



Energy and Environment Quarterly

U.S. Department of Commerce; Office of Administrative Services; Office of Sustainable Energy and Environmental Programs

Taking Net-Zero Energy to the Next Level at NIST

The National Institute of Standards and Technology in Gaithersburg, Md., broke ground this spring on an energy efficient home designed to showcase and test green building technologies. The 2,700-square-foot two-story home will use energy-saving appliances and design, as well as solar panels to minimize the amount of energy it pulls from the grid and to generate at least an equal amount of energy. Some months the home may have an electric bill, but in others it will return energy to the grid, resulting in net-zero energy usage on an annual basis.

The NIST Net-Zero Energy Research Test Facility will resemble a



Conceptual design of NIST's Net-Zero Residential Test Facility. Credit: Building Science Corporation.

typical suburban home occupied by a Washington, D.C.-area family. Researchers will simulate the daily energy usage of a family of four to prove that the typical American home can still use very little energy and produce as much energy as it consumes.

The house will incorporate commercially-available technology to demonstrate that living in a net-zero home means living in the same manner they do now. The house will be built to achieve the U. S. Green Building Council's platinum Leadership in Energy and Environmental Design rating

- Advanced wood framing;
- R-7 windows;
- A solar array;
- A closed-loop thermal system;
- Multiple zoning for air distribution;
- Radiant heat in the basement; and
- Smart Grid metering and networking capabilities.

The Net-Zero Energy Research Test facility will bring a next generation of energy-efficient homes closer to reality. A boost in energy-efficient home sales would create clean would help the country in meeting President Obama's challenge for 80 percent of our energy to come from clean sources by 2035. Net-zero home sales would also help to create clean energy jobs and industries of the future. 

and will feature:

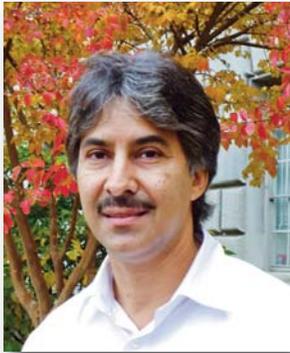
- An ultra-tight building envelope consisting of a continuous membrane, rigid exterior insulation board, and cellulose insulation;

Inside this issue:	
Getting to Know Bill Cruz, OSEC's Sustainability Rep	2
Home Energy Saving Tips	2
Commerce tackles Climate Change	3
NOAA Leads Latest Chesapeake Bay Restoration Effort	4
Old Technology for New: Horses and Broadband	4



NIST's Net-Zero Energy Residential Test Facility with exterior shell completed and wrapped in a moisture/air barrier. Window and door openings have been sealed in preparation for the first air leakage test. Photo Credit: NIST

Getting to Know a New Community Member: Bill Cruz, Office of the Secretary



Building Management Specialist Bill Cruz

Please help us welcome Bill Cruz from the Office of the Secretary's Office of Administrative Services to the Department of Commerce's sustainability community. Although Bill is new to the sustainability field, he comes with an impressive record of energy and water conservation.

As a building management specialist with

the Office of Space and Building Management, Bill manages contracts, construction, special projects, energy and water conservation, and more for the Department of Commerce's headquarters building, the Herbert C. Hoover Building (HCHB). He previously served as HCHB's chief engineer for 19 years, overseeing the operation of the Department's computerized building automation system (BAS). Along with his team of operating engineers he controlled energy usage during the operation of the HVAC system, steam plant and chiller equipment with over 3,000 pieces of equipment and 50,000 data points.

Bill's expertise with HCHB's complex BAS, the HVAC system, steam plant

and chiller equipment gives him valuable insight into energy conservation opportunities in the 1.8 million square foot building. During his tenure as HCHB's chief engineer Bill initiated countless energy and water conservation projects, including the recent cooling tower upgrade, which is expected to save 4,400 gallons of water and over 38,000 kilowatt hours (kWh) of electricity annually, and installation of variable frequency drives on HCHB's air handling units, which will save over 111,000 kWh of electricity and \$47,000 annually.

Prior to joining Commerce in 1983, Bill worked at several other federal agencies, including the General Services Administration, the U.S. Department of Agriculture,

and the Central Intelligence Agency.

Morris Thompson, who worked closely with Bill while he was chief engineer, says of his colleague, "Bill's proactive attitude towards energy management even led him to monitor weather forecasts. For example, on hot days he began running the chillers at 4 am so that during the heat of the day they didn't have to run at full capacity to maintain occupant comfort. This optimized the performance of the HVAC equipment and achieved significant energy and cost savings."

Bill looks forward to helping Commerce headquarters lead the department by example in sustainability and greenhouse gas reduction. ♻️

Energy and Environmental Tips

- Getting a handle on your home's energy use is an important first step to improving efficiency. You can do a simple assessment yourself using on-line tools or have a professional energy auditor perform a more thorough audit. Then, use ENERGY STAR resources to get guidance on home improvement projects to enhance energy efficiency, lower utility bills, and increase comfort. Visit www.energystar.gov/homeimprovement for more information.

