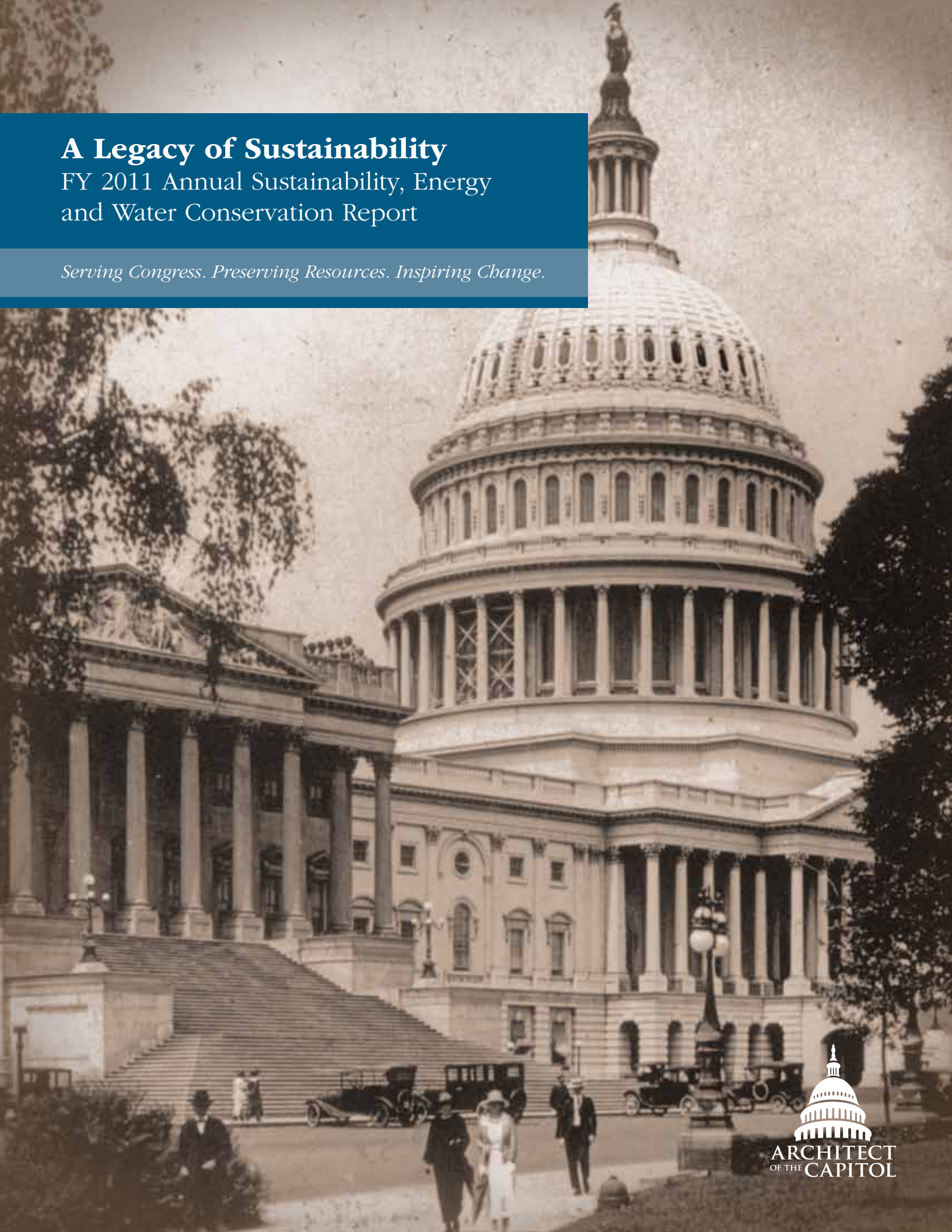
A Legacy of Sustainability

FY 2011 Annual Sustainability, Energy and Water Conservation Report

Serving Congress. Preserving Resources. Inspiring Change.



ARCHITECT OF THE CAPITOL

Congressional Mandates and Oversight

The Architect of the Capitol (AOC) is part of the legislative branch of government and serves Congress and the Supreme Court. It is responsible for the maintenance, operation, development and preservation of the United States Capitol. As stewards of the U.S. Capitol and as a legislative agency, the AOC is required to meet annual reductions in energy consumption under the Energy Policy Act of 2005 (EPAct2005) and the Energy Independence and Security Act of 2007 (EISA2007).

In accordance with EISA2007, the AOC is driven to apply aggressive standards to reduce energy use by three percent annually from FY 2003 levels, yielding a 15 percent total decrease by FY 2010 and a 30 percent total reduction by FY 2015.

This report was created to inform Congress and the American people of the AOC's progress on meeting its efficiency goals as well as its further commitments to sustainability and water efficiency. It includes details on the AOC's approach, achievements, and areas identified for future progress.

To read the FY 2011 Annual Sustainability, Energy, and Water Conservation Report in its entirety, please visit www.aoc.gov/sustainability.cfm.



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Message from the Architect

As part of our long-term Strategic Vision, the Architect of the Capitol is committed to strengthening a culture of sustainability aligned with fiscal responsibility. In this report, A Legacy of Sustainability: 2011 Sustainability, Energy and Water Conservation Report, we discuss the progress we've made toward achieving these goals, costs avoidance as a result of our energy savings and expected outcomes for future years. This document highlights the significant efforts and achievements made in Fiscal Year 2011 to preserve and maintain the more than 17.4 million square feet and 470 acres of grounds and buildings in our care while reducing energy and water consumption.

"In 2011, the AOC saved enough energy to heat, power, and cool the U.S. Capitol Building for more than one and a half years."

Throughout Fiscal Year 2011, we made tremendous progress toward a more sustainable future, demonstrating energy conservation leadership through key initiatives. From minor construction projects within jurisdictions to major-impact projects, our team of professionals and crafts persons adhered to the fundamental belief that historic preservation is one of the highest forms of sustainability.

Fiscal Year 2011
Accomplishments

Successfully met our annual energy reduction goal

Avoided $12.3 million in annual utility expenses

Established a dedicated Sustainability and Energy Division

Successfully reduced our water use intensity 26%

Most importantly, we kept our focus on saving energy, practicing sustainability and reducing costs. Our efforts achieved a total energy reduction of 18.9 percent for Fiscal Year 2011, surpassing the 18 percent goal and avoided $12.3 million in annual utility expenses. Moving forward, we plan to increase our energy efficiency by further challenging ourselves to harness the power of technological advancements as we move into the second decade of the 21st century.

I am proud of what our talented staff has accomplished. The following pages are a testament to their dedication to our mission to create a more sustainable future for our properties, and the American people.

Stephen T. Ayers, FAIA, LEED AP
Architect of the Capitol



Introduction

As builder, caretaker and guardian of the nation's most significant buildings, the Architect of the Capitol (otherwise stated as AOC or Agency throughout this document) upholds preservation as one of the highest forms of sustainability. Since 1793, the AOC has sought to ensure that our nation's most important buildings represent the core values of our government. Although more than two centuries have passed, the priorities of the AOC have remained unchanged: to provide Congress and the American public a wide range of professional expertise and services to preserve and enhance the U.S. Capitol building and its related facilities.

The Architect of the Capitol upholds preservation as one of the highest forms of sustainability.

Today, ensuring energy reduction and sustainability is an integral part of that mission. The AOC strives to lead the way as a champion of sustainability, incorporating best practices and tools in its planning processes and working to ensure fulfillment of the Energy Policy Act of 2005 (EPAct2005) and the Energy Independence and Security Act of 2007 (EISA2007). As a result, project prioritization and choices in the design, construction, and maintenance of the U.S. Capitol and the surrounding facilities are made with energy reduction and sustainability in mind.

Caring for the Capitol campus' buildings and landscapes is the heart of what the AOC does to preserve and sustain its heritage assets. Programs such as building envelope studies and condition assessments of masonry walls, mortar and joints, windows and doors, drainage and roof systems feed into historic preservation plans so that conditions of greatest need are identified and prioritized. This program is an important step in preserving and insuring that our buildings are weather tight and energy efficient. The AOC's Historic Preservation Policy promotes the repair of the building fabric over replacement. This attitude is a sustainable one because it advocates for a workplace that values and employs skilled preservation craftspeople, extends the life of materials and reduces construction waste.

Throughout FY 2011, the AOC has embarked on several initiatives that reaffirm the Agency as a leader in sustainability and as a responsible steward of taxpayer funds. This report highlights significant efforts and achievements made in FY 2011 to preserve and maintain the more than 17.4 million square feet and 470 acres of buildings and grounds.

To read the FY 2011 Annual Sustainability, Energy, and Water Conservation Report in its entirety, please visit www.aoc.gov/sustainability.cfm.

A Mission-Focused Approach

Meeting the Challenge to Reduce Energy Consumption

In FY 2011, the AOC successfully met its annual energy reduction goal. The energy reduction goal was 18 percent of the baseline established in 2003 and the AOC achieved an 18.7 percent reduction, which included 3 percent in renewable energy credits. Looking forward to FY 2012, the energy reduction goal is 21 percent and excludes the ability to incorporate renewable energy credits. Therefore, to achieve a 21 percent energy reduction in FY 2012, the Agency will need an additional 5.3 percent in direct energy savings from FY 2011's performance.

In order to meet this challenging FY 2012 goal, improvements in critical infrastructure systems and building performance are a priority for the AOC. Today, Energy Savings Performance Contracts (ESPC), which are private-public partnerships, enable the AOC to undertake energy savings projects with minimal up-front investment. Project work funded by these contracts includes installing energy-efficient light fixtures, converting water fixtures to low-flow units, and modernizing building automation systems.

A More Sustainable U.S. Capitol

Achieving a sustainable U.S. Capitol is at the core of the Agency's mission. At the Architect of the Capitol, sustainable practices include:

- Improving energy and water efficiency.
- Using low-impact materials.
- Promoting health and wellness.
- Sustaining our cultural landscapes.
- A planning process that involves identifying high-impact energy and sustainability opportunities.
- Rehabilitation of existing structures.

The AOC exemplifies a legacy of sustainability, as we have been preserving the Capitol Building since 1793. This is not a new business; the AOC has been engaged in energy-saving activities since the energy

Energy Savings Performance Contracts Awarded:

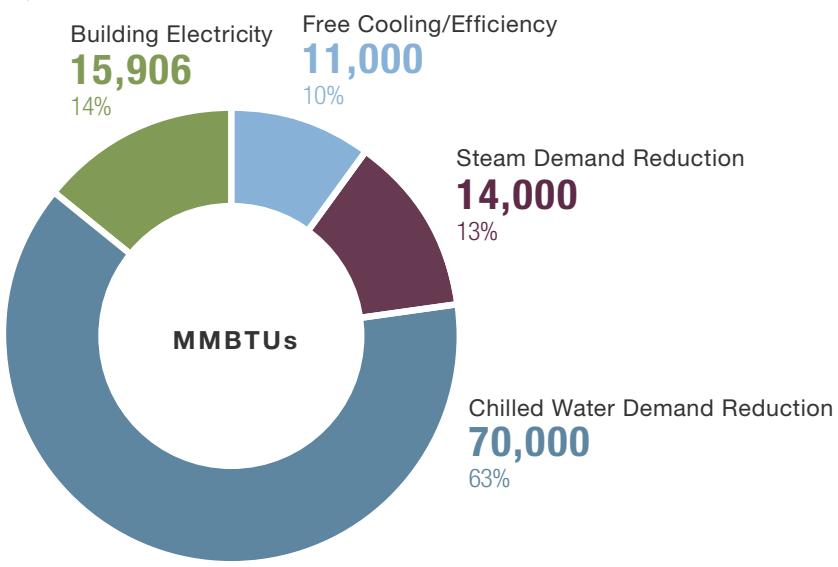
House Office Buildings
August 2009,
23 percent energy reduction

Senate Office Buildings
December 2009,
32 percent energy reduction

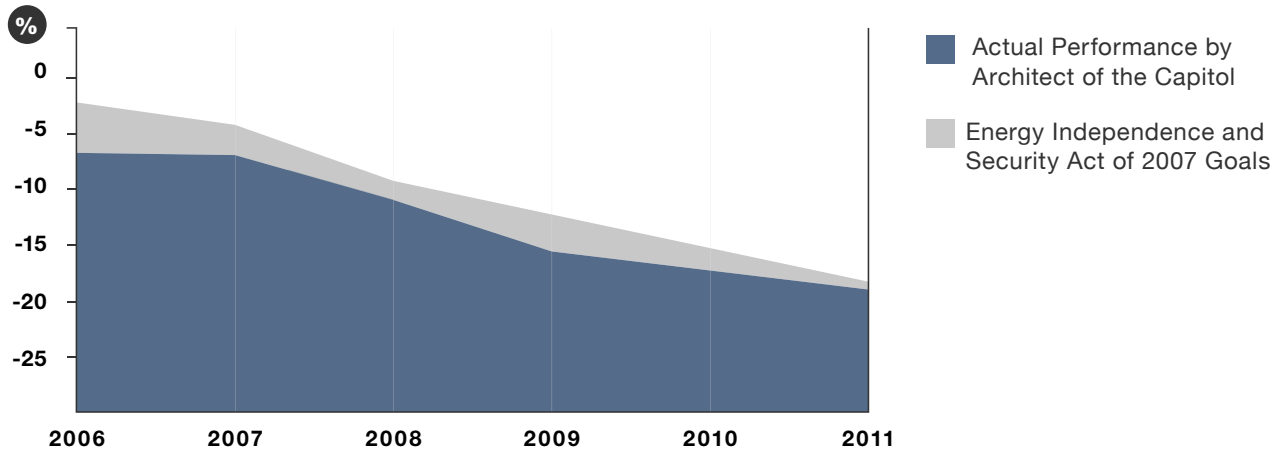
U.S. Capitol Building
December 2009,
47 percent energy reduction

By FY 2013, ESPC contracts reduce the Architect of the Capitol's overall energy usage 15.4 percent

AOC FY 11 Savings Distribution



Annual Energy Reduction



The AOC exemplifies a legacy of sustainability, as we have been preserving the Capitol Building since 1793.

crisis of the 1970s. In 1978, the AOC presented a report to Congress entitled, "Program for the Energy Conservation and Management for the United States Capitol Complex Buildings," which proposed the concept for the Program for Energy Conservation (PEC). The purpose of PEC was to investigate and implement measures for energy conservation.

