

**STATEMENT OF STEPHEN T. AYERS, AIA
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**Regarding “A Growing Capitol Complex and Visitor Center: Needs for
Transportation, Security, Greening, Energy, and Maintenance”**

**Subcommittee on Economic Development, Public Buildings, and Emergency
Management, Committee on Transportation and Infrastructure
U.S. House of Representatives**

April 1, 2008

Madam Chair, Chairman Oberstar, Congressman Mica, Congressman Graves, and members of the Subcommittee, thank you for inviting me here today to discuss the Office of the Architect of the Capitol's (AOC's) Capitol Complex Master Plan, and to update you on the progress on the Capitol Visitor Center (CVC) and our energy conservation efforts.

Capitol Visitor Center Construction Update

I'd like to begin with a brief overview on the CVC project. As you know, we have a great team of people working diligently behind the scenes not only to build the Capitol Visitor Center, but to ensure a safe, memorable, and educational visitor experience when it opens.

The CVC will greatly enhance the visitor experience by providing greater educational opportunities and much-needed amenities to the millions of people who visit their Capitol Building each year. It is designed to match the Capitol in quality and endurance, and generations of Americans will greatly benefit from all it has to offer including the educational exhibits and the inspirational orientation film; providing everyone with the opportunity to learn about Congress and our legislative process.

Each day, the CVC takes on a more finished appearance, and the comprehensive fire alarm and life-safety testing continues to be performed as planned. In fact, in March our crews began working double shifts to ensure that our testing work remains on schedule. A few minor issues have arisen and have been quickly addressed by the contractor. We have completed or are well underway with final testing of a number of systems and devices including, but not limited to, the emergency

generators, fire pumps, fire dampers, sprinkler systems, FM 200 suppression systems, kitchen hoods, the pollution control system, and elevators.

Overall, we remain pleased with the progress being made. Specifically, as the fire alarm testing is proceeding, we are completing minor construction in the following areas: the Library of Congress (LOC) tunnel, the House hearing room, the East Front, the exterior grounds, and the House and Senate atria stairs.

Crews are working to complete punchlist items such as millwork, wall stone, floor stone, ceiling panels, plaster work, carpeting, doors, and other finishes. At this pace, we believe that we are on schedule to receive the temporary Certificate of Occupancy by July 31, 2008, and will have the facility available to open in November 2008, as planned. In anticipation of these milestones, Ms. Rouse and our team continue to work with Oversight Committees and Congressional leadership on plans for CVC's visitor services operations.

Long-Term Demands Vie for Limited Resources

“Planning is bringing the future into the present so that you can do something about it now.”

— Alan Lakein, author

With the addition of the CVC and several new facilities to our jurisdiction over the past several years, including the LOC's National Audio Visual Conservation Center, Book Storage Modules at Fort Meade, the National Garden, and the U.S. Capitol Police's Fairchild Building, the AOC is now responsible for some 16.5 million square feet of buildings and nearly 450 acres of land. In recent years, the number and magnitude of our projects has also greatly increased.

Stewardship of the Capitol complex is a unique challenge. The challenge is amplified by the historic significance of our iconic buildings, aging physical infrastructure, and day-to-day operational requirements. Our buildings range in age from 27 years old for the Library of Congress's Madison Building, to 100 years old for the Cannon, Russell, and Jefferson Buildings, to 200 years old for parts of the Capitol Building.

This means there are many potential projects that call for our attention to ensure that these buildings continue to effectively serve Members of Congress and their staffs for the next 200 years. This includes ensuring that fire and life-safety deficiencies are corrected and that significant resources are devoted to protecting the people who work in and visit the Capitol complex.

In order to prioritize, coordinate, and efficiently complete the many current and future projects we need to accomplish to meet the future needs of Congress, a comprehensive Master Plan must be in place as a way to bring the future into the present. The current Capitol Complex Master Plan was developed in 1981, and is no longer relevant given the changes in security, technology, and other areas over the past 25 years.

