

Public Works *Digest*

In this issue:

Energy and Water Conservation and Management





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A compact fluorescent light saves energy and money. U.S. Army photo

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Installation energy sustainability in a changing world

by Donald LaRocque

The *Army Energy Strategy for Installations* states: "Our excellence in defending America and her values has underlying costs for energy and water needed to operate our installations." These words highlight the direct linkage between the supply of reliable energy and water, at affordable costs, to the Army's operational capability. Energy will require nearly \$1.5 billion in our fiscal year 2007 Base Operating Services. Like the country in general, we have to continue to provide the full range of installation services in the face of our dependence on fossil fuels and offshore energy supply that stress our limited funding. To counter these challenges, we must exercise the full spectrum of command emphasis, project authorities and programming opportunities to reduce our energy demands in the near term and position the Army to withstand spiraling costs and potential for stoppages in fuel supplies in the future.

Energy strategy

Recognizing our energy and funding dilemma, the *Army Energy Strategy for Installations* was issued to change the way the Army obtains and uses energy and water. The strategy focuses on sustainable operational efficiency through five major initiatives:

- Eliminate energy waste in existing facilities
- Increase energy efficiency in renovation and new construction
- Reduce dependence on fossil fuels
- Conserve water resources
- Improve energy security

Campaign plan

To address these five initiatives, the Office of the Assistant Chief of Staff for Installation Management-Installation Management Command-U.S. Army Corps of Engineers team worked with a federal and industry energy experts to develop a detailed campaign plan to set the course for the next 25 years. The initial *Army Energy and Water Campaign Plan for Installations*



Donald LaRocque
Photo by Stephen Oertwig

defined the necessary actions, the short and long-term approaches, and the tools, technologies and actions needed to ensure successful accomplishment of the Army's long-range energy and water goals. This campaign plan proved essential in defending our requirements in the FY 2008-2013 Program Objective Memorandum (POM).

In April, Lt. Gen. Robert Wilson, the ACSIM and commanding general of IMCOM, directed a review of the campaign plan to address emerging guidance, policy, and operational realities as we prepare for the next POM round. He sent copies of the campaign plan to senior commanders requesting their critical comments on the plan, taking into account the new Energy Policy Act (EPA05) and Executive Order (EO) 13423. Over the next couple of months, the Army energy team will evaluate the comments and recommend adjustments in the plan's objectives, metrics and the supporting actions.

Designing in energy saving

As we transform our warfighters, we must also redefine the priorities we use in designing new facilities. Initially, we began using the Sustainable Project Rating Tool in 2001 to evaluate our designs to place emphasis on incorporating higher energy and water efficiency into rated projects. Beginning in April, the Army moved to the U.S. Green Building Council's Leadership in Energy and Environmental Design for New Construction (LEED-NC) rating system. LEED-NC applies to all Military

Construction projects beginning in FY 2008 and beyond, and we have set LEED Silver as the minimum acceptable level for all new vertical construction.

MILCON Transformation

The demands of Grow the Army, Global Defense Posture and Realignment, Army Modular Force and Base Closure and Realignment 2005 involve an unprecedented surge in our construction programs. MILCON Transformation will leverage cost savings from the acquisition of facilities with consistent procurement and technical processes. To this end, we are working with USACE to develop new performance-based standards for Tier 1 facilities, e.g., barracks, headquarters, maintenance facilities, to be at least 30 percent more energy efficient than the American Society of Heating, Refrigeration and Air-conditioning Engineers' standards as required in the EPA05 and EO 13423.

Metering: managing what we can measure

The majority of our facilities are either not metered for utilities or use labor intensive "dumb meters" that limit our ability to truly manage energy consumption. Like the adage, "How do you know where you are going, if you don't know where you've been?" we need to find out how energy and water we purchase today is being used, then we can attack the waste and efficiency projects that are most cost effective for our installations. With the direction of EPA05 and funding provided in the POM process, we have developed a metering plan and are set to execute a procurement program that will result in a seamlessly data flow from the new meters through data loggers to data management servers. Then installation energy managers can exercise daily energy and water operations and management control.

Energy awards program

Outstanding accomplishments deserve recognition. We recently highlighted energy program excellence through the



Corps helps Army achieve energy and water goals

by Lt. Gen. Robert L. Van Antwerp

Our nation faces unprecedented challenges in conserving and managing our energy and water resources. As commander of the U.S. Army Corps of Engineers, I have the responsibility—which I view as an opportunity—to actively support the Army in its effort to meet these challenges. Through the great diversity of the Corps organization, we provide this support in a number of interesting ways.

Construction and major renovation

The most visible work done by the Corps in direct support of the Army is Military Construction of new facilities and major renovations. We face incredible challenges because of the urgency, unprecedented magnitude and limited funding of the ongoing and upcoming MILCON, Base Realignment and Closure, Grow-the-Force and work-for-others programs.