A pilot program was launched to test a number of initiatives before implementing it campus-wide. Some of the strategies executed included developing an automated energy management and control system to achieve specific efficiencies in the operation of mechanical and electrical systems. By the early 1980s, the system had proven itself and it was expanded to other Congressional office buildings and refined. Since 1992, our Energy Management Control Systems have produced significant energy savings annually.

Over the years, we expanded our efforts from a pilot program to a campus-wide effort. In the late 1990s, we completed a campus-wide lighting upgrade, replacing more than one-half million fluorescent lamps and ballasts resulting in a savings of more than $1.5 million annually. We have continued these lighting upgrades to the present day, which includes our group re-lamping program and comprehensive lighting fixture ballast replacement in selected buildings.

Employee of Sustainability and Energy Division works with the Power Plant team inside the control room.

FY 2011 marked the formalized establishment of a dedicated division with the creation of the Sustainability and Energy Division. The Sustainability and Energy Division is responsible for continuing energy performance initiatives and addressing some of our biggest challenges by preserving the historic

The AOC's Historic Preservation Policy promotes a workplace that values and employs skilled preservation craftspeople, extends the life of materials and reduces construction waste.

integrity of these iconic buildings, while at the same time making them as energy efficient as possible.

To ensure the success of these initiatives, the division established short- and long-term sustainability goals with the intent of measuring the Agency's progress toward those objectives by continuously monitoring, adjusting, and training on improved practices throughout FY 2012 and beyond. In addition, the division designs and oversees program strategies with AOC managers and jurisdictions to foster collaboration and communication.

The division also facilitates working groups and participates alongside executive branch agencies, representing the legislative branch, at federal stakeholder meetings — specifically, division members are involved with the following groups: Inter-Agency Sustainability Working Group, the Building Technology Research and Development Working Group, the International Facility Management Association, the Construction Management Association of America, Association of Energy Engineers, the U.S. Green Building Council, American Planning Association, Building Commissioning Association, and the Construction Industry Institute.

The Sustainability and Energy Division discussing elements of a Capital Improvement Project.

FY 2011 marked the formalized establishment of a dedicated division with the creation of the Sustainability and Energy Division.

Buildings, Infrastructure, People

By establishing focus areas on buildings, infrastructure, and people, the division helps to drive Agency efforts towards efficient, high-performing, and healthy buildings across the Capitol. Throughout this report, these focus areas for sustainability and energy — buildings, infrastructure, and people — represent the attention placed on the condition and performance of our spaces, grounds, building and utility systems, and occupants. The three sections of this report highlight each of these focus areas.

Buildings

This section reviews the AOC's maintenance, rehabilitation and enhancement of the Capitol buildings, specifically the use of ESPCs to achieve substantial energy savings, energy conservation measures, and performance optimization and monitoring.

This section highlights sustainability projects including the establishment of construction guidance parallel to Silver Level certification from the Leadership in Energy and Environmental Design (LEED®) Green Building Rating System, and the increased use of vegetative and cool roofs throughout the Capitol.

Finally, this section also provides information about the new AOC Sustainability Scorecard, which will enable the Sustainability and Energy Division to track the implementation of sustainable strategies across the Capitol. This will allow the division to benchmark the Agency against AOC's internal environmental targets,

Ongoing infrastructure improvements help to address water conservation issues. Above a night display of the Bartholdi Fountain.

its own legislative mandates, and additional measures put forth by other federal agencies.

Infrastructure

This section details ongoing infrastructure improvements that improve the sustainability of the Capitol campus that includes the implementation of a free cooling strategy during the winter months at the Capitol Power Plant and the restoration of the Bartholdi Fountain to address water conservation, and converting legacy building automation to direct digital controls. In addition, this section discusses the future installation of a combined heat and power energy production system at the power plant, which will consume natural gas and use gas turbine engines to produce electricity and steam, as well as the replacement of inefficient chillers at the power plant.

Lastly, this section highlights the creation of a stormwater management plan for the Capitol that will better enable the AOC to comply with requirements mandated within EISA2007 and the Clean Water Act, enforced by the District of Columbia.

Information about the Cultural Landscape Report (CLR) for Capitol Square is also included in this section and provides the AOC with a primary document to assess the historical integrity of the landscape, to record and evaluate the character-defining features of the landscape, and to recommend treatment approaches consistent with the landscape's significance, condition, use, and management.

People

This section articulates the importance of educating and connecting people on the long-term advantages of sustainability in order to achieve a culture of resource conservation. Programs highlighted in this section are Demand Response, or "Gold Days," which present a key approach for the AOC to manage its consumption of energy. As part of this program, the AOC jurisdictions work to actively decrease energy use across the campus on days identified with the highest energy demand. As part of this endeavor the "Power to Save" program educates staff and Capitol employees about sustainability and environmental stewardship goals.

This section also highlights the Agency's recycling performance that focuses efforts on meeting annual recycling goals. "In FY 2011, the Architect of the Capitol achieved an overall recycling rate of 41.3 percent, tracking higher than its 38 percent FY 2013 goal.

For more detailed descriptions of these initiatives and to read this report in its entirety, please visit www.aoc.gov/sustainability.cfm.

The integration between the Sustainability and Energy Division's Sustainability Plan and the Agency's Strategic Vision will help to prioritize efforts to reduce energy consumption and improve resource conservation at the AOC.

Looking Ahead

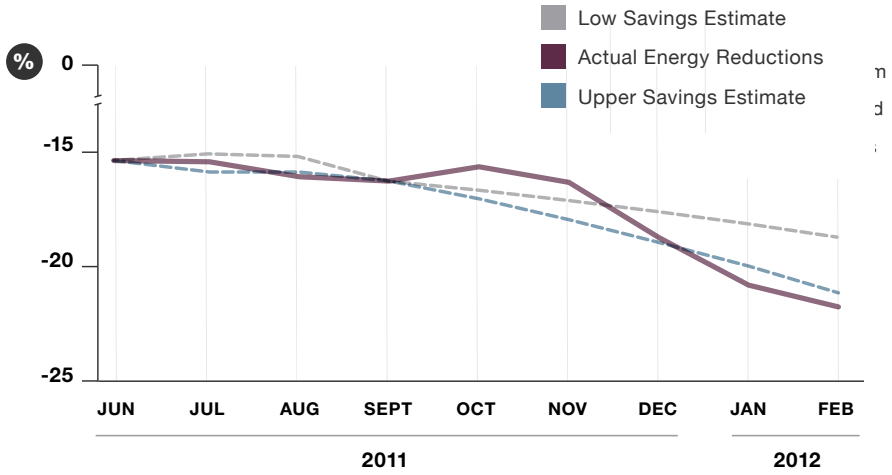
The Strategy

The AOC initiated a five-year Strategic Vision in 2012 that articulates the Agency's goals and strategies. Based on a collaborative staff effort, the Strategic Vision will help guide decision-making and drive innovation. The Strategic Vision places significant emphasis on the importance of resource conservation. The federal government is the nation's largest energy consumer, and as such has a responsibility to lead the effort in resource conservation. The Energy Independence and Security Act of 2007, which calls for a 30 percent energy reduction by 2015 and the Energy Policy Act of 2005, which requires federal agencies to meet annual reductions in energy consumption, both establish high-performance federal building requirements.

In order to comply with these regulations, the Sustainability and Energy Division incorporated energy and sustainability goals into the Strategic Vision. Other initiatives include improved coordination between sustainability and historic preservation, as well as ensuring our stewardship respects both the unique historic fabric, and current and future sustainability challenges of the Capitol.

This integration between the Sustainability and Energy Division's Sustainability Plan and the Agency's Strategic Vision will help to prioritize efforts to reduce energy consumption and improve resource conservation at the AOC.

Energy Reductions



Financial Impacts

The AOC continues to focus on energy and sustainability efforts in a cost effective manner that recognizes the constrained fiscal environment. The energy reductions we have achieved in FY 2011, avoided $12.3 million annual utility expenses. As we increase our energy reduction to 21 percent in FY 2012, this annual avoided cost figure will grow to $16.4 million.

Our sustainability efforts will also provide long-term cost savings as we build and rehabilitate facilities with the goal of energy and water conservation, waste reduction and occupant engagement toward a mindset of conservation. One recent example is the renovation of East House Underground Garage.

The energy reductions we have achieved in FY 2011, avoided $12.3 million in annual utility expenses.

Our sustainability efforts will also provide long-term cost savings as we build and renovate facilities.

East House Underground parking garage ribbon cutting after renovation.

When complete, this project will achieve a Leadership in Energy and Environmental Design (LEED)® Gold rating. The building will use 24 percent less energy than a code compliant facility of similar construction. An analysis of the facility operating and construction renovation costs showed a $100,000 annual reduction in ownership costs compared to a non-LEED facility, which translates to a two-year payback for the LEED certification process as well as the subsequent savings thereafter.

As part of our Strategic Vision of resource conservation, the Architect of the Capitol will continue to make fiscally sound energy conservation and sustainability investments in our facilities. These investments support the Legacy of Sustainability we employ to support our mission to serve Congress and the American people.

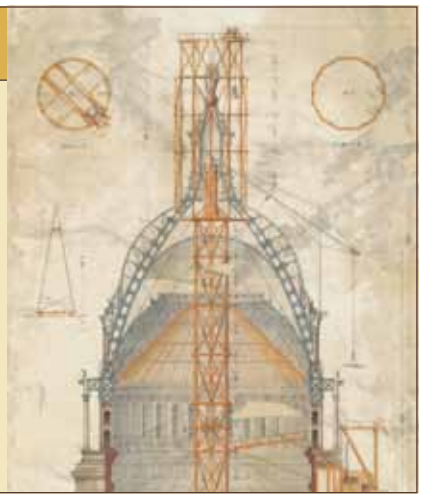
Sustainability Information Management System (SIMS)

In FY 2012, the Sustainability and Energy Division will unveil a new database system to track the achievements of its sustainable and energy reduction practices. This database, called the Sustainability Information Management System (SIMS), will support the division's comprehensive approach for coordinating existing and future efforts, identifying sustainability benchmarks, and helping to integrate sustainability and energy efficient practices into daily operations. These methods will help to yield successful results and positively affect the AOC's buildings, infrastructure, and people.

Our Legacy of Sustainability

Commencing with the Capitol's cornerstone in 1793, the AOC's legacy of sustainability began with investments in structures designed and built to endure. Today it continues in our efforts to reduce resource consumption across the Capitol, preserve its historic treasures and continue to fulfill a long- term commitment to the Congress and the American people.

The AOC is committed to using sustainable practices whether we're building a new facility or maintaining one that's more than 200 years old, such as the Capitol Building. One of our biggest challenges is ensuring that we preserve the historic integrity of these buildings, while at the same time making them as energy efficient as possible.



Balancing responsibilities is a high priority for our Agency and could only be achieved through the dedication of 2,600 talented professionals and crafts persons. The photo at left illustrates some of the daily responsibilities executed to maintain our cultural landscapes.

The AOC's renewal efforts will impact the quality of life and preservation of the Capitol for future generations.

Short- and long-term goals will be focused on the executive branch's guiding principles, mandated energy and water consumption goals, waste generation and diversion rates, materials, cost, and health and wellness. These core goals will be integrated and tracked through a sustainability scorecard. The Sustainability and Energy Division is conducting interviews and working with jurisdictions to compile information on existing programs and practices.

The SIMS database will deliver demand-based assessments per the AOC's needs and be utilized in FY 2012 and beyond. These deliverables will support the program, monitor and measure progress, identify results, and document the fulfillment of the AOC's legislative requirements.

