

FY 2012



# USDA Headquarters & GWCC Energy & Water Management Action Plan



USDA  
Office of Operations  
October 2011



# USDA HEADQUARTERS & GWCC ENERGY & WATER MANAGEMENT ACTION PLAN

## Background

The recent significant reductions in operational budgets and the expected continued reductions results in the need for Departmental Management (DM) to take more aggressive energy conservation measures as spelled out in this plan. Executive Order 13514 “*Federal Leadership in Environmental, Energy, and Economic Performance*” and EISA 2007 “*Energy Independence and Security Act*” require a 3% annual reduction in energy intensity through the end of FY 2015 (30% reduction overall.) In addition, the E.O. requires that at least half the statutorily required (5%) renewable energy consumed by the agency in a fiscal year comes from new renewable sources and to the extent feasible, the agency implements renewable energy generation projects on agency property for agency use.

## Environmental Footprint

Operation	Elements or our operation that interact with the environment (Environmental Aspects)	Environmental Impact
Administrative Offices	<ul style="list-style-type: none"> <li>➤ Electronics</li> <li>➤ Vampire Electricity</li> <li>➤ Appliances</li> <li>➤ Supplemental A/C/ and Heating Units</li> </ul>	<ul style="list-style-type: none"> <li>➤ The primary environmental impact of electricity consumption is the production of greenhouse gases that contribute to global warming</li> <li>➤ Water use for irrigation and for cooling electric power plants are tops among US water uses, at about 136 billion gallons a day. So, not only does using less electricity save you money and reduce global warming impacts, but it also protects our precious fresh water supplies. USDA operations are not water intensive, but we recognize that water consumption is a growing concern. We are addressing our main uses of water: landscape irrigation, domestic use in the HQ facilities.</li> </ul>
Cafeteria & Food Service Operations	<ul style="list-style-type: none"> <li>➤ Hot Water Use For cooking Kitchen Appliances</li> </ul>	
Janitorial Services	<ul style="list-style-type: none"> <li>➤ Water used in cleaning</li> </ul>	
Operation & Maintenance	<ul style="list-style-type: none"> <li>➤ Lighting</li> <li>➤ HVAC</li> </ul>	
Landscaping	<ul style="list-style-type: none"> <li>➤ Water Use irrigation</li> </ul>	



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### Goal

Reduce energy and water use, increase efficiency of related systems, reduce dependency on non-renewable energy sources and reduce greenhouse gas emissions.

### Objectives

- **Energy Efficiency:** Reduce energy intensity 30 percent by 2015, compared to an FY 2003 baseline.
- **Greenhouse Gases:** Reduce greenhouse gas emissions through reduction of energy intensity 30 percent by 2015, compared to an FY 2003 baseline.
- **Renewable Power:** At least 50 percent of current renewable energy purchases must come from new renewable sources (in service after January 1, 1999). EPAct 2005 requires that U.S.D.A purchase at least 5% of its electricity from renewable source in 2012 and 7.5% starting in 2013.
- **Water Conservation:** Reduce water intensity (gallons per square foot) by 2% each year through FY 2015 for a total of 16% based on water consumption in FY 2007.
- **Electronics Management:** Annually, 95 percent of electronic products purchased must meet Electronic Product Environmental Assessment Tool (EPEAT) standards for energy conservation where applicable; enable Energy Star® features on 100 percent of computers and monitors.
- **Building Performance:** Renovate buildings in accordance with sustainability strategies, including energy and water conservation.
- **Cost Reductions: Position OO to achieve over \$700,000 in energy cost reduction in FY 2012. This follows the \$370,000 in FY 2011.**

In FY 2011, DM spent \$7,553,000 on facilities energy compared \$8,300,000 in FY 2010, \$8,671,600 in FY 2009, \$9,593,000 in FY 2008 and \$9,000,000 in FY 2007. Overall, DM's energy usage decreased by 6% compared to FY 2010.

