	0.0	\$0.0	0.0
Natural Gas	Thou. Cubic Ft.	0.0	\$0.0	0.0
LPG/Propane	Thou. Gal.	0.0	\$0.0	0.0
Coal	S. Ton	0.0	\$0.0	0.0
Purch. Steam	BBtu	0.0	\$0.0	0.0
Other	BBtu	0.0	\$0.0	0.0
Total Costs:			\$0.0	0.0
Exempt Facilities (Thou. Gross Square Feet)		0.0	Btu/GSF:	#DIV/0!

ENERGY POLICY ACT 2005 REPORTING CATEGORIES				
EPACT Goal-Subject Buildings/Facilities				
Energy Type	Consumption Units	Annual Consumption	Annual Cost (Thou. \$)	Site-Delivered Btu (Billion)
Electricity	MWH	133,707.1	\$7,844.1	456.2
Fuel Oil	Thou. Gal.	525.7	\$513.9	72.9
Natural Gas	Thou. Cubic Ft.	354,470.1	\$2,604.7	365.5
LPG/Propane	Thou. Gal.	9.8	\$18.3	0.9
Coal	S. Ton	0.0	\$0.0	0.0
Purch. Steam	BBtu	13.1	\$526.1	13.1
Other	BBtu	534.5	\$5,257.8	534.5
Total Costs:			\$16,764.8	1,443.1
EPACT Goal Buildings/Facilities (Thou. Gross Square Feet)		3,717.4	Btu/GSF:	388,190
EPACT Excluded Facilities				
Energy Type	Consumption Units	Annual Consumption	Annual Cost (Thou. \$)	Site-Delivered Btu (Billion)
Electricity	MWH	0.0	\$0.0	0.0
Fuel Oil	Thou. Gal.	0.0	\$0.0	0.0
Natural Gas	Thou. Cubic Ft.	0.0	\$0.0	0.0
LPG/Propane	Thou. Gal.	0.0	\$0.0	0.0
Coal	S. Ton	0.0	\$0.0	0.0
Purch. Steam	BBtu	0.0	\$0.0	0.0
Other	BBtu	0.0	\$0.0	0.0
Total Costs:			\$0.0	0.0
EPACT Excluded Facilities (Thou. Gross Square Feet)		0.0	Btu/GSF:	#DIV/0!

ALL FACILITIES COMBINED				
Energy Type	Consumption Units	Annual Consumption	Annual Cost (Thou. \$)	Site-Delivered Btu (Billion)
Electricity	MWH	133,707.1	\$7,844.1	456.2
Fuel Oil	Thou. Gal.	525.7	\$513.9	72.9
Natural Gas	Thou. Cubic Ft.	354,470.1	\$2,604.7	365.5
LPG/Propane	Thou. Gal.	9.8	\$18.3	0.9
Coal	S. Ton	0.0	\$0.0	0.0
Purch. Steam	BBtu	13.1	\$526.1	13.1
Other	BBtu	534.5	\$5,257.8	534.5
Total Costs:			\$16,764.8	1,443.1
All Facilities (Thou. Gross Square Feet)		3,717.4	Btu/GSF:	388,190



Appendix C: List of Excluded Facilities

**For Submittal With EPA's
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APPENDIX C – LIST OF EXCLUDED FACILITIES

Table C-1. List of Excluded Facilities		
<i>Facility</i>	<i>Explanation</i>	<i>FY 2011 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 EPCA 2005. Therefore, EPA is reporting the energy consumed by this vessel in FY 2011 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> .	45,755 kWh



Appendix D: EPA's Projected FY 2015 FRPP Inventory

**For Submittal With EPA's
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APPENDIX D – PROJECTED FY 2015 FRPP INVENTORY

The following table contains a full listing of EPA’s anticipated FY 2015 FRPP inventory of buildings greater than 5,000 square feet as of December 16, 2011.