Balancing Priorities

The AOC maintains, rehabilitates, and enhances existing structures to the greatest extent possible, always working to support the delicate balance between preservation and modernization.

Successfully balancing these responsibilities is a high priority for our Agency and could only be achieved through the dedication of 2,600 talented professionals and crafts persons who consistently deliver innovative solutions to help preserve our buildings and our environment. Programs compete for limited fiscal resources with other AOC priorities such as physical security or life-safety projects. This challenge is made even more acute by increased energy demands brought on by the addition of new AOC energy intensive facilities and expanding information technology infrastructure. A balanced approach or holistic strategy helps the AOC to utilize natural resources efficiently and effectively when moving from low-cost projects to larger scale capital improvements.

The AOC's renewal efforts will impact the quality of life and preservation of the Capitol for future generations. It will also help to determine our success in meeting energy challenges, including issues related to sustainability, historic preservation, and security.

Energy-Saving Opportunities — The U.S. Capitol Building

The U.S. Capitol building is one of the most energy intensive buildings within the AOC facility portfolio and has plenty of opportunity for energy savings.

In FY 2011, the Capitol reduced its energy consumption by 22 percent — through a combination of operational improvements, smaller energy improvement projects and initial effects of multi-year upgrades.

By FY 2013, renovations will help to achieve a notable energy savings of 47 percent contributing to the mandated AOC agency-wide goal of a 30 percent energy reduction by 2015. As part of this process, an upgraded building automation system was installed in the Capitol building. This direct digital control (DDC) system will enable the building's mechanical systems to employ energy conservation strategies. DDC will also provide a valuable tool to improve performance of the thermal energy systems and as a powerful predictive maintenance tool that can help improve building occupant comfort levels related to air flow, temperature, and air quality.

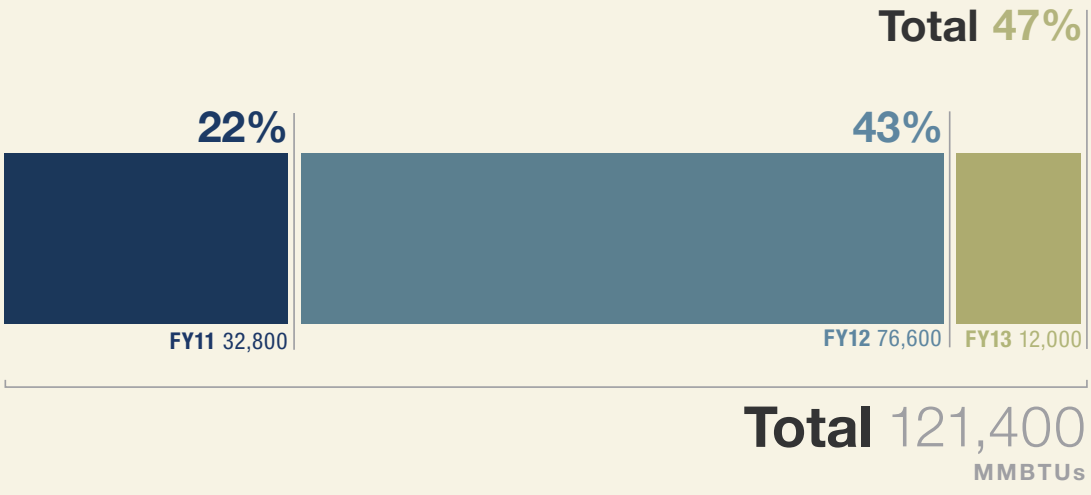
Successful implementation of the remaining work, especially the work on the heating, ventilation, and air conditioning system, is essential for the Architect of the Capitol to meet the 30 percent energy reduction goal. By going beyond the 30 percent energy savings threshold, the Capitol is demonstrating energy conservation leadership within the AOC. Through the energy savings in the Capitol, the AOC will also be able to demonstrate

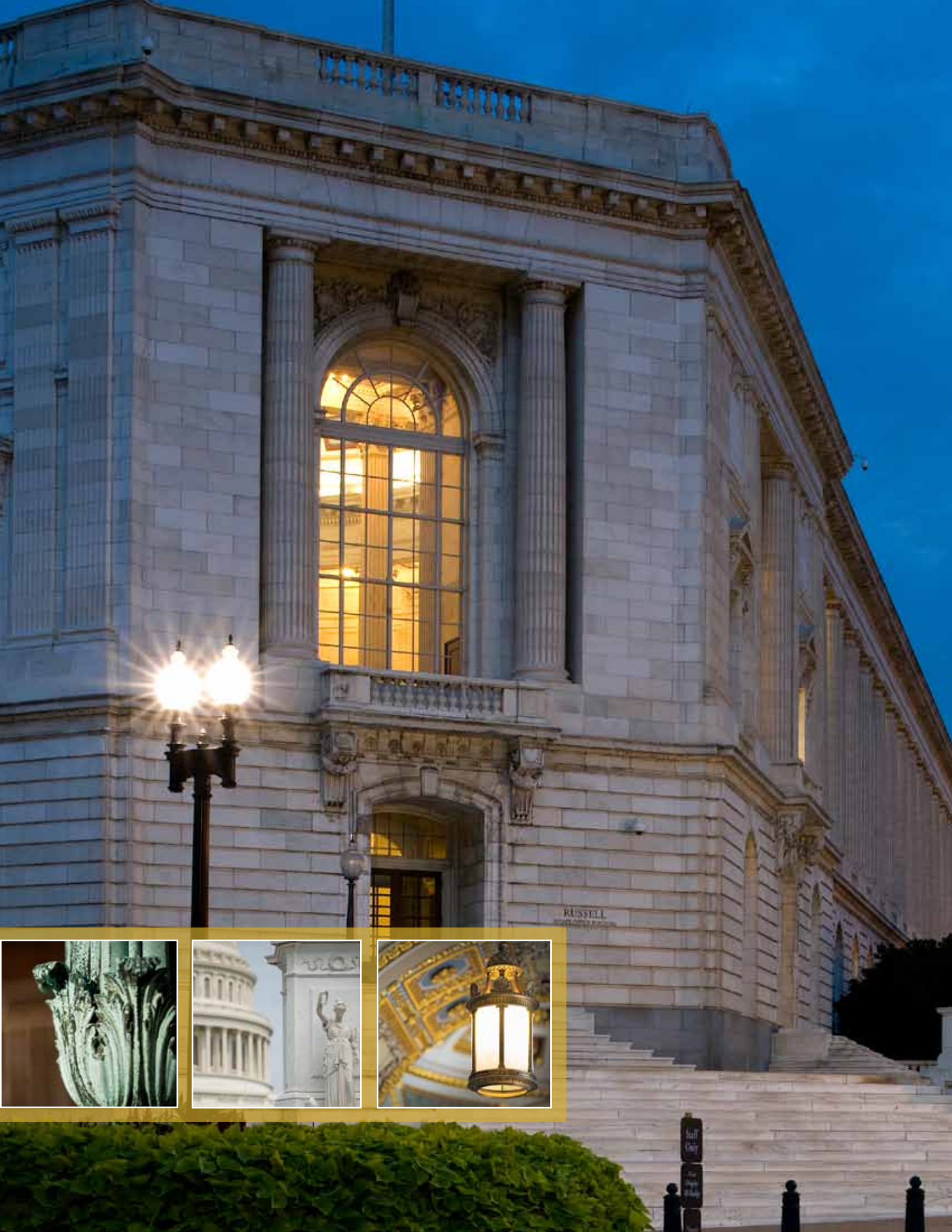
to Congress and the rest of the federal government our ability to achieve significant savings in one of the oldest, most heavily visited and significant buildings in the United States.

The following points summarize the achieved and anticipated progress in the Capitol related to energy conservation:

- Reduced energy intensity and usage by 21.7 percent in FY 2011 over the baseline year 2003.
- Annual energy savings value of $1.1 million.
- On track to achieve an overall 47 percent energy reduction.

Energy Reductions Expected at the US Capitol Building Through FY13

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Buildings

There is a very real and positive impact that the government can make on the environment and energy security. It is a known fact that the federal government is one of the largest energy consumers in the nation — consuming nearly half of all energy produced in the United States. According to the Federal Real Property Report published by the U.S. General Services Administration (GSA), federal government agencies own, lease, and otherwise manage more than 3.3 billion gross square feet that consumes 600 trillion BTUs of energy per year at an operational cost of $6.2 billion.

The federal government has the opportunity to educate and lead by example. To help face these challenges, the AOC is committed to being a leader among federal agencies in energy and sustainability. Its mission, to protect our nation's treasures using sustainable practices, can be seen in AOC's sustainability standards and techniques in design, construction, and operations, and within the AOC's Strategic Vision.

Outcomes Related to Efficient and Sustainable Operations

Energy

Energy Savings Performance Contracts

The Architect of the Capitol has used Energy Saving Performance Contracts (ESPC) to achieve substantial energy savings. To date, the AOC has entered into three ESPC contracts that will provide more $100 million in energy upgrades in the U.S. Capitol, Senate Office Buildings and House Office Buildings. Total energy savings at contract completion will total approximately $9 million per year.

An energy savings performance contract with an energy services company identifies life-cycle effective measures, guarantees performance, and borrows money in a financing arrangement to make the improvements. After installation, the annual energy savings from the improvements are used to pay off the financed debt under a structured arrangement similar to a mortgage. At the end of the financing term the improvements and resulting energy savings belong to the government. If during the finance performance period the measures fail to provide the guaranteed energy savings, the energy service company is liable for the shortfall.

AOC employees analyze an energy management system.

"Our mission is to preserve and protect the national treasures entrusted to our care. It just makes perfect sense to fulfill our mission using sustainable practices."

— Stephen Ayers, Architect of the Capitol

Controls and Technology

In July 2009, the Architect of the Capitol (AOC) entered into a partnership with NORESCO, LLC, for an Energy Savings Performance Contract (ESPC) in the House Office Buildings. The project includes nearly $34 million in facility infrastructure upgrades in the Rayburn, Longworth, Cannon and Ford House Office Buildings, as well as the House Page Dormitory. Highlights of this project include:

- Upgrading nearly 33,000 fixtures in all buildings with energy-efficient, state-of-the-art lighting controls in selected areas for daylight harvesting and dimming;
- Upgrading heating, ventilation, and air conditioning controls, control strategies, and equipment customized for each building, incorporating enhanced space condition feedback and building occupancy schedules;
- Installing new low-flow restroom fixtures, faucets, and showerheads in all buildings, as well as a condensate harvesting system for the West Court fountain make-up water in the Rayburn Building, and a showcase green roof in the central courtyard of the Cannon Building; and
- Replacing steam traps in the Rayburn, Longworth, and Ford Buildings.

"By practicing efficient energy management, we save taxpayer dollars and protect the environment and natural resources. The actions and initiatives we have implemented over the past several years are making a difference and have saved energy across the Capitol," said Stephen T. Ayers, Architect of the Capitol. "There is more we can do to further conserve energy, and this public-private partnership will help us achieve very significant energy reductions over the next several years."

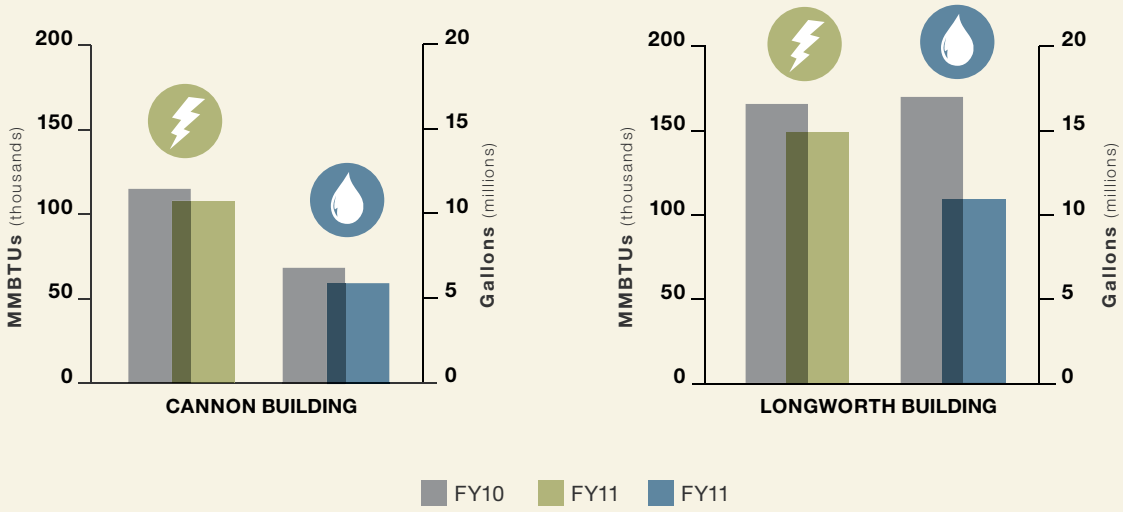
After implementation of all energy conservation measures over the 30-month construction period, the House Office Buildings are estimated to potentially realize:

- A 23 percent reduction in total energy consumption;
- A 32 percent reduction in total water consumption; and
- Approximately $3.3 million in annual energy savings.

