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U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy

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IN THIS ISSUE

...and more!

Federal Energy and Environmental Management Continues to Make Strong Progress

President Bush has called on the federal government to lead by example, to be a good neighbor, and to be a good steward. The Council on Environmental Quality, the Office of Management and Budget's Office of Federal Procurement Policy, and the Federal Environmental Executive led an interagency working group that prepared a report highlighting the activities and accomplishments of the federal community in meeting this charge.

On October 18, 2004, Federal Environmental Executive Edwin Piñero sent to President George W. Bush the report entitled, *Leading by Example: A Report to the President on Federal Energy and Environmental Management (2002-2003)*.

The Federal Environmental Executive stated, "The federal government continues to make strong progress in being more environmentally sustainable and energy efficient. We continue to work diligently to ensure the federal government does its part to use our resources wisely so that we can make our communities more livable, our businesses more competitive, and our world a cleaner place for future generations."

The report highlights several achievements, including:

- Almost 2,000 federal facilities are actively implementing environmental management systems to provide a strategic framework for ensuring compliance with environmental requirements, integrating environmental accountability into day-to-day decision making and planning, and enabling continual improvement.
- From FY 1990 to 2003, total carbon emissions from energy used in federal facilities declined by 2.8 million metric tons of carbon equivalent. This is equal to removing almost 2.1 million cars from the road for 1 year.
- In FY 2003, agencies implemented 103 alternatively financed energy projects through which the private sector invested approximately $570 million, for a life-cycle cost savings of $1.1 billion.
- As of March 2004, agencies reported purchasing almost 552 gigawatt-hours of green power, enough renewable electricity to service more than 54,000 average households a year.
- More than 150 federal buildings are seeking the US Green Building Council's Leadership in Energy and Environmental Design (LEED) certification, which integrates building design and construction practices with energy and environmental considerations.

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Pentagon Activates Solar Air Conditioning, Heating, Lighting, and Power System

The solar heating, air conditioning, power and lighting system installed at the guard station of the Pentagon Heating and Refrigeration Plant is one of the most advanced solar energy systems in the United States.

Despite its modest appearance, the system incorporates 12 advanced features that demonstrate new and improved ways of using solar energy to reduce fossil and electrical energy use.

It demonstrates these new and advanced technologies in an unobtrusive way within the conventional construction of a small 400-square-foot building.

The guard station solar project incorporates the following 12 unique technologies:

1. Solar thermal tile air heating roof system.
2. Reflective roofing laminates and selective surface absorbers to boost solar roof air temperature.
3. High temperature, multi-stage solar roof with peak operating temperatures above 212 degrees F.
4. Photovoltaics (PV) beneath solar thermal tiles for electricity generation and heat production.
5. PV panels separate from the solar roof for grid independent power generation and operation.
6. Grid connected, off-peak, supplemental battery charging controlled by PV-sensing relays.
7. PV-powered cooling fans for PV temperature control, switch gear cooling, and solar roof heat recovery.
8. Desiccant dehumidification of outside air using solar "waste heat" in the summer.
9. Solar heat driven desiccant-evaporative cooling of outside air.
10. Solar pre-heating and pre-cooling of a heat pump to boost heat pump performance and cut electrical energy use.
11. Rainwater recovery from the solar roof to supply the indirect evaporative cooling stages.
12. Automatic winter tank drain-down to prevent freezing.

Many of these features have never before been demonstrated, such as the solar air heating tiles with PV absorbers below for simultaneous electricity and heat production in one weather tight roof. The desiccant evaporative cooling system is also a unique development, since it relies on solar air heating to drive a desiccant air conditioning system. The high temperature summer airflow from the solar roof is an ideal energy source for the desiccant regeneration, which is accomplished with hot air. In the wintertime, the solar roof supplies heating energy to the guard station. The electric power produced drives the heating and cooling system fans and pumps throughout the year and provides security lighting at night.

Solar Heat and Electricity

The new use of photovoltaic materials in a solar heating system is made possible by the use of "air" as the heat transfer agent under the solar thermal tiles. Sunlight passing through the tiles hits the PV materials, which simultaneously generate heat and electricity. The electricity from

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Cover:
The magnifying glass photo on the front cover is a guard station solar project of the Pentagon Heating and Refrigeration Plant.

Leading by example, saving energy and taxpayer dollars in federal facilities

the PV runs the heat recovery and cooling fans that collect solar heated air from the PV surfaces below the tiles. The electricity from the PV also energizes controls in the lighting and battery charging circuits. Placing the PV system below the tiles keeps the PV warm, which improves the electric generating capacity of the amorphous PV panels. The fans also keep the PV cool enough (below 180 degrees F) during peak summer conditions, to protect the panels from thermal damage. The PV deployed below the roof surface represents just 3 percent of the total roof collector area. The PV panel surface area contributes 68 watts of electric power and 345 watts of thermal air heating to the roof's peak summer heating capacity of 11,700 watts thermal (40,000 Btu/hr).

Solar Air Conditioning

The new solar-desiccant-evaporative air conditioning system reduces summer humidity levels of outside air and cools the air before supplying it to the guard station. The desiccant drying stage removes the humidity from the air. The dry air allows ultra-efficient evaporative cooling to take place even in humid climates from the mid-Atlantic to the Gulf coast. Because indirect evaporative cooling is used, no humidity is added to the air headed to the guard station. This aspect of the system demonstrates how outside air can be pre-conditioned before entering an existing building HVAC system, using "excess" solar heat in the summer. This is particularly important for buildings like laboratories or industrial facilities with l00 percent outside airflow and high energy use and cost in dehumidifying and cooling the air.

The solar-desiccant-evaporative system has reduced dewpoint temperatures by as much as 16 degrees and reduced dry bulb temperatures by 10 degrees F during a mid-day test in July. When minor adjustments are made to the water flow and airflow between stages, a 20+ degree drop in dry bulb temperature is expected. At peak performance, the existing system has demonstrated 3.6 units of cooling/dehumidification output for every 1 unit of electrical input and all of the electrical input from the utility grid is at night, during "off-peak" hours.

Solar Assisted Heat Pump

Another advanced feature of the system is a modern update of an older solar heating technology that was conceived during the 1970s, but never commercialized. At that time, "solar assisted heat pumps" were recognized as beneficial for cutting energy use by heat pumps. In the 1970s, heat pump technology was at an early development stage and showed marginal efficiency improvement from solar pre-heating. However, modern heat pumps have overcome those inefficiencies and can substantially reduce energy use with solar air pre-heating.

During cold weather, heat pump energy use can be cut by 35 percent or more with the addition of solar air pre-heating systems. In many cases, solar heated air from the roof or walls can be easily directed to the nearby roof top or ground mounted heat pumps. Similarly, cooler air supplied to the heat pump in summer will cut electricity use by the heat pump in delivering air conditioning. The Pentagon system was designed to demonstrate how solar air pre-heating and pre-cooling of heat pumps can cut high electricity use in the winter and summer.