Headquarters Complex Update: Between FY 2000 and FY 2006, there was a steady increase in electrical energy usage in the Headquarters Complex. Since FY 2006 there have been significant reductions in electric consumption due to increased and coordinated efforts by facilities staff, data center personnel, and office occupants. During FY 2011 there was over a 15% reduction in electrical energy usage compared to FY 2003 (baseline year) and over 21% reduction since FY 2006 (our peak usage year). During FY 2011 there was a 4% decrease in water usage compared to FY 2007. In addition to electrical energy, we continue to see significant reductions in the usage of district steam in the facility. In FY 2011 we have reduced our district steam usage by approximately 45% compared to FY 2003 (baseline year) on a per square foot basis.

GWCC Updates: The GWCC has seen a steady increase in electric use and cost since FY 1999. The electric use at GWCC has increased by 34% compared to our baseline year of FY 2003. The electrical use decreased by over 8% compared to FY 2010.

DM has made significant progress in FY2011 to improve energy efficiency and awareness in the Headquarters Complex in support of Executive Order 13514 including:

- The completion of the Replacement of Chiller #1 at Sub-Central Chilled Water Plant. The project included replacement of the main circulation pump with an



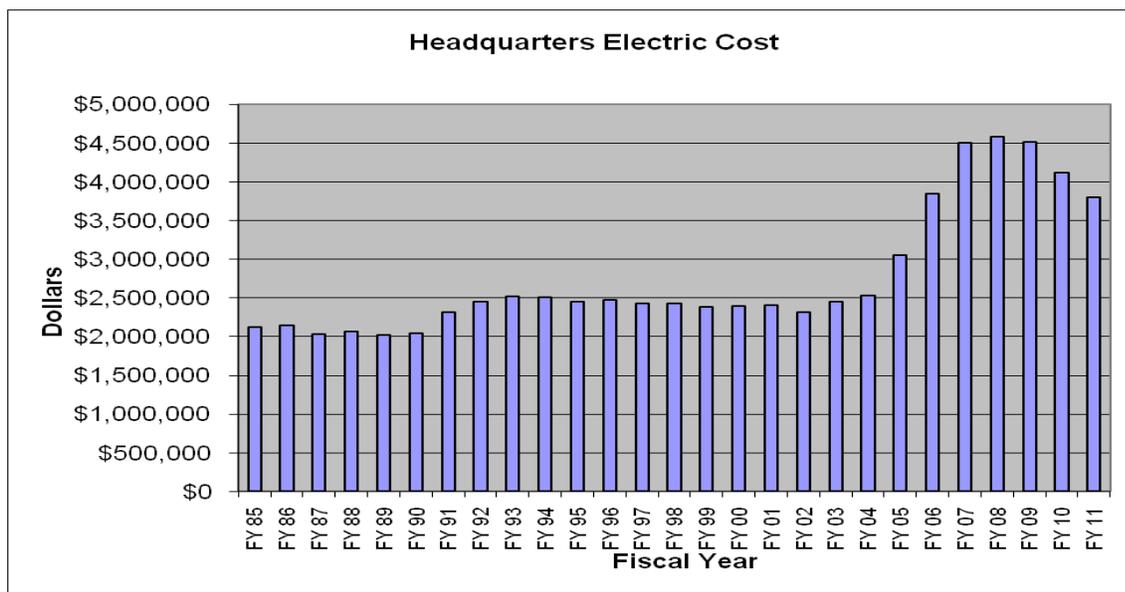
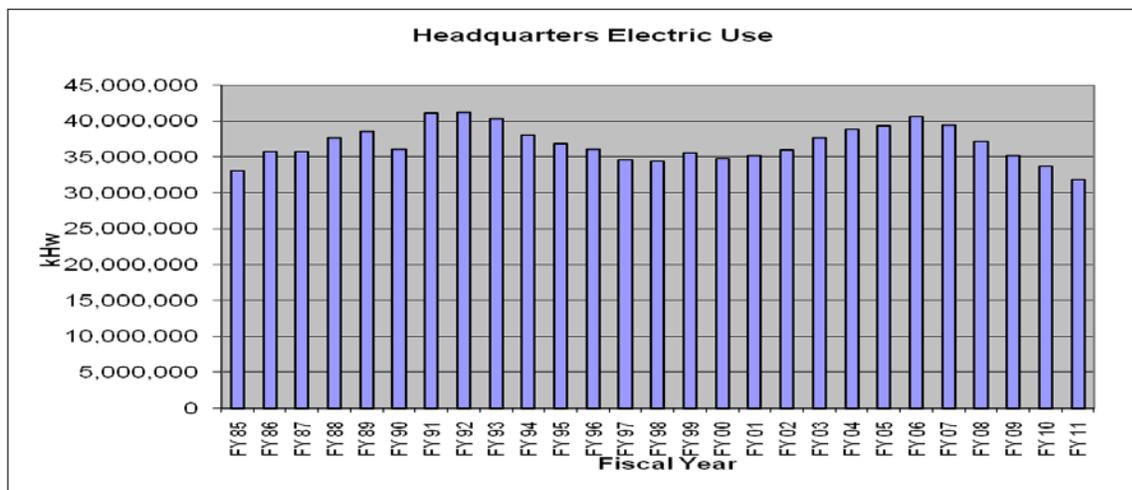
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- energy efficient pump controlled by a VFD, installation of a heat exchanger to allow for “free cooling” during cooler weather, and the replacement of the DDC.
- During Energy Awareness month of October 2010, OO hosted an information table on how employees can save energy at work and at home.
- Successfully managed the Interruptible Load Response Program including a Facility-Wide test of the System in June 2011 at Headquarters.
- Began the conversions of exterior lighting the LED technologies.
- Completed Phase 4A of the South Building Modernization
- Began Implementing PEPCO Energy Services UESC.
- After-Hours Facility Survey – Follow up implementation of repairs to hallway and restroom sensors.
- Retro-fitting elevator cabs with LED lights.
- Replacement of S-502 Air Compressor



