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NIH Innovative Irrigation and Planting Techniques Helping the Environment

The Department of Health and Human Services, National Institutes of Health (NIH) Main Campus in Bethesda, MD, has developed a water-conserving grounds maintenance plan that provides an attractive campus landscape by employing innovative irrigation and planting techniques. In addition, the 300-acre campus has a no-net-loss tree policy whereby any tree on campus lost due to construction or natural causes, will be replaced on a one-for-one basis. The landscaping plan and the no loss tree policy proved quite challenging for the Grounds Maintenance and Landscaping Section (GMLS), led by Lynn Mueller.

Prior to the development of the new landscaping plan, all trees and plants on the campus were watered by a garden hose. This practice was labor intensive and wasteful since the hose supplied water too quickly to be entirely absorbed into the earth at the tree or plant. During the summer drought of 1999, GMLS installed slow drip irrigation bags and water-saving soaker hoses to water new trees and plants. Not only did this measure save water by significantly reducing runoff and evaporation, it drastically reduced the human labor for standing and watering the trees and plants.

As drought conditions worsened, and the use of domestic water was restricted, GMLS began using groundwater pumped from the foundation excavation and construction of a new building nearby. Previously, the water had been routed to a storm drain during the excavation, but GMLS tapped into this otherwise wasted water supply and recycled approximately 126,000 gallons of water over a three-month period.



Slow drip irrigation bags installed by GMLS.



FEMP
*is Your Partner in
 Making Projects
 Happen*

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Beth Shearer
FEMP Director

Secretary of Energy
Spencer Abraham

**Acting Director,
Office of Energy Efficiency
and Renewable Energy**
Abe Haspel

FEMP Deputy Director
Joan Glickman

FEMP Focus Editor
Annie Haskins



The Director's Column

This issue of the *Focus* has a number of articles showing how facilities have cut their water use with a variety of measures. While electricity reliability continues to dominate our thoughts and activities, we cannot forget that water conservation is a looming and growing issue. I hope you will find helpful information in this issue that will improve or increase your water conservation activities.

Because the energy situation in California continues to become more complex and seemingly insoluble, FEMP is again producing a special issue of the *FEMP Focus* on electricity reliability. FEMP, in partnership with other Federal agencies, also has been doing a number of things to help California with their energy situation:

- We are coordinating Federal-State facility responses: On April 24th, Federal agencies participated with California state and local governments in a load reduction exercise program.
- FEMP has piloted a Load Response Reduction Team with Camp Pendleton, California to determine the most appropriate action to reduce cost and load. Other military bases and Federal agencies are now requesting similar assistance.

We encourage you to partner with utilities, local communities, and FEMP to contribute to the Federal Government's efforts to conserve the nation's precious water and other energy resources.

Coming Soon...

A Special *FEMP Focus* on

Electricity Reliability

Including articles on:

- California Survival Strategies,
- Distributed Energy Resources,
- Wind Power as an alternative energy source,
- State reaction to energy issues, and
- More.

Irrigation Water Conservation Opportunities at Marine Corps Installations

Beginning in 1996, The Marine Corps Headquarters Facilities office ranked installations based on their potential for water conservation. Further water conservation analyses involving a water audit and a leak detection survey were performed to identify cost-effective water conservation strategies. To date, water conservation analyses have been completed at eight installations.

These analyses found large amounts of potable water used for irrigation. By implementing efficient irrigation practices, particularly in arid regions, significant reduction in waste of water resources, as well as cost savings, can be achieved.

How Much Potable Water Is Used for Irrigation?

The quantity of water used for irrigation ranged from 16 percent to 33 percent of total consumption at installations in the Mid-Atlantic and the South, to as much as 75 percent at those in the West. All major water uses were identified, though quantities often had to be estimated through observation and discussions with base personnel. At most installations, potable water is used for irrigation, and all major water uses other than irrigation and evaporative losses from the cooling systems are discharged to the sewer system. At installations where there were wastewater flow meters, the potable water used for irrigation was estimated by subtracting wastewater treatment plant flow,

system leaks, and water loss due to evaporation from the total potable water produced or purchased. The estimated and measured wastewater flows were compared to ensure that wastewater flows were not impacted by combined sewer system or infiltration/inflow problems. At installations where there were no wastewater flow meters, the water used for irrigation was estimated using the flow balance method, i.e., by subtracting all major water uses and system leaks from potable water produced or purchased. Table 1 provides estimates of water used for irrigation at installations as a percent of total water consumption.

Approximately 75 percent of watering is accomplished using underground sprinkler systems that are generally activated by

timers. At most installations, sprinkler systems are operated between dusk and dawn. Hand watering is done during working hours. The duration and quantity of watering used for irrigation is determined by the foreman/gardeners. Sprinkler systems are generally operated for 15 to 40 minutes. The duration of manual watering at each station depends on the person watering. Where watering is done by a grounds maintenance contractor, each station usually is watered for a long time, often causing surface run-off.

How Much Irrigation Water Is Needed?

The quantity of water required for irrigation depends on the type of landscape, the irrigation area, and

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Table 1. Percent of Total Potable Water Used for Irrigation

Installation Location	Potable Water Used for Irrigation (Percent)	Annual Reference Evapotranspiration (Inches)	Annual Rainfall (Inches)
Northern Virginia ^a	25	39.2	43.6
North Carolina ^a	32	42.3	46.9
South Carolina (wetlands) ^a	16	49.0	46.5
Arizona (desert)	60	81.8	3.5
California Site 1	45 ^b	47.7	9.8
California Site 2	50	46.4	9.9
California Site 3 (desert)	45 ^c	82.8	4.7
California Site 4 (desert)	75	83.6	5.0

Notes:

a - Reference evapotranspiration exceeds rainfall during summer months

b - Excludes nonpotable water used for golf course irrigation

c - Excludes nonpotable water used for the irrigation of golf course, tree lines, and other selected areas

IRRIGATION WATER CONSERVATION OPPORTUNITIES AT MARINE CORPS INSTALLATIONS

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local climatic conditions. The theoretical water requirements for a particular type of grass can be estimated from reference evapotranspiration and rainfall data. Evapotranspiration is a measure of water depletion from the soil due to evaporation and transpiration through plant foliage.

The water used for irrigation at most of the installations studied exceeded prescribed estimates, and in one installation it was as much as 150 percent more than necessary. The base personnel in one of the installations located in a desert area indicated that excess water was being used to protect the grass in heavy traffic areas such as ball fields, parks, and recreation areas. For sandy soil, adding 10 to 15 percent more water is helpful in heavy traffic areas. If the soil is soft, however, adding more water than required could damage the turf, because people walking on wet soil could further compact the soil. The recommended solution to the compaction problem is increased aeration by loosening the soil, which allows water to percolate, thus helping to increase root growth.