We knew in developing a new Capitol Complex Master Plan we had to strike an important and delicate balance because the U.S. Capitol building functions as much more than an office building. It is a museum, a conference center, a tourist attraction, the world's most recognizable symbol of democracy, the seat of our nation's lawmaking branch of government, a place to celebrate our open society, and a target for those who seek to undermine the freedoms it represents.

The intent of our current Capitol Complex Master Plan is to strike the right balance in these contrasts. Therefore, we crafted the following vision statement which became the organizing principle from which all other planning activities begin: *The Capitol complex is an enduring symbol that will continue to provide a forum for democracy and represent our commitment to a free and open society.*

From there we developed four themes that were the basis of the Master Plan and are attributes upon which to judge its success:

1. The Capitol complex as a national seat of government and as a historic, symbolic, and cultural place.
2. The Capitol complex as a workplace and a visitor destination.
3. Facility management philosophies and stewardship of the Capitol complex.
4. Open space and landscape strategies.

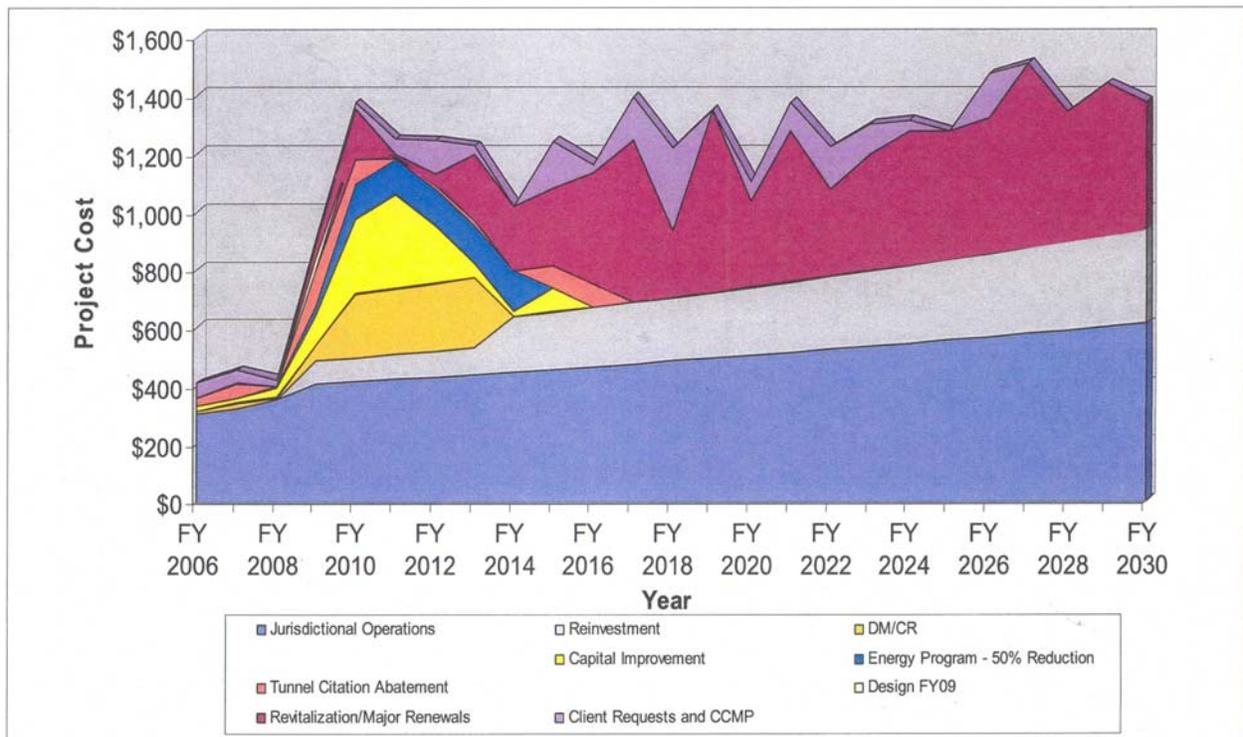
With these themes in place, we began the next step in the planning process: establishing a baseline by which to measure and compare building conditions, plan and evaluate funding requirements, and determine priorities.