Table D-1. EPA’s Projected 2015 FRPP Inventory			
<i>Location</i>	<i>Parent Property</i>	<i>Asset Name</i>	<i>Size (GSF)</i>
Montgomery, AL	National Air and Radiation Environmental Laboratory	NAREL - Main Building	61,957
Montgomery, AL	National Air and Radiation Environmental Laboratory	NAREL Warehouse - Building 4	5,200
Montgomery, AL	National Air and Radiation Environmental Laboratory	Emergency Response Field Assets Warehouse	17,500
Gulf Breeze, FL	Gulf Ecology Division	Administration	7,434
Gulf Breeze, FL	Gulf Ecology Division	Shop Facility	5,229
Gulf Breeze, FL	Gulf Ecology Division	Marine Toxicology and Chemistry Laboratory	13,099
Gulf Breeze, FL	Gulf Ecology Division	Marine Environmental Assessment Facility	7,417
Gulf Breeze, FL	Gulf Ecology Division	Microbiology Laboratory and Warehouse	14,168
Gulf Breeze, FL	Gulf Ecology Division	Research and Administrative Support	9,650
Gulf Breeze, FL	Gulf Ecology Division	Computational and Geospatial Sciences Building	7,691
Athens, GA	Ecosystems Research Division	Main Laboratories and Office	58,826
Athens, GA	Ecosystems Research Division	C.E.A.M. Annex	5,298
Athens, GA	Ecosystems Research Division	E.I.A. Annex	5,193
Athens, GA	Ecosystems Research Division	Lifespan Center (Day Care)	8,435
Fort Meade, MD	Environmental Science Center	Main Building	167,223
Ann Arbor, MI	National Vehicle Fuel and Emissions Laboratory	Main Laboratory and Office	200,550
Duluth, MN	Environmental Research Laboratory - Duluth	Main Laboratory Building	69,549
Duluth, MN	Environmental Research Laboratory - Duluth	Research and Sample Storage Building	5,100
Duluth, MN	Environmental Research Laboratory - Duluth	Annex Building	9,158
Grosse Ile, MI	Large Lakes and Rivers Forecasting Research Station	Main Building	28,180
Durham, NC	Research Triangle Park	Main Building	1,042,611
Durham, NC	Research Triangle Park	National Computer Center	100,922
Durham, NC	Research Triangle Park	Daycare	24,225
Edison, NJ	Region 2 Laboratory	Office Building 10 - Office Building	20,247
Edison, NJ	Region 2 Laboratory	Building 17/18 - Office Building	12,767

Table D-1. EPA's Projected 2015 FRPP Inventory

<i>Location</i>	<i>Parent Property</i>	<i>Asset Name</i>	<i>Size (GSF)</i>
Edison, NJ	Region 2 Laboratory	Building 205 - Regional Response Center and Offices	105,786
Edison, NJ	Region 2 Laboratory	Building 209/210 - Laboratory/Office	104,420
Edison, NJ	Region 2 Laboratory	Building 212 - Storage	94,608
Edison, NJ	Region 2 Laboratory	Building 238 - Training Complex and Mobile Laboratory Garage	26,331
Edison, NJ	Region 2 Laboratory	Building 245	43,300
Edison, NJ	OSWER - REAC Trailer Complex	OSWER - ERT Modular Laboratory	6,776
Edison, NJ	OSWER - REAC Trailer Complex	OSWER - SERAS Office Trailers	8,100
Cincinnati, OH	Andrew W. Breidenbach Environmental Research Center	Main Building and Annex	389,436
Cincinnati, OH	Andrew W. Breidenbach Environmental Research Center	Full Containment Building	13,537
Cincinnati, OH	Andrew W. Breidenbach Environmental Research Center	Child Care Center	5,904
Cincinnati, OH	Andrew W. Breidenbach Environmental Research Center	Annex 2	45,719
Cincinnati, OH	Center Hill Research Facility	Offices and High Bay Building	17,957
Cincinnati, OH	Test and Evaluation Facility	Test and Evaluation Facility	36,101
Ada, OK	Robert S. Kerr Environmental Research Center	Main Building and Addition	62,458
Ada, OK	Robert S. Kerr Environmental Research Center	Annex	7,460
Ada, OK	Robert S. Kerr Environmental Research Center	Library Conference Facility	16,644
Corvallis, OR	Environmental Research Laboratory - Corvallis	Main Building	58,519
Corvallis, OR	Environmental Research Laboratory - Corvallis	Toxicology Facility and Plant Ecology Building	8,300
Corvallis, OR	Environmental Research Laboratory - Corvallis	Shop and Supply Building	16,600
Corvallis, OR	Environmental Research Laboratory - Corvallis	TERF Headhouse and Greenhouses	14,188
Corvallis, OR	Environmental Research Laboratory - Corvallis	Willamette Research Station Main Building	10,600
Newport, OR	Coastal Ecology Branch	Main Laboratory and Office Building	38,097
Narragansett, RI	Environmental Effects Research Laboratory	Laboratory Building	74,974
Narragansett, RI	Environmental Effects Research Laboratory	Facilities Support Building	10,699
Narragansett, RI	Environmental Effects Research Laboratory	Field Operations Building	6,600
Port Orchard, WA	Manchester Regional Laboratory	Main Laboratory	39,814
Port Orchard, WA	Manchester Regional Laboratory	Warehouse	14,904
	Total Square Feet		3,185,461