The Corps is committed to transforming the MILCON process to save 15 percent in cost and 30 percent in time, while still delivering quality projects. We developed the Army's MILCON Transformation process, using a model Request-For-Proposal (RFP) design-build process to collect the "best of breed" ideas and practices of the design and construction communities. We will blend these ideas and practices into adapt-build prototypes for most Army facilities. A Corps office is designated as the



Lt. Gen. Robert L. Van Antwerp
Photo by F.T. Eyre

center of standardization (COS) for each facility type.

The incorporation of energy conservation and sustainability requirements into these projects, along with encouraging the use of geothermal and renewable energy, presents additional challenges and solutions. The Energy Policy Act of 2005 (EPA05), requires improvements in metering, products, motors, equipment and design.

The model RFP used for MILCON Transformation proposals and the design manual used for all Corps military projects have been updated to require that new designs incorporate the requirements of this law.

An ongoing study is aimed at optimizing compliance with the law. It will identify the baseline energy consumption for particular facility types and determine a standard

set of practices and technologies for each climate and type of facility. Applying these standards will result in at least 30 percent energy savings. The results will be placed in the RFPs for these facilities, saving considerable time and money, the two key factors of MILCON Transformation.

We have developed a training program to help Corps design and construction engineers and architects implement the energy conservation requirements for new construction. Installation personnel have been invited to attend each session of the week-long course.

The new law requires electrical metering of all government buildings by 2012. The model RFP and tri-service specifications already require metering of *all* utilities. So, we're ahead of the game.

The Corps is also enthusiastically supporting the Army's decision to ensure sustainability in our new projects by meeting the requirements of the U.S. Green Building Council (USGBC) sustainability rating tool, Leadership in Energy and Environmental Design (LEED). New building projects are required to meet, as a minimum, the requirements for a LEED Silver rating. The Army is self-certifying this performance.

The Corps has developed an implementation guide to assist the Army's project delivery teams in performing the sus- ➤

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Secretary of the Army Energy and Water Conservation Awards program with presentations to Fort Knox, Ky.; Fort Detrick, Md.; Rock Island Arsenal, Ill.; Camp Shelby, Miss.; Fort Stewart, Ga.; U.S. Army Garrison Benelux, Belgium; U.S. Army Garrison Ansbach, Germany; U.S. Army Garrison Hessen (Hanau), Germany; and Fort McCoy, Wis. (See article on page 19.)

Education


Energy awareness is a continuing pro-

cess. Soldiers, leaders, Family members, civilian employees and contractors must be a part of the energy solution. In October, we will mark Energy Awareness Month to promote greater awareness of the energy we consume. Even simple acts like turning off lights, limiting vehicle idle time and shutting off unused equipment can make a difference in the economic security and mission capability of our Army.

Summary

While we have little control over the price of a barrel of oil charged on the

global market, each of us has within our power the ability to reduce the amount of that energy we use. We must control our energy and water appetite to ensure the future flexibility in our budgets and operational decisions. Together, we can and must make a difference; but each of us has to do our part.

Donald LaRocque is the chief of Public Works, Installation Management Command. 



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tainability process. This guide identifies the credits that are preferred and those to be avoided. It also identifies credits for which the installation will be responsible. Because of our EPAct05 compliance, a large number of the credits on Corps projects will be energy-savings credits.

The implementation guide provides four stages of review to assure that the sustainable credit items are carried through the design-build process. This begins with the planning and continues through design, construction and self-certification.

We have established subject matter experts at each of our districts and COSs to ensure that the proper documentation is provided. The Corps is the first federal agency to bulk purchase a block of web-based training modules from USGBC to prepare its designers and architects. We are working with USGBC to develop additional training for project managers, designers and construction managers.

Installation support

The Corps supports the Army energy resources goals at the installation level. Installations can use the Energy Engineering Analysis Program (EEAP) to analyze energy inefficiencies, then develop and implement energy projects. The lessons learned may be showcased Armywide.

Installations are working to train their own energy managers. In the meantime, our Huntsville Center is developing an Armywide indefinite-delivery contract to provide resource energy manager support to Army posts. This contract will be available in fiscal year 2008.

The Corps also provides guidance to help installations procure energy-efficient equipment and products. All of the unified facility guide specifications are being updated to require Energy-Star and Federal Energy Management Program equipment. In addition, the Corps' Construction Engineering Research Laboratory is developing a database of advanced energy-efficient

technologies to be used in new construction and retrofit projects.

This focus on efficient technologies is right in line with my commitment to taking the Corps from "good to great." Technology acceleration is a key element in our becoming a great organization. We have to be careful not to get involved in just any fad that comes along, but to embrace sustainable technologies that will see us into a brighter future.