As a first step in prioritizing competing demands, we had independent experts complete Facility Condition Assessments (FCAs) on most Capitol complex facilities. These assessments validated a “bow wave” of unfunded Deferred Maintenance and Capital Renewal requirements. FCAs are the primary tools we use to evaluate existing facilities and to identify maintenance and repair issues.

The FCAs have validated a backlog of more than \$600 million in Deferred Maintenance and \$800 million in Capital Renewal projects, with \$900 million of the total \$1.4 billion being immediate or high priority. As the AOC continues to be unable to fund Deferred Maintenance, Capital Renewal, and new projects and initiatives, the “bow wave” of unfunded requirements continues to grow, as demonstrated in the following table.

Long Term Demand

(\$ in Millions with inflation)



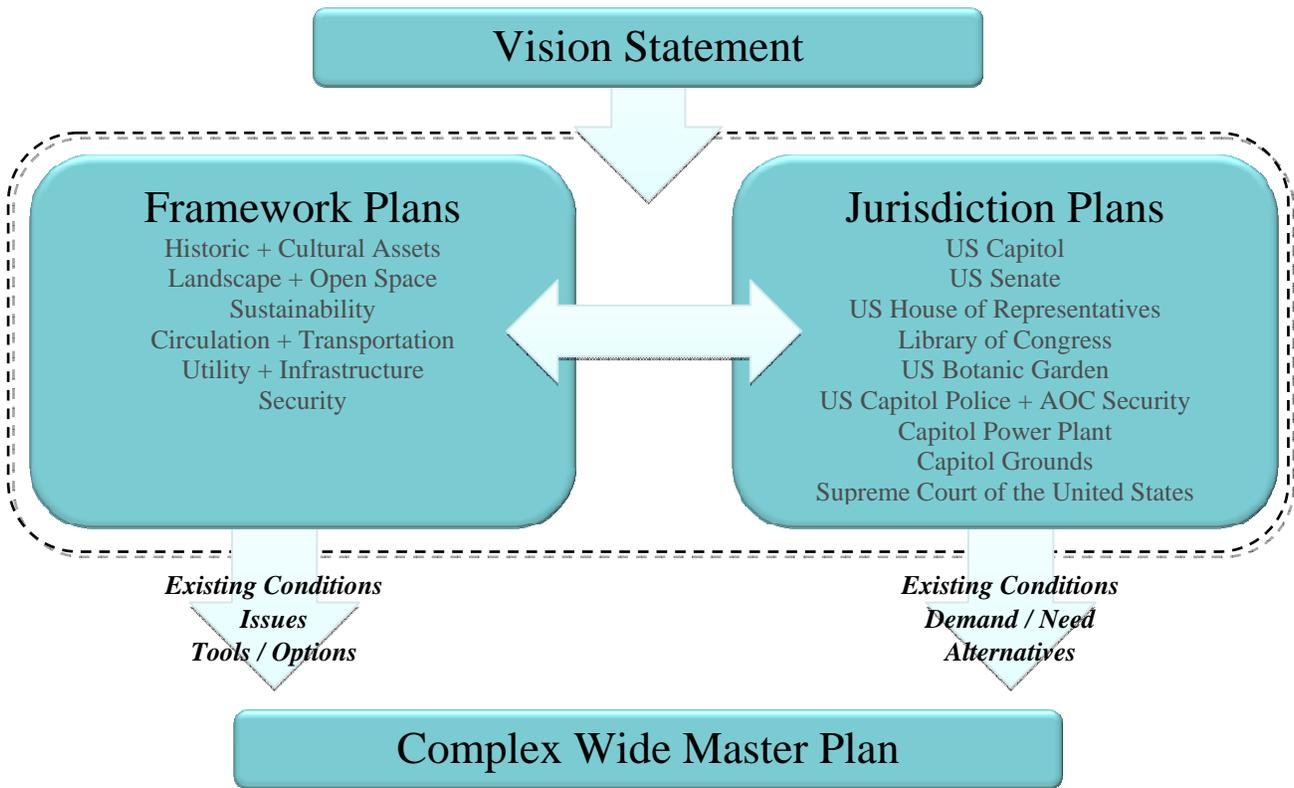
If not addressed, unfunded requirements will only grow more serious and expensive over time. Our experience has shown that if building systems are not replaced or repaired at the end of their expected life, the rate of emergency failures increase dramatically. As a result, funds and labor needed for maximizing the life of other systems are diverted to address the emergency situation, reducing the value of our existing investments. Deferring maintenance also drives increased operating costs as inefficient equipment uses more energy, and requires far more maintenance. This is especially poignant as the cost of natural gas, fuel oil, and electricity continues to rise. My biggest concern about deferring maintenance and capital renewal is that costs accumulate and the bow wave continues to grow to a point that becomes too large to fund.