The associated reductions in carbon dioxide and other emissions related to the projected electricity savings are equivalent to removing nearly 1,700 cars from the road or planting over 2,600 acres of trees.

The House Office Buildings are expected to benefit significantly from improved aesthetics, equipment performance and reliability resulting from these energy-saving initiatives, as well as make significant progress toward meeting the statutory energy reduction goals for Federal buildings.

Energy & Water Savings at Cannon and Longworth Buildings



The Department of Energy master contract was used to award three ESPC contracts in 2009. This contract allows agencies to enter into agreements with payback periods up to 25 years. The three AOC projects have finance terms that range from 12-16 years based on estimated paybacks.

In FY 2011, all three projects were in the construction phase. The House Office Buildings and U.S. Capitol building projects will be complete in FY 2012 and the Senate Office Buildings ESPC improvements will be complete in early FY 2013. These three projects are on track to contribute 15 percent of the total 30 percent required energy conservation reductions.

For FY 2011 reporting, all three ESPC contracts began to provide energy savings as elements of the projects were completed. The ESPC's related improvements provided 75 percent of our new energy savings realized in FY 2011 (81,000 of 109,000 MMBTUs).

ESPC contracts will provide substantial energy savings and upgrade critical lighting and HVAC equipment. These improvements will be achieved without having to request appropriated dollars for the improvements.

O&M Improvements

Comprehensive energy audits help the AOC's facility managers better understand where energy is being consumed and identify opportunities to reduce energy consumption and costs. Inspection teams review existing documentation and conduct a field inspection to determine an individual buildings' energy performance, then prepare detailed lighting and HVAC models to simulate energy use. If available, metered data is then used to calibrate the energy models. If metered data is not available, the energy models serve as an estimated energy usage profile for the building.

These energy audits are used by the AOC to document existing conditions and energy usage trends, and to develop a set of energy conservation measures (ECMs). The resulting ECMs are incorporated into jurisdictional operations and maintenance or minor construction programs, campus-wide initiatives or bundled into larger energy projects with less than a ten-year payback. Some of the ECMs that address infrastructure improvements such as window and HVAC replacements are incorporated into future major renewal or rehabilitation efforts.

Through FY 2011 the majority of space within the Capitol facilities has been audited for energy and water saving opportunities.

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Through FY 2011 the majority of space within the Capitol facilities has been audited for energy and water saving opportunities. In the future, energy performance assessments will be coordinated with and performed

Facility Condition Assessments

One aspect of the Architect of the Capitol (AOC) facilities management is to understand the current condition of its buildings. This includes, among a list of several assessments: historic assets, sustainability, and energy. The accomplishment of Facility Condition Assessments and identified work elements have provided a basis to identify the Facility Condition Index (FCI) for each facility.

The Capitol Complex Master Plan (CCMP), completed in FY2012, used condition information from the FCAs to supplement independent data collection and documentation of existing conditions in order to identify issues, develop Framework Plans, and draft alternative 20-year development scenarios for each Jurisdiction. The master planning team identified preferred alternatives, developed a draft composite plan which consolidates Vision Statement, Framework Plans and Jurisdiction Plans into a single comprehensive document.

as part of the **Facility Condition Assessments**. Separate performance audits will be done for the Capitol Power Plant and the steam and chilled water distribution systems.

The AOC has the challenge of operating and maintaining historic buildings not initially designed for modern demands. Additionally, modern systems have become highly sophisticated. From additions, alterations or outright replacements, small issues can make big impacts. **Retro-commissioning** is the means and methods that provide the AOC the ability to vastly improve building performance by focusing optimizing performance of existing mechanical systems. Similar to the way one would tune their car, retro-commissioning addresses problems that have developed throughout the building's life.

Through retro-commissioning, the goal is to ensure optimum performance of a facility, in accordance with design or current operating needs. The retro-commissioning process has become a useful tool and allows the AOC to dissect the very life systems of its buildings to proactively pinpoint issues and efficiently re-align the system's needs.

These activities usually follow a building audit and result in low cost repairs or adjustments with simple payback periods ranging from less than half a year to two years. Typical issues identified are malfunctioning valves and dampers and sensors out of calibration. Other energy conservation measures identified include automating manual operations, additional control points for air handler operation, and modifying or adding control strategies such as economizer cycle, night setback and temperature reset.

There are several checkpoints that must be acknowledged in order to appropriately gauge a building's overall performance. A true picture of the building's capability and actual performance includes the auditing, re-commissioning, and as seen in this section, performance monitoring of a building or project.

Performance monitoring involves in-depth time and event based analysis of the mechanical systems, energy metering and the various interactions between systems. At a building level, performance monitoring ensures the persistence of savings achieved from operational improvements; at a project level, commissioning ensures that all systems and components are designed, installed, tested, operated, and maintained according to the owner project requirements. Both require the development of an owner project requirements document (also known as an OPR) and knowledge of existing conditions and procedures of the building, and if applicable, major building systems.

The Sustainability and Energy Division utilizes performance monitoring to ensure that energy-efficient operating strategies are maintained and creates a foundation for ongoing training and system analysis.

The comprehensive energy audits completed through FY 2011 are ongoing, have allowed the division to better understand where energy is being consumed and identify opportunities to reduce energy consumption and costs. Along with preventative maintenance practices, such as commissioning, and the upkeep of the AOC's building automation systems, the division is ensuring reduced energy use, lower operating costs, better building documentation, improved occupant productivity and verification of systems installed.

Retro-commissioning

Retro-commissioning is a systematic method for investigating how and why an existing building's systems are operated and maintained, and identifying ways to improve overall building performance.

Through retro-commissioning, the goal is to ensure optimum performance of a facility, in accordance with design or current operating needs.

Capitol Visitor Center Museum Display Case Commissioning

The buildings on Capitol Hill facilitate many demands. The AOC must fully understand the intricacies of each space — historic, archival, museum, exhibition, laboratory, conservatory, and canine facility — to establish sufficient condition parameters for the wide-ranging spaces. As such, the commissioning of one space varies greatly from the commissioning of another.

Utilizing these inspections to ensure savings throughout the life of the building and evaluate climate control options — space relative humidity, thermal comfort, and energy consumption — the analysis informs the team on how to meet these demands.

The commissioning of the Capitol Visitor Center Museum Display Case is a great example of the level of detail involved. For the museum, the focus of commissioning was precisely on controlling conditions for the exhibit display cases to help ensure the longevity of the exhibit material conditions. Design reviews focused on temperature and humidity control. Precise airflows, filtering, and very tight temperature control were very important. Testing involved multiple options performed which included portable data loggers and monitoring of the airflows within the display cases with dry ice testing.

Lessons learned included the value of sealing ductwork, precise air balancing, and the value of controlling dew-point temperature in relation to humidity. Experienced tradesmen carefully selected chilled water control valves, water filtering and softening systems, and proper start-up and control of humidifiers. Post trend analysis ensures the system continues to operate correctly.

Sustainability

Building Design and Construction

The design, construction and management of our federal buildings have a major impact on environmental issues such as energy consumption, resource management, water conservation, pollution, and environmental degradation. To address these issues, a number of federal agencies adopted the use of third-party tools as a method to manage and meet sustainable mandates.

In adding to the Energy Policy Act of 2005 and the Energy Independence and Security Act of 2007, the AOC established a construction guidance parallel to that of a silver level certification, from the Leadership in Energy and Environmental Design (LEED®) Green Building Rating System. The LEED® rating system, created and administered by the U.S. Green Building Council, which consists of a series of building design and operational practices, and strategies. The rating system is based on a numeric point system, with certifications awarded to buildings that exhibit a minimum environmental performance.

One of the main objectives for rehabilitating the East House Underground Garage was to prolong the life of the facility.

The East House Underground Garage parking deck entrance.

In January 2012, the AOC East House Underground Garage received a LEED Gold Certification for New Construction for their efforts in FY 2011. One of the main objectives for rehabilitating the East House Underground Garage was to prolong the life of the facility, meet or exceed building code, promote sustainable facility construction, and improve energy efficiency operations of the facility.

The scope of the project identified the opportunities for potential energy savings, environmental quality improvements and sustainable facility operation.

At left, the Library of Congress Packard Campus Green Roof. The building is covered with a 228,000 square foot extensive and intensive garden roof.

In FY 2011, two new examples of vegetative roofs on campus can be seen in both the Senate and House jurisdictions.

The project was recognized for:

- Construction activity pollution prevention, controlling dust and debris from contamination of the air and sewer run-off systems.
- Providing new water-efficient plumbing fixtures that increased water savings by more than 50 percent.
- Optimizing energy performance and provided high performance mechanical systems that reduced energy consumption by more than 24 percent above ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers) guidelines.
- Diverting over 99 percent of the 8,500,000 pounds of construction debris from landfills, utilized 8,700,000 pounds of new materials with more than 18 percent recycled content including 28,000 pounds of new reinforcing steel and 2,500 cubic yards of new concrete, and more than 50 percent of new materials obtained from regional sources.
- Excelling in indoor environmental quality by maintaining a non-smoking facility, utilizing new mechanical systems with increased ventilation and incorporating new materials and finishes with low Volatile Organic Compound (VOC) content.
- And installing efficient LED (light-emitting diode) lights with significantly longer life and with no mercury content and establishing a green cleaning program.

Vegetative Roofs — Sustainable Opportunities

In FY 2011, two new examples of vegetative roofs on campus can be seen in both the Senate and House jurisdictions. The Dirksen Senate Office green roof can be enjoyed from nearby office and conference room space. The design recreates the historic skyline of DC, highlighting the Capitol Building and Washington Monument. And the House jurisdiction completed its green roofs through the House Jurisdiction ESPC projects. The roofs are located in the courtyard of the Cannon House Office Building and can also be enjoyed from its surrounding office space. The Cannon green roofs provide aesthetic relief as well as manage the storm water that would otherwise pool upon the courtyard area.

Off campus, visitors continue to enjoy the Library of Congress Packard Campus Green Roof. The building is covered with a 228,000 square foot extensive and intensive garden roof. While blending the design into the rural Virginia hillside, the green roof has the added benefit of helping to keep the temperatures inside the archival storage facility stable for up to two weeks in the event of a long-term power outage, a necessity to preserve the world's largest collection of audio-visual artifacts. The roof and surrounding campus added over 9,000 trees and nearly 200,000 individual plantings making the project one of the largest private sector reforestation projects on the eastern seaboard.

Vegetated roofs are a sustainable strategy and financially beneficial when executed successfully. Vegetative roofs offer a full range of benefits: extending the life of a roof membrane by protecting it from UV light exposure; creating the potential for local job development in the design/engineering, manufacturing, and installation of green roofs; reducing and filtering storm water runoff from roof areas (critical for the DC area); reducing the **urban heat island effect** by cooling the roof surface; creating an urban habitat; and improving the overall aesthetic of the roof area (particularly beneficial on low roofs).

As these projects are planned, the life-cycle costs of both vegetated and standard roofing systems could be evaluated, taking into account the savings realized from the extended life of the roof membrane. Additional savings result from the reduction or elimination of the need for a storm water retention tank to hold water before release into the city storm water system. The cost of installing green roofs will vary depending on the amount of vegetation, year of installation, manufacturer, composition, and plant species specified, but the benefits are numerous.

The three types of vegetated roof surfaces:

1. extensive (minimum soil layer of .8-6 inches),

2. semi-intensive (moderate soil depth of +/- 6 inches),

3. intensive (soil layer of 12 inches or more).

Extensive roofs are typically the most commonly applied systems in the U.S. because they are lighter weight. The weight of a fully saturated extensive system with minimal soil cover averages 17 pounds per square foot, which is comparable to the weight of a conventional gravel ballasted roof system.

Cool Roofs — Sustainable Opportunities

When vegetative roofing systems are not feasible, cool roofs offer an alternative approach to improve building energy performance. Cool roofs are advantageous because of their highly reflective and emissive systems create a net positive impact on the building and its surrounding microclimate. The LEED rating system describes a cool roof as

In FY 2011, the AOC completed a needed roof replacement at the Rayburn House Office Building and took the opportunity to modify the existing system into a cool roof. The bottom right photo captures the installation.

having a high albedo (the amount of reflectiveness) or meeting a specific surface reflective index (SRI) criterion.

- Low-sloped: roof Slope ≤ 2:12 / Slope SRI = 78.
- Steep-sloped: roof Slope = > 2:12 / Slope SRI = 29.

In FY 2011, the AOC completed a needed roof replacement at the Rayburn House Office Building and took the opportunity to modify the existing system into a cool roof. Rayburn's cool roofing system reflects light rather than absorbing it to help reduce the amount of cooling needed in the hot summer months, which equates to money saved in energy. When the sun's radiation hits the roof surface, the solar reflectance deflects the solar energy from being fully absorbed into the roof and transferred within the building below. Often, cool roofs will be compared with one wearing a white versus black t-shirt.