Irrigation Water Conservation Practices

Many installations spend their efforts on developing and implementing water conservation projects such as plumbing fixture replacement and vehicle wash-water recycling systems, without seriously evaluating landscape management practices. However, significant potential exists for water conservation through implementing the following irrigation management practices:

- Get professional landscape management advice. Whether through training or contract, the management of landscaping and irrigation practices for installations with large irrigated areas where the potable water supply is limited and/or the potable water cost is high because of treatment requirements, has tremendous potential for water and cost savings. The installation of water meters where possible to measure water used for landscape irrigation helps greatly to monitor water use and to detect waste. This is particularly important where contractors maintain the grounds.
- Apply principles of xeriscaping to significantly reduce irrigation water in landscape management. Xeriscape is based on sound horticulture principles (Reference: *Xeriscape, Nature's Choice of Landscape*, Arizona Municipal Water Users Association). They are:
 - Good landscape planning and design,
 - Appropriate turf areas,
 - Efficient irrigation,
 - Use of soil amendments,
 - Use of mulches,
 - Incorporation of low-water-use plants into landscape, and
 - Appropriate maintenance of plants and irrigation systems.
 - Review water application methods to ensure greatest efficiency. Where possible, all irrigation should be done during night hours by automated sprinkler systems that are

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**IRRIGATION WATER CONSERVATION OPPORTUNITIES
AT MARINE CORPS INSTALLATIONS**

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monitored and activated by moisture sensors. If moisture sensors are not available, the appropriate application rate should be calculated using the local evapotranspiration rate.

- Use nonpotable water for irrigation where possible. Many Marine Corps installations use secondary treated wastewater treatment plant effluent for golf course irrigation. This practice can be implemented at low cost where the installation operates its own wastewater treatment plant, or where the treatment facility is nearby. The California Department of Health has developed draft guidelines indicating the level of wastewater treatment required for various uses. Another source of nonpotable water for irrigation is groundwater at installations that operate their own wells and water treatment plants. Groundwater can often be diverted for irrigation prior to treatment, thus saving on water treatment cost.

For more information, contact A. "Pad" Padmanaba at 301-770-2320 or e-mail apadmanaba@cs.com.

NIH INNOVATIVE IRRIGATION AND PLANTING TECHNIQUES HELPING THE ENVIRONMENT

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GMLS also utilized xeriscaping, a water-conserving method of landscaping in arid or semi-arid climates, on the roof top garden plaza of the National Library of Medicine on the NIH Bethesda Campus. The garden plaza relies totally on natural water resources, as there are no means for manual watering. By using drought resistant plant material, innovative water absorbing soil, and native plant species, GMLS designed a new garden plaza for the Library that went 31 days without appreciable rainfall and with no loss of plants. The design not only provides continual bursts of color from mid-spring through the first heavy frost, but provides a haven for several varieties of birds and butterflies.

Due to major new construction and renovations on the campus, the no loss tree policy could have proved a difficult challenge as well. However, due to the diligence of GMLS, since 1998, nearly 870 new trees have been planted, 390 removed due to construction, and another 155 younger trees have been transplanted.

For more information, contact Lynn Mueller, NIH, at 301-496-4817 or e-mail muellerl@ors.od.nih.gov.

Your facility can realize water, energy, and associated cost savings from conservation measures described in this issue, including irrigation and other best practices. FEMP can also provide assistance in identifying cost effective water conservation measures at your facility through its SAVEnergy Program. The basic SAVEnergy survey includes water conservation screening and using the Watergy software. If needed, the more comprehensive Water Conservation Survey is provided as an option to the screening. Information on SAVEnergy, including program description and request forms (with Regional Office points of contact) is available at: www.eren.doe.gov/femp/techassist/savenergyprog.html.

If you need additional help on SAVEnergy, please contact Will Prue at 202-586-4537, Karen Thomas at 202-646-5223, or your Regional Office SAVEnergy point of contact shown on the request form.

**"Water scarcity
is probably the most
underestimated
emerging issue today,"**

Worldwatch Institute President Lester Brown to more than 800 delegates in his opening address at the 10th annual Stockholm Water Symposium. More information can be found at www.uswaternews.com/archives/arcsupply/texpwar10.html.



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Fort Irwin: Saving Water in the Desert

At the U.S. Army's National Training Center at Fort Irwin, CA, the reminders of the scarcity of water are as constant as the blowing sagebrush. Summer temperatures can reach 120 degrees, while substantial temperature swings during the winter can mean chilly days in the 20s.

Covering 1,000 square miles of the Mojave Desert, Fort Irwin is home to a training program for some 3,500 soldiers per exercise, 10 times a year. That is a lot of people who need water for drinking, bathing, bathrooms, cooking, heating, and more. "We consume more than 1 billion gallons of water each year," says Rene Quinones, Energy Manager/Planner in Fort Irwin's Department of Public Works. Quinones also recognizes the financial impact of water use. "The closest water supply is more than two miles away, so it's costly to bring water to the site."

Working with Johnson Controls, Quinones says, Fort Irwin has developed several water projects guaranteed to save approximately 121 million gallons of water and more than \$169,000 per year.

The strategies include:

- **New reservoir system.** The Fort's reservoir is used as a heat dump for 660 tons of ground source heat pump capacity. Coupled with high desert temperatures, the heat transfer worked better than expected, causing the system to overheat. So a cooling tower/heat exchanger combination has been installed to help keep the system running smoothly.
- **Irrigation control system.** The current system is being repaired and upgraded so that water usage can be monitored from a central computer. That way, operators can know instantly if there is a leak or broken equipment in any area. In addition, moisture sensors will be used to determine the optimal amount of water needed.
- **Barracks upgrade.** Water consumption at the 13 barracks is largely a matter of toilets, showers, and bathroom faucets. Through the installation of low-flow toilets, showerheads, and faucets, water usage can be reduced by almost half, and energy will be saved as well.

The base has been honored in the past with two Federal Energy and Water Management Awards for its conservation measures, but Quinones says they are not done. Johnson Controls also is looking at 60 other buildings to see if there are additional water conservation strategies.

For information, contact Rene Quinones, 760-380-5048, at rene.quinones@irwin.army.mil, or Bob Johnson at robert.l2.johnson@jci.com.



Fort Irwin, near Barstow, CA., is saving more than \$169,000 each year in energy and water costs by using technologies such as this new cooling tower/heat exchanger system.



A man-made reservoir at Fort Irwin uses a cooling tower/heat exchanger to help keep the system running smoothly. Water conservation projects at the base are guaranteed to save approximately 121 million gallons of water per year.

Water Utility Partnership Meetings

The Water Utility Partnership is an outgrowth of the Federal Utility Partnership Working Group (FUPWG) whose goal is to establish partnerships and improve communications between Federal agencies, utilities, and service companies in order to facilitate the implementation of cost-effective energy and water-efficiency projects.