Water conservation

The Army water conservation plan has several goals:

- Assess current usage, then meet usage reduction guidelines.
- Improve storage and distribution integrity.
- Increase efficiency of plumbing fixtures.
- Limit use of potable water for irrigation.
- Address efficiency and losses in process water.
- Develop implementation strategies, technical standards and training.
- Identify resources for future demands.

The Corps is assisting the conservation plan in several areas. Metering is critical to monitoring the impact of attempted improvements. All new military projects are provided with water meters, and Huntsville Center is supporting the installations in provision of water metering.

Faucets, flush valves, showerheads, toilets and urinals provided in our projects are the low-flow type. Waterless urinals are provided at appropriate locations, in accordance with Army standards. Huntsville Center has assisted various installations with Energy Savings Performance Contract projects to install low consumption water valve fixtures.

In addition, along with the Office of the Assistant Chief of Staff for Installation Management, the Installation Management Command, industry and academia experts, the Corps is part of an ad hoc committee to develop the necessary knowledge


set, subject matter experts and training to address the water conservation goals.

Meeting our energy and water resources conservation and management goals is a great challenge, but the Army and the Corps are up to the task. We have assembled a team of project managers, engineers, architects and researchers to lead the way towards energy independence. It is a worthy goal and one that is critical to our nation's security.

I believe that by focusing on our mission and teaming with industry, these efforts will help us meet one our Corps priorities, enhancing the quality of support to Soldiers, civilians, Families and the public, with excellence. We're heading for "great," and I am thrilled to be on this team.

Essayons.

Army Strong, Engineer Ready!

Lt. Gen. Robert L. Van Antwerp is the chief of engineers and commanding general of the U.S. Army Corps of Engineers. 

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Army holds annual Energy Forum

by Doug Dixon

The Office of Assistant Chief of Staff for Installation Management, in coordination with Headquarters, Installation Management Command, held its annual Army Energy Forum Aug. 9-10 in New Orleans, La., at the conclusion of the GovEnergy 2007 Conference and Trade Show. GovEnergy 2007 was sponsored jointly by the Department of Defense, the Department of Energy (DOE) and the General Services Administration.

Don Juhasz, chief of energy and utilities policy, OACSIM, opened the forum by, discussing the Army Energy Program and the impacts of Executive Order (EO) 13423. Juhasz was followed by Andrea Valentine of the Office of the Deputy Assistant Secretary of the Army for Installations and Housing. Valentine spoke about what Army installations should do to meet the requirements of the Energy Policy Act of 2005 and EO 13423.

Other presentations included updates on major DoD programs such as Residential Communities Initiative, Utilities Privatization, Energy Savings Performance Contracts, the Energy Conservation Investment

Program and other Army-specific activities in renewable energy, utilities modernization, the Energy Engineering Analysis Program, technology standards, natural gas commodity assessment, metering strategy, energy security and building performance standards.

This year's forum was the largest ever with more than 160 participants. Representatives from the Office of the Deputy Assistant Secretary of the Army for Installations and Housing, OACSIM, IMCOM, the U.S. Army Corps of Engineers' Construction Engineering Research Laboratory, the National Guard Bureau, the Army Medical Command and Army Materiel Command, plus staff from the Army Contracting Agency, the General Accountability Office, the Army Audit Agency and the Army and Air Force Exchange Service attended. The audience included energy managers and resource efficiency managers from more than 40 IMCOM installations.

GovEnergy 2007 was highlighted by a first-ever visit from DOE Secretary Samuel W. Bodman. Bodman launched the Transformational Energy Action Management


(TEAM) Initiative, a departmentwide effort aimed at reducing energy intensity across the nationwide DOE complex by 30 percent. The TEAM Initiative aims to meet or exceed the aggressive goals for increasing energy efficiency throughout the federal government laid out by President George W. Bush. Reducing energy intensity by 30 percent across the DOE complex will save about \$90 million in taxpayer dollars per year, after projects are costed, Bodman said.

The DoD All-Hands Energy meeting was held Aug. 8 after the GovEnergy conference. The presentations for the 29th annual *Secretary of the Army Energy and Water Management Awards* were made during this meeting. (Editor's note: see article on page 19.)

Dr. Get Moy, director of utilities and energy, Office of the Deputy Under Secretary of Defense for Installations and Environment, presided and announced a joint initiative with the DOE to pilot "net-zero" energy installations, establish a test and evaluation clearinghouse, and streamline the third-party financing mechanism.

This year's forum was organized and managed for OACSIM by Pacific Northwest National Laboratory. The forum agenda and associated presentations are available at <http://army-energy.bqda.pentagon.mil/training/2007forum.asp>.