Direct Current Power

All electrical equipment in the system operates off of Direct Current (DC) power that is delivered at 24 volts DC to a battery bank within the building. The use of DC power instead of AC power saves energy in three ways. First, it eliminates conversion losses from converting DC to AC power in an inverter. Second, the external rotor DC motors in the fans use about one-third of the power of comparable AC motors moving the same amount of air. The third reason DC power saves energy is related to the use of peak demand reduction during the summer cooling season.

The PV system is sized to supply all the power needed during the winter months. During the peak air conditioning season in the summer, the solar-desiccant-evaporative system will often consume more power than the PV panels can generate. The batteries provide the necessary capacity to operate the solar-desiccant-evaporative system throughout the day. When the sun sets, the PV system activates a "110 Volt AC to 24 Volt DC" battery charger that brings the batteries up to full charge during the nighttime hours. This hybrid battery charging approach makes the maximum use of the PV output during the peak electric demand and shifts the grid connected battery charging to an "off- peak" period when electrical demand on the utility grid is lower.

Rainwater Recovery

The Pentagon system collects rainwater for the evaporative cooling stages because the guard station's remote location has no ready source of water. Rainwater recovery was actually the lowest cost option, since installation of a "city" water system would have required hand digging 200 feet of trench over other utility lines buried under asphalt. However, the rainwater system offers other benefits, such as reduced storm water runoff from the roof, and reduced consumption of "city" water. The PV system provides automatic pumping for the evaporative cooling stages and drain down of the storage tank for winter freeze protection.

Lessons Learned

One of the lessons learned from this project is that the multi-staged roof and external PV panels will not be required in future versions. Only a single tile roof surface, with PV panels integrated below the solar thermal tiles, is required to provide the necessary high temperature heated air and electricity for the heating, air conditioning, lighting, and power. Water heating and thermal storage for night time and cloudy day use can be easily accommodated with an air-to-water heat exchanger.

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Fort Lewis Benefits from Building Operator Certification™ Training

A successful partnership between the Northwest Energy Efficiency Council, FEMP, and Fort Lewis near Tacoma, WA, was instrumental in organizing and conducting an on-site Building Operator Certification™ (BOC) training at Fort Lewis in 2003. The Fort Lewis Public Works Department hosted an on-site BOC Level I course series for 25 Maintenance and Repair (M&R) Division electrical and mechanical staff and other Public Works staff including engineers, planners, and estimators. "Expanding professional horizons was the intent of the training," explained Charles Howell, energy program coordinator for the Public Works Department's planning division. Five other Fort Lewis public works employees had completed an earlier BOC series in nearby Renton, WA, and finding it highly worthwhile, one of them encouraged a BOC "home schooling" for colleagues. Fort Lewis and FEMP split the cost of the on-base training.

Operational Challenges

Many older, energy-inefficient facilities on the base feature concrete block construction, single-pane windows, and small heat piping that requires long reheating cycles. The base has already undergone extensive energy improvements, so one of the challenges is to operate and maintain the new equipment while also continuing to upgrade older equipment—lighting, motors, boilers, HVAC and mechanical systems, and windows.

Additionally, the base's Leadership in Energy and Environmental Design (LEED™) requirements make it necessary to push for even greater efficiencies closer to 50 percent above the ASHRAE standard. To date, they have successfully achieved a 20 to 30 percent increase in efficiency compared to the ASHRAE standard. "The efficiencies we are gaining will require a better trained and sophisticated M&R staff to maintain this level of efficiency," said Howell; "BOC has been truly helpful in that regard."

Until recently, the base also operated without an integrated controls system for monitoring the operation of HVAC, mechanical, and lighting systems. Monitoring had to be performed at each building individually across the base. With some 1,000 buildings, this posed a challenge for the public works staff. Development of an integrated controls system for 10 percent of the base's facilities is now underway with funding from an energy savings performance contract. Once completed, it will allow building managers to baseline energy consumption and optimize operation of energy intensive equipment such as lighting and heating and ventilation equipment.

Results of BOC Training

Improving energy efficiency can't be done with equipment alone. People, their practices, and the decisions they make also play an important role. Jim Flannery, Mechanical Lead, describes BOC training as part of a larger cultural evolution toward energy efficiency at Fort Lewis. He is now instituting procedures within his team that call for replacing aged circulating pumps with newer energy-efficient models that are smaller, easier to handle and help reduce utility bills.

BOC graduate John Sly, was already familiar with many aspects of building systems, but gained new insights into indoor air quality from BOC classes. For example, Sly now thinks about carpets and their fumes when developing selection criteria for work packages. This enhanced awareness enables him to be more proactive about addressing indoor air quality problems by identifying potential sources of pollutants and more closely tracking occupant complaints about air quality.

When designing, planning and estimating projects, Sly also applies concepts he learned in the BOC classes. "When involved in design/pre-construction meetings, I put more emphasis on energy conservation techniques and push for better building commissioning and re-commissioning processes," he says. One example of his attentiveness to conservation is purchasing high-efficiency motors. He also has more of a knowledge base to use in reviewing the validity of vendor-proposed energy measures, such as lighting.

Even though Fort Lewis' public works employees already had considerable general building knowledge, BOC helped them to see how the systems they work on overlap with others, and how they tie in with energy efficiency.

For more information on the Regional BOC/FEMP activities, contact Arun Jhaveri, Regional Technology Manager at FEMP/Seattle, 206-553-2152 or arun.jhaveri@ee.doe.gov. For more information on BOC, visit www.theBOC.info.

FEDERAL ENERGY AND ENVIRONMENTAL MANAGEMENT CONTINUES TO MAKE STRONG PROGRESS
(continued from page 1)

- In FY 2003, federal agencies acquired nearly 21,000 alternative fuel vehicles (AFV), nearly doubling the AFV acquisitions from the previous year and raising the total AFV inventory to almost 81,000.
- In FY 2002, almost 733,000 federal employees, or approximately 30 percent of the federal workforce, commuted to work by other than single-occupancy vehicles, helping reduce traffic congestion and air pollution. A total of $261 million was invested during FY 2002 in support of these programs.

The Report also discusses progress on the recommendations made in the 2000-2001 Report to the President that challenged the federal sector to continue improving its environmental stewardship.

The full report can be viewed at www.ofee.gov.

For more information, contact Juan Lopez, 202-564-1297, juan.lopez@ofee.gov.

Wastewater Digester Gas Can Produce High Quality Methane Fuel for Federal Facilities

Wastewater treatment plants (WWTPs) with anaerobic digesters can produce high quality, high Btu methane that can be used to fuel a federal facility power plant. There are more than 16,000 wastewater treatment plants in the United States ranging in size from multi-billion dollar complexes to small, single community plants. More than 3,500 of these facilities employ anaerobic digestion. Since methane production is one of the products of digestion, many treatment plants use a portion of the gas to supply heat needed to complete the digestion process. But only 2 percent of these plants utilize the digester gas to produce electricity. Most of these plants could produce power from the gas and still heat their digesters with the waste heat from the generation process.