- R-Value is a measure of insulation's ability to resist heat traveling through it. The higher the R-Value the better the thermal performance of the insulation. For example, heat flows through an R-8 wall twice as fast as through an R-16 wall.

- Quiz question:** What can you recycle or donate for reuse at the Herbert C. Hoover Building?

- Personal cell phones and personal digital assistants (PDAs)
- Toner cartridges
- Packing peanuts
- All of the above

(answer on back page)



Close-up of solar panels

Commerce Prepares for Climate Change

The Department of Commerce has begun a collaborative effort across bureaus and offices to draft its first climate change adaptation plan in accordance with the new requirements of Executive Order (EO) 13514, Federal Leadership in Environmental, Energy, and Economic Performance.

President Obama signed EO 13514 on October 5, 2009 calling on all federal agencies to establish an integrated strategy for sustainability in the federal government and “evaluate agency climate change risks and vulnerabilities to manage both the short- and long-term effects of climate change on the agency’s mission and operations.”

The Council on Environmental Quality (CEQ) issued implementing instructions for Federal agency adaptation planning on March 4, 2011, and by the end of the month Commerce had designated Mr. Fred Stephens, the Senior Sustainability Officer and Deputy Assistant Secretary for Administration, as the

department’s lead for climate change adaptation planning efforts. The department also established a planning committee led by the Office of Policy and Strategic Planning with support from the Office of Administrative Services and technical subject matter experts from each of the Bureaus. In June, the department published a climate change adaptation planning policy. By September 2011, the planning committee had completed a high level vulnerability assessment (available online at <http://www.commerce.gov/office-secretary/office-policy-and-strategic-planning>) and is on track with an agency plan that will be incorporated into the department’s next Strategic Sustainability Performance Plan update in June 2012. The Office of Real Property Programs is concurrently leading an infrastructure vulnerability assessment that will dovetail into the climate change adaptation plan.

Of particular interest within the Department, the



Healthy coral reef in St. Croix, US Virgin Islands. In response to climate change NOAA has stepped up its monitoring of reefs such as this one. Warming of the world’s oceans puts reefs at risk of coral bleaching, leading to their death. Photo credit: NOAA

National Oceanic and Atmospheric Administration (NOAA) is playing a leading role in climate change adaptation planning across the federal government. NOAA co-chairs the Interagency Climate Change Adaptation Task Force that is developing a national strategy on climate change adaptation. NOAA also recently embarked upon an ambitious program to develop a NOAA Climate Services Portal with the goal of becoming the “go-to” website for NOAA’s

climate data, products, and services for all users.

For more information contact Allison Castellan at 301-713-3155 x125 or allison.castellan@noaa.gov.

»

Upcoming Events

- In January 2012 the Office of Administrative Services will begin soliciting applications for the fifth annual Department of Commerce **Energy and Environmental Stewardship Awards**. Nominate your office for outstanding achievements in energy or environmental performance. Draft nomination categories and criteria are available in the Energy and Environmental Management Manual at <http://www.osec.doc.gov/oas/orepmp-news.html>.
- Training is available 24-7 on the use of the **Energy Star Portfolio Manager** system for tracking your building’s energy consumption, water consumption, and progress towards becoming certified as sustainable. Go to <http://www.osec.doc.gov/oas/orepmp-news.html> to view three training videos tailored to Department of Commerce facilities.

NOAA Leads Latest Chesapeake Bay Restoration Effort

The National Telecommunications and Information Administration has awarded several billion dollars in grant money through their Broadband Technology Opportunities Program (BTOP). Many of the construction projects are located in rural and often rugged terrain. The difficulty in accessing the sites has previously made it unprofitable for telecommunications companies to offer their services.

One project, Vermont Telecommunications Authority is evaluating a decidedly low tech approach to achieving their high tech goals. Fred, a Belgian draft horse, not only can access previously

inaccessible locations but fertilizes and turns up the soil while she works. When it comes to installing broadband fiber in remote locations, Fred doesn't just horse around! *so*



Wetlands along a Chesapeake Bay tributary.
Photo credit: NOAA

Horses for Broadband: Old and New Technologies Collide



The National Telecommunications and Information Administration has awarded several billion dollars in grant money through their Broadband Technology Opportunities Program (BTOP). Many of the construction projects are located in rural and often rugged terrain. The difficulty in accessing the sites has previously made it unprofitable for telecommunications companies to offer their services.

One project, Vermont Telecommunications Authority is evaluating a decidedly low tech approach to achieving their high tech goals. Fred, a Belgian draft horse, not only can access previously inaccessible locations but fertilizes and turns up the soil while she works. When it comes to installing broadband fiber in remote locations, Fred doesn't just horse around! *so*



U.S. Department of Commerce;
Office of Administrative Services;
Office of Sustainable Energy and
Environmental Programs (OSEEP)

1401 Constitution Ave., NW
Washington, DC 20230

Phone: 202-482-3580
Fax: 202-482-1969
Email: gogreen@doc.gov

www.osec.doc.gov/oas/ore.htm