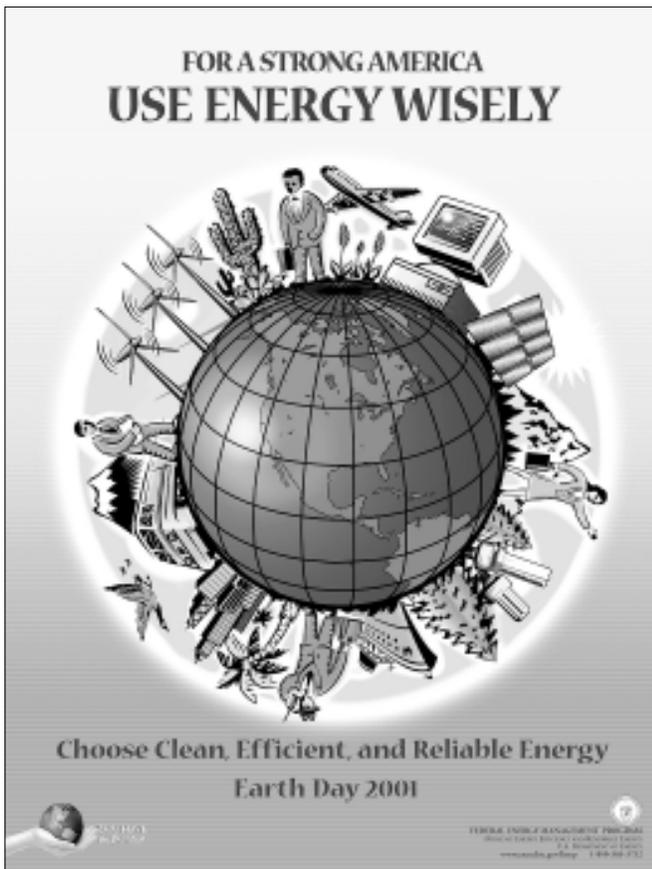
Sponsored with local water utilities and water and energy service companies, these meetings bring representatives of Federal agencies and utilities together to:

- **Assist** agencies in building the partnerships they need to meet the water conservation requirements of the Energy Policy Act (EPA) of 1992 and Executive Order 13123.
- **Exchange** information about water conservation needs and helpful programs and services.
- **Learn** how FEMP can help with water conservation projects, including how to obtain innovative financing.

FY 2001 Meeting Schedule

April 26 – Denver, Co
Denver Federal Center from 10-3:30. Contact Pam Lee-Bull at 303-384-7516.

May 15 – San Francisco, CA
Contact Stephanie Tanner at 202-646-5218.



The Earth Day 2001 poster is available by calling EREC at 1-800-363-3732 or visit www.eren.doe.gov/femp/ordermaterials.html.

Correction

In an article that appeared in the September 2000 *FEMP Focus*, *Steam Traps Maintenance: An ESPC and UESPC Opportunity*, there were mistakes made to the wording of the article's fourth paragraph.

Avoid fixed-orifice traps because they continually blow off live steam and have no way to compensate for variable rates of condensation. Traps subject to freezing temperatures may be damaged by water held inside the trap when the steam system is shut down. Replace traps subject to freeze damage with self-draining types.

The paragraph should instead read:

Match the steam trap type with system loads demands and consider freezing potential in the steam trap selection process. To minimize any steam leakage from those systems that have fluctuating condensate levels and use fixed-orifice plate steam traps, the trap should be sized accurately for the expected condensate flow rate. The designer should use an acceptable safety factor that will maintain the steam bleed at a level that is no greater than the steam bleed from a mechanical steam trap. Condensate receiver tank temperatures should be monitored to verify this.

All traps subject to freezing temperatures may be damaged by water held inside the trap when the steam system is shut down. One way to avoid potential freezing problems is to replace traps subject to freeze damage with self-draining types.

ESPC Delivery Order Awarded at Salt Lake City Veterans Affairs Medical Center

The Veterans Affairs Medical Center (VAMC) in Salt Lake City, UT, will reduce utility costs almost \$500,000 a year through an energy savings facility improvement program with Johnson Controls, Inc. The \$4.8 million project will reduce the facility's annual energy consumption by 30 percent.

The Central Region DOE Super energy savings performance contract (ESPC) will allow the VAMC, an ENERGY STAR® building, to meet its long-term goals with no up-front costs. The streamlined contract will improve operational and maintenance efficiency, reduce energy utilized with waste stream management, improve indoor air quality, and demonstrate commitment to renewable energy.

Administrators at the Medical Center wanted to take a forward-looking approach to renovate the 30-building facility. Johnson Controls audited every building and developed a plan to save energy and money while increasing employee productivity and patient comfort.

"Johnson Controls has provided the resources for us to meet our goals," said Brian McClung, Mechanical Engineer Supervisor of Operations at the VAMC. "We are benefitting from the ability to accomplish several large cost, energy-conserving measures through one project in a short period of time. Normal project funding levels would have postponed these accomplishments for years."

The contract will assist VAMC in achieving the goals of Executive Order 13123. The project includes new energy-efficient lighting, chiller plant and HVAC equipment improvements, and modifications to the chilled water system. The energy savings program also incorporates environmental benefits. Updating the solar hot water system and replacing a medical waste incinerator will reduce harmful atmospheric emissions while decreasing facility energy costs.

"We are pleased to be a partner with the VAMC to reduce the facility's annual energy consumption, and help them better serve our country's veterans," said Bob Johnson, Johnson Controls National Sales Director for Government Systems.



Johnson Controls audited each of the Veterans Affairs Medical Center buildings in Salt Lake City and developed a plan to save energy and money while increasing employee productivity and patient comfort.

Q&A

What is the difference between the Regional Super ESPCs and the Technology-Specific ESPCs?

Both the Regional and the Technology-Specific Super ESPCs are based on the indefinite delivery, indefinite quantity provision of the Federal Acquisition Regulation. Also, in both cases, DOE pre-selects a group of ESCOs to provide delivery order services against the main contract. However, Regional Super ESPCs apply to specific regions of the country, while Technology-Specific Super ESPCs have been chosen for their expertise in a particular energy-savings or renewable technology (e.g., photovoltaic geothermal heat pumps). The benefits of using a Technology-Specific Super ESPC over another contract vehicle are primarily linked to its ability to bring together the necessary private resources to overcome barriers to mainstreaming the use of proven new and emerging energy conservation measures in Federal facilities.

I think I have a potential Super ESPC project. How do I proceed?

Contact your DOE Regional Office Representative (RO), who will be able to walk you through the process. RO contacts can be found on the FEMP Services Web page at www.eren.doe.gov/femp/utility/femp_services_who.html.

Can I talk to more than one ESCO before I commit to accepting a proposal?

Yes, you may entertain marketing calls and hold informal discussions with multiple ESCOs to gather information about their capabilities. ESCOs bear the expense of marketing calls, therefore requests for detailed proposal information should be made in writing.

What questions do you need answered? FEMP wants to provide the most useful information possible, but we need your help to achieve this! Please submit your questions via e-mail to Tatiana Strajnic, at: tatiana.strajnic@ee.doe.gov.

Meet the New Faces of FEMP

The FEMP staff is growing rapidly. In the last two years, FEMP has acquired a new Director, a new Deputy Director, and 11 new staff members. The combination of the new and veteran members has provided insight into the growing needs of FEMP's customers, such as technical assistance, project partnerships, and education and training on implementing new technologies. The group will continue to synthesize their talents to help agencies with their energy saving projects. Here we introduce you to the new FEMP staffers.



JOAN GLICKMAN joined FEMP as Deputy Director in August 1999. As Deputy Director, Ms. Glickman is involved in all aspects of FEMP. Prior to joining FEMP, Ms. Glickman was a special assistant to the Assistant Secretary for Energy Efficiency and Renewable Energy. There she managed several Secretarial priorities including Energy Smart Schools, Brightfields, and Federal energy management policy. Ms. Glickman played a key role in developing Executive Order 13123, which

encourages smart energy use in Federal buildings. Prior to joining the Office of Energy Efficiency, she worked on property reuse and land use issues for DOE's Environmental Management program. She also spent four years at the International City/County Management Association where she assisted local governments on brownfields redevelopment, Superfund, and other environmental concerns. She has a Masters degree in Public Policy from Harvard University's Kennedy School of Government and a Bachelor of Arts degree in African History from Amherst College.