Urban Heat Island Effect

The main cause of the urban heat island is modification of the land surface by urban development which uses materials that retain heat. Waste heat generated by energy usage is a secondary contributor. As population centers grow they tend to modify a greater and greater area of land and have a corresponding increase in average temperature.

Mitigation of the urban heat island effect can be accomplished through the use of green roofs and the use of lighter-colored surfaces in urban areas, which reflect more sunlight and absorb less heat.

Green roofs provide shade and remove heat from the air through evapotranspiration, reducing temperatures of the roof surface and the surrounding air. On hot summer days, the surface temperature of a green roof can be cooler than the air temperature, whereas the surface of a conventional rooftop can be up to 90°F (50°C) warmer.

Another consequence of urban heat islands is the increased energy required for air conditioning and refrigeration in cities that are in comparatively hot climates. The Heat Island Group estimates that the heat island effect costs Los Angeles about $100 million per year in energy. Through the implementation of heat island reduction strategies, significant annual net energy savings have been calculated for northern locations such as Chicago, Salt Lake City, and Toronto.

The market for cool roofs has greatly advanced and today provides numerous variations of cool roofs (US EPA). Cool roof systems can be easily applied to existing buildings, helping to keep the interior spaces cooler and conditions more comfortable.

Looking Ahead

Building Automation Control Growth

Improved Performance Monitoring — Continuing to Lower Operating Costs

In FY 2011, a contract was awarded to build a Utility Metering Enterprise System, incorporating our existing metering infrastructure. This web-based system will allow AOC personnel to easily sort, filter, and analyze large amounts of data in a timely fashion, and generate and export jurisdictional and executive level reports for various recurring requirements.

Building Automation Control Growth

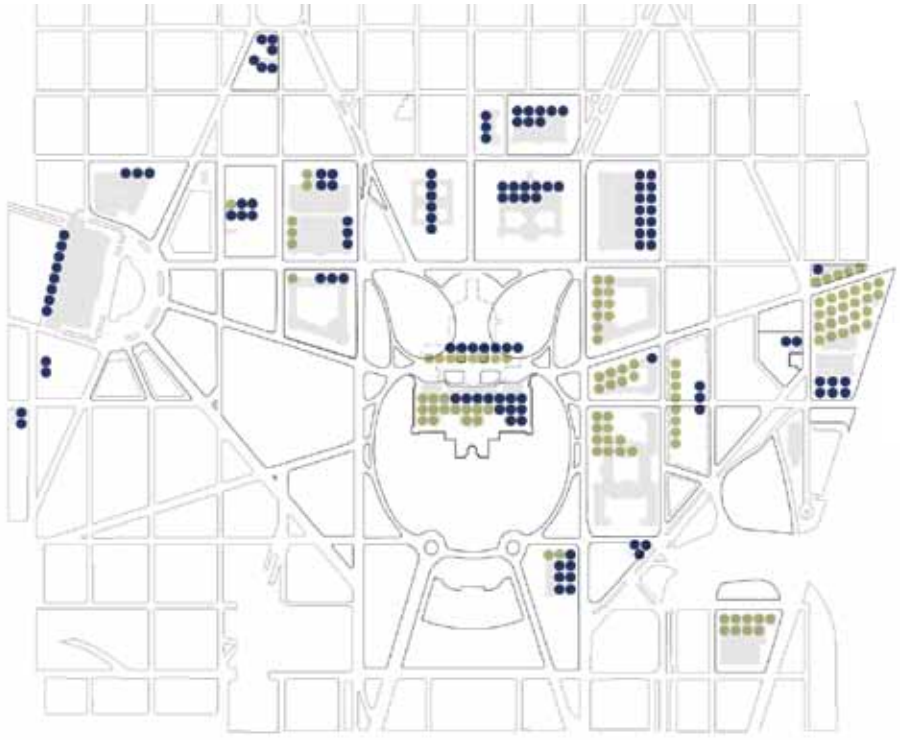
The building automation system continues to experience extensive growth as our energy systems are converted to electronic controls. With this increasing number of automation control comes an opportunity to monitor performance and increase savings out of a system. The chart below shows the growth of the control points in our automated system. As major building renovations occur, this growth curve will be sustained as all our building stock is modernized. Each new building or major renovation can generate up to 100,000 new digital control points. Currently, emphasis is on HVAC and lighting systems. Over time the use of digital control points could grow to include security related functions like doors and access control, elevator systems, fire protection systems and energy sub-metering.

The AOC will complete a Building Automation System Master Plan in FY 2012. The primary purpose is to provide the Agency with a plan to facilitate appropriate strategic system growth, highlight costs and support requirements. In addition, the AOC will formalize and provide a training template for system users. Training will be an integral part of implementing the final Master Plan and a highlight in next year's report.

Modeling/System Performance

As a result of our building energy audits we have the ability to compare building performance vs. theoretical energy performance. The energy models provide a best-case energy usage that assumes systems within

Building Automation Control Growth from FY 11 to FY 12



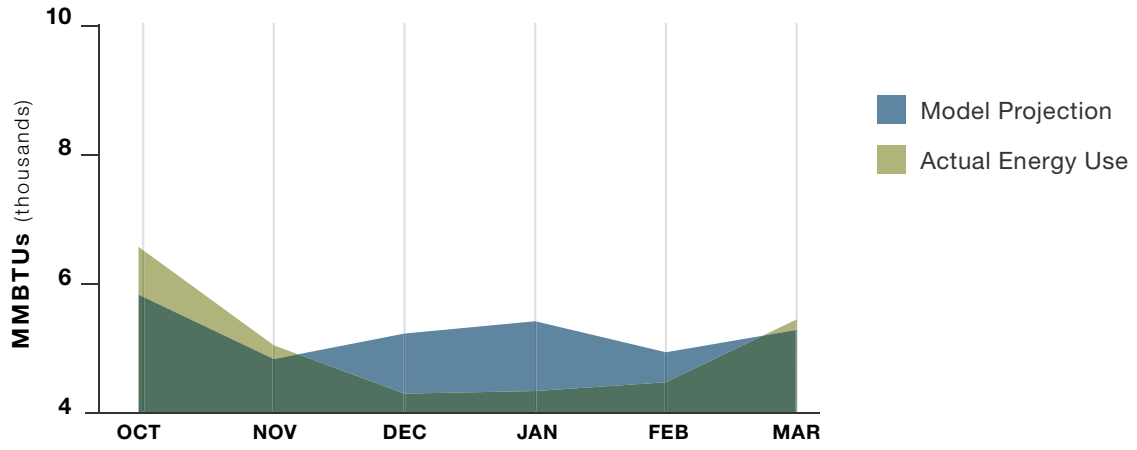
104

FY11 Meters Reporting Data

225

FY12 Projected Meters Reporting Data

Ford Energy Usage FY11 (Model vs. Actual)



the building operate appropriately. Often these assumptions are not accurate and abnormally high-energy uses, when compared to energy model outputs, will point out systems that are not functioning properly. A good example of this is illustrated in the graph shown below. In this graph the building chilled water usage in the Ford House Office Building is plotted against the chilled water energy model outputs. As evident in the chart, the building performed poorly in this chilled water category. As a result, the House Jurisdiction was able to invest in improvements to repair the chilled water air handler systems and drive the usage to the expected usage. By having complete performance statistics for all buildings, the Jurisdiction was able to target renovation funding to the area in need.

Completion of the building thermal energy metering will enable this level of analysis in all our major facilities. As thermal energy usage becomes available the outliers will be evident. With this knowledge, the Jurisdictions can craft their capital improvement budgets to address the most pressing needs and focus on bigger energy savings, which will yield better savings to investment ratios.

Building/Project Scorecards Focused on Energy and Sustainability

Prior to the creation of the Sustainability and Energy Division, many of the AOC's sustainability efforts were largely disconnected and lacked a central reporting structure. One of the primary responsibilities of the new division is to promote and measure the sustainability efforts of the Architect of the Capitol.

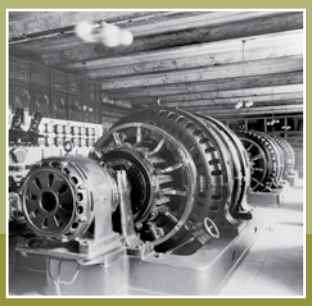
Using a new AOC Sustainability Scorecard, the Division will track the implementation of sustainable strategies across the complex to benchmark the Agency against AOC's internal environmental metrics, its own legislative mandates, and the targets established by other federal agencies.

To that effort, representatives of the Division in conjunction with Project Managers and other AOC business partners will schedule informal charrettes to complete the scorecard during design, construction, and post construction phases of the project. The scorecard framework will be used in the Project Prioritization Process and serve as a snapshot for the AOC's integrative project delivery, energy and water performance, indoor air quality, natural resource consumption, and overall sustainability educational efforts. The benefit will be the AOC's ability to measure, assess and continually improve upon its overall environmental impact. The result will, we believe, create an opportunity for innovative and effective ideas.

Sustainability Scorecard

Using the new AOC sustainability scorecard, the Division will track the implementation of sustainable strategies to benchmark the Agency against the executive branch's guiding principles and mandated energy and water consumptions goals:

- Integrated Design and Assessment
- Energy Performance
- Water Performance
- Indoor Environmental Quality
- Materials



Infrastructure

Sixty percent of the energy used by the AOC is consumed within the U.S. Capitol Power Plant. The majority of the energy is used to create steam and chilled water which is transported through a series of tunnels to locations as far out as Union Station and the government printing office. Campus buildings use this steam and chilled water to heat and cool the buildings. Small improvements to the production efficiency of steam and chilled water can have great energy conservation impacts.

Ongoing Improvements

Energy and Water

Power Plant: Chilled water production

The common performance metric for chilled water production is the kilowatts of energy it takes to produce one ton of chilled water, or kw/ton. The efficiency among the plant varies depending on the age of the chillers. Our modern chillers operate with efficiencies approaching .8 kw/ton. The older chillers from the 1970s, operate with efficiencies of 1.2 kw/ton, meaning that these older chillers are 40 percent less efficient. The modern chillers are used whenever possible, and the older chillers are only turned on during the hottest periods of the summer or if the more efficient chillers are undergoing maintenance or repair.

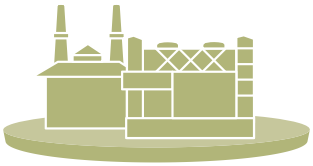
In FY 2011, the power plant utilized its free cooling capacity during the winter months. Throughout the year there is a base chilled water

The U.S. Capitol Power Plant

During peak cooling periods the plant will process approximately 20,000 gallons of water per minute. This amount is similar in volume to a residential swimming pool; therefore, in a one-hour period the equivalent of 60 swimming pools of water will be brought into the plant from buildings up to one mile away, cooled 12-14 degrees and shipped back out to the tunnel system to provide air conditioning. The photo on this page shows one of three large chillers that provide this cooling capacity. One of these chillers is equivalent to the amount of energy consumed for the entire Rayburn House Office Building while occupied, a 10-story, two million square foot facility that spans a city block and houses close to 3,200 employees.

Power Consumed by Capitol Power Plant vs. Buildings of the Capitol for FY11

Capitol Power Plant



1.4 million
MMBTUs

Buildings of the Capitol*

775,000
MMBTUs

*Buildings are defined as: BG Admin, BG Conserv., Cannon, USCP HQ, Ford, Fed Judiciary, Dirksen, Hart, House Page Dorm, Webster Hall, Adams, Jefferson, Madison, Longworth, Rayburn, Russell, US Capitol, US Supreme Court.

Tunnel Program: General statement on improvements coming to a completion

In FY 2011, the AOC completed the final phases of the multi-year $142 million tunnel improvement program. This initiative began in 2007 to address safety issues and a backlog of maintenance and repair activities. The Architect of the Capitol, characterized, and repaired over 1,700 safety and health hazards for more than five miles of utility tunnels on Capitol Hill. One secondary benefit has been improvements in the tunnel energy efficiency. Through the installation of new steam traps, repair of leaks and upgrades to insulation, the tunnels have been transformed into a modern, safe and efficient method to transfer large quantities of steam and chilled water.

Before

After

At the Architect of the Capitol, practices include sustaining our cultural landscapes. The images above and below capture the restoration and display of the Bartholdi Fountain.

load in several of the buildings on campus. These loads are primarily the function of excess heat produced by electronics in places like data centers, IT closets and in selected spaces. These base chilled water loads exist regardless of outside air temperatures. When outdoor air temperatures fall below 35°F, staff can use non-mechanical methods to meet cooling loads and completely turn off the large chillers. In effect, the power plant uses the cold outside air to cool the returning chilled water from the buildings.

Bartholdi Fountain

Reducing water use around the Capitol includes evaluating the decorative fountains across our grounds. Similar to taking advantage of a building upgrade, the AOC comprehensively looks at

courtyards and fountain upgrades as opportunities to reduce energy and water use.