In terms of our overall planning process, once a Facility Condition Assessment is completed on each facility, the information is rolled into a five-year Capital Improvements Plan (CIP). The Capital Improvements Plan is used to evaluate projects based on a set of pre-established criteria. These criteria include whether the work addresses fire and life-safety issues; code compliance; preservation of historic or legacy elements; economics and life cycle cost considerations; physical security; and other considerations, such as environmental and energy efficiency. The projects are further evaluated based on the conditions of the facilities and their components, and the urgency in correcting the deficiencies.

This fall we will begin drafting our first Five-Year Capital Improvements Plan using the information gathered from our FCAs and the Capitol Complex Master Plan. We will be working to ensure all requirements are identified, prioritized, and included in the CIP. Once developed, the CIP will be updated each year to reflect changes resulting from funding decisions of the prior year, previously identified projects that have moved into the five-year window for accomplishment, and any new requirements not previously known. This tool will lead to significant efficiencies in our program development and budget preparation processes.

The Capitol Complex Master Plan incorporates our major requirements for Deferred Maintenance and Capital Renewal work, along with Congress's requirements for Capital Improvements and new construction.

The chart below outlines the CCMP planning process.



Throughout the planning process, we have looked to external agencies for involvement and guidance in the planning process. For example, the National Academy of Sciences participated greatly in the visioning process, convening an Expert Advisory Panel. Later, representatives from our planning team met with staff of federal and local agencies that influence planning of the Capitol within the city, including the National Capital Planning Commission, Commission of Fine Arts, Smithsonian Institution, National Park Service, D.C. Office of Planning, D.C. Department of Transportation, and the Anacostia Waterfront Initiative. The team also reached out to the adjacent neighborhood via the Friends of Garfield Park, the Capitol Hill Historical Society, and other neighborhood/community groups.

Supporting the Capitol Complex Master Plan are six Framework Plans. Their purpose is to evaluate influences and make recommendations on projects and other initiatives that affect multiple jurisdictions and impact the Capitol complex. They also establish the basis for organizing Jurisdictional Plans into an integrated Master Plan. The six Framework Plans focus on

Sustainability; Transportation; Historic and Cultural Assets; Landscape and Open Spaces; Security; and Utilities and Infrastructure.

The purpose of the Jurisdiction Plans is to identify, quantify, and plan for unmet needs of the nine separate Jurisdictions within the Capitol complex, while at the same time seek to provide a flexible investment strategy that incorporates reinvestment and new construction to meet future needs. Each Jurisdiction Plan is being evaluated to ensure sequencing of short- and long-term priority work is properly expedited and aligned for successful execution and to avoid duplication of efforts.

In the development of the Jurisdiction Plans, we engaged in a thorough and inclusive process that ensured full participation of our stakeholders. Stakeholders were invited to participate in interviews, focus groups, and review sessions, and we provided continuous feedback to ensure parties were kept well informed of our progress.