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Don Juhasz, chief of energy and utilities policy in the Office of Assistant Chief of Staff for Installation Management, opens the Army Energy Forum in New Orleans. Photo by Theresa Shoemaker, Pacific Northwest National Laboratory



Culture change now will make a difference for the future

by Don Juhasz

The Army is working toward meeting energy statute requirements, but it is uncertain the Army will get where it needs to be if its “culture” remains status quo. A huge mind-set shift is needed in which Military Construction Transformation and other construction changes can occur.

The Energy Policy Act of 2005 (EPA05) and Executive Order (EO) 13423 set clear goals, but the impact on the Army construction community is in conflict. The mission to construct more square footage with less available funding is priority. Available dollars currently go for immediate needs and not for long-term impacts. Also, history has demonstrated time and time again that just increasing funding does not proportionally increase compliance or implementation of statutes or policy.

Congress and Army organizations have resorted to using Energy Savings Performance Contracts (ESPCs) to supplement needed dollars. ESPCs require guaranteed energy reductions and provide “avoided cost.” But such contracts have expensive financing costs that essentially place a high-rate mortgage on the taxpayer. An ESPC, however, does provide immediate influx of capital for energy reduction projects that help EPA05 compliance. But ESPCs are not appropriate for MILCON projects because the facilities are not yet in existence.

Higher efficiency equipment can and should be put in up front on new construction. Obviously, if it is cost effective to retrofit or replace proposed inefficient equipment as soon as the facility is completed, then it is cost effective to install it in the first place. ESPCs are legally intended to help with our existing inventory of facilities, not to serve as a cash cow to supplement MILCON.

The apparent issue is that incentives to incorporate the statute requirements have not been provided. Without incentives, needed cultural changes rarely occur, even



Don Juhasz
Photo courtesy of Office of the
Assistant Chief of Staff for
Installation Management

when the goal is to implement processes and procedures that many would agree are the right thing to do. Unfortunately, sometimes needed change occurs only when there are real consequences for failing to comply.

This may be the case for the impact of EPA05 on MILCON Transformation. When rising utility costs become intolerable, then construction standards for energy consumption will weigh in. Until then, the required mission of more square footage will prevail over long-term utility and facility-maintenance costs.

The long-range impact of current operations on maintenance budgets has made its mark. The poor conditions in installations’ infrastructures are a direct result of under-maintenance and lack of capitalization of utilities systems. This is the main argument for the Utilities Privatization program. This situation will only become worse with current funding limits, which is another challenge and incentive for the needed culture change in MILCON Transformation thinking.

Current funding shortages will limit the ability of Directorates of Public Works and installation commanders to take care of their infrastructures in ways that would return the greatest investment for the dollars used. Their predecessors for the last 20

years have made decisions that did not fund the maintenance of their utility infrastructures or efficiency improvements. They have concentrated their allotted funds into high visibility issues.

The out-of-site, out-of-mind infrastructure has fallen into failed or failing conditions that have been left to the current DPWs and commanders to solve. In addition, the infrastructure becomes proportionally much more expensive to restore than the cost would have been to maintain it. Currently due to funding limitations, we are on a repair-on-failure mode with little or no preventive maintenance occurring.

Research shows how future costs are affected by funding priority decisions made now. It is not, and has not been, strictly a lack of funding but a lack of where the funding went. Current conditions are a direct result of prior funding decisions that were not based on the value of the dollar spent but the immediate visibility improvements provided. This is the culture that must change for both new construction mind set and expenditure of funds on maintaining existing facilities.

Priorities must be changed to reflect long-term cost considerations over short-term maximum square footage construction. Current studies by the Navy show that four facilities that are EPA05 compliant will provide more future dollars to support continued growth and operations than five new inefficient facilities built using current noncompliant standards at a cost that is less than 3 percent more than the construction cost of the five noncompliant facilities. Also, the five noncompliant facilities would require four to five times the annual maintenance and operational costs of an equivalent compliant facility. This is the price of forcing the additional square footage to be constructed now without the implementation of the energy-compliant standards.

The same is true of improvements on existing facilities, for which utility and



Energy managers need key directives at their fingertips

by William F. Eng

"All I really need to know (about the Army Energy Program), I learned in kindergarten." With apologies to Robert Fulghum, the purpose of this article is to provide some basic tools for installation energy managers, directors of Public Works and garrison commanders with which to be familiar. Energy managers, in particular, should read and understand these references because they make one a player in the now critical energy-resource arena. The security of the nation and the Army's ability to sustain its missions are directly tied to its ability to manage energy resources.

This is an article that you will want to print and keep handy. It will pay dividends many times over.