The average American creates approximately 100 gallons of wastewater every day. It is composed of 99.94 percent water and must be treated and purified before it can be reintroduced to the environment. In larger treatment facilities this process involves anaerobic digestion where, in the absence of oxygen, bacteria digest residual solids and create methane gas as a byproduct. This gas can be converted to significant amounts of energy and with minimal processing can be used as a substitute for natural gas.

Applications

Wastewater digester gas can serve as a natural gas fuel substitute in applications such as boilers, hot water heaters, reciprocating engines, turbines and fuel cells. The gas produced by anaerobic digestion is usually more than 60 percent methane and some plants with state-of-the-art facilities have the potential of producing a biogas with concentrations of methane that reach up to 95 percent. This biogas is produced on a continuous basis and contaminants, such as hydrogen sulfide, are removed prior to use. Other processing may include dehydration, filtering or carbon dioxide removal.

The most common use of wastewater treatment methane is for internal process heat used in the wastewater digesting process. This can be provided directly or by converting to steam in a boiler. The most popular technology to convert wastewater treatment gas to electricity employs internal-combustion engines that run a generator to produce electricity. This is most often used to power internal operations with the excess being sold back to the grid. Heat generated by these engines can also be recovered and used to heat digesters and plant facilities thus improving overall system efficiency. Another proven application employs microturbines which also produce electricity. These can be modularized and easily expanded as gas production expands.

New technologies are being employed in the use of biogas and these include fuel cells and Stirling engines. Some fuel cells operating on wastewater digester methane produce up to 2 megawatts of electricity. The Stirling engine is attractive for this application because it is an external combustion engine and does not require the degree of gas cleanup that other technologies require. These can also be modularized.

Potential for Federal WWTP Biogas-to-Energy Projects

A recent study found that there were approximately 140 wastewater treatment plants with anaerobic digesters greater than 3 million gallons per day that were within 5 miles of large federal facilities. (Anaerobic digesters are generally used when wastewater flow is greater than 3 million gallons per day). Data obtained from the EPA's Water Discharge Permit database indicates that over 1,600 wastewater treatment plants and nearly 800 federal facilities are located within 15 miles of each other.

Federal energy managers should be aware of two types of opportunities to undertake WWTP biogas-to-energy projects. For large federal facilities that have their own treatment plants, numerous possibilities to save on energy, water, or related operating costs (including sludge removal) should be considered. In addition to the types of energy generation projects discussed above, other improvements could be financed through FEMP's Biomass Alternative Methane Fuels (BAMF) Super ESPC relating to the processing of wastewater. For federal facilities that are located near (under 15 miles) a municipal WWTP, they should explore whether it is of sufficient size to produce excess biogas, the availability of the biogas, and what end-use application would make economic sense.

Benefits of Wastewater Digester Gas and the BAMF Super ESPC

Under the BAMF Super ESPC, agencies can partner with prequalified, competitively-selected energy services companies (ESCOs) and use an expedited contracting process to implement their projects quickly, avoiding the uncertainty and delay of depending on appropriated funding. The ESCO arranges financing for project development, equipment, and installation, and the debt is paid back over time from the guaranteed cost savings generated by the project. FEMP's experienced project facilitators can guide the agency through the entire process, providing expert consultation and assistance with technical, contractual, and financial aspects of the project. For more information about ESPCs, visit FEMP's web site at http://www.eere.energy.gov/femp/financing/superespcs.cfm

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Distributed Energy Resource Analysis at Naval Base Ventura County's Building 1512

Naval Base Ventura County (NBVC) requested a design assistance grant from FEMP for a preliminary cost effectiveness assessment of possible on-site generation projects. Lawrence Berkeley National Laboratory is executing the analysis using its Distributed Energy Resources Customer Adoption Model (DER-CAM). DER-CAM determines the minimum energy bill that any combination of on-site generation and heat recovery equipment can achieve over a test period, usually an historic year. The key data required are utility tariffs faced by a facility, its hourly electricity and heat requirements (both disaggregated to a few end use categories that allow separation of potential combined heat and power served loads from others), and a menu of available on-site equipment possibilities. The most demanding of these data requirements is often the hourly energy use information. In most cases, including the NBVC study, data sets are developed using building energy simulation. NBVC also had a particularly complex tariff structure. The resulting DER-CAM system recommendation is an idealized system intended to serve as a starting point for more detailed engineering analysis.

NBVC is comprised of two nearby bases located 60 miles northwest of Los Angeles, CA: the Naval Air Station at Point Mugu and the Construction Battalion Center at Port Hueneme, founded in 1941 and 1942 respectively. NBVC employs more than 6,000 civilians, 9,000 military personnel and 1,300 contractor staff.

Port Hueneme's Building 1512 was selected after a site visit by Lawrence Berkeley National Laboratory staff because it has the largest electricity use on the two bases, relatively easy visitor access, opportunities for absorption cooling, and because it has other neighboring buildings with substantial thermal loads that may ultimately become part of a broader microgrid. Building 1512 comprises approximately 136,000 square feet and houses a Navy Exchange (a retail store), the Commissary (a grocery store), and many smaller businesses, notably a food court. The site is similar to a small shopping mall.

Under the contractual electricity and natural gas rates paid by NVBC, and given simulated building end use energy loads and available generating technology characteristics, results indicate that if the building installed a 600 kilowatt DER system, consisting of two 300-kilowatt natural gas fired reciprocating engines with absorption cooling, the annual energy bill savings would be about 14 percent, or $55,000 per year. Electricity purchases from the utility decrease by 3.3 gigawatt-hours per year and natural gas purchases increase by 8.7 gigawatt-hours per year. This appears to be an interesting but not compelling opportunity.

Choice of applicable tariff for the analysis turns out to be critical. A switch to the default utility tariff by Building 1512 alone would almost eliminate the benefit of this project, while it would lower the current bill. Applying a third set of internal energy recharge rates delivers a quite different proposed system entirely, further demonstrating that DER-CAM's detailed treatment of tariff structures can produce results surprisingly different from analyses based on simple approximations of energy costs.

Looking beyond the energy bill to a broader societal view, however, all of the DER installation options suggested for Building 1512 offer substantial efficiency improvements, some to near 65 percent compared to utility central station power generation which is usually around 35 percent efficient. In addition, carbon emission reductions in the range of 20 percent or more than 100 metric tons per year would be achieved considering estimated displaced utility power generation emissions.

A study of this kind is demanding of data inputs and resources, but the resulting system provides a much more valuable starting point for further analysis than sequential economic evaluation of various possible systems. Systematic analysis involving DER-CAM can play a useful role for agencies interested in exploring distributed energy resources.

For more information, please contact Owen Bailey, LBNL, at OCBailey@lbl.gov.

PENTAGON ACTIVATES SOLAR AIR CONDITIONING, HEATING, LIGHTING, AND POWER SYSTEM
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The project was initiated in 2003 and the system began automatic operation and testing in the summer of 2004. Dr. Get Moy, Director of Installations Requirements and Management for the Office of the Under Secretary of Defense (Installations and Environment), said, "I am excited that the Pentagon has demonstrated the successful application of these advanced energy technologies, where they will be visible to energy users across the Department of Defense and the federal government."