The Capitol Complex Master Plan is a work in progress. Ultimately, it will establish a framework that will help the Congress to prioritize the maintenance, renovation, and construction of facilities over the next five, 10, and 20 years while allowing for prudent budgeting of the costs for necessary upkeep and construction. We appreciate Congress's support and investment in our Capitol Complex Master Plan process. Planning for our future now will ensure that the Capitol complex continues to provide a diverse and balance experience for Americans, and it will ensure that we make the right investment in its future.

Energy Conservation Efforts

Next, I'd like to discuss the initiatives and projects the AOC has undertaken over the past several years, and the initiatives we are currently implementing to conserve energy, and instill environmental sustainability in facility design and operations across the Capitol complex.

As I discussed earlier with regard to the Capitol Complex Master Plan, as we address the aging infrastructure and significant backlog of deferred maintenance and renewal work, it is imperative that we make the right investments in the right places.

The way in which we design, construct, manage, and maintain our facilities has a major impact on environmental issues such as energy consumption, resource management, pollution, and environmental impact. Sustainable design and construction is a holistic approach to facility management that considers impacts on human health and well-being as well as the natural environment at every stage of the building life cycle.

The AOC has embraced the principals of sustainable design in the ongoing planning, building, operations, and maintenance of the facilities and grounds entrusted to its care. Our Sustainability Framework Plan's goal, over 20 years, is to engage in off-grid sources of energy production, improve energy and water efficiency, and use alternative and renewable forms of energy. These goals will also, ultimately, minimize operating costs.

The Capitol Visitor Center is an excellent example of our use of sustainability principles as it was designed to incorporate as many green features as possible within the constraints of its unique requirements. A few of the CVC's specific "green" features include:

- Built below an existing parking lot, the CVC is a "redevelopment" of an urban site which has not increased the amount of hard surfaces relative to run-off.
- A storm water management system was incorporated into the design to mitigate the impact of run-off and sediment into the city's storm sewer system.
- Compact Fluorescent Light (CFL) fixtures were used wherever possible and light fixture occupancy sensors provided.
- Low-flow bathroom fixtures and automatic faucets and toilets were installed.
- Low-emitting construction materials (paints, solvents, carpets) were used.

Committed to Saving Energy since the 1970s

The AOC has been engaged in energy-saving activities since the energy 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.

It was decided that a pilot program would be launched to try 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 office buildings and refined. Since 1992, our Energy Management Control System has 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 ballast replacement in selected buildings.

Public Law 105-275, Sec. 310

When H.R. 4112, the Legislative Branch Appropriations Act for FY 1999, was signed into law, the AOC was required “to develop and implement a cost-effective energy conservation strategy for all facilities to achieve a net reduction of 20 percent in energy consumption . . . not later than 7 years after the enactment of this Act.” The AOC responded by fulfilling the requirements of the amendment by developing a comprehensive energy conservation and management plan; performing energy surveys of some facilities; continued to install energy and water conservation measures, and considered Energy Savings Performance Contracts to finance energy conservation projects and help achieve energy consumption targets.

Energy Policy Act of 2005 (EPAct), Energy Independence and Security Act of 2007 (EISA), and Recent Energy Savings and Efficiencies

Most recently, we have demonstrated our commitment to energy conservation by complying with the requirements and goals of the Energy Policy Act of 2005. Under the Act, the AOC was required to reduce energy consumption in the Capitol complex in FY 2006 by two percent, as compared to the baseline set in FY 2003. The long-term requirement of the Energy Policy Act is to increasingly reduce, by percentage, energy consumption per gross square foot per year in fiscal years 2006 through 2015. I am pleased to report that the AOC exceeded the goal of two percent by reducing its energy consumption by 6.5 percent in FY 2006.

We exceeded our goal through a variety of projects and pilot programs.