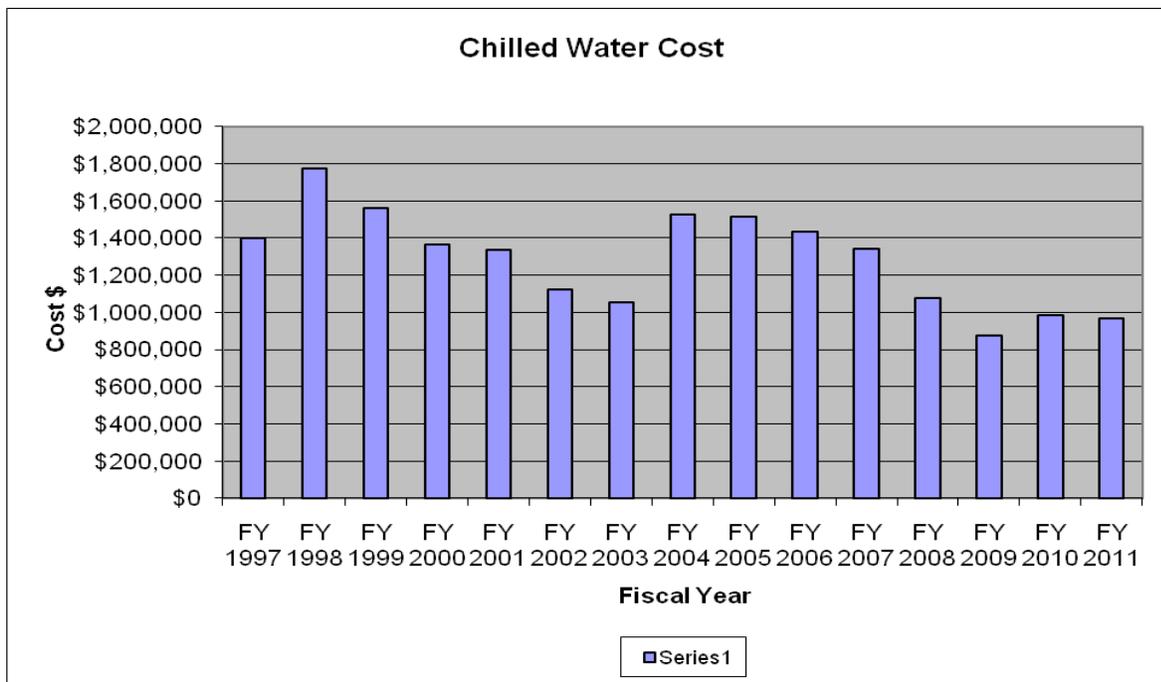
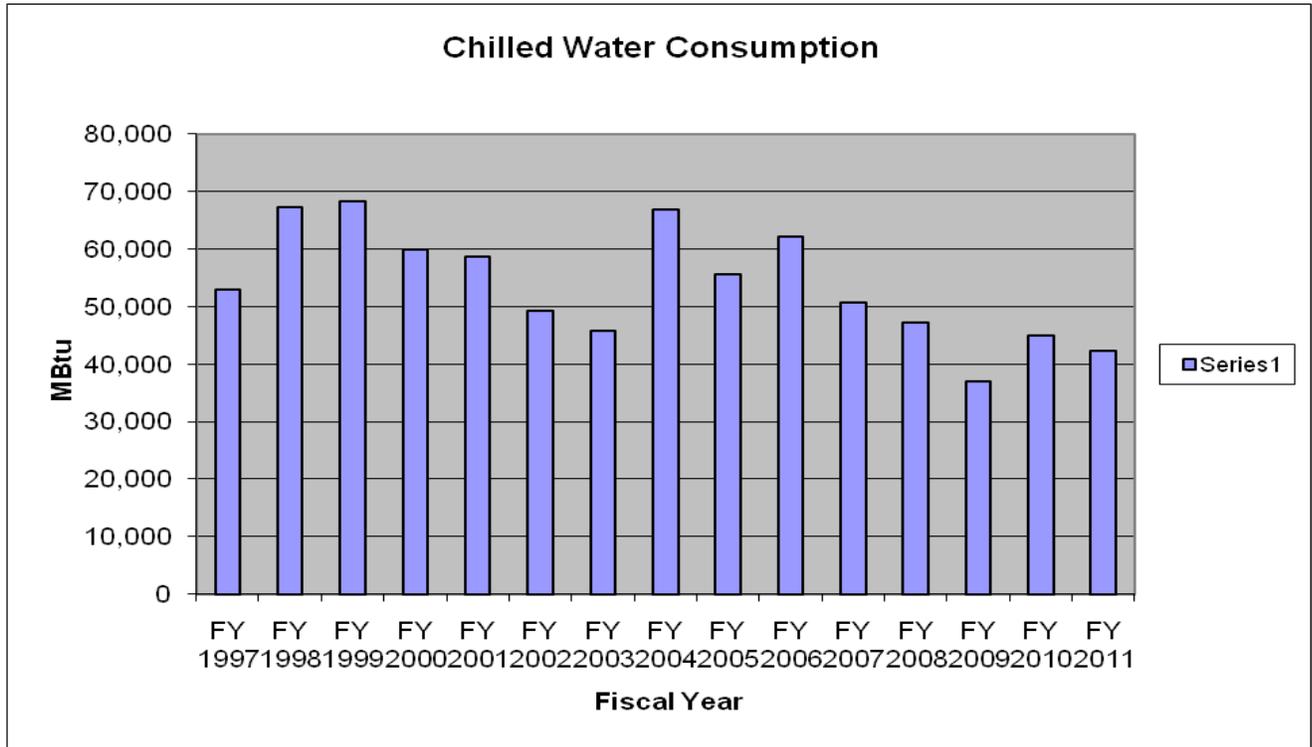
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The Figures below illustrate the Headquarters (Whitten and South Buildings) electrical energy usage and costs for the past 27 years. As of October 2007, Cotton Annex was removed from our building inventory. As you can see, there has been a steady increase in electric usage and cost from FY00 to FY06, due to office automation and increased loads from the data centers, server rooms, increases in electric rates, deferring of energy conservation projects, and space utilization policies (increasing number of employees and associated electrical usage in the OO facilities).