DAVID McANDREW joined the FEMP staff in October 2000. His previous experience includes three years at the Federal Energy Regulatory Commission as an Energy Industry Analyst serving as an expert staff witness in the Office of Administrative Litigation. He worked on a wide variety of cases before the Commission, including electric cost-of-service rate determinations, stranded cost calculations, contract disputes, Open Access Transmission Tariff rates terms and conditions, merger approvals, and

Regional Transmission Organization formation. Mr. McAndrew also has worked at the Defense Energy Support Center, serving as an industry expert on procurement of natural gas and electricity for Federal facilities. At FEMP, he is dividing his time between Departmental Utilities Management and Alternative Financing with an emphasis on Utility Energy Service Contracts. He also is responsible for assisting Federal facilities in purchasing Green Power. Mr. McAndrew holds a Bachelor of Science degree in Marketing.



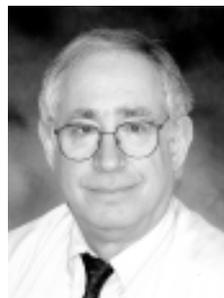
DANETTE DELMASTRO joined FEMP in October 2000. Prior to joining FEMP, she was a contractor supporting Planning, Budget, and Management in the Office of Energy Efficiency and Renewable Energy. She also has a background in strategic planning, project management, outreach, and communications. At FEMP, Ms. Delmastro works with the Alternative Financing/ESPC program, manages the FEMPTTracks database system, and supports the Outreach program in the

areas of marketing, publications, presentations, and award programs. She holds a Bachelor of Science degree in Business Administration and Communications.



BEVERLY DYER joined FEMP's External Service Delivery team in October 2000, following her position as the EPA ENERGY STAR® Buildings program manager for Federal agencies. In her 17 years of Federal service, Beverly also has served at EPA as an interagency project officer for developing EPA/DOE/NRC technical guidance, and at the National Science Foundation as a science resource analyst. At FEMP, Ms. Dyer is placing a special emphasis on customer service delivery. She also will contribute to FEMP's

communications, outreach and strategic planning efforts. Ms. Dyer holds a Master of Arts degree in Science, Technology, and Public Policy.



ALAN GANN came to FEMP from the former DOE Office of Field Integration. Prior to joining DOE in 1979, he held positions with the Federal Power Commission, General Services Administration, and Naval Facilities Engineering Command, and has testified as an expert witness for each agency on utility costs and rates. For FEMP, Mr. Gann is responsible for the review and approval of utility contracts for the DOE sites - electricity, water, and sewage. He also manages DOE's rate

intervention program, whereby DOE intervenes before state and Federal regulatory commissions to protect the consumer interests of DOE and other Federal executive agencies. Mr. Gann is recognized as a Federal Energy Champion for his work with DOE. He holds a degree in electrical engineering.



NELLIE GREER is a familiar face at FEMP with new responsibilities. She has worked at DOE for the past 25 years. She joined FEMP in January 1994 as a program analyst providing analytical and administrative support to the office. Since that time, she has supported the budget formulation process, coordinating responses to Q&A's for Congressional hearings, manages the Federal Energy and Water Management Awards, and assists in the outreach and communications effort. Ms. Greer also

has recently joined the Departmental Utility and Energy Team (DUET) that targets FEMP services at DOE facilities. Her efforts will be concentrated on managing outreach efforts to DOE programs, sites, and field offices, along with assisting in managing the EMS3 database system and coordinating input to the DOE annual report on energy management activities.



SHAWN HERRERA joined FEMP in May 2000 as a Program Manager. Before joining the staff, she was with the DOE Nevada Operations Office. Ms. Herrera has experience with energy management practices, design tools, and evaluation techniques as they relate to energy management in Federal facilities. She is currently managing FEMP's distributed energy resources program, and oversees the design assistance program. Ms. Herrera holds a Bachelor of Science degree in Electrical Engineering.



STEVEN HUFF joined FEMP in October 1999 from the former Office of Field Integration. Before joining DOE, he worked at the U.S. Air Force, the Federal Energy Regulatory Commission (FERC), and the West Virginia Public Service Commission (PSC). Mr. Huff served as an expert witness on accounting, cost of service, and rate design at FERC and the West Virginia PSC. Since 1985, he has been responsible for the planning, acquisition, management, and approval of utility contracts for DOE sites. He also

manages DOE litigation before State and Federal regulatory commissions, ensuring that DOE consumer interests and that of other Federal executive agencies are protected. Mr. Huff is the Co-Designated Federal Officer for the Federal Energy Management Advisory Committee. For his work with DOE, Mr. Huff was recognized as a Federal Energy Champion. He has a Bachelor of Science degree in Business.

Not shown are Schuyler (Skye) Schell, new Team Lead for Planning and Outreach and soon to come on board, Linda Mesaros, new Team Lead for Technical Assistance, Financing, and Departmental Utility and Energy Team.

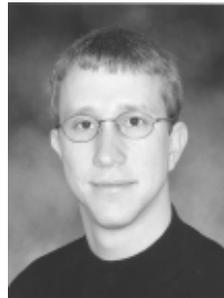


ALISON THOMAS is currently on detail from the DOE's Office of Industrial Technologies. Prior to joining DOE, she worked for the Air Force Research Laboratory as an R&D program manager for hazardous waste remediation technologies. Ms. Thomas is responsible for the Technical Assistance budget and performance metrics, energy-efficient product procurement, and the Industrial Facilities Program. She holds a Bachelor of Science degree in Environmental Engineering, and a Master of Science degree in Technical Management.



ELLYN KREVITZ joined FEMP's Customer Service, Planning, and Outreach team in July 2000. She is currently managing the FEMP-Wide Customer Survey, coordinating education planning for the Green Energy Parks Program, and supporting other FEMP policy work. Ms. Krevitz is a member of the Presidential Management Intern Program, a two-year management training program with the Federal Government. She received a Master of Public Administration degree, with a

concentration in Environmental Policy and she holds a Bachelor of Science degree in Environmental Studies.



MICHAEL MILLS joined the FEMP staff in August 2000 as a Presidential Management Intern. He previously worked for the Chemical Manufacturers Association, the Environmental Protection Agency, and the Center for International Environmental Law. His role at FEMP is to consult on legal issues and assist with the Utility Program. Mr. Mills also acts as the FEMP liaison to the International Team, manages the office equipment, and works on short-term projects such as

cost-benefit analyses, awards program criteria, and FEMP goals. He has a Bachelor of Science degree in Environmental Science and Management, a Master of Science degree in Environmental Law, and a Juris Doctorate degree.



AB REAM recently joined the FEMP staff from the U.S. Coast Guard, where he created and managed their Facilities Energy Program. Mr. Ream introduced the concept of energy savings performance contracting to the Coast Guard, and facilitated the involvement of the Kodiak, Alaska, Coast Guard base as the first DOE Super ESPC delivery order. Prior to his tenure with the Coast Guard, he worked for the Army Corps of Engineers, the Federal Energy Regulatory Commission, the American Gas

Association, and a small solar energy firm. Mr. Ream's role at FEMP includes business and market planning and development, and management of Federal accounts. He holds a Bachelor of Science degree in Engineering and a Master of Science degree in Engineering Management.