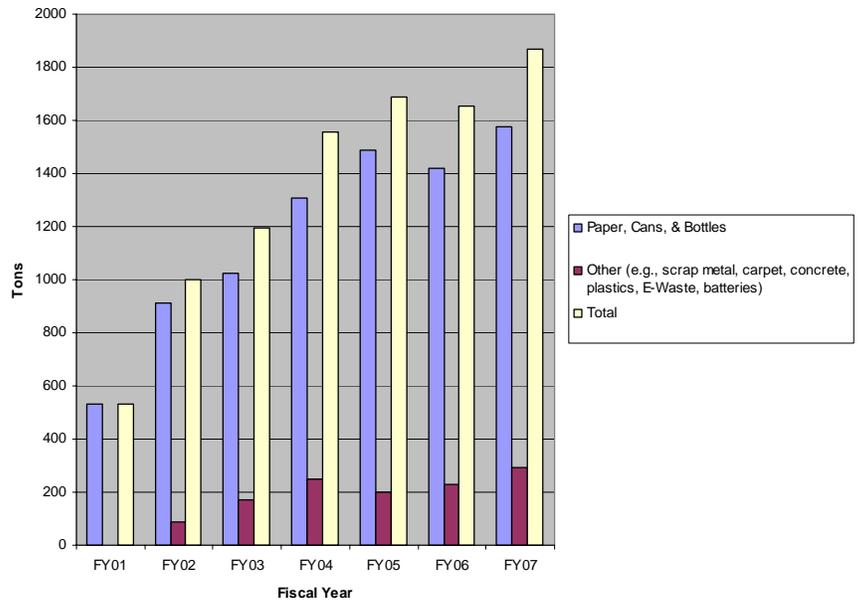
The AOC:

- Installed Capitol complex-wide modern, energy-efficient lighting and comfort-control systems that are saving taxpayers more than \$2.2 million per year.
- Implemented a pilot program to install dimmable lighting ballast systems with daylight and occupancy sensors in overhead lighting to maintain consistent lighting levels in Senate offices. A similar pilot is ongoing in the Capitol Building.
- Is replacing conventional incandescent light bulbs with compact fluorescent lamps (CFLs) across the Capitol complex.
- Is installing occupancy sensor light switches in offices and installing restroom fixture motion sensors and additional low-flow devices for water conservation.
- Initiated a feasibility study to replace the Rayburn House Office Building roof with a building integrated photovoltaic roofing system or a vegetative roof for decreased storm water run-off and improved insulation.
- Is installing modern heating/cooling systems and adjusting and controlling HVAC schedules.
- Is preparing to install an E-85 gas pump.
- Is auditing the energy consumption of facilities to identify energy saving opportunities and planning to add new steam and chilled water meters to all buildings to monitor actual energy use.
- Is using Energy Savings Performance Contracting to increase building energy efficiencies and upgrade infrastructure.

The AOC also implemented a procurement policy that establishes our preference for the use of bio-based products. We require the use of USDA-approved bio-based products. The AOC is also taking the initiative to identify environmentally-friendly products in our daily operations by adding requirements for environmentally-friendly products to our contracts.

We also administer recycling programs and active, voluntary participation by Congressional and other offices has been significant to its success the past several years. In both the House and Senate Office Buildings, offices are outfitted with recycling bins under the voluntary recycling program.

Over the past five years, the total tonnage of non-contaminated recyclable wastes has tripled, while revenue from AOC's recycling program is up over 60 percent. The contamination rate (or off-specification rate) has been reduced to zero over the past five years. In addition, over the past



two years, we have recycled 100 percent of all AOC computer and electronic waste which includes monitors, keyboards, computers, printers, laptops, and other computer hardware.

To further encourage participation, last month, we implemented a new and improved recycling program in the House Office Buildings. We simplified the program by combining all paper into one recycling category. This means high grade paper, mixed paper, and newspaper will all be collected as one category, simply called "Paper." We began delivering new recycling bins and labels House offices on March 17.

The AOC also has initiated two Energy Saving Performance Contracts (ESPCs) and we plan to utilize them to achieve a portion of the required energy reductions under the EAct and EISA. ESPCs allow the AOC to initiate energy saving projects with little upfront funding. An Energy Savings Contractor (ESCO) identifies improvements with short-term payback periods. The AOC and the ESCO then select projects to perform under terms of an ESPC. A negotiated portion of the savings generated by the project pays the ESCO in accordance with the terms of the ESPC. Once the negotiated term of the contract is over, the government retains the energy savings of the project.