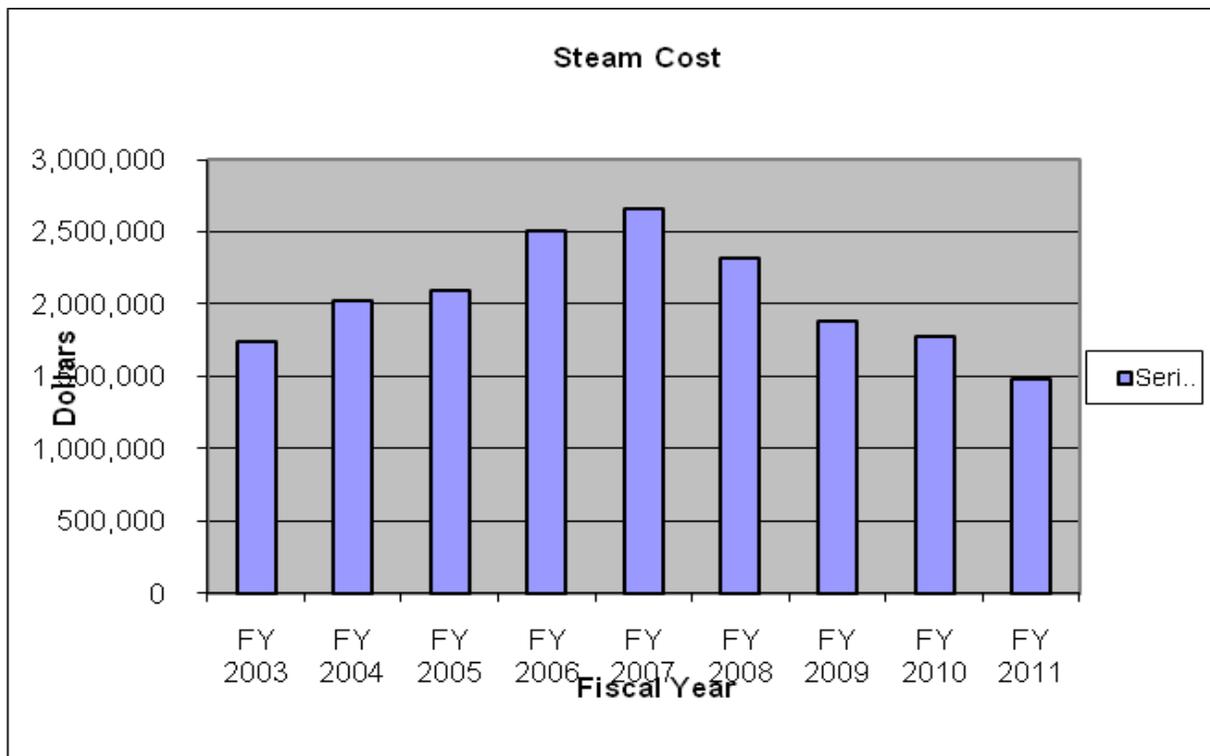
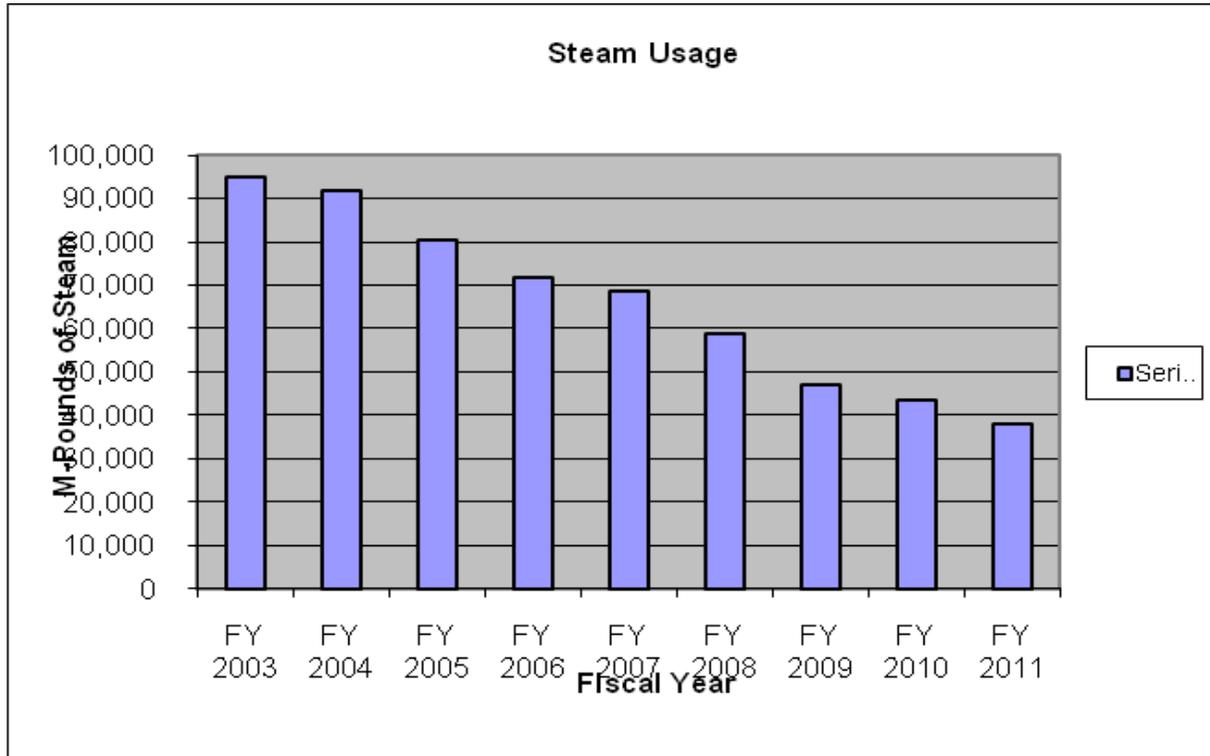