For additional information contact Terri Robertson, Pentagon Energy Manager, at (703) 695-8004 or John Archibald at American Solar, Inc. at (703) 346-6053 or download the Summary Report at: www.americansolar.com/techpapers.html.

FEMP's Early CHP Projects Show Success

Three years ago FEMP launched a program to make combined heat and power (CHP) technologies easily accessible to federal agencies that wanted to save energy and costs and enhance the energy security and reliability of their facilities. Responding to growing interest among federal energy managers, and led by a FEMP assessment estimating that CHP could be cost-effective and pay for itself in about 7 years in about 9 percent of large federal facilities, FEMP began offering assistance to help agencies screen for feasibility and implement CHP projects.

FEMP initially identified six projects as good prospects for support, and five of these projects have now been completed—four financed through energy savings performance contracts (ESPCs), and one through a utility energy services contract (UESC). These projects are part of a significant upsurge in CHP: Since 1999, 28 distributed energy or CHP systems representing more than 81 megawatts of capacity were installed at federal facilities.

The success of these projects show how CHP can improve the quality, reliability, and security of power systems at federal facilities, as well as reducing greenhouse gas emissions and energy costs. Two of the largest of these projects—Fort Bragg and Twentynine Palms—are also good illustrations of the value of alternative financing in bolstering energy security for federal installations.

Fort Bragg

Fort Bragg's Public Works Business Center (PWBC) is responsible for the almost 30 million square feet of facilities at the 84-year-old Fayetteville, North Carolina installation. It began an energy partnership with Honeywell in 1997 that has helped Fort Bragg cut total energy costs by more than 25 percent and leveraged $66 million in privately-financed improvements at no additional operating cost to the government.

Honeywell's first-of-a-kind 5-megawatt CHP plant features dual use of turbine exhaust, modulating between exhaust-firing an absorption chiller to produce chilled water for air conditioning and feeding a heat recovery steam generator for serving heat loads. The system's advanced control software optimizes individual component operation and overall system response to time-varying energy rates and electric, chilled water, and steam loads. By recycling the waste heat, the effective efficiency of power generation rises to 70 percent—about double the efficiency of central station power plants—and the project will save about $1.8 million per year.

The large turbine that drives the CHP system improves Fort Bragg's abilities to manage electric demand and operate in an "island" mode in the event of a prolonged outage on the main grid. The costs for developing the prototype system were shared between DOE's Office of Distributed Energy (through Oak Ridge National Laboratory) and Fort Bragg, which obtained financing through the ESPC with Honeywell.

Twentynine Palms

This project is another outstanding demonstration of CHP's value for addressing both energy cost and energy security issues. More than 10,000 military personnel and their families live at the Marine Air Ground Task Force Training Command (MAGTFTC) at Twentynine Palms, located in the desert 45 miles north of Palm Springs. With summer temperatures as high as 120F, adequate cooling is a significant concern, as are energy security and reliability, since MAGTFTC is at the end of the Palm Springs electrical distribution system.

Through an ESPC with Johnson Controls, Inc., MAGTFTC now has a $16 million cogeneration system that includes a 7.2-megawatt dual-fuel gas combustion turbine and more than 3 miles of high-pressure gas lines. The turbine exhaust is captured in a heat recovery hot water generator that produces an average of 35 million Btu per hour for the high-pressure district hot water loop; the heat also powers a 200-ton absorption chiller used for precooling of the turbine inlet air. Selective catalytic reduction equipment enables the system to meet air quality standards.

The guaranteed savings of $5.8 million per year means that the project will have a simple payback of 3.5 years. The revenue stream from this project is providing the financing for phase three upgrades under an additional ESPC; these include a 1.2-megawatt photovoltaic system, three chiller plants, and other critical infrastructure improvements. When the upgrades are complete, the overall system efficiency is expected to be 75 percent, more than double the average efficiency of the U.S. electric grid.

San Diego Naval Medical Center

The Naval Medical Center, San Diego (NMCSD; also known as Balboa Naval Hospital) is the most technologically advanced Navy medical treatment facility. NMCSD received design assistance from FEMP's CHP team to evaluate the options available for an upgrade of its cogeneration plant and signed a UESC with San Diego Gas & Electric to install a CHP system. The project includes turbine replacement (a 4.5-megawatt to replace a 2.4-megawatt turbine), heat recovery replacement, chiller replacements, and cooling tower installation. This project also captured funds from the sale of emissions allowances in the California South Coast Air Quality District.

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FEMP'S EARLY CHP PROJECTS SHOW SUCCESS
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VA San Diego

The Veterans Affairs San Diego Healthcare System signed an ESPC with Sempra to replace the existing 880-kilowatt gas turbine cogeneration system located in the central plant with a larger, cleaner-burning, more efficient 4.5-megawatt gas turbine. The installation cost for this system is estimated at $6.7 million. After the system is completed in early 2005, it is expected to yield annual energy savings of $1.5 million, resulting in a simple payback time of 4.4 years.

VA Los Angeles

CHP can be particularly cost-effective in medical facilities because of their large requirements for air quality control and their need for reliable backup power supplies. FEMP's initial screening indicated that the Veterans Affairs Greater Los Angeles Healthcare System could benefit from CHP, and VA is planning to install a 5-megawatt turbine, which is expected to produce energy savings of $2.1 million annually, with a simple payback of 3.7 years.

Hill Air Force Base

Although Hill AFB did not install CHP because FEMP's CHP team ultimately determined that the system under consideration was not cost-effective, the base did install other efficiency upgrades, awarding the first delivery order under the FEMP Biomass and Alternative Methane Fuels (BAMF) Super ESPC program in September 2003 to Exelon Services Federal Group. The principal energy conservation measure is use of landfill gas to generate electricity. The delivery order will bring $4.9 million of private capital investment to the base, resulting in $17 million of energy cost savings over the 20-year period covered by the contract. The base is currently looking at using other BAMF resources for CHP applications as a follow-on effort to the initial project.

How FEMP Helps

CHP is gaining attention as a technology that can improve the quality, reliability, and security of power systems at federal facilities while also helping to meet federal energy efficiency goals. FEMP's CHP team can help agencies connect with private-sector technology partners and financiers. For federal facilities that express an interest in CHP installation, FEMP takes basic data provided by the facility and produces a summary report that helps managers understand factors affecting their site's CHP economics and decide whether to pursue a CHP project.

The FEMP CHP team, which is based at Oak Ridge National Laboratory (ORNL), provides site surveys and feasibility verifications, collection of baseline data, design and technical assistance, and assistance in using alternative financing. FEMP also provides design verification, component matching, and system sizing to thermal and power profiles; technical and price proposal evaluation; advice for addressing policy and regulatory constraints; and project facilitation.

CHP can also be a key component of a facility's energy security by providing backup power during a power outage, and FEMP's offerings include help with developing energy security plans. This includes help in identifying critical loads and emergency back-up systems, as well as developing vulnerability assessments, emergency operations plans, and remedial action plans.

For more information, contact FEMP CHP Core Team leader Kirby Wilcher, wilcherkl@ornl.gov, 865-574-0429.