Federal Laws and Statutes –

- August 2005: Energy Policy Act of 2005

Presidential Executive Orders (EO) –

- January 2007: EO 13423, *Strengthening Federal Environmental, Energy and Transportation Management*
- October 2000: EO 13150, *Federal Workforce Transportation*
- December 1996: EO 13031, *Federal Alternative Fueled Vehicle Leadership*

Department of Defense guidance –

- November 2005: DoD Instruction 4170.11, *Installation Energy Management*



William F. Eng
Photo by Alex Stakhiv

- November 2005: Office of the Under Secretary of Defense for Acquisition, Technology and Logistics (OSD-ATL)-directed high-level plan for reducing/eliminating dependence on fossil fuel


Army guidance –

- April 2007: *Army Petroleum Reduction Strategy*
- April 2007: *Army Sustainable Design and Development Policy Update – Life-Cycle Costs*
- July 2006: *Army Guidance Sustainable Management of Waste in Military Construction, Renovation and Demolition Activities – Supplemental Guidance*
- January 2006: *Army policy Sustainable Design and Development Policy Update – SPiRiT to LEED Transition*
- December 2005: *The U.S. Army Energy and Water Campaign Plan for Installations*

- December 2005: *Army Interim Policy Guidance – Army Energy Conservation*
- October 2005: *Army Policy Fuel Conservation*
- July 2005: *The U.S. Army Energy Strategy for Installations*
- October 2004: *Army Strategy for the Environment*
- May 2001: *Army Policy Sustainable Project Rating Tool (SPiRiT)*
- May 2000: *Army Policy Sustainable Design and Development (SDD) Policy*
- February 1997: *Army Regulation 11-27, Army Energy Program*

To be a successful energy program manager at an Army installation, you should have copies or easy access to these current reference documents. The documents or a hyperlink are on the Army Energy home page, <http://army-energy.hqda.pentagon.mil>. An Army Knowledge Online account is required.

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maintenance costs continue to climb. Without this cultural shift among design engineers, construction and management teams and Army leadership — an understanding that future long-term costs are tied to first cost decisions — the Army will not be able to sustain the increases in utility and maintenance costs as they continue

to be an ever increasing percentage of limited resources and budgets. The situation will threaten our energy and physical security as a nation.

We must incorporate the statutory requirements of EPAct05 and the requirements of EO 13423 now if we are to remain sustainable in the next decade.

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What's up with water?

by William F. Eng

East Coast, West Coast — it doesn't matter on which side of the country a U.S. Army installation is located when it comes to water issues. When surrounding communities' water supplies can't keep up with the population and business growth, they start to dry up or are contaminated by toxic chemicals, communities will look to the federal government for help.

For example, if a community's water supply is contaminated by a chemical spill, even from many years ago, or there is natural arsenic in the water, a community will naturally look for help from a nearby community or a military installation. Being good neighbors is mutually beneficial. Army installations and surrounding communities often make mutual agreements to come to each others aid in the event of a major fire or disaster.

Often times, all it takes is an infusion of federal funds to drill a new well, run a larger water transmission or distribution pipeline, or install more advanced water treatment works. But some times, if these measures can't be put into place quickly enough to avert serious health and safety problems, a local community may ask an installation for some temporary help to bridge the gap until a long-term solution can be found.

At Fort Knox, Ky., for example, the neighboring community's water supply was not able to expand to support the growing population and was hindering economic growth. The installation, however, had excess capacity in its recently upgraded water system. With approval from the secretary of the Army, Fort Knox entered into an agreement to sell water to the community for a limited time, about five to seven years, with the understanding that the community would work towards developing a countywide or regional water system, possibly with the installation system as the key component, but under a privatization scenario. As of this writing, the privatization of the Fort Knox water system is still in progress and is scheduled for a fiscal year



2009 completion.

On the other hand, a community may ask to permanently tap into an installation's sources of water. These kinds of request come from many quarters and must be addressed quickly and thoroughly. Two examples of this scenario are the U.S. Military Academy at West Point, N.Y., and the Presidio of Monterey, Calif.

West Point: Many years ago, a small nearby community had part of its water supply contaminated by leakage of petroleum products from a national brand gas station. The parent company spent many years cleaning up and treating the contaminated water source and providing potable drinking water to the community. When the company ended the cleanup program, apparently with New York State approval, the community still considered their original water source contaminated and sought help from its congressional delegation.

One of the two U.S. senators and the community's congresswoman asked the Army for water for this community from the system of surface lakes, ponds and streams that supply water to West Point. Because West Point had kept good records of water flows and consumption, and had the staff expertise, the installation was able to analyze the vagaries of weather and rainfall, and the seasonal nature of water demand. The garrison prepared a study explaining that no water surplus exists and that West Point is unable to provide the community water without putting its mission of training future Army leaders at risk. The Army Secretariat conveyed its regrets that West Point would not be able to pro-

vide the requested water.