In FY 2011, the AOC completed the large undertaking of off-site restoration of Bartholdi Fountain and made numerous improvements to the basin within Bartholdi Park. The restoration was commissioned to address corrosion and excessive wear to the fountain and included repairing deteriorated metal, replacing interior mechanical and electrical components, and replacing the lighting with new energy-

In FY 2011, the AOC completed the large undertaking of off-site restoration of Bartholdi Fountain.

efficient fixtures true to the style of the fountain's original glass sconces. The fountain also received modern energy efficient pumps and motors, a new water treatment and filtration system, and a zinc coating to preserve the original cast-iron of the fountain that dates back to 1876.

The project modernized the fountain with a new underground concrete utility vault that will control the mechanical and lighting operations of the refurbished water feature. The U.S. Botanic Garden (USBG) is now focused on redesigning the park and completed a master plan in October 2011. The redesigned Park will include new planting beds that will demonstrate the highest quality horticultural design and showcase the principles of the Sustainable Sites Initiative (SITES), a program to create voluntary national guidelines and performance benchmarks for sustainable land design, by aligning site development and management practices with the functions of healthy ecosystems. The SITES initiative was created by the American Society of Landscape Architects, the Lady Bird Johnson Wildflower Center at The University of Texas at Austin and the USBG.

Looking Ahead

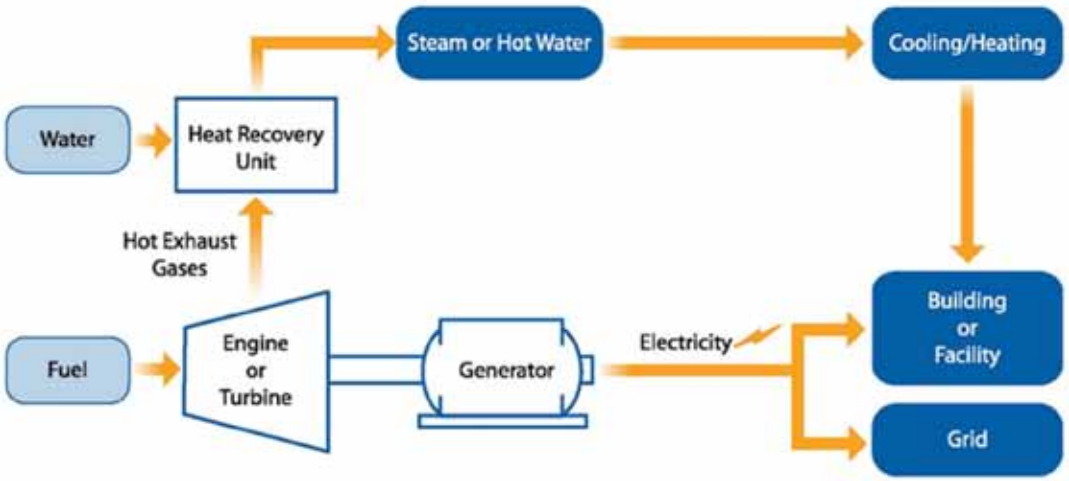
Energy Water

Combined heat and power

In FY 2011, the AOC began a large project to install a co-generation energy production system. When complete, this system will provide equipment that will consume natural gas and use gas turbine engines to produce electricity and steam. The process of using the turbines waste heat to produce steam drives the total cycle efficiency from 35 percent (as in a typical power plant) to 60 percent. At a typical power plant the waste heat from the combustion process is sent into the air or dumped into a large body of water. In a co-generation system, we are able to extract this waste heat energy to create useful steam. After the co-generation system is complete the plant will operate as shown below:

In FY 2011, the AOC began a large project to install a co-generation energy production system.

Co-generation Energy System/Plant Diagram



Old infrastructure must be removed to make way for the new co-generation energy production system.

Summer Months: The co-generation system will operate to produce the base steam load the buildings require as well as produce the electricity required to operate the majority of the chilled water production equipment. Outside grid electricity will only be required to provide chilled water when the building demand for chilled water is at its highest, when temperatures are in the 90+ degree range.

Winter months: The co-generation system will provide the base steam requirements. During colder periods additional boilers in the plant will come online to meet the steam heating requirements. The electrical loads at the plant will be less than the electricity produced by the turbines; therefore, in the winter, excess power will be sent to the electrical grid. The power company will credit this excess power by offsetting to our other building accounts.

The design for the system was funded in FY 2011 and construction is anticipated to begin in early FY 2013. The construction will be funded and built by a third party energy services company. The annual financial savings from the system will pay the third-party debt. The annual savings result from increasing the overall system efficiency, primarily a function of using the waste heat to generate needed steam.

Refrigeration Plant

The Power Plant is also in the process of replacing our least efficient chillers. The Refrigeration Modernization project will replace chillers installed in the 1970s. These new chillers will use a more environmentally friendly refrigerant, as well as operate with much improved efficiency. The new chillers can operate 30-40 percent more efficiently.

This project will utilize space that was created when the chiller plant was expanded in the mid-2000s. When complete, the refrigeration system will be modernized with equipment that will save energy, use more environmentally friendly refrigerants and increase system reliability. The final benefit will be the provision of space for additional capacity that may be needed in future years.

The Refrigeration Modernization project will replace chillers installed in the 1970s.

Sustainability

Stormwater Management Plan

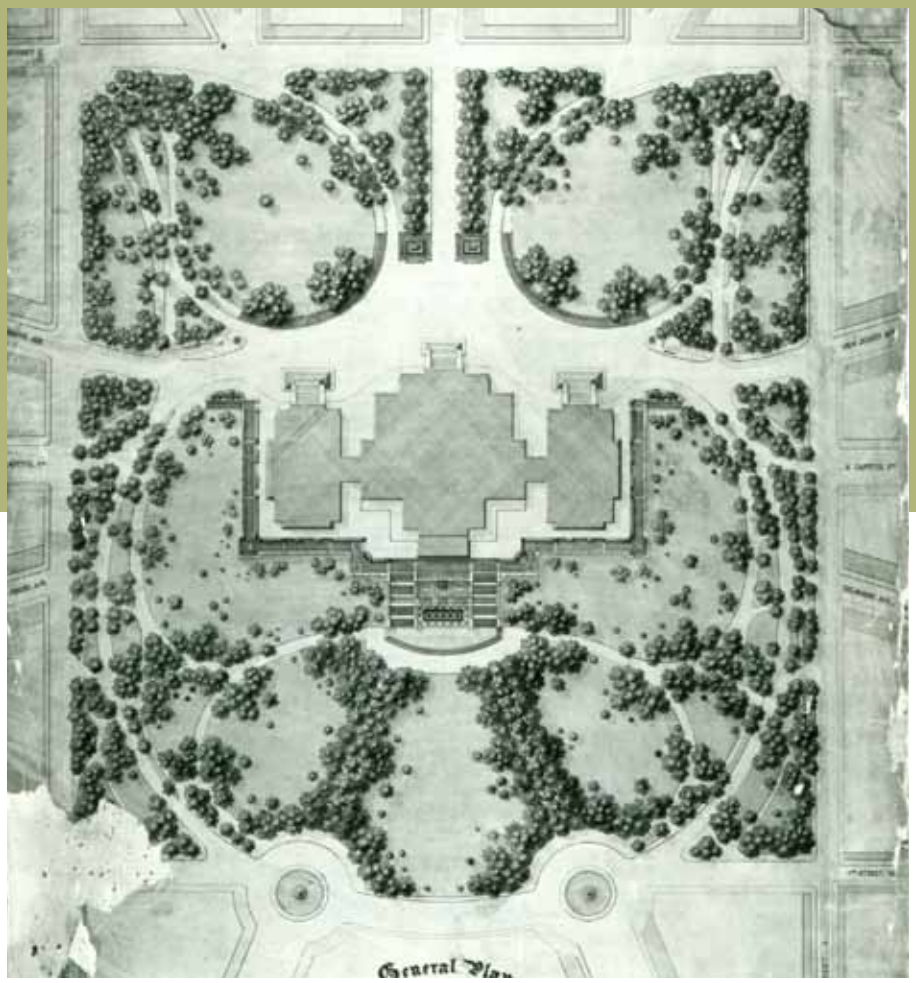
The Architect of the Capitol is in the process of developing a stormwater management plan for the Capitol and its surrounding facilities. The primary purpose of the plan is to comply with requirements mandated within EISA2007 and the Clean Water Act, enforced by the District of Columbia. The current stormwater drainage system for the District of Columbia is combined with the wastewater sewer system, called a combined sewer overflow system, which was not designed to handle the current capacity. The AOC will continue to work with the District Department of Environment to implement stormwater best management practices.

The plan is based on detailed utility infrastructure, topographic, and hydrologic information. The completed plan will recommend creative stormwater management techniques that are both respectful of the historical integrity of the Capitol Campus and responsive to the strict stormwater control requirements.

Cultural Landscape Plan

The purpose of the Cultural Landscape Report (CLR) for Capitol Square is to provide the AOC with a primary document to evaluate the history and integrity of the landscape, to document and evaluate

Rain gardens collect and infiltrate stormwater to help the AOC comply with requirements mandated within EISA2007 and the Clean Water Act.



the character- defining features of the landscape, and to recommend treatment approaches consistent with the landscape's significance, its condition, its use and its management.

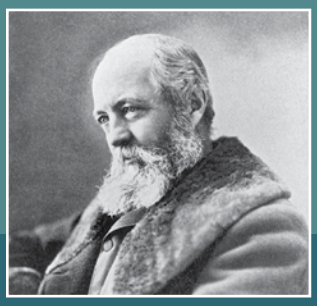
There are three relevant aspects of sustainability that can be considered for application to the Capitol Square landscape. They are: original Frederick Law Olmsted era sustainability elements, current sustainable landscape practices, and aspects of fiscal sustainability that can be applied to the landscape to reduce initial costs and ongoing maintenance efforts and related costs. The overall sustainability objective to achieve in the CLR is to reinforce historic sustainable practice aspects and add new applications for the Capitol Square landscape in a manner that is fully integrated with preservation, management and ongoing maintenance of the Olmsted landscape character.

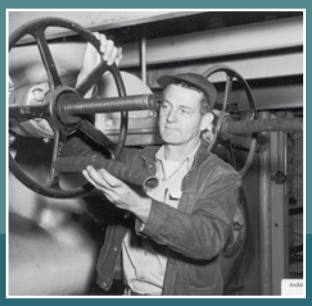
Below the surface of Capitol Square is a network of infrastructure and subterranean access. As expected over time the infrastructure needs of Capitol Square have evolved with changes in utility systems, HVAC and space use. Today, there is a degree of infrastructure clutter within the landscape that includes pipes, vaults and surface boxes. While these elements serve real needs, they contribute to visual clutter and distract from the intended landscape character. When integrating any new or upgraded infrastructure the objective is: to integrate infrastructure in the least obtrusive manner so that the landscape character is retained as needed services are provided.

The information presented in the Cultural Landscape Report provides guidance for effective heritage asset stewardship to manage our cultural landscapes.

The purpose of the Cultural Landscape Report (CLR) for Capitol Square is to provide the AOC with a primary document to evaluate the history and integrity of the landscape.


KAESER
ENERGY SAVINGS





People

As the annual host to millions, the AOC benefits from educating and connecting people on the long-term advantages of sustainability to achieve a culture of resource conservation. Through outreach and education we continue to provide our occupants the information to make smart decisions on energy use. From a building use perspective, the AOC has adapted scorecards and metrics to align its performance with goals. From a people perspective, we focus on improving basic education, continuing to improve upon understanding, awareness, and training of our systems. Education can arrive in the form of formal or informal events — such as tours, training, signage, or presentations. All in all, we look toward our staff, occupants, and visitors as a way to meet our sustainable means.

Daily Operations

Energy And Water

Sections 1252(e) and (f) of the U.S. Energy Policy Act of 2005 (EPACT) state that it is the policy of the United States to encourage "time-based pricing and other forms of demand response" and encourage States to coordinate, on a regional basis, State energy policies to provide reliable and affordable demand response services to the public.

The AOC focuses on demand response days as a way to manage its peak consumption of energy. The Sustainability and Energy Division together with jurisdictions work to actively decrease energy use across the campus on these identified days when demand will be at its highest. Implementing a demand response program helps to curb peak electrical demand, which affects our following year costs. Demand response strategies primarily save electricity in the buildings.

Through outreach and education we continue to provide our occupants the information to make smart decisions on energy use.

The Senate Powers Down

In their continuing efforts to reduce energy consumption, the Senate Superintendent's Office focuses on people and their impact on electrical use."Power down days" are executed for electrical curtailment throughout all the Senate Office spaces. The office releases targeted recommendations with expectations of maximum participation. The Superintendent's Office curtails power consumption by turning off cove lighting, architectural lighting, exterior architectural fountains, and non-essential HVAC equipment. Minimum lighting levels in the affected areas are maintained for emergency purposes. The office asks staff to help by turning off non-essential lights, TVs, space heaters and other electrical equipment.