FEMP Supports Design Review of Emergency Power Improvements at NASA's Dryden Flight Research Center

Last year the Pacific Northwest National Laboratory (PNNL) responded to a request from the NASA Dryden Flight Research Center to conduct a design review of the proposed emergency power improvements at the Center in California. This service was provided through the FEMP Design Assistance program. The review included numerous communications with personnel at the Center as well as a site visit to provide a briefing of the final results.

NASA's Dryden Flight Center, like many Federal facilities, is conducting extensive reviews of its energy infrastructure. The FEMP/PNNL design review focused on emergency power requirements at the Center. It concluded that the proposed design at the NASA flight center appears to meet the intent of all applicable Federal guidelines for emergency power plants.

The review resulted in two key issues for consideration: the need for the Center to get off to a fast start on the extensive permitting process that is required for new power production facilities, and a recommendation that the Center commence a study on protective devices (circuit breakers) because the proposed design places a much larger burden on such devices.



Aerial photo of NASA's Dryden Flight Research Center, located in Edwards, CA.

With moderate conservation efforts, the Federal Government could conserve approximately 40 percent of its water use, or 121 million gallons of water per day. This is enough water for approximately 1.8 million people, or a state the size of West Virginia.

From "Federal Facilities Water Use and Water/Energy Conservation Potential," a study prepared by Lombardo Associates, September 1997.

The review team concluded that the design was technically sound and represented a standard design for a central power plant. It also concluded that the Center would end up with a high quality product (presuming that proper oversight is maintained in the construction phase) if the design is carried through to fruition, and that the proposed design appears to meet the intent of all applicable Federal guidelines for power plants.

Finally, in the judgment of the review team, a decentralized approach could offer a higher level of reliability for this facility. Ultimately the Center will need to balance the power requirements against the design objectives for this project.

For more information about this project, contact Jeff Dagle, Pacific Northwest National Laboratory, at jeff.dagle@pnl.gov or 509-375-3629. For more information about the FEMP Design Assistance program, contact Shawn Herrera, FEMP, at shawn.herrera@ee.doe.gov or 202-586-1511; or contact Bill Chvala, PNNL, at william.chvala.jr@pnl.gov or 509-372-4558.

Upgrading and Optimizing Electricity Distribution Systems Saves Energy

Federal facilities can save energy and money by installing efficient power-distribution equipment and correcting flaws in their distribution systems. Modest capital investments in efficient transformers, preventive maintenance, and monitoring and control systems can save tens of thousands of dollars annually. To realize these savings, follow the steps outlined below.

Transformers. Nationally, increasing by 0.1 percent the average efficiency of the transformers sold to Federal facilities in a single year could save more than 2.9 billion kilowatt hours (kWh) over the life of the units and reduce polluting emissions by thousands of metric tons. Optimizing the number, size, and efficiency of transformers can quickly pay for new equipment. First, eliminate or de-energize unneeded transformers to prevent no-load losses because even if the transformer is not powering equipment, its core is continually losing energy. For example, eliminating the no-load losses from a standard-efficiency, low-voltage 75 kVA transformer will save about \$193 annually at \$.055 per kWh. Before purchasing new transformers, evaluate potential savings from high-efficiency models. The payback period for a high-efficiency transformer may be as little as 2 to 3 years. Even better, a properly sized high-efficiency model may cost less than an oversized standard-efficiency model. Evaluate capacity needs carefully, avoid oversizing, and, when requesting price quotes, ask bidders for no-load and full-load loss data for their units. A 1998 study showed that a high-efficiency 750 kVA transformer that cost about \$1,000 more than a standard-efficiency model saved \$5,146 over 15 years and paid for itself in 2.4 years. This simple formula can calculate the life-cycle cost savings from high-efficiency models:

$$\text{Cost savings (\$)} = [(\text{no-load kW loss difference} \times 8760 \text{ hours per year}) + (\text{load loss kW difference} \times \text{hours per year of operation} \times \text{per unit load}^2) \times \text{electricity price (\$/kWh)} \times \text{expected life in years} - [\text{Efficient unit price} - \text{Standard unit price}]]$$

Recommended transformer efficiencies developed by FEMP's Federal Procurement Challenge are posted at www.eren.doe.gov/femp/procurement/begin.html.

For a list of models that comply with FEMP's recommendations, and computer tools for estimating costs and savings and determining optimal transformer size, see www.epa.gov/appdstar/transform/utility.html.

Capacitors for Power Factor Correction. Improving power factor by installing capacitors can be highly cost-effective where the utility charges a premium for low power factor. To reflect the greater cost of serving facilities with low power factor, utilities commonly assess a financial penalty for power factors of under 85-90 percent. A key contributor to low power factor is reactive power required to support equipment such as induction motors. To improve power factor, capacitors can be installed to supply reactive power. Properly sized and controlled capacitors can pay for themselves in as little as one month.

Preventive Maintenance may be the least costly way to improve performance and save energy. For example, infrared thermography surveys or voltage-drop surveys of power panels and motor control centers detect "hot spots" caused by loose or dirty contacts. Electricians can use the maps of high-temperature areas to find and correct problems. Preventive maintenance of wiring can prevent voltage fluctuations due to loose wires that cause voltage drops across connections. Uninterruptible power supply units can prevent power quality problems such as voltage sags and interruptions.

Power Monitoring and Control Systems. Energy management and control systems can cut energy waste and utility penalties, trim overhead and maintenance costs, and reduce down time. Some of the most cost-effective measures available, these systems move raw data from monitoring devices in the field to personal computers that can automatically control tasks such as load shedding, power factor correction, emergency load transfer, and demand control.

For more information on electricity distribution systems, contact Ben McConnell, Oak Ridge National Laboratory, at 865-576-2733 or e-mail McConnellbw@ornl.gov.

Three New Reports Available from the New Technology Demonstration Program

FEMP's New Technology Demonstration Program (NTDP) is distributing the following new publications covering thermal energy storage technology, integrated systems, and combined heat and power systems.

Thermal Energy Storage for Space Cooling, Federal Technology Alert, DOE/EE-0241, December 2000

Developed by the Pacific Northwest National Laboratory, this *Federal Technology Alert* describes how thermal energy storage technology can be used to significantly reduce electricity demand and energy costs by allowing energy-intensive, electric-driven cooling equipment to be predominantly operated during off-peak hours when electric rates are lower. The *Federal Technology Alert* identifies several different types of thermal energy storage systems, each with particular advantages and disadvantages. Thermal storage systems of one type or another could be cost-effectively applied in many buildings with a space cooling system. The document also outlines how to estimate potential costs and savings associated with thermal energy storage systems.

All FEMP NTDP *Federal Technology Alerts* provide summary information on energy-efficient, water-conserving, and renewable-energy technologies that may have the potential to reduce operating costs of Federal facilities. The technologies featured in *Federal Technology Alerts* have already entered the market and have some experience but, in general, are not used in the Federal sector.

Integrated Systems, Federal Technology Alert, DOE/EE-0234, September 1999

Developed by the Oak Ridge National Laboratory, this *Federal Technology Alert* describes how to bring together gas-fired and electric-driven equipment into building systems in order to provide heating, cooling, dehumidification, and electric service. The *Federal Technology Alert* looks at hybrid chiller plants, desiccant dehumidifiers, building cooling and heating, and power systems. Optimizing these building systems in an integrated approach has the potential to significantly reduce energy costs. The case study looks at a hybrid chiller plant containing both an electric-driven centrifugal chiller and a gas-fired absorption chiller.