Recognizing the vulnerability of its water resource, the West Point Directorate of Housing and Public Works, maintains an intensive and comprehensive water leak detection and repair program, using sensitive electronic leak-detection equipment and its savvy about its water system. Five years ago, the DHPW cut their estimated water losses of 300,000 gallons per day by two-thirds. The students, faculty and staff have also been engaged to use water wisely through a continuous education program. *(Editor's note: See a more detailed report in the September/October 2004 Public Works Digest.)*

Presidio of Monterey: On the other coast, the Presidio of Monterey/Ord Military Community (POM/OMC), situated on picturesque Monterey Peninsula, is surrounded by lots of water — unfortunately salty — and growing communities with an appetite for POM's "excess water." Having undergone Base Realignment and Closure, POM/OMC, with so much excess land to bequeath to the civilian communities, seemed like a natural spring to tap when the need for water arose.

The rights to water in the Western states are handled differently than in the East. The Presidio, built on lands that were once under Spanish domain, have "Pueblo Water Rights" as well as federal water rights. The State of California, which came into existence only in the 1800s, has imposed water management districts to allocate the scarce resource but must also honor those pre-existing water rights. It will require legal and water experts to sort out the various water rights, allocation quotas and intra-basin transfer scenarios.

Pressured by a growing population, POM's neighboring communities pushed to have inserted in the National Defense Authorization Act of 2006 a requirement that the secretary of Defense prepare and submit an interim assessment of the current and future water needs of POM/OMC. A well-known water consultant investigated. ▶



UP program moves installation utilities to private sector

by David Williams

Utilities privatization (UP) is an investment strategy designed to recapitalize the Army's utilities infrastructure, including electric, natural gas, water and wastewater. UP involves the transfer of ownership and operation of utility distribution systems to private entities.

The UP program is directed by the Office of the Secretary Defense. Systems are exempted from privatization if analysis determines that privatization is uneconomical or if there are national security reasons for continued Army ownership. Privatization actions use the Defense Energy Support Center (DESC) as the primary execution agent.

As of Aug. 21, 116 Army systems in the United States have been privatized, 158 are uneconomical to privatize, and 77 are under evaluation. The Army's fiscal year 2007 UP program is funded at \$21.2 million. DESC and the Army are poised to make award decisions by Sept. 30. The schedule includes:

- Fort A.P. Hill, Va. – Water and Wastewater
- Fort Jackson, S.C. – Water and Wastewater
- Fort Gordon, Ga. – Water and Wastewater
- Fort Bragg, N.C. – Water and Wastewater

- Fort Hood, Texas – Water and Wastewater
- Fort Richardson, Alaska – Electric, Gas, Water, Wastewater and the Electric Plant
- Fort Greely, Alaska – Electric, Gas, Water, Wastewater and the Electric Plant
- Fort Wainwright, Alaska – Electric, Gas, Water, Wastewater and the Electric Plant

It is important that the garrison staffs at the installations in the FY 2008 schedule are intimately involved in the process. As the Army moves forward towards privatizing the utility systems at each installation in the FY2008 schedule, installations should include their Directorates of Public Works in the process and also other gar- ➤

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The consultant found that, contrary to local expectations, there is no surplus of water at POM, compared to forecasted requirements, but a deficit will exist as soon as 2013. OMC fared better. Water availability won't outpace forecasted requirements until 2050. This report was presented to Congress in April. All forecasts included aggressive water conservation programs as required by local ordinances and state laws, otherwise the future requirements would be questioned. *(Editor's note: See a more detailed report in the September/October 2004 Public Works Digest.)*

POM began taking action immediately on the consultant's findings and recommendations, and has progressed towards securing the rights to all the water that is required to meet future demand, ensuring that the demands are reasonable, sustainable and in keeping with the local planning guidance.

Fort Bliss, Texas: The City of El Paso has a lot in common with Fort Bliss, such as the Hueco Bolson underground aquifer. A number of small towns on both sides of the border also use the Hueco Bolson.

Due to the combined effects of prolonged drought and increased populations, the fresh water in the Hueco Bolson was being over drawn, and brackish water was intruding. As the largest water users in the basin, the City of El Paso and Fort Bliss, independently at first, each planned to construct a desalination plant and leave the fresh water for others.

After much discussion, a partnership arrangement was made. Fort Bliss would provide the land and conduct the environmental impact and brine injection studies. The city, under an Enhanced Use Lease, would construct a 27.5-million-gallon-per-day desalination plant, operate it and provide water at a favorable rate. *(Editor's note: See the May/June 2005 Public Works Digest.)* The world's largest inland desalination plant was dedicated in August, and now the city and the post have unlimited drinking water.


Fort Gordon, Ga.: When privatization of the Fort Gordon water and waste water systems was found to be uneconomical, the installation was still interested in some sort of outsourcing of these utilities. Fortunately, the 2005 National Defense Authorization Act provided the authority

for the Army to conduct a pilot program of contracting for specific types of municipal services from a local jurisdiction for up to 10 years.