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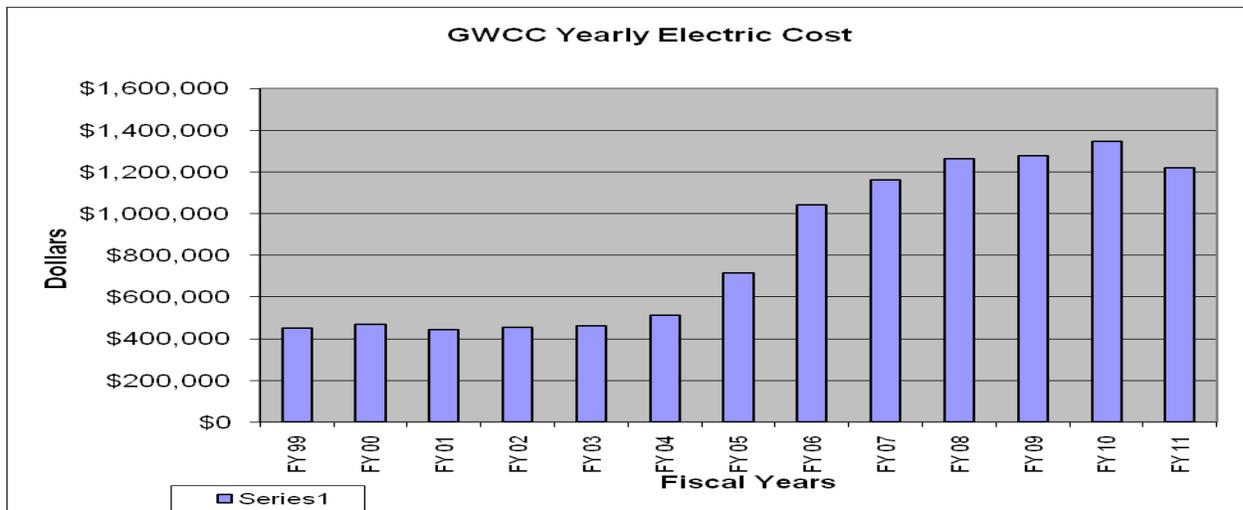
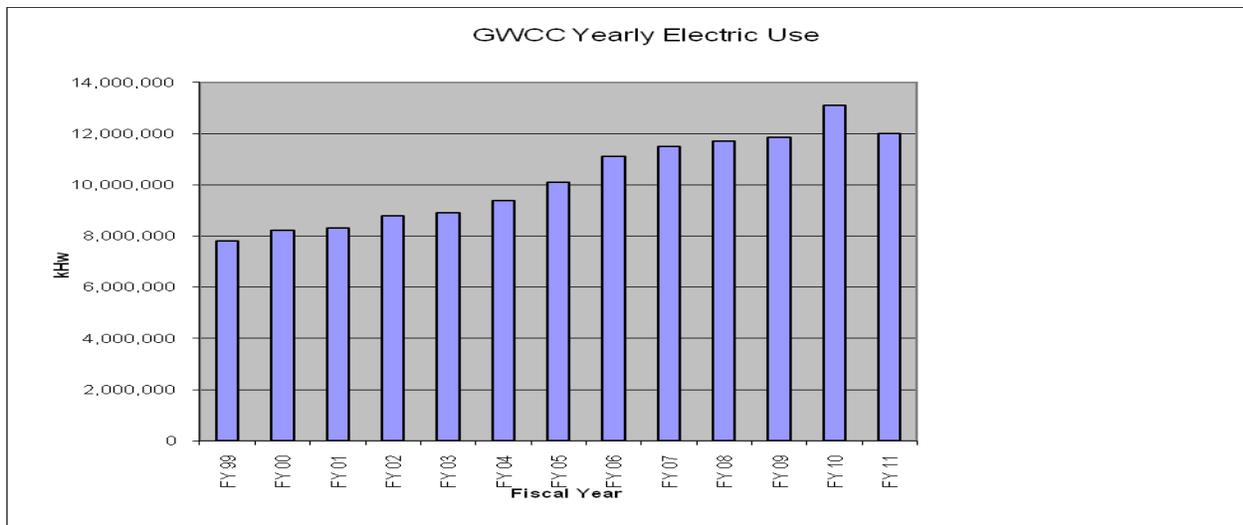
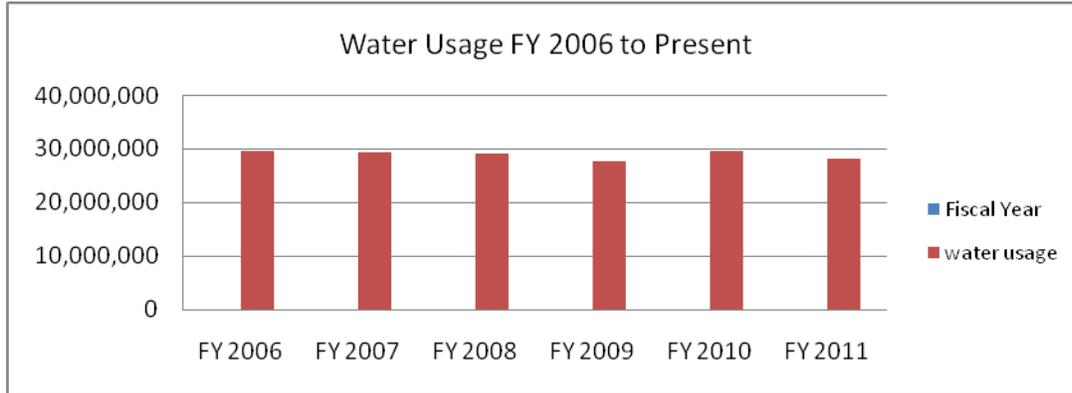