Energy Efficiency Improvements Through the Use of Combined Heat and Power in Buildings, Technology Focus, DOE/EE-0239, October 2000

Developed by the Oak Ridge National Laboratory, this *Technology Focus* describes the growing number of options the Federal energy manager has to provide electric power and thermal energy to buildings and processes throughout the Federal system. This report looks at integrating proven technologies to maximize the use of recoverable thermal energy. It also provides a glimpse at some emerging technologies that can be important to future energy savings in the Federal sector.

Technology Focuses provide brief information on new, energy-efficient, environmentally friendly technologies of potential interest to the Federal sector.

A complete description of FEMP's NTDP and its products (including the three publications featured in this article) can be found on the FEMP Web site at www.eren.doe.gov/femp/prodtech/newtechdemo.html. You may also order any NTDP product through the FEMP Web site, just click on "order FEMP materials" located in the banner of any FEMP Web page. Of course, you may also order any FEMP product, including NTDP products, by calling the Energy Efficiency and Renewable Energy Clearinghouse at (800) 363-3732 [international callers, please use (703) 287-8391].

For more information on the New Technology Demonstration Program, please contact Ted Collins, FEMP, at theodore.collins@ee.doe.gov; Steven Parker, PNNL, at steven.parker@pnl.gov; or David Payson, PNNL, at dave.payson@pnl.gov.

ENERGY STAR® Upgrades Portfolio Manager

New features make it easier for managers to benchmark buildings

EPA recently announced the release of Version 1.1 of the ENERGY STAR® Manager. This software tool, the first to allow managers to benchmark the energy performance of their buildings against similar space types nationwide, is the key to receiving an ENERGY STAR® label.

The upgraded ENERGY STAR® Portfolio Manager is particularly important for Federal managers due to the requirements of Executive Order 13123, "Greening the Government through Efficient Energy Management." This Order requires agencies to:

- Strive to meet ENERGY STAR® criteria for energy performance and indoor environmental quality by the end of 2002,
 - Integrate this building rating tool into general facility audits, and
 - Include a preference for buildings having the ENERGY STAR® building label in their selection criteria for acquiring leased buildings.
- The upgrade includes a number of enhancements to make it easier for managers to input large blocks of data. The new features include:
- Method for users to enter multiple months of energy data at one time,
 - Ability to import large datasets of building information through a downloadable spreadsheet template,
 - Enhanced system navigation and tabbing for Netscape users,
 - Summary view that shows the current status of all buildings in a user's portfolio;
 - Expanded diagnostic help for buildings,
 - Expanded fuel types and refined energy conversion factors,
 - ENERGY STAR® target and industry average energy costs conveniently displayed on the Results page,
 - Improved generation of the Statement of Energy Performance,
 - Improved generation and format of graphical reports, and
 - Expanded and updated Frequently Asked Questions list.

Each benchmarked building receives a score from 0 -100. Buildings receiving a score of 75 or higher are eligible to apply for an ENERGY STAR® Label. To date, more than 60 Federal buildings are already ENERGY STAR®.

ENERGY STAR® Portfolio Manager is available by visiting www.energystar.gov and clicking on "Government" and "Benchmark Your Building."

Recently, *Time* magazine described a United Nations assessment of the Earth's ecosystems. Of the five types of ecosystems rated from good to grim, only freshwater, in both its availability and quality, was rated as grim.

Beth Shearer from the May/June 2000 FEMP Focus Directors Column.



Achievements and Accolades

In this issue of the *FEMP Focus*, and in issues to follow, a special section will be set aside to honor those people who contribute their time, skills, and experience to help meet the Federal Government's energy management goals. If you have a person or organization you would like to recognize in upcoming issues of the *Focus*, please send a short write up on the accomplishment along with a photo, where available, to Annie.Haskins@ee.doe.gov.



Terry Brennan, Green Energy Parks Program Coordinator, National Park Service and David Cooke, Director of Administration and Management, Department of Defense, present Eleanora Balibar (center) with a Service Award for her work on Energy 2000.

Department of Defense Presents Award to National Park Service Employee

Eleanora Balibar, a National Park Service Employee, received a Service Award along with a plaque for her outstanding and invaluable efforts in assisting the Department of Defense (DOD) in organizing and making the Energy 2000 Conference in Pittsburgh, PA, a success. Ms Balibar is a Mechanical Engineer/Regional Energy Coordinator for the Department of Interior, National Park Service, at the Maintenance, Design and Engineering Division of the Philadelphia Support Office. The award was presented to Ms. Balibar on October 30, 2000 at the Pentagon by Mr. David O. Cooke, DOD's Director of Administration and Management, and Mr. Terry Brennan, Green Energy Parks Program Coordinator from the National Park Service Washington Headquarters.

During the period August 25, 1999, through August 25, 2000, Ms. Balibar was assigned to work with DOD to assist Bob Billak, Energy Manager for the Pentagon, to coordinate the logistics for all eight sessions of the Energy 2000 Conference. These responsibilities included, but were not limited to: coordinating speaker presentations, synopsising topics for the "Whole Building Design Track," which was DOD's responsibility, and making all the arrangements for the speaker's requirements. Additionally, she moderated three of the sessions, introducing the speakers, providing biographical information, and fielding questions and answers after the presentations. The personal commitment and dedication of Ms. Balibar created an atmosphere that was friendly, cooperative, professional, and constructive throughout the planning and implementation of the conference. Her positive attitude and conscientious attention to the philosophy of the Defense Energy Mission and to the interests and concerns of the members of the Energy 2000 Planning Committee were critical ingredients for making the conference a real success.

Ms. Balibar made an outstanding contribution to the Federal Facilities Division, the Real Estate and Facilities Directorate, and DOD.

For more information, contact Bob Billak, Department of Defense, at 703-695-7909, or e-mail rbillak@ref.whs.mil.

Department of Defense Recognizes Florida Solar Energy Center

At a recent Pentagon ceremony, the Florida Solar Energy Center (FSEC) received an award for their ongoing support of the Department of Defense's (DOD) significant role in an annual workshop and trade show. David O. Cooke, DOD's Director of Administration and Management, presented a plaque to Ken Sheinkopf, Director of Public Affairs for FSEC. FSEC has provided assistance with graphics, planning, and publications for Energy 1999 and Energy 2000. FSEC staff are currently supporting efforts for Energy 2001, which will be held in Kansas City, MO, June 3-6. The award given by DOD acknowledges FSEC's technical and administrative support of the annual event.

Energy 2001 will be the fourth annual national energy management workshop and trade show for Federal, state, local, and private sector energy managers, energy service companies, utilities, procurement officials, engineers, and others involved in energy management around the country. Recognizing that it is the largest single energy user in the nation, DOD has implemented an aggressive energy reduction program, reducing the energy consumed in its buildings by 20 percent since 1985. The Energy 2001 workshop is one of the many ways in which DOD promotes energy efficiency and the use of renewables at Defense sites and throughout the Federal government.

FSEC is the largest and most active state-supported renewable energy and energy efficiency research, training, testing, and certification institute in the United States, and is affiliated with the University of Central Florida.

For more information on this award and other DOD programs, contact Bob Billak, Department of Defense, at 703-695-7909, or e-mail rbillak@ref.whs.mil.



Bob Billak, Pentagon Energy Manager, and David O. Cooke, Director of Administration and Management, Department of Defense, present Ken Sheinkopf, Director of Public Affairs, FSEC, (center) with a recognition award for FSEC's work on Energy '99 and Energy 2000.