The City of Augusta, Ga., approached the installation with a proposal to provide water and wastewater services using this new authority. As an expression of their commitment, the city invested \$5.8 million at its own risk in system upgrades prior to the Army hookup.

On Sept. 28, 2006, a contract was awarded at a cost of \$36.3 million for Augusta to provide water and wastewater services for four years with six one-year options. Fort Gordon incurred connection fees totaling \$9.7 million but avoided a total of \$6.6 million in capital upgrades that would have been required had it not transferred the systems.

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Use of common material contributes to range sustainability

by Sara Leach

Engineers and scientists are studying a simple, innovative and cost-effective technique to transform and stabilize munitions constituents at military training ranges. They are employing hydrated lime to quickly transform explosives into benign constituents and prevent metal residues from migrating to surface water or groundwater sources.

Ranges are vital for training Soldiers and testing weapons and munitions that will be used by U.S. military forces. However, potential contamination at the ranges may create environmental challenges for range managers. The research into the use of hydrated lime that is being conducted by the U.S. Army Engineer Research and Development Center's Environmental Laboratory (ERDC-EL) offers a potential solution.

"Most munitions-contaminated soils found on training ranges contain a mixture of compounds," said Steve Larson, research chemist in ERDC-EL. "For hand grenade ranges, the prevalent munitions used are fragmentation grenades, typically composed of a steel shell containing Composition B explosive material. Through normal detonation, hand grenades can deposit trace amounts of both RDX and TNT at the range, along with the components of the steel shell casing."

RDX is an explosive widely used by the military and forms the base for Composition B, a common military explosive.

"Via alkaline hydrolysis, explosive

residues are quickly broken down, and metals can be effectively immobilized via hydroxide precipitation," said Andy Martin, an environmental engineer at ERDC-EL. "With the addition of hydrated lime to the hand grenade range soils, we can effectively accomplish this in a manner that is both cost effective and easily implemented."

During a field demonstration, the ERDC team applied hydrated lime to an active hand grenade range. The results indicated that the proper application of hydrated lime can be incorporated into range management operations, Martin said. The lime reduces migration by transforming energetic compounds into benign compounds and by sufficiently stabilizing the metals associated with hand grenade shells.

"Current field results have shown greater than a 50 percent reduction of RDX in post-liming range soil samples taken less than 24 hours after a liming event," he said.

Treating munitions constituents on site at grenade ranges will help mitigate



Engineer Research and Development Center researcher Jared Johnson applies lime in a grenade bay. Photo by Andy Martin, Environmental Laboratory, Engineer Research and Development Center

potential environmental issues and reduce the potential cost to the Department of Defense for soil and groundwater remediation.


This research is funded by the Environmental Security Technology Certification Program and conducted by ERDC-EL in Vicksburg, Miss.

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reson organizations, such as Directorates of Contracting and Offices of the Judge Advocate General.

The FY 2008 UP program is funded at \$37 million and includes:

- Fort Polk, La. – Water and Wastewater
- Schofield Barracks, Hawaii – Water and Wastewater

- Fort Bragg, N.C. – Gas
- Fort Belvoir, Va. – Water and Wastewater
- Fort Polk, La. – Electric
- Fort Stewart, Ga. – Gas
- Fort Dix, N.J. – Water and Wastewater

POCs are Jeffrey Ward, Utilities Privatization program manager, Office of the Assistant Chief



Army developing renewable energy guidance

by Ron Diehl and Mike Warwick

Prospects for renewable energy projects are receiving increased attention within the Army, Department of Defense, the administration and Congress, mirroring interest by the public and the environmental community. This interest is reflected in legislation like the Energy Policy Act of 2005 (EPA05), administration directives like Executive Order (EO) 13423, and DoD directives and other activities such as the Defense Science Board Energy Panel.

Following its Renewables Assessment, DoD issued a memo in 2005 setting a target to replace 25 percent of its electricity use with power from renewable resources by 2025. DoD currently receives between 6 percent and 9 percent of its power from renewable sources, depending on how Renewable Energy Certificates (RECs) are viewed. Making the jump to 25 percent will be a stretch and will require development of on-site renewable potential, as well as purchases of renewable power from utilities and independent power producers where available.

Currently, all federal agencies are required to meet a 7.5 percent goal by 2013 under EPA05 and EO 13423. The Department of Energy (DOE) is responsible for developing guidance for all agencies to meet that goal. DoD is already near the federal 7.5 percent goal.

DOE's objectives, expressed in its guidance, are very different from DoD's and the Army's. DOE has adopted reporting requirements that are too restrictive for DoD to employ if it is to reach its own 25 percent goal. For example, DOE's draft guidance doesn't recognize certain kinds of renewable projects. As a consequence, the Army is in the process of developing its own guidance, specific to its objectives, so installation and other staff are clear about how to proceed in the identification and

development of renewable projects and power purchases.