Fliers, posters, and messages are sent when high temperatures and humidity is forecasted, or when the Senate has scheduled a recess for a period longer than 4 days. One of the beneficial impacts is that the efforts help curtail peak energy demands which helps control the need for added electrical capacity on the grid.

POWER TO SAVE

Examples of Power to Save education materials.

Sustainability

Stakeholder Outcomes

The "Power to Save" program educates staff and Capitol employees about sustainability and environmental stewardship goals. By communicating and reinforcing key concepts such as the importance of energy and resource efficiency to architectural quality, historic preservation and cost-effective operations, the "Power to Save" program has been effective in increasing energy and resource awareness and motivating action on meeting sustainability and legislative goals set by Congress. Sustainable design and operations create healthy and productive work environments for all Capitol Hill employees.

In FY 2011, the Capitol achieved an overall recycling rate of 41.3 percent.

In FY 2011, the "Power to Save" program launched a new overarching communications effort, "A Legacy of Sustainability." The launch exemplified the AOC's past and continued efforts towards sustainability and energy conservation and became this year's cover for the FY 2011 Annual Energy Report.

Waste and Recycling: Building and Tenant Impacts

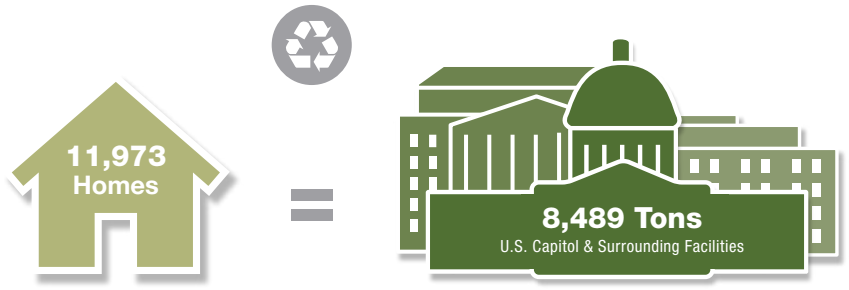
The operation and maintenance of the Capitol involves materials that enter and exit our buildings related to: construction, daily operations, site maintenance, and various tenant activities. Management and operational activities throughout Capitol Hill can have a significant impact on the environmental performance of the Capitol by optimizing and, ultimately, reducing the flow of materials.

In FY 2011, the AOC entered into a new waste removal contract that will divert up to 90 percent of non-recyclable solid waste from landfills through the utilization of local waste-to-energy facilitates. Waste-to-energy refers to the incineration of solid wastes to generate heat, and in turn produce steam and electricity. The Environmental Protection Agency, U.S. Department of Defense, U.S. Department of Energy, and the Federal Energy Management Program all consider waste-to-energy as a responsible means of solid waste disposal. Additionally, the Environmental Policy Act of 2005 and Executive Order 13423 state that waste-to-energy offers an opportunity for Federal Agencies to meet their renewable energy goals while addressing economic and environmental concerns.

Recycling remained active during the waste-to-energy transition and operation. The AOC continues to focus on meeting its recycling performance goals. From cardboard and paper to bottles and cans, scrap metal, and batteries, the Environmental Division maintains a database for the AOC's goals and metrics, working with jurisdictions to

An AOC employee gathers materials to be recycled.

U.S. Capitol and Surrounding Facilities Equivalencies to Home Recycling



An average U.S. home collects **1,418 lbs** of recycling each year.

The U.S. Capitol and its Surrounding Facilities collects **8,489 Tons** (16,978,000 lbs) of recycling each year.

track waste and recycling metrics. In FY 2011, the Architect of the Capitol achieved an overall recycling rate of 41.3 percent, tracking higher than its 38 percent FY 2013 goal.

The AOC takes advantage of numerous local resources near Capitol Hill for the collection of construction-generated waste (concrete, steel, ferrous and nonferrous metals, masonry, glass, wood, gypsum board, carpet, ceiling tiles, asphalt, cardboard, land clearing waste, and hardware. In many cases, local recyclers will purchase scrap metal and some salvaging centers will also sort materials off-site, which helps address the issue of space constraints. For example, as part of the Science and Technology Committee renovation, the AOC's Construction Division used a local waste recycler to achieve credits toward LEED® certification.

When it comes to fit-out and turnover related to building moves, there are multiple opportunities to impact waste including construction waste, and fit-out materials and equipment that generate large amounts of packaging. Many high-turnover consumable items, such as paper, lighting and cleaning products are easily forgotten in the operation and maintenance of a building. The AOC implements detailed move plans that address all stages of a product's life within waste minimization strategies and within 'green' purchasing criteria.

Looking Ahead

Sustainability

Sustainability and the Strategic Plan

Looking ahead to FY 2012, the Sustainability and Energy Division will continue working to fulfill its critical mission and achieve the goals and outcomes outlined in Strategic Vision. As one can see from the crosswalk to the right, the division's actions and roles are valuable to the Agency in achieving its vision.

For FY 2012, the Sustainability and Energy Division will update its efforts to:

- Improve communications to clients;
- Better improve outreach and training on resource conservation, sustainable topics, and projects; and
- Continue to expand existing working groups.

This will enable the division to smartly target information to stakeholders via multiple channels.

The Sustainability, Energy and Water Conservation Division is involved in updates to the AOC Design Guidelines. The updates align with applicable strategic goals, legislative mandates, and adopted Guiding Principle goals. It is of the utmost importance to continue upgrading existing policies and implementing new strategies that focus on sustainable practices.

The AOC focuses on continued education and stakeholder involvement.

In FY 2012, the Sustainability and Energy Division will work with the Environmental and Safety division to push forward more proactive green procurement policies and integrate the current waste and recycling database into SIMS, the Sustainability Information Management System, that will support the division's comprehensive approach for coordinating existing and future efforts, identifying sustainability benchmarks, and help to integrate sustainability and energy efficient practices into daily operations. Other goals include helping to create a standardized waste management plan to align with the AOC's Sustainability Plan goals for operation and construction waste.

Sustainable requirements will allow opportunities for sustainability to be integrated at various decisions points within procurement process: delivery of products, types of goods, contracting, and marginal/benefit factors.

Sustainable design requirements have been integrated into the selection criteria for Architectural and Engineering (A/E) services. Indefinite service providers must include green objectives for specific projects and provide a checklist or narrative to ensure that sustainable design requirements will be addressed.

Sustainability is included in the AOC design standards, including the requirement that projects achieve a level of sustainability most appropriate to the scope of work. In its Design Standards, the AOC establishes goals for new and existing buildings that aim to "conserve energy resources, improve environmental performance and to appropriately utilize materials."

Strategic Plan: Preserve, Enhance, and Protect our Facilities and Landscapes

A green purchasing program that includes environmentally friendly products such as green cleaning materials that meet Green Seal Standards for Industrial and Institutional Cleaners will improve indoor air quality throughout the construction, operations, and maintenance process. The Sustainability and Energy Division intends to support the Strategic Vision goals of preserving, enhancing, and protecting our facilities and landscapes through such sustainable methods. Future rollout of the Strategic Vision's

To date, the AOC has made great progress in many areas of waste management.

sustainable model cleaning program includes:

- Creating deep cleaning schedules to preserve, enhance and protect our facilities and landscapes.
- Establish a database for products that are environmentally safe and safe for use on historic facilities and landscapes.
- Ensure cleaning products are more compatible with existing security equipment and materials.
- Utilize more health friendly products.

Currently, the AOC is required to give preference to items composed of the highest percentage of bio-based products practicable and is assessing policies to help meet its sustainability and energy priorities.

Waste and Recycling: Improved Material Flows

As outlined in earlier sections of this report, the federal government's energy footprint is extensive in the United States; however, federal agencies have an equally important role in demanding better materials performance as well. The Sustainability and Energy Division is working at multiple levels to address resource efficiency and conservation throughout the Architect of the

Above, an AOC employee demonstrates materials to be recycled. And at right, those materials are managed and gathered.

Capitol's jurisdictions. To date, the AOC has made great progress in many areas of waste management. To push that line even further requires raising a bar to a new level and focusing on reducing waste streams.

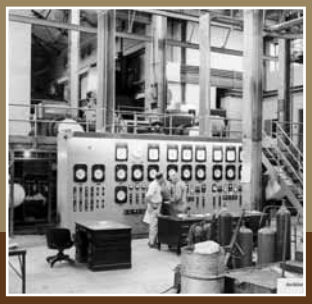
There are multiple approaches to creating a waste resource assessment in order to continually broaden what materials are being reused and recycled. The Sustainability and Energy Division intends to work with the Environmental Division to identify an increasing number of waste streams for inclusion into the AOC recycling program. The Environmental Division has an internal goal of evaluating at least 2 additional waste streams by the end of FY 2013 — in January 2011, they awarded a task order to perform an analysis in support of this goal. The evaluation is currently underway, with a final report on this evaluation expected in the fall of FY 2012.

Some important questions to ask of operations:

- Are there ways to avoid purchasing new materials by re-using existing?
- Have we created, updated, and abided by resource-efficiency policies?
- Where is waste generated and can it be re-used or otherwise diverted from a landfill or incinerator?
- Have we created, updated, and abided by sustainable operational policies?

The Sustainability and Energy Division will continue to help make day-to-day activities more sustainable and make commitments in relation to energy, transportation, and water-use, waste generation and other areas.





Jurisdiction Highlights

Each of the Agency's jurisdictions plays a unique role in fulfilling the organization's mission and meeting its energy and water efficiency goals. This section presents each jurisdiction's contribution toward the Agency's energy and water conservation efforts.

U.S. Capitol

In FY 2012 the Capitol ESPC project will have completed construction and begun achieving full energy savings for the last several months of the fiscal year. The current guaranteed annual energy savings of the Capitol ESPC project, due to be complete in FY 2013, is 121,400 MMBTUs. Through the end of FY 2011, the ESPC vendor has installed measures that saved 32,800 MMBTUs of energy. When the ESPC project is complete, the expected energy savings will have reduced the overall energy consumption 47 percent. These and future savings will keep AOC on track for meeting its sustainability and energy goals.

Capitol Visitor Center

Exhibition Hall Display Case Lighting Upgraded — The AOC completed a project to upgrade the lighting in the CVC's Exhibition Hall display cases in October 2010. This effort resulted in vast improvements to the visibility of documents, objects and artifacts without compromising their integrity. Additionally, the Exhibits and Education Division worked with specialists to upgrade the microclimate system that is responsible for maintaining the appropriate environment within the document cases. The upgrade was in place by early August 2011.

Capitol Grounds

In FY 2011, Capitol Grounds initiated a storm water management plan that will be completed in FY 2012. Phases one and two included an analysis of existing infrastructure, topography, and hydrology. The completion of phases three and four of the storm water management program will include the development of recommendations and alternatives to be coordinated with the Capitol Complex Master Plan and other guiding documents. Phase four will provide a program of requirements including designs, construction schedules, and implementation approach and budget model.

Through the implementation of free cooling, the Capitol Power Plant realized savings from energy reductions equal to $360,000.

Capitol Power Plant

The jurisdiction implemented energy conservation measures that improved the efficiency of steam and chilled water production. By using outside air during the winter to generate chilled water in lieu of an electric-powered chiller, the Capitol Power Plant realized energy reductions of three million kWh and savings equal to $360,000. The jurisdiction also worked with customers to reduce energy usage and establish energy set-backs during nights and weekends. The jurisdiction continued to install facility energy meters that enable the AOC to track energy use by building in order to implement energy savings measures. The meters will be connected to a new distributed control system that monitors the distribution of utility services and will allow a faster response time when service interruptions occur.

House Office Buildings

The AOC's first LEED certified facility is located within the House Office Building jurisdiction. In 2011, we completed the renovation of an underground parking structure. This project achieved a LEED Gold certification.

The House Office Buildings successfully completed its Energy Savings Performance Contract Improvement Projects — $34 million facility infrastructure upgrades. After these upgrades, the jurisdiction expects to realize a 23 percent reduction in energy use and a 32 percent reduction in water consumption, resulting in approximately $3.3 million in annual savings.

Some unique sustainability measures within the House include: a green roof in the Cannon Courtyard; a condensate harvesting system that provides make-up water to the Rayburn court fountain; and a solar fiber optic lighting demonstration collector which transmits sunlight via fiber optic cables to interior spaces below. Recycling is also a focus at the HOB, with an efficient recycling program that supports congressional offices and committee spaces.

Senate Office Buildings

The jurisdiction completed two Senate Committee Room renovations, including the restoration of the Russell Building's Armed Services Committee Room and Agriculture, Nutrition, and Forestry Committee Room. These renovations returned the rooms to their original grandeur and installed state-of-the-art digital audio-visual systems and energy-efficient lighting and control systems. Additional projects included:

- Completed installation of a green roof on the Dirksen Building.
- Completed replacing motors 5HP and greater with high efficiency motors.
- Completed Dirksen Building air handling replacement (phase one) to replace aging air handling units and upgrading controls to DDC.
- Upgraded TV lights to LED.
- Hosted Fall and Spring Energy and Environmental Showcases.
- Started a re-use office supplies program.