2001 Federal Energy and Water Management Awards Criteria and Guidelines Now Available

The criteria and guidelines for the nominations for the 2001 Federal Energy and Water Management Awards are now available on the FEMP Web site. The criteria and guidelines have been mailed out to agency energy coordinators, task force members, Acting Federal Interagency Energy Policy Committee (656 Committee) members, and DOE Regional Officers and Directors. You can get your copy, along with a nomination cover sheet at www.eren.doe.gov/femp/prodtech/awards/awardsprog.html. The criteria and guidelines for the awards also includes information and criteria for the Second Annual Presidential Awards for Energy Management Success. Winners of the Presidential Awards are chosen from the same nominations that are submitted for the Federal Energy and Water Management Awards. The Federal Awards ceremony will be held on October 17, 2001 and the Presidential Awards will be held on October 18. Award nominations are due May 18, 2001. Both events will include a reception to honor the award winners. More information on these events will be available soon.

For more information, contact Nellie Greer, FEMP, at 202-586-7875 or nellie.tibbs-greer@ee.doe.gov.

Alliance Task Force Advises Transition Committee on Importance of Federal Energy Management

In January 2001, The Alliance to Save Energy's Federal Energy Productivity Task Force submitted a policy position paper for consideration by the Bush-Cheney Transition Advisory Committee and the Department of Energy. The report recommended five initiatives to strengthen and enhance policies contained in Executive Order 13123 and the Energy Policy Act of 1992. The recommended initiatives are:

- Make Federal energy productivity a Presidential priority and hold the agencies fully accountable,
- Establish energy efficiency investment goals,
- Get DOD to establish senior energy management team within the Office of Secretary to communicate their seriousness regarding energy efficiency,
- Expand financing options including establishing a Government energy improvement loan program,
- Maximize energy efficiency opportunities in unregulated utility markets.

The Alliance Task Force document pointed out ways to effectively increase agency accountability, increase funding for energy management projects, and manage energy supply and pricing in deregulated utility markets. The Task Force Chairman Jared Blum, who is a member of the Federal Energy Management Advisory Committee (FEMAC), presented these recommendations at the January FEMAC meeting.

For a copy of the Task Force recommendations, e-mail Luther Dudich at ldudich@ase.org.

“What crisis will challenge energy management professionals in the next millennium? The greatest challenge of the next millennium could be water. In fact, a major crisis already exists with regard to this simple resource.”

Excerpted from Energy User News, December 1999, “Water: A Crisis for the New Millennium,” written by John J. McGowan, CEM.

12th Annual Energy Efficiency Forum

June 13, 2001
National Press Club
529 14th Street, NW
Washington, DC

During the 2000 Presidential campaign, George W. Bush said, “Our country has a great and urgent need for a comprehensive energy policy, with leadership from the president himself. Without a long-term strategy to ensure steady, reliable supplies of energy, we put at risk our economy and the way of life it supports.”

Whether it is a government agency, a manufacturer, hospital or a high-tech startup, success depends on close attention to economic and operational efficiencies. Strategic planning that includes energy efficiency technologies can have a strong impact on a business or organization's bottom line. At the 12th Annual Energy Efficiency Forum, government policy-makers and business leaders will examine these important contributors to our country's economy in light of the Bush Administration's redefinition of the national energy policy.

For more information about the 12th Annual Energy Efficiency Forum please visit www.eeforum.net, or contact Michelle Jones, United States Energy Association, (202) 312-1269.

Labs21 High-Performance, Low-Energy Design Course Offered at Energy 2001

The Laboratories for the 21st Century (Labs21) Team will present a one-day training workshop on June 7, 2001, in Kansas City, MO, during DOE's Energy 2001 conference. This one-day workshop will provide a comprehensive overview of opportunities to optimize energy performance of new and existing laboratories. The workshop will be taught by experienced laboratory designers, energy managers, and facilities professionals.

The workshop will be limited to 36 attendees to assure good interaction. Participants are expected to have some understanding of laboratory design issues. A registration fee of \$95 includes round trip bus transportation between the Energy 2001 hotel and the course location, refreshments, lunch, course workbook, and CD software including the *Energy Efficient Laboratory Design Guide*. The *Energy-Efficient Laboratory Design Guide* will serve as the "text book" for the workshop. The software will be distributed at the course or it can be downloaded from <http://ateam.lbl.gov/Design-Guide/index.html>. Participants are encouraged to bring their laptops and load the software.

This one-day course presented by DOE and EPA provides a comprehensive overview of strategies to optimize energy performance of new and existing laboratories.

Course topics will include:

- Design Programming,
- Diversity and Right Sizing,
- Direct Digital Controls,
- Air Supply and Exhaust Systems,
- Distribution Systems,
- Air Filtration,
- Lighting,
- Commissioning, and
- Resources and Tools.

As a special bonus, participants will be able to review a revolutionary new laboratory hood technology. This technology, developed at the Lawrence Berkeley National Laboratory, reduces airflow requirements by 50 percent or more in laboratory hoods using a push/pull air divider approach.

Instructors:

Don Prowler, FAIA, Princeton University
 Geoffrey Bell, PE, Lawrence Berkeley National Laboratory
 Otto VanGeet, PE, National Renewable Energy Laboratory
 Dale Sartor, PE, Lawrence Berkeley National Laboratory
 Frank Kutlak, R.A., National Institutes of Health

For additional information, including details on registration, visit www.epa.gov/labs21century/training/index.htm or contact the Metropolitan Energy Center at 816-531-SAVE (7283).

Laboratories for the 21st Century Conference Arrives in Our Nation's Capital

This year's Labs21 conference is scheduled for October 2-4, 2001, at the Hotel Washington in Washington, DC. Join private and public sector laboratory designers, engineers, owners, and operators and gather in our nation's capital for an opportunity to address issues related to energy and environmental efficiency in the laboratory setting. For more information on this year's conference, visit www.epa.gov/labs21century/conf/conf2001/index.htm.

Call for Papers: Abstracts Due May 15, 2001

Individuals with in-depth knowledge and experience in the areas of laboratory energy efficiency and environmental performance are encouraged to present at this year's conference. For more information on submission requirements and suggested topics, visit the Labs21 Web site at www.epa.gov/labs21century/conf/conf2001/papers.htm.

For more information, contact Dale Sartor, LBNL, at 510-486-5988, or e-mail dasartor@LBL.gov.



LABS FOR THE 21ST CENTURY

Executive Order 13123 Guidance Documents Now Available in One Publication

Executive Order 13123: Greening the Government Through Efficient Energy Management Guidance Documents for Federal Agencies is now available in two formats. You may order a copy by calling the Energy Efficiency and Renewable Energy Clearinghouse at 1-800-363-3732 or you may view the report online at www.eren.doe.gov/femp/aboutfemp/guidances.html. The document contains the guidance created by Federal agencies in accordance with Executive Order 13123 and also contains GSA's Model Lease Provisions and information on the Whole Building Design guide. Order or download your copy today!