WASTEWATER DIGESTER GAS CAN PRODUCE HIGH QUALITY METHANE FUEL FOR FEDERAL FACILITIES
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In a typical BAMF WWTP digester gas project, the ESCO builds a pipeline from the treatment plant to the Federal facility and then installs or reconfigures the end use equipment to utilize the resource. WWTP gas-to-energy projects can bring immediate and long-term benefits to Federal facilities:

- Energy cost savings.
- Energy security
  - —When WWTP gas is piped directly to its end use, it provides security from interruptions in the gas and electric grids.
  - —For facilities that require back-up or standby electricity generation, WWTP gas systems provide the lowest cost while still accommodating a steady base load.
- Utility cost stabilization—Because the WWTP gas resource is obligated under a long-term contract, WWTP systems provide an excellent hedge against fluctuations in fuel and electricity prices.
- Environmental benefits—Significant reductions in greenhouse gas emissions (The methane from wastewater is 25 times more harmful to the atmosphere than carbon dioxide).
- Progress toward Federal goals for use of renewable energy.

Is There a WWTP Gas-to-Energy Opportunity in Your Backyard?

To find out more about the process for using the BAMF Super ESPC to implement a WWTP gas-to-energy project at your facility, please contact the FEMP representative at the DOE Regional Office for your area, or one of the following: Christopher Abbuehl, National Program Representative for the BAMF Super ESPC, at 215-656-6995 or christopher_abbuehl@ee.doe.gov; Craig Hustwit, BAMF Technical Lead, at 412-386-4532 or craig.hustwit@netl.doe.gov; or Danette Delmastro, FEMP BAMF Team Lead, at 202-586-7632 or danette.delmastro@ee.doe.gov.

Going Beyond Energy Star® to Save Energy When Purchasing Computers

Desktop computer energy use is rising fast due to more powerful video cards and microprocessors, and the challenges of enabling power management across networks. Despite this increase in energy use, new technological advances and a new utility partnership can help federal buyers take advantage of more efficient computers that minimize energy waste.

The 80 Plus Opportunity

The solution is to buy computers with a more efficient power supply. This simple, silver box is found inside nearly all desktop computer models and is designed to convert high voltage alternating current from the wall outlet into low voltage direct current for use by computer circuitry. The best new designs are more than 80 percent efficient and power factor corrected, often allowing computers that use them to be smaller, quieter, and cooler.

Most current desktop computer power supplies are only 60 to 70 percent efficient, meaning they waste 30 to 40 percent of all the electricity the computer consumes. An 80 Plus compliant power supply allows the typical desktop computer (Figure 1) to drop from 361 kilowatt hours per year to 285 kilowatt hours per year, saving 21 percent of total electricity use across all modes of operation. Most of that electricity is saved during the workday, when electricity costs and cooling loads are usually highest.

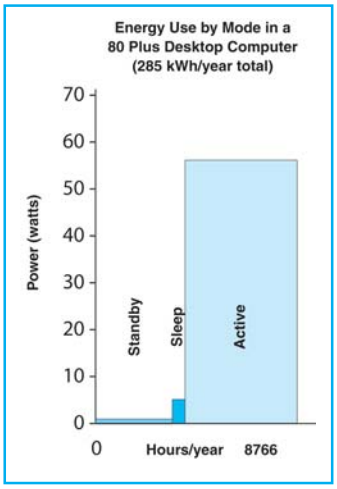

Figure 1

To help bring these new power supplies and computers to market, Ecos Consulting has teamed up with the Northwest Energy Efficiency Alliance, Efficiency Vermont, and various California and east coast utilities to create the 80 Plus program (www.80plus.org). The program tests power supplies and computers to identify models that are more than 80 percent efficient and power factor corrected. Participating utilities pay manufacturer incentives of $5 for qualifying desktop computers and $10 for desktop derived servers sold in their service territories. That covers most to all of the extra cost of installing better power supplies, depending on the technology employed.

Demand Efficiency with Model Procurement Language

The success of this effort rests on consumer demands for these more efficient power supplies. Many computer manufacturers will not commit to offering the better power supplies until their largest customers demand them. If federal and state agencies incorporate 80 Plus into their long term procurement specifications, manufacturers will offer the option on key models. This will reduce energy bills and minimize lifecycle cost, saving about $25 over a desktop computer's 4 year life and more than $100 in servers over the same 4 year period.

To make it easy, the 80 Plus program has posted model procurement language on its website. You can add that language to your existing procurement specifications and cut your computer energy use by about 21 percent—if you give manufacturers six months of lead time to respond. They, in turn, will pass those requirements through to their supply chain, buying the more efficient power supplies from them.

How much can you save? If you buy 1,000 computers a year, participating in this program could cut your electric bills by $18,000 after just 2 years, not counting air conditioning savings and the value of improving power quality. But every office uses different types of desktop computers and for different periods of time. To make the calculations easy, the 80 Plus program has posted a procurement calculator on its website. It's a simple Excel spreadsheet that allows you to estimate your savings across the number of computers you buy each year.

Market Realities: Why Buying Energy Star® is Not Always Enough

Computers are often heralded as one of the great success stories of energy efficient labeling and procurement. Since the launch of the first Energy Star® labeling program in the early 90s, computers have been able to drop into a low power sleep mode after a period of inactivity. More recently, FEMP developed a list of computers that meet low standby power guidelines of 2 watts or less (about half of all current models). Federal agencies have been able to tap those "low power mode" energy savings by specifying Energy Star® and FEMP compliance when purchasing computers.

More than 90 percent of the desktop computers currently sold in the U.S. are Energy Star® compliant (see Figure 2). Energy Star® allows computers to consume 15 to 60 watts in sleep mode (depending on power supply size), though many desktop computers available today need only 5 watts or less. Energy Star® depends on users enabling the sleep mode to generate energy savings. Yet recent research by Lawrence Berkeley National Laboratory, Ecos Consulting, and others consistently finds that the sleep mode is disabled on most networked office computers. IT managers and users are disabling it for convenience, or to allow file backups and virus updates at night.

continued on page 10

GOING BEYOND ENERGY STAR® TO SAVE ENERGY WHEN PURCHASING COMPUTERS

(continued from page 9)

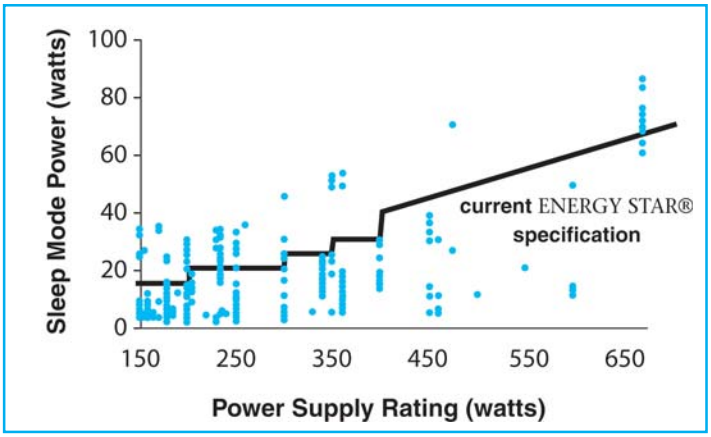

Figure 2

So the good news is that federal consumers are buying computers that use little energy when in standby or sleep mode. The bad news (Figure 3) is that they don't spend much time in that mode. We estimate that federally procured desktop computers are operating about 58 percent of the year and using about 90 to 97 percent of their total annual energy during that time.