In early FY 2013 the Senate Buildings ESPC project will complete construction and begin achieving full energy savings by the end of the fiscal year. The current guaranteed annual energy savings of the ESPC project is 188,000 MMBTUs.

The AOC's first LEED certified facility is located within the House Office Building jurisdiction.

The Office of Security Programs implemented the first phase of installation of an automated lighting control system in the U.S. Capitol Police Headquarters.

Library Buildings and Grounds

The Library of Congress continues moving forward with building and operational improvements within library office space, archival and historic areas, as well as its large data center and amenity spaces. Recent projects include:

- Madison Data Center Infrastructure Upgrades — The new design allows for a higher chilled water supply temperature and improves the overall air flow distribution.
- The Madison 6th Floor cafeteria — The lighting system was renovated to including the replacement of fluorescent lights with energy efficient LED lights. The new system is estimated to reduce energy consumption by 68 percent.
- Motion Sensors within Book Stacks.
- Upgrade the two largest air handing units — A design contract was awarded to replace the pneumatic control system with Direct Digital Controls. This project was identified in the Adams energy audit and the annual energy savings is estimated at $400,000.
- Re-lamping Program — Approximately 34,000 lamps have been replaced with an estimated annual savings of $75,000.
- More than 12 variable frequency drives were installed throughout the LBG with an additional 24 being replaced in FY13 for a potential yearly savings of $300,000.
- Madison digital control upgrade — This project is estimated to save $650K annually with an anticipated payback period of 3 years.
- Library and AOC are teaming up on a "Green Day" electrical curtailment program as well as the "Gold Day" demand response initiative.

Capitol Police Buildings, Grounds and Security

In FY11, the US Capitol Police and the Office of Security Programs maintained their focus on reducing energy consumption while improving building operations. Highlights included:

- A control system and exhaust air modification project at the headquarters building which has a projected payback period of 1 year.
- Installed the first phase of an addressable automated lighting control system and fixture retrofit project in the headquarters that

will reduce total electrical use at the site by 12% annually when completed.

- Retrofitted the lighting in 2 US Capitol Police vehicle maintenance facilities that reduces lighting costs by 30% while significantly improving light levels for staff operations.

- Obtained funding to implement a mechanical and control systems upgrade of the remaining pneumatic controls and HVAC system at the headquarters building which is projected to save over $100,000 per year in utility costs.Supreme Court and Judiciary Building.

The Supreme Court of the United States

The Supreme Court of the United States implemented sustainable practices by surveying and monitoring Heritage Assets. These inspections included the decorative ceilings in the West Conference Room and Law Library. Restoration work began during the summer of 2011. The AOC stonemasons cleaned and repointed granite and marble surfaces on the north and east sides of the building to alleviate stone deterioration. In addition, an inspection of the exterior bronze features of the building was completed and conservation treatments are being reviewed.

Two residential wind turbines on display outside of the Conservatory produce approximately 4,500 kilowatt hours per year.

U.S. Botanic Garden

Sustainability remained a major focus in FY 2011. Efforts to lower the Botanic Garden's solid waste stream diverted 38,000 pounds of paper, glass, plastic and cardboard for recycling and more than 638,000 pounds of green waste for composting. The USBG continued its participation with the Sustainable Sites Initiative (SITES) and also led a federal work group for the White House Council on Environmental Quality to develop guidelines for sustainable practices in federal facility site selection and landscaping. Energy-Savings Initiatives Implemented — the installation of high-efficiency, low-energy fans in the Conservatory, energy-efficient windows (FY 2012) in the Administration Building and new management practices at the greenhouses helped reduce energy use. Two residential wind turbines on display outside of the Conservatory produce approximately 4,500 kilowatt hours per year.



Conclusion

As the Architect of the Capitol moves forward into FY 2012, the Agency maintains a solid commitment to energy conservation, keeping its focus on responding to Congress' mandate to reduce energy consumption. The AOC's dedication to this mission has been demonstrated by the energy reductions achieved to date that have avoided $12.3 million annually in utility expenses. As the AOC increases its energy reduction to 21 percent, this avoided cost figure will grow to $16.4 million annually.

Achieving a future of sustainability for our nation is a significant challenge; however, for the AOC, such a future is possible.

Achieving a future of sustainability for our nation is a significant challenge; however, for the AOC, such a future is possible. Every day, 2,600 professionals and skilled crafts persons rise to the occasion and take up this challenge through the implementation of vital programs and continued innovation. We will continue our legacy of sustainability in FY 2012 and sharing our story of success next year.

Appendix

FY 2011 Energy Management Performance Summary

Goal Performance				
Energy Management Requirement	**FY 2003 Btu/GSF**	**FY 2011 Btu/GSF**	**Percent Change FYs 2003-2011**	**FY 2011 Goal Target**
Reduction in energy intensity in facilities subject to the EPACT goals	172,678	140,096	-18.9%	-18.0%
Renewable Energy Requirement	**Renewable Electricity Use (MWH)**	**Total Electricity Use (MWH)**	**Percentage**	
Eligible renewable electricity use as a percentage of total electricity use	365,870.4	360,287.2	101.5%	5.0%
Water Intensity Reduction Goal	**FY 2003 Gallon/GSF**	**FY 2011 Gallon/GSF**	**Percent Change FY 2003-2011**	
Reduction in potable water consumption intensity	27.2	20.2	-25.7%	
Metering of Electricity Use	**Cumulative # of Buildings Metered**	**Cumulative % of Electricity Metered**	**Cumulative % of Appropri-ate Buildings Metered**	**FY 2012 Goal Target**
Standard Electricity Meters in FY 2011	45	100.0%	100.0%	100%
Advanced Electricity Meters in FY 2011	16	35.6%	35.6%	Maximum Extent Practicable
Total Electricity Meters in FY 2011	45	100.0%	100.0%	
Federal Building Energy Efficiency Standards			**Percent of New Building Designs**	**FY 2007 forward Goal Target**
Percent of new building designs started since beginning of FY 2007 that are 30 percent more energy efficient than relevant code, where life-cycle cost effective:			100%	100%
Investments in Energy and Water Management				
Sources of Investment	**Investment Value (Thou. $)**		**Anticipated Annual Savings (Million Btu)**	
Direct obligations for facility energy efficiency improvements	$5,450.3		10,469.0	
Investment value of ESPC Task/Delivery Orders awarded in fiscal year	$0.0		0.0	
Investment value of UESC Task/Delivery Orders awarded in fiscal year	$0.0		0.0	
Total	$5,450.3		10,469.0	
			Percentage	
Total investment as a percentage of total facility energy costs			9.2%	
Financed (ESPC/UESC) investment as a percentage of total facility energy costs			0.0%	

Btu British Thermal Unit
BBtu Billion British Thermal Units
Btu/SF British Thermal Unit per Square Foot
kWh Killowatt-Hour
MMBtu Million British Thermal Units

FY 2011 Energy Management Data Report

Part 1: Energy/Water Consumption and Cost Data

1-1. EPACT GOAL-SUBJECT BUILDINGS							
Energy Type	**Consumption Units**	**Annual Consumption**	**Annual Cost (Thou. $)**	**Unit Cost ($)**		**Site-Delivered Btu (Billion)**	**Est. Source Btu (Billion)**
Electricity	MWH	0.0	$ 0.0	$ 0.0	/kWh	0.0	0.0
Fuel Oil	Thou. Gal.	81.4	$306.1	$3.76	/gallon	11.4	11.4
Natural Gas	Thou. Cubic Ft.	1,337,225.2	$16,857.2	$12.61	/Thou Cu Ft	1,337.2	1,337.2
Coal	S. Ton	2,459.0	$276.0	$112.24	/S. Ton	68.9	68.9
Purch. Steam	BBtu	16.2	$628.0	$38.77	/MMBtu	16.2	22.5
Purch. Chilled Water	BBtu	13.9	$510.0	$36.69	/MMBtu	13.9	13.9
Excluded Steam (-)	BBtu	(203.3)	($6,832.9)	$33.61	/MMBtu	(203.3)	(282.6)
Excluded Chilled Water (-)	BBtu	(91.1)	($1,518.3)	$16.67	/MMBtu	(91.1)	(91.1)
Excluded Security (-)	BBtu	(16.7)	($525.5)	$31.47	/MMBtu	(16.7)	(16.7)
Purch. Renew. Electric.	MWH	307,620.2	$33,030.9	$0.11	/kWh	1,049.6	0.0
Purch. Renew. Other	BBtu	0.0	$ 0.0	$ 0.0	/MMBtu	0.0	0.0
		Total Costs:	$42,731.4		Total:	2,186.1	1,063.5
FY 2011 Goal Subject Buildings Gross Square Feet (Thousands)		15,042.3			Btu/GSF:	145,328	70,701
Goal Subject Buildings FY 2003 Baseline (Btu/GSF)		172,678			Btu/GSF w/ RE Purchase Credit:	140,096	

Appendix

1-2. EPACT Goal Excluded BUILDINGS							
Energy Type	**Consumption Units**	**Annual Consumption**	**Annual Cost (Thou. $)**	**Unit Cost ($)**		**Site-Delivered Btu (Billion)**	**Est. Source Btu (Billion)**
Electricity	MWH	0.0	$0.0	$0.00	/kWh	0.0	0.0
Fuel Oil	Thou. Gal.	405	$1,522.9	$3.76	/gallon	56.7	56.7
Natural Gas	Thou. Cubic Ft.	32,584.0	$410.8	$12.61	/Thou Cu Ft	32.6	32.6
Coal	S. Ton	0.0	$0.0	$0.0	/S.Ton	0.0	0.0
Purch. Steam	BBtu	0.0	$0.0	$0.00	/MMBtu	0.0	0.0
Purch. Chilled Water	BBtu	0.0	$0.0	$0.00	/MMBtu	0.0	0.0
Excluded Steam (-)	BBtu	203.3	$6,832.9	$33.61	/MMBtu	203.3	282.6
Excluded Chilled Water (-)	BBtu	91.1	$1,518.3	$16.67	/MMBtu	91.1	91.1
Excluded Security (-)	BBtu	16.7	$525.5	$31.47	/MMBtu	16.7	16.7
Purch. Renew. Electric.	MWH	52,667.06	$5,655.1	$0.11	/kWh	179.7	0.0
Purch. Renew. Other	BBtu	0.0	$0.0	$0.00	/MMBtu	0.0	0.0
		Total Costs:	$16,465.6		Total:	580.1	479.7
FY 2011 Goal Subject Buildings Gross Square Feet (Thousands)		1,531.7			Btu/GSF	378,719	313,162
Goal Excluded Subject Buildings FY 2003 Baseline (Btu/GSF)		121,847			Btu/GSF w/ RE Purchase Credit:	375,027	

1-3. ALL RENEWABLE ENERGY USE (INCLUDING NON-ELECTRIC) AS A PERCENTAGE OF FACILITY ELECTRICITY USE		
All Renewable Energy Use (Billion Btu)	**Total Facility Electricity Use (Billion Btu)**	**RE as a Percentage of Energy Use**
	1,229.3	101.5%

1-4.1 WATER USE INTENSITY AND COST				
Potable Water	**Annual Consumption (Million Gallons)**	**Annual Cost (Thou. $)**	**Facility Gross Square Feet (Thou.)**	**Gallons per Gross Square Foot**
Buildings & Facilities Water Usage	320.0	$5,791.0	15,825.5	20.2
				Percent
Approx. percentage of reported water consumption that is estimated:				0%
Is the FY 2007 Agency water intensity basline preliminary or final?				Final

Part 2: Energy Efficiency Improvements

2-1. DIRECT AGENCY OBLIGATIONS				
	FY 2011		Projected FY 2012	
	(Million Btu)	(Thou. $)	(Million Btu)	(Thou. $)
Direct obligations for facility energy efficiency improvements, including facility surveys/audits		$5,450.3		$600.0
Estimated annual savings anticipated from obligations	10,469.0	$281.0	0.0	$0.0

2-2. ENERGY SAVINGS PERFORMANCE CONTRACTS (ESPC)		
	Annual savings (Million Btu)	(number/Thou. $)
Number of ESPC Task/Delivery Orders awarded in fiscal year & annual energy (MMBTU) savings.	0.0	0
Investment value of ESPC Task/Delivery Orders awarded in fiscal year.		$0.0
Amount privately financed under ESPC Task/Delivery Orders awarded in fiscal year.		$0.0
Cumulative guaranteed cost savings of ESPCs awarded in fiscal year relative to the baseline spending.		$0.0
Total contract award value of ESPCs awarded in fiscal year (sum of contractor payments for debt repayment, M&V, and other negotiated performance period services).		$0.0
Total payments made to all ESPC contractors in fiscal year.		**$1,294.5**

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