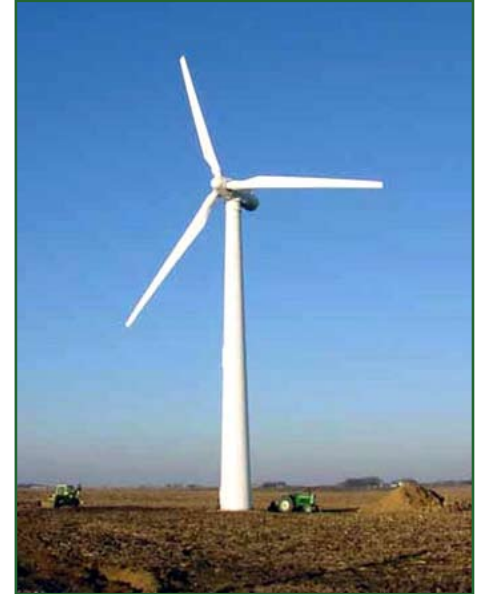
This DoD guidance is based on current requirements and trends in legislation and administrative directives, which are not consistent with one another, creating confusion about how they apply. The current requirements are also not as specific as they need to be as they apply to the Army's unique situation. The primary areas of conflict and confusion are:

- Is the baseline solely electricity use or total energy use?
- Does only power production count?
- What happens with renewables for non-power uses, such as thermal, daylighting and remote applications?

There are many secondary issues as well, such as capturing credit for previous investments in renewable energy on privatized facilities.

In general, the guidance being developed by the Office of the Assistant Chief of Staff for Installation Management will take a liberal interpretation of what should qualify in order to provide installations with maximum flexibility to develop on-site renewable potential. In addition, projects that enhance energy security or "fix" power costs are favored over those that don't. This means on-site projects are preferred over purchased power, and purchased power from nearby sources is favored over power remote from load. RECs are generally discouraged because they take credit for power not used by the installation.

The present draft calls for the Army to count everything that potentially produces power from renewable sources. The draft counts renewable energy used in buildings that reduces electricity use, including thermal uses, ground-source heat pumps and daylighting. It also proposes to collect data and report production from isolated



This wind turbine provides renewable energy to Camp Williams, Utah. U.S Army photo

and remote renewable applications, such as solar-and-diesel hybrid generation and solar street lighting.

Biomass and biofuels, including landfill and sewer gas, used to produce power will be counted, but those for thermal uses only will not count. However, it is recommended that these uses be tracked to comply with expected future greenhouse gas monitoring requirements. Renewable power consumption is also recorded separately in the Army Energy and Water Reporting System.

The draft is expected to be finalized soon, and a specific guidance document will follow shortly thereafter.

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Study aims to ease EAct05 compliance for new construction

by Dale Herron

Since the Army builds repetitive facilities throughout the United States, the Office of the Assistant Chief of Staff for Installation Management is sponsoring a study to simplify the process of compliance with new federal energy requirements for duplicative facilities.

The Energy Policy Act of 2005 (EAct05) requires that federal building energy-efficiency performance standards be revised. When shown to be life-cycle cost effective, new federal buildings must be designed to achieve energy consumption levels that are at least 30 percent below the levels established in the currently applicable version of standards published by the American Society of Heating, Refrigeration and Air-conditioning Engineers (ASHRAE) 90.1 or the International Energy Conservation Code.

To comply with this part of the law, the U.S. Army Corps of Engineers has changed the Army's facility criteria to require the designer of record for each new Army facility to demonstrate that the facility's design will have at least 30 percent better energy performance than a similar facility designed in accordance with the ASHRAE 90.1-2004 building standard.

To fully meet this requirement, the designer of record must first produce a building design that is in compliance with the ASHRAE 90.1 standard and determine the annual energy performance of that building in the required location. Then, the design must be modified to include energy-efficient improvements, and the annual energy performance of the revised design must be determined. The designer repeats this process until the annual energy performance of the revised building is at least 30 percent better than the ASHRAE-compliant building. Finally, the revised design must be shown to be life-cycle cost effective compared to the original

ASHRAE-compliant design.

Clearly this is a time-consuming, costly and tedious process both for the designer of record and for the USACE design reviewers. The study seeks to simplify the process and improve the results.

The study team includes experts from USACE's headquarters, Engineer Research and Development Center (ERDC) and Centers of Standardization; the Department of Energy's (DOE) Federal Energy Management Program and National Renewable Energy Laboratory; and ASHRAE. The facilities to be studied are training barracks, unaccompanied enlisted personnel housing (UEPH) barracks, battalion headquarters buildings (BHQs), tactical equipment maintenance facilities (TEMFs), dining facilities, child