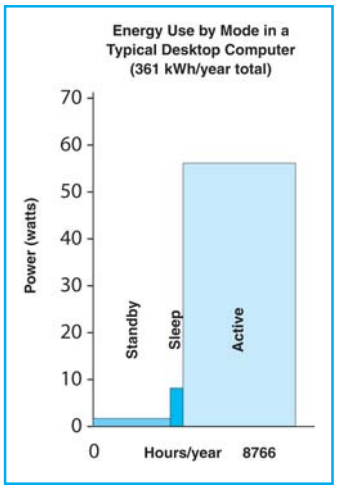

Figure 3

Therefore, buying an ENERGY STAR® computer does not ensure that federal purchasers will minimize lifecycle costs, as required by the Federal Acquisition Regulations and Executive Order. The fact is that neither ENERGY STAR® nor FEMP recommendations cover the active mode—that is, the period during which computers are running and use most of their annual energy. ENERGY STAR® recognizes these problems and is moving to address them. It has posted a new draft specification for consideration, but those changes are not likely to take effect in the marketplace until late 2006 or early 2007, after international consultation and a grandfathering period for existing machines are finished.

Act Now to Save Energy and Costs

In order to take advantage now of lower energy use in the active mode, your best bet is to demand 80 Plus-compliant power supplies in all your computer purchases. By acting now and using new model procurement language that addresses active energy use, you can help reduce your agency's energy use and improve the efficiency of computers for all consumers.

For more information, contact the 80 Plus program manager, Geoff Wickes, at gwickes@ecosconsulting.com or 503 525 2700 x145 or visit the 80 Plus website at www.80plus.org.

New SAVEnergy Audit Contracts Awarded

The Federal Energy Management Program awarded new SAVEnergy contracts in November 2004, continuing the program which many federal agencies have been using for energy audits since 1995. Changes in the new contracts include nation-wide eligibility for all selected contractors, and the added option to identify peak-load reduction measures.

The SAVEnergy Audit is a comprehensive examination of the energy systems in federal facilities or buildings. Engineers, pre-qualified as specialists in building energy systems, evaluate the condition of the building envelope (windows, walls, floors, and roof) and the performance of the energy-consuming equipment, including: lighting, furnaces, chillers, air handling systems, and pumps. SAVEnergy benefits federal facilities by:

- Identifying cost-effective energy-saving measures;
- Evaluating the performance of the facility's heating, ventilating and air-conditioning systems;
- Screening for opportunities to conserve water and use clean, renewable energy systems;
- Creating SAVEnergy Action Plans for greater energy and water efficiency; and
- Meeting the requirements of Executive Order 13123, and agency energy efficiency goals.

Agencies can request the following options, in addition to the basic SAVEnergy survey:

- The Water Conservation Survey, a more comprehensive study of water use in a facility, including water supply, major water using processes and equipment, and more;
- Whole-Building Computer Simulation, which uses the building's energy-use profiles, operating schedules, energy-consuming systems, and other items to characterize current energy use and address the interactive effects of recommended energy conservation measures (ECMs); and
- Identification of Peak-Load Reduction Measures, focusing on natural gas or electricity, in response to recent shortages in both energy sources.

Federal facilities can request a SAVEnergy Audit at any time. However, requests submitted early in the fiscal year are more likely to be funded in that year. Cost-sharing, or full agency funding is also encouraged. Information on the SAVEnergy Program, including the SAVEnergy Request Form, can be found at: http://www.eere.energy.gov/femp/services/assessments_savenergy.cfm

For more information, please contact Will Prue of FEMP at 202-586-4537, or wilfred.prue@ee.doe.gov, or Karen Thomas of NREL-FEMP at 202-646-5223, or karen_thomas@nrel.gov.

T5 Fluorescent Technology Flies High for Defense

The United States Air Force 35th Fighter Wing at Misawa Air Base, Japan decided to investigate new lighting for their aircraft shelters because current lighting levels were ineffective and created a safety concern for maintenance personnel. Reducing energy consumption on base was also a priority. Captain Elizabeth Porter, Chief of Maintenance Engineering, assisted by Resource Efficiency Manager William Bunch, accepted the responsibility to head the project. Her office is responsible for all base infrastructure and manages the energy program.

The Wing flies two squadrons of F-16 Fighting Falcons which are housed in hardened aircraft shelters (HASs). This type of structure has stiff lighting requirements because the power of the jet engines generates massive vibrations, even in a building that is made of reinforced steel and concrete. The presence of hazardous materials and explosives are also a concern.

Original lighting in the HASs consisted of 400-watt High Pressure Sodium (HPS) high-bays. This offered marginal light levels (20-foot candles) of yellowish light with poor color rendering, making it difficult to service the fighter jets. The Air Force contracted energy consultant Bart Wallace, president of Daystar Energy Systems in El Cerrito, California, to help them deploy the proper lighting system. He suggested that new T5HO fluorescent lighting technology might offer the light levels, color rendering, and energy efficiency that the military branch was seeking.

To demonstrate the lumen value and color of a T5 solution, Mr. Wallace created a concept test sample using an off-the-shelf 4-lamp open luminaire moved between gyms, warehouses, and other large volume facilities on base and in Misawa City. However, new HAS lighting would require enclosed luminaires, carrying a UL Class I, Division 2 hazardous location classification. Paramount Industries of Croswell, MI, was then chosen to develop product specifications because of their experience with custom designs, their manufacturing capabilities for heavy-duty industrial luminaires, and their quick delivery.

Paramount utilized eight 54-watt T5HO lamps and a specular reflector in their hazardous location HS2 model Techniseal® troffer to create a new 2x4-foot luminaire. With eight lamps, it delivers up to 40 percent more mean lumens than a standard 400-watt metal halide luminaire. Even with only six lamps, it can still provide equivalent light levels while yielding up to 25 percent energy reduction (according to ballast manufacturers' statements). Other advantages over metal halide include instant start-up, better lumen maintenance, and excellent color rendering. It also offers the opportunity to interface with electronic controls for additional energy savings.

The Air Force and local Japanese engineers reviewed drawings and product samples for 6 months before reaching a consensus. They opted for the six lamp version and ordered 765 of the new luminaires for the 31 shelters on base. Contractors began installing the new luminaires in March 2004 with completion scheduled for December 2004. Twenty-four units were installed in each 8,758 square foot shelter. The HAS ceilings were also cleaned and painted white. The luminaires were mounted with a 20 x 18 foot spacing layout. Because of the curved ceilings, mounting heights varied from 17 to 25 feet.

Captain Porter also ordered 255 of three lamp hazardous location HT5 model Paramyd® luminaires for task lighting at floor level to provide extra light underneath the aircraft. The Paramyd luminaire is an extremely rugged vibration-resistant luminaire with adjustable mounting brackets and a tool-free lens frame for easy servicing.