To ensure that our efforts save energy and save taxpayer dollars, we are planning to conduct energy audits on several facilities throughout the Capitol complex. The Government Accountability Office, in its report entitled, “Energy Audits are Key to Strategy for Reducing Greenhouse Gas Emissions” validates that energy audits are a key “because these audits identify cost-effective systemwide energy-efficiency and renewable-energy projects.”

To date, five energy audits have been performed. We are currently conducting energy audits on all buildings on a five-year rotating schedule. Although funding was requested in FY 2007 to continue these audits, of the funding level of the continuing resolution precluded any projects from receiving funding. We requested \$1.1 million in our FY 2008 budget request to fund energy audits as part of our five-year plan, and \$400,000 was appropriated. These funds will be used to begin energy audits for the Capitol Building, the Hart Senate Office Building, and the LOC’s Madison Building.

In addition to the energy audits, we have completed studies to identify projects, techniques, and policies which can be implemented to save energy. For example, we have been evaluating the viability of cogeneration capacity to the Capitol Power Plant, which could provide steam, supplementary electricity, and backup power to the Capitol complex and reduce regional emissions by more efficiently capturing the energy output.

It is important to note that the largest, single contributor to our energy reduction efforts is the Capitol Power Plant. Between FY 2003 and FY 2006, the Capitol Power Plant, as a result of new and improved energy efficiency measures implemented there, cut its electricity consumption by six percent and consumption of gas, oil, and coal, measured as total million BTUs of energy, by 12.3 percent.

Capitol Power Plant and Energy Efficiency

Madam Chair, because the Capitol Power Plant (CPP) plays a critical role in our efforts, I would like to provide a brief history of the facility. The Capitol Power Plant operates 24 hours per day, 365 days per year to provide steam and chilled water service. Since the first initiation of steam service in 1910, the Capitol Power Plant has never been offline.

When it was first placed in operation, the CPP provided the Capitol complex with refrigeration and electricity. However, in 1952, the electrical generation plant was decommissioned and modern steam and refrigeration plants were built to provide buildings with steam and chilled water for heating and cooling purposes. Today, the CPP generates steam and chilled water used for heating and cooling of 23 buildings located on Capitol Hill. The electricity used today throughout the Capitol complex is purchased from PEPCO. The steam plant contains seven boilers that utilize a combination of three fuels (natural gas, low-sulfur coal, and fuel oil) to generate steam. Fuel selection is made based on a combination of economics and equipment availability. The refrigeration plant contains 13 electric driven mechanical chillers that utilize refrigerant to produce chilled water used for cooling purposes.

The Capitol Power Plant operates under the Title V permitting program established under the Environmental Protection Agency's (EPA's) 1990 Clean Air Act Amendments. The Title V program requires all new and existing major sources of air emissions to obtain a federally-approved, state-administered operating permit. All Title V operating permits include applicable requirements from federal and state emission standards. We take great pride in abiding by the permit because the permit is designed to protect the public.

The Title V operating permit currently held by the Capitol Power Plant is administered through the District of Columbia Department of Health, Air Quality Division. In addition, the CPP has a complex emissions monitoring system in place, and is required to certify the emissions monitoring systems quarterly, with a certification performed by an independent third party testing firm annually. The Capitol Power Plant must submit quarterly reports to the District of Columbia and Semi-Annual reports to the Director of EPA Region III.

The AOC has spent and will continue to expend the funds needed to improve efficiencies and reduce emissions at the CPP. Several initiatives have been completed over the past several years to expand environmental controls at the Capitol Power Plant.