Appendix E: EPA's FY 2011 EPC Act 2005 Goal Subject Building Inventory

**For Submittal With EPA's
Energy Management and Conservation Program
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APPENDIX E – EPA’s FY 2011 EPAct 2005 GOAL SUBJECT BUILDING INVENTORY

Table C-1. EPA’s FY 2011 EPAct 2005 Goal Subject Building Inventory ¹		
<i>Facility Name</i>	<i>Location</i>	<i>Site Energy Manager</i>
Robert S. Kerr Environmental Research Laboratory	Ada, Oklahoma	Frank Price
National Vehicle and Fuel Emissions Laboratory	Ann Arbor, Michigan	Steven Dorer
National Exposure Research Laboratory	Athens, Georgia	Rick Pittman
Science and Ecosystem Support Division Laboratory	Athens, Georgia	Betty Kinney
New England Regional Laboratory	Chelmsford, Massachusetts	Michael Kenyon/ Robert Maxfield
Chapel Hill Laboratory	Chapel Hill, North Carolina	Greg Eades
Andrew W. Breidenbach Environmental Research Center	Cincinnati, Ohio	Rich Koch
Test and Evaluation Facility	Cincinnati, Ohio	Rich Koch
Center Hill Facility	Cincinnati, Ohio	Rich Koch
Child Development Center	Cincinnati, Ohio	Rich Koch
National Service Center for Environmental Publications Warehouse	Cincinnati, Ohio	Rich Koch
National Health and Environmental Effects Research Laboratory, Western Ecology Division	Corvallis, Oregon	Primo Knight
Willamette Research Station	Corvallis, Oregon	Primo Knight
National Health and Environmental Effects Research Laboratory, Mid-Continent Ecology Division	Duluth, Minnesota	Rod Booth
Region 2 Laboratory	Edison, New Jersey	Joseph Pernice
Response Engineering and Analytical Contract Trailers	Edison, New Jersey	Joseph Pernice / Sella Burchette
Butler Building and Office of Research and Development Trailers	Edison, New Jersey	Joseph Pernice/ Carolyn Esposito
Environmental Science Center	Fort Meade, Maryland	Rick Dreisch/ Jeffrey Dodd
Region 8 Laboratory	Golden, Colorado	Craig Greenwell
Large Lakes Research Station	Grosse Ile, Michigan	Rod Booth
National Health and Environmental Effects Research Laboratory, Gulf Ecology Division	Gulf Breeze, Florida	Clay Peacher
Region 6 Environmental Laboratory	Houston, Texas	Stephen Reese
Kansas City Science and Technology Center	Kansas City, Kansas	John Begley

<i>Facility Name</i>	<i>Location</i>	<i>Site Energy Manager</i>
National Exposure Research Laboratory, Environmental Sciences Division	Las Vegas, Nevada	Robert Andrews
Region 10 Laboratory	Manchester, Washington	Robert Manos
National Air and Radiation Environmental Laboratory	Montgomery, Alabama	Mike Clark/ Jonathan Aplin
National Health and Environmental Effects Research Laboratory, Atlantic Ecology Division	Narragansett, Rhode Island	Russ Ahlgren
National Health and Environmental Effects Research Laboratory, Western Ecology Division	Newport, Oregon	Primo Knight
New Consolidated Facility	Research Triangle Park, North Carolina	Greg Eades
National Computer Center	Research Triangle Park, North Carolina	Greg Eades
National Health and Environmental Effects Research Laboratory	Research Triangle Park, North Carolina	Greg Eades
Page Road Facility	Research Triangle Park, North Carolina	Greg Eades
Ambient Air Innovative Research Site Facility	Research Triangle Park, North Carolina	Greg Eades
Burden's Creek/Jenkins Road Facility	Research Triangle Park, North Carolina	Greg Eades
First Environments Early Learning Center	Research Triangle Park, North Carolina	Greg Eades
Region 9 Laboratory	Richmond, California	Jennifer Mann

¹ EPA is required to report to DOE and OMB the energy use at facilities for which the Agency pays utility bills. Although EPA occupies other facilities, utility expenses for those facilities are paid by GSA.