After the installation, all the involved parties were impressed. New light levels averaged 50-foot candles in the first shelter—more than double the levels of the original HPS. Because of the whiter light and better color rendering it gave the visual impression of being even brighter increasing productivity for the military technicians working in the shelters. Even with the dramatic improvement in light quality, energy consumption was reduced by 25 percent.

Labs21 Announces Call for Presenters for 2005 Annual Conference

Are you a laboratory owner, designer, engineer, health and safety officer, supplier, or manager? If so, the Laboratories for the 21st Century (Labs21) program invites you to present your ideas and accomplishments at the Labs21 2005 Annual Conference on October 18-20, 2005, in Portland Oregon. The application deadline for the Call for Presenters is April 15, 2005.

This year, there are three options for presenting at the conference:

- making a presentation in one of the technical sessions,
- displaying your designs in the engaging Poster Session, or
- sharing a project for informal review by leading design experts at the first-ever Roll-Up Your Sleeves Roundtable.

For more information, including suggested presentation topics and submission requirements, visit www.labs21century.gov/conf/upcoming/index.htm#call.

Other Countries Adopt Energy-Efficient Government Purchasing

There is growing interest in energy-efficient purchasing by governments in other parts of the world. In many cases, these procurement programs have been based, at least in part, on the models of FEMP and its close relationship to ENERGY STAR® labeling. For example:

Denmark

Following an agreement signed in September 2004 between the Danish Energy Saving Trust, a national Buyers Organization (SKI), and several IT suppliers, future government purchasing will include tough new energy efficiency specifications for PCs and monitors, including the FEMP low-standby criteria as well as low-power requirements for "sleep" and active modes. The program also includes a nationwide marketing campaign targeting non-government buyers.

This latest initiative builds on a longstanding tradition of voluntary energy-efficient purchasing by members of the Danish "A-Club," which include national and local government agencies, social housing organizations, and other consumers large and small. The A-Club, established in 1999, offers its members technical specifications and models for use in procurement, special offers, and brand-specific information on efficient models through a website (in Danish only). The A-Club is named for the highest-efficiency ("A") rating under the EU energy labeling scheme. When a public agency joins the Club, the agreement is taken as a serious policy commitment, typically signed by the relevant Minister, mayor, or agency director. Currently, 190 organizations are A-Club members with another 40 considering membership. Public members include the Danish Parliament, 9 government ministries and agencies, 7 county administrations, and 71 municipalities. In total, A-Club members from the government sector account for over 20 percent of electricity sales to the public sector in Denmark.

United Kingdom

Beginning in 2002, the UK government adopted a policy of purchasing more "sustainable" products, with energy efficiency criteria a significant component of sustainability and new, more specific requirements imposed beginning November 2003. The Office of Government Commerce is cooperating with the Department of Environment (DEFRA) to identify energy efficiency specifications and product sources ("Quick Wins") for a number of important product categories (http://www.ogcbuyingsolutions.gov.uk/environmental/downloads/quick_wins.doc).

Mexico

This past September a group of Mexican municipalities participated in a 2-day workshop in Toluca, south of Mexico City, to launch new programs for energy-efficient purchasing, inspired in large part by the experience in the U.S. with federal, state, and local procurement of ENERGY STAR® and FEMP-recommended efficient products. The workshop was organized by the municipal government association AMMAC, in partnership with the "Cities for Climate Protection" campaign led by ICLEI (see below) and Lawrence Berkeley National Laboratory. Public officials in each city have committed to buying energy-efficient office equipment and lighting products, based on criteria that parallel the ENERGY STAR® label (for office equipment) and a Mexican voluntary label for lighting (Sello FIDE).

China

Also this past September, two major agencies of the Chinese government have approved in principal a proposed new policy for energy-efficient purchasing by all central government agencies. The program, to be launched in early 2005, initially covers more than 15 types of products that meet efficiency specifications certified by the China Center for Certification of Energy Conservation Products (CECP). To prepare for this new program, the CECP hosted a workshop on government sector energy efficiency in Fall 2003 (http://www.pepsonline.org/workshop/index.html).

Korea

A well-established program in Korea requires that government agencies follow energy efficiency specifications in purchasing more than 25 types of products. This past summer, an official from the Korea Energy Management Corporation announced that the government is proposing a new requirement for government agencies to purchase low-standby products "based on President Bush's Executive Order."

Japan

Like Korea, Japan has legal requirements in place calling on government agencies to follow energy efficiency specifications when buying certain products—at least 19 types of product as of the regulations updated in 2002.

European Union "PROST" Study

A 2-year study of energy-efficient government procurement sponsored by the European Union led to publication of the 2002 report "Harnessing the Power of the Public Purse." The study

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OTHER COUNTRIES ADOPT ENERGY-EFFICIENT GOVERNMENT PURCHASING
(continued from page 12)

reviews government energy-efficiency procurement activities in the 7 participating European Union countries (and 12 others), and concludes that investments of about €80 million/year could lead to government energy cost savings of up to €12 billion annually (http://www.eceee.org/library_links/prost.lasso).

Municipal purchasing campaigns

An international non-government organization, ICLEI (formerly International Council for Local Environmental Initiatives) sponsors the "Procura+" and "Cities for Climate Protection" campaigns in many countries around the world, including the U.S. (details at http://www.iclei.org/).

"e-Parliament" Network

The e-Parliament is a voluntary international network of elected government officials, formed in 2002. Working mainly on-line, the group shares ideas on legislation to advance sustainability, including a strong emphasis on energy efficiency under the "Action Network on Climate and Energy." One of their policy recommendations is for governments to use their buying power to encourage market shifts toward energy efficiency. Another part of the e-Parliament Toolkit addresses low standby power, with specific reference to the USDOE/FEMP program to implement Executive Order 13221 (see http://www.e-parl.net/energy/policy/markets.htm and http://www.e-parl.net/energy/campaign/toolkit-summ.htm).

For more detail on these and other programs for energy-efficient purchasing, check out the country summaries at www.pepsonline.org. For more information, contact Joan Glickman, Joan.Glickman@ee.doe.gov; or Jeff Harris, JPHarris@lbl.gov.

Federal Facilities Reduce Vending Machine Energy Consumption

The General Services Administration (GSA) has purchased 5,000 VendingMisers, an energy management solution shown to reduce vending machine energy consumption by almost half, and they are being installed in cold drink vending machines located in GSA facilities nationwide. The $500,000 purchase order is USA Technologies' single biggest order to date authorized under a recent 5-year agreement signed with the GSA.

The order comes just days after USA Technologies announced that the U.S. Air Force had completed installation of nearly 500 VendingMisers to cut the cost of electricity consumed by cold drink vending machines at its Kadena base on Okinawa, in the Pacific.

The U.S. Navy has already begun converting cold drink vending machines on bases at Yokosuka in Japan, Naval Station Pearl Harbor, and in San Diego, California.