A few of these projects include:

- Baghouses were added in the 1990's to reduce the amount of particulate matter emitted from boilers.
- New Continuous Emissions Monitoring System (CEMS) and Continuous Opacity Monitoring System (COMS) were installed to monitor emissions levels and maintain compliance as set forth in Federal and local regulations.
- New filter-bags in the baghouses to lower emissions of particulate matter from boilers were installed in 2005.
- Ongoing expansion of the West Refrigeration Plant involves upgrading refrigeration systems to increase overall efficiency, including the use of environmentally friendly 134-A Freon.
- In 2005, new coal under-throw stokers were installed to replace the original coal feeder systems. In addition, the CPP is replacing the stoker grate drive system in both coal boilers in 2007 and 2008. These modern systems should provide more efficient operation and coal combustion.
- The CPP is required to continuously monitor opacity, nitrogen oxides (NOx), and oxygen emissions. New monitors were installed in 2005 and provide constant monitoring of emissions from the coal boilers, which allow us to adjust our fuel mix in real time.
- In addition, the Plant only uses low-sulfur, low-ash coal.

We are working to make the CPP more energy efficient and to reduce emissions. This is a long-term effort and one that will take considerable investment. However, this investment is reasonable compared to the impractical and cost-prohibitive potential of eliminating the CPP. Existing, centralized heating and cooling systems have been studied and proven to be most cost-effective for a large campus such as the Capitol complex. The ability to burn three fuels at the CPP assures reliability, provides flexibility, and ensures some protection against rapidly rising fuel costs as we can switch to a lower cost fuel at any time. However, to cease using one fuel completely would require significant capital improvements to the CPP, necessitate disruptive infrastructure changes to the Capitol complex, and increase average annual fuel costs by millions of dollars.

New AOC Energy Saving Projects, Programs, and Initiatives

In addition to improving efficiencies at the CPP, there are a number of initiatives that we have planned to ensure the Capitol complex's continued compliance with the Energy Policy Act of 2005

and the Energy Independence and Security Act of 2007. To meet these laws' requirements, we plan to undertake the following projects, programs, and initiatives.

- Improve metering so that the impact of energy and water conservation projects can be measured rather than estimated.
- Continue use of Energy Savings Performance Contracts (ESPCs) as a means to pursue projects that offer lifecycle cost-effectiveness but may require increased first-cost investment.
- Evaluate opportunities for onsite renewable energy generation such as use of photovoltaics and supplementing existing fuel with biodiesel.
- Evaluate opportunities for energy recovery both at the Capitol Power Plant and within individual buildings.
- Continue analysis of currently planned facility repairs and upgrades for energy and water savings opportunities.
- Continue development of the Capitol Complex Master Plan/Sustainability Framework Plan to ensure an overarching sustainable approach to facilities and grounds administered by Congress.

By practicing efficient energy management, we save taxpayer dollars and protect the environment and natural resources. As you can see, the AOC has taken considerable action over the years to save energy across the Capitol complex. There is more we all can do to further conserve energy; however we need to ensure that the projects we chose to invest in are fiscally responsible, energy efficient, preserve the historic integrity of these landmark buildings, and have minimal adverse effects on the buildings' occupants, the local community, or on Congressional operations.

Conclusion

Madam Chair, we greatly appreciate this Subcommittee's support and the investment Congress has made in our facilities and infrastructure over the past several years as we continue to make the Capitol complex safer and more energy efficient. As these buildings age, they will require significant repairs, renovations, and upgrades. This will require significant investment.

My goal is to work with Congress to create a clear plan by which we prioritize our projects and the future needs of the Capitol complex. With this Master Plan in place, we can then begin reducing the backlog of Deferred Maintenance and Capital Renewal work that has been identified through Facility Condition Assessments, and address the “bow wave” of unfunded requirements that has continued to grow.

The AOC is committed to being good stewards of the Capitol complex, and in that regard, our achievements and successes can be directly attributed to the dedicated, professional individuals that make up the AOC team. In my role as Acting Architect, I am honored and privileged to work along side them. Because of their efforts and commitment to excellence, we continue to provide exceptional service to Congress and the American public. Once again, thank you for this opportunity to discuss these issues with you today. I’d be happy to answer any questions you might have.