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## Targets FY 2012

- To identify and reduce, if possible, after-hours and constant energy loads causing significant consumption of resources, including working with the OCIO to reduce electrical loads from servers, data centers and computer rooms.
- To identify after hours electrical loads that cannot be reduced and ensure those burdens are offset by tenant reimbursements. Conduct “after-hours” survey of window a/c unit usage. Notify agencies of policy of charging additional charges for after-hours usage of window a/c units.
- To establish a framework to reduce energy consumption to meet or exceed Presidential mandates and legal requirements.
- To engage employees to participate in our Demand Response programs using outreach and education events, including participating in our PLC Program to reduce our Capacity Load Charges in FY 2013 by 10%.
- To participate fully in the Economic Response Programs offered by PJM
- Implement upgrades to ensure significant cost reductions in FY 2012/2013.
- Presentations to tenant agency offices. Follow up with agencies on recommendations.



**USDA HEADQUARTERS & GWCC  
ENERGY & WATER MANAGEMENT ACTION PLAN**

**Action plan for 2012**

<b>Scheduled Actions</b>	<b>Contact Person</b>
Demand Response Program	Ed Hogberg, Ed Murtagh, Vicki Taylor, P.V. Alexander, Hossein Amini
Commissioning of the Upgraded Sub-Central Chilled Water Plant. Year Long Effort, all seasons.	Ed Murtagh, Jeff Sheckels
Green Power Purchase Update	P.V. Alexander
Outreach Events	Ed Murtagh
S-502 Air Compressor – tie into cooling tower	Ed Murtagh, Bahn Lam
Implement UESC with PES – GWCC & Headquarters	Ed Hogberg, Ed Murtagh
Lighting Retro-fits (Tailhouse South Building**)	Hossein Amini and P.V. Alexander.
Implement In-House Energy Management Training for OO staff	Ed Murtagh, Jeff Sheckels
240 E & W Whitten lighting to T-8s	Jeff Sheckels
Remove Wing 1 Steam Station	Ed Murtagh, Bahn Lam

<b>1<sup>st</sup> Quarter</b>	<b>October Energy Awareness Month Outreach</b> <b>Green Team Energy Meeting (Fall Planning Meeting – Winter Operations)</b> <b>Complete OO Energy Report to OPPM</b> <b>Implement Lighting Projects</b>
<b>2<sup>nd</sup> Quarter</b>	<b>Implement In-House Energy Management Training</b> <b>Complete Steam Survey</b>
<b>3<sup>rd</sup> Quarter</b>	<b>Green Team Energy Meeting (Spring Review Meeting, Planning Summer Operations)</b> <b>Test ILR Capabilities</b>
<b>4<sup>th</sup> Quarter</b>	<b>Implement ILR and PLC Programs</b> <b>Update Energy Action Plan for FY 2013</b>



### **Performance Indicators**

The Office of Operations will maintain an advance metering system for measuring and recording usage data. Energy usage data is reviewed daily to look for abnormalities and adjust energy usage accordingly.

Water use is monitored by the Office of Operations

The Energy Management Work Plan has a list of specific tasks, the person responsible for those tasks, intermediate deadlines, and the resources needed to achieve the objectives and targets above.

### **Operational Controls**

There are certain controls in place to ensure we continue to maximize opportunities for energy and water reductions. Operational controls come in the form of policy, guidance, contractor specifications as well as employee awareness.

### **Team Roles, Responsibilities, and Competence**

This program is managed by staff with environmental training from the sustainable operations group and the environmental management division within DM. This team relies heavily on volunteer participation from the USDA HQ Green Team. Team members provide a wealth of knowledge and experience in a broad range of areas, they volunteer their time based on their specific expertise and area of interest. Without their effort many of our achievements would be not obtainable.