FEMP Training Reminders

Life-Cycle Costing (Project Oriented)

June 12-13
Rockville, MD
509-372-4368

FEMP Lights Web Course

June 25-August 31
www.femplights.com

Designing Low-Energy Sustainable Buildings

June 21-22
Atlanta, GA
202-628-7400

Electric Utility Restructuring and Utility Project Financing

July 10-11
Chicago, IL
703-243-8343

FUPWG Upcoming Meetings

On the evening of June 4, 2001, Federal Utility Partnership Working Group (FUPWG) members are invited to an informal gathering to be held at Energy 2001 in Kansas City, Missouri. There will be no formal meeting of FUPWG at Energy 2001, however, FUPWG members are encouraged to attend Energy 2001.

The next full meeting of the FUPWG will be in Oklahoma City on October 10 and 11, hosted by Oklahoma Gas & Electric. Please make plans to attend!

Upcoming Conferences

FDIC ENERGY FAIR

May 2
Arlington, VA
202-942-3011

WEST COAST ENERGY MANAGEMENT CONGRESS

May 9-10
San Diego, CA
770-279-4390

ENERGY 2001, NEW HORIZONS: SOLUTIONS FOR THE 21ST CENTURY

June 3-6
Kansas City, MO
www.energy2001.ee.doe.gov
800-395-8574

DOE POLLUTION PREVENTION CONFERENCE

June 18-22
Albuquerque, NM
<http://p2.werc.net>

Energy 2001 New Horizons – Solutions for the 21st Century *A Conference Not to Be Missed*



Last year 1100 attendees, speakers, and exhibitors participated in Energy 2000 in Pittsburgh, PA. The largest crowd ever is expected to attend Energy 2001 in Kansas City, MO, June 3 to 6. Don't miss your opportunity to network with and learn from top Federal, state, local, and private sector energy managers, energy service companies, utilities, procurement officials, engineers, and others involved in energy management around the country.

The Department of Energy's Federal Energy Management Program, along with the General Services Administration and the Department of Defense, will host the Energy 2001 workshop and exposition at Kansas City's Hyatt Regency Crown Center.

Several new tracks and sessions have been added to the Energy 2001 program, along with more presentation topics and new activities. Tracks set for Energy 2001 are:

- Acquisition,
- Electric Utility Deregulation,
- Facility Operations and Maintenance,
- Laboratories and Industrial Facilities,
- Project Financing,
- Renewable Applications and Water Conservation,
- Sustainable Building Design,
- Technology, and
- Energy 101.

Track leads have carefully selected the best speakers and programs to feature in the more than 60 individual sessions, where discussions will focus on the latest resources, tools, regulations, and techniques to help Government and private sector energy professionals solve their organization's energy problems. More than 125 exhibitors will show the latest products and services available on the market today. The program details are posted on the Energy 2001 Web site at www.energy2001.ee.doe.gov.

Opening and closing plenary speakers have been scheduled. This year, Bob Berkebile will speak of his experience as principal of BNIM Architects. Demonstration projects with which Mr. Berkebile has had a leading role include: Greening of the White House, Greening of the Pentagon, Greening of the Grand Canyon, Greening of Antarctica, and relocating floodway communities out of the Mississippi Flood Plain.

Keith Harrell, author of *Attitude is Everything*, will be plenary speaker at the workshop's closing luncheon. Mr. Harrell is an award-winning speaker, trainer, consultant, and author of a series of video and training tools, and is highly recognized for his innovative and enlightening presentations.

Visit the Energy 2001 Web site at www.energy2001.ee.doe.gov/RegistrationInfo.htm to register for the conference.

For more information, contact Rick Klimkos, FEMP, at 202-586-8287 or e-mail rick.klimkos@ee.doe.gov.

DOE's Sun Wall Takes Shape

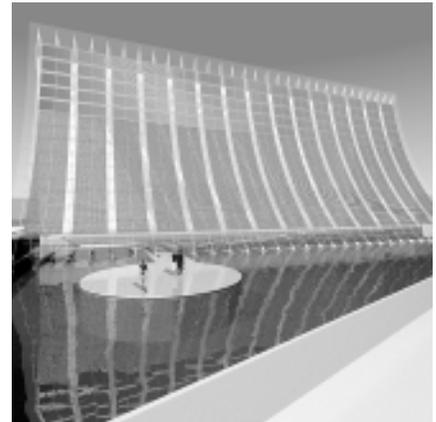
On March 5, Martin Wolf, FAIA, of Solomon Cordwell Buenz Associates of Chicago presented his firm's winning Sun Wall competition entry to an audience at The National Building Museum in Washington, DC. The Sun Wall competition was conceived by former DOE Assistant Secretary of Energy Efficiency and Renewable Energy Dan Reicher to promote photovoltaic technology at DOE headquarters with the installation of a PV array on the south wall of the Forrestal Building. A competition was then launched for all interested architects to design a PV structure that would exemplify sophisticated engineering and produce a "technical icon" as Mr. Wolf described it.

One hundred twelve designs were submitted to the competition. The designers were instructed to work with a 32,000-square-foot, 18-inch thick blank concrete wall and a large open space in front of the wall. The winning design was envisioned to improve the aesthetics of an otherwise unproductive wall space, and promote solar technology and design practices within the architectural and building professions.

Producing a typical lunch—hamburger, french fries, and a soft drink—uses 1500 gallons of water. This includes the water needed to raise the potatoes, the grain for the bun and the grain needed to feed the cattle, and the production of soda.

Colorado State University's water information Web site: <http://waterknowledge.colostate.edu/coolfact.htm>.

The Sun Wall photovoltaic system as designed for the south wall of the Department of Energy Forrestal Building.



Partnering with the engineering team of Ove Arup & Partners, New York, Wolf and his team investigated the best way to catch the rays of the sun. They decided that a large passive curved PV panel, rather than movable panels, would more efficiently capture the geometry of the sun. Because the winter sun is lower in the sky, the rays would hit the higher panels of the curved structure, heating hot water that would help the heating system in the winter. The summer sun, which is higher in the sky, would then hit the bottom panels and provide energy for the electrical system during the summer months. An open space between the concrete wall and the PV panel could then be used as an exhibition. Planar fittings would connect the cables that would hold the large panels of glass. The large open plaza in front of the system will be filled with water to form a reflecting pool, and an island placed in the center so visitors can view this cathedral of energy. The design, if created, would ultimately become the world's largest photovoltaic system for a Federal building.

Mr. Wolf and his firm hopes that their design will get the backing of the Bush Administration and the Secretary of Energy Spencer Abraham so that the project will move from design to installation. While the estimated cost of the project has not been determined, Mr. Wolf speculated the price to be around \$15 million.

For more information on the Sun Wall project, visit www.eren.doe.gov/sunwall.

For information on topics not covered, call the FEMP Help Desk at 1-800-363-3732.	FEMP Office	202-586-5772
	FEMP FAX	202-586-3000
	FEMP Internet Page	http://www.eren.doe.gov/femp

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LBNL: Lawrence Berkeley National Laboratory
 NREL: National Renewable Energy Laboratory
 ORNL: Oak Ridge National Laboratory
 PNNL: Pacific Northwest National Laboratory
 SNL: Sandia National Laboratories

The *FEMP Focus* is published bimonthly by the Federal Energy Management Program of the U.S. Department of Energy/Office of Energy Efficiency and Renewable Energy.

If you are making projects happen at your Federal facility, FEMP would like to hear from you. Please submit project descriptions to Annie Haskins at the address listed below. You will be contacted for additional information if your project is selected to be featured in a future edition of the *FEMP Focus*.

Address mail to:
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