USA Technologies estimates the 5,000 VendingMisers would save the federal sector customer approximately $500,000 a year in electricity costs, and that the customer could expect to recover the cost of the VendingMisers in approximately 1 year.

GSA recently agreed to a 5-year contract with USA Technologies that enables all federal government agencies and facilities worldwide to purchase USA Technologies' VendingMiser®, CoolerMiser™, PlugMiser™ and SnackMiser™ directly from the company. There are an estimated one million vending machines and refrigerated coolers in the federal sector, and by equipping them with VendingMiser, USA Technologies believes the government could save up to $100 million on energy costs annually.

FEMP Training Reminders

Introduction to ESPC
April 12-13
Newport, RI
202-586-7632

Operations and Maintenance Management
April 12-13
Philadelphia, PA
509-372-4368

UESC Projects
June 8-9
Seattle, WA, OH
206-553-7694

Introduction to ESPC
June 14-15
Cincinnati, OH
202-586-7632

West Coast EMC 2005
June 28-29
San Diego, CA
http://www.aeecenter.org/emc/EMCbody.htm

Advanced ESPC Financing Workshop
August 2-4
Baltimore, MD
202-586-7632

Energy 2005
August 14-17
Long Beach, CA
www.energy2005.ee.doe.gov

Design Strategies for Low-Energy, Sustainable, Secure Buildings
August 17-19
Long Beach, CA
202-628-7400 x 201

Alternative Financing Q&As

You've asked. . .

Q. *What types of technical assistance does FEMP provide for Super ESPC projects?*

A. FEMP, through the DOE Regional Office and National Laboratories, provides agencies with technical support to assess technical and economic feasibility of ESPC or other alterative financing approaches for agency site energy projects. If an agency elects to implement an ESPC project, FEMP provides free training on the DOE Super ESPC Delivery Order process for development, award, and implementation of a privately-financed, performance-based energy savings project; provides a Project Facilitator (technical resource with ESPC project development and energy engineering expertise) to assist the agency with education and technical assistance all the way through submittal of an initial proposal by an Energy Service Company (ESCO). If an agency wants to proceed with project development toward award of a Delivery Order and post-award implementation and administration under the DOE Super ESPC contract, the agency can continue using the services of a FEMP Project Facilitator on a reimbursable basis.

Q. *What is a site survey, what happens during a site survey, and what are the roles of the ESCO and agency?*

A. An ESCO conducts a multi-day site survey to gather information about a site's energy uses, equipment needs, and modernization plans and priorities. The survey is typically conducted immediately following the initial kickoff meeting by a small group of ESCO auditors, escorted by site facilities staff. The auditors will gather several years of utility bills, site and building layouts, and information about the site's equipment and its use (operating hours, nameplate data, etc). The ESCO uses the survey data as a basis for preparing its initial proposal for the agency.

Q. *How can an ESPC Delivery Order's period of performance be reduced?*

A. The period of performance of an ESPC is defined to be the time required for an ESPC's net savings to pay off the ESCO's expenses, including financing costs and fee. A reduction in the period of performance can be accomplished by increasing the annual net savings, or decreasing the size of the project loan, or both. The net savings can be increased by increasing the total project savings, or by decreasing on-going project expenses (M&V costs, management costs, O&M costs, etc). Either way, more money is available to repay the loan quicker. The loan size can be reduced by reducing the cost of the project investment, or by reducing the interest rate on the loan. Either way, the loan can be repaid more quickly.

Q. *Can my agency award an ESPC Delivery Order for a project that primarily conserves water?*

A. Yes, the recent National Defense Authorization Act that reauthorized the ESPC program and extended the ESPC sunset date to October 1, 2006, also allowed water-related savings to be used to pay for ESPCs. The Act defines the term "energy savings" to mean—
A reduction in the cost of energy, water, or wastewater treatment, from a base cost established through a methodology set forth in the contract, used in an existing federally owned building or buildings or other federally owned facilities as a result of—

(A) the lease or purchase of operating equipment, improvements, altered operation and maintenance, or technical services;

(B) the increased efficient use of existing energy sources by cogeneration or heat recovery, excluding any cogeneration process for other than a federally owned building or buildings or their federally owned facilities; or

(C) the increased efficient use of existing water sources in either interior or exterior applications.

The ACT defines "energy savings contract" and "energy savings performance contract" to mean—
A contract that provides for the performance of services for the design, acquisition, installation, testing, and where appropriate, operation, maintenance, and repair, of an identified energy or water conservation measure or series of measures at one or more locations. Such contracts shall, with respect to an agency facility that is a public building, be in compliance with the prospectus requirement and procedures of section 3307 of title 40, United States Code.

The Act defines energy or water conservation measure to mean—

(A) an energy conservation measure, as defined in section 551 of the *National Energy Conservation Policy Act*; or

(B) a water conservation measure that improves the efficiency of water use, is life-cycle cost-effective, and involves water conservation, water recycling or reuse, more efficient treatment of waste water or stormwater, improvements in operation or maintenance efficiencies, retrofit activities, or other related activities, not at a federal hydroelectric facility.

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For information on topics not listed here, call the FEMP Help Desk at 1-877-337-3463

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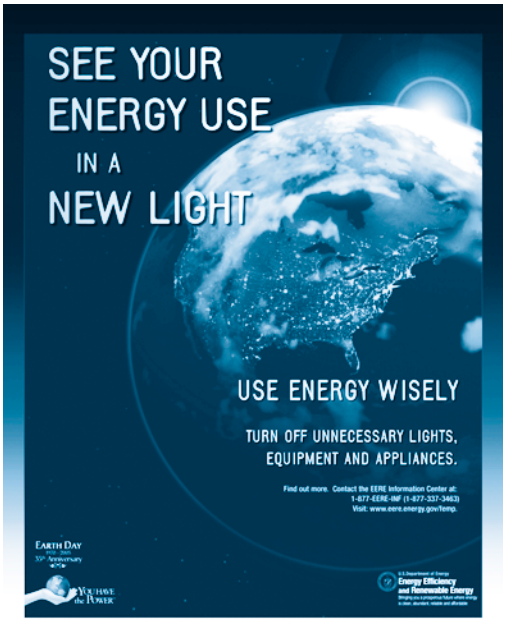
Earth Day 2005 Message Promotes "See Your Energy Use in a New Light"

Earth Day, which began in 1970, is now celebrated by millions of people worldwide. This year is the 35th anniversary, and the Federal Energy Management Program, Office of Energy Efficiency and Renewable Energy, is asking federal facilities and others across the country to celebrate Earth Day on April 22nd, and practice energy efficiency throughout the year. The theme this year, "See Your Energy Use in a New Light," encourages federal workers and others to "see the light" about the significant amount of money and energy that can be saved by cutting energy use. Please call the EERE Information Center at 877-337-3463 to request a limited supply of Earth Day materials. Materials will be available to order by April 7, 2005. A *Power Kit: Energy Awareness Resources* on CD Rom with high resolution graphics for creating and printing your own materials will be available to order by March 31, 2005.

For more information, contact annie.haskins@ee.doe.gov or check out the Earth Day Web page at http://www.eere.energy.gov/femp/services/earthday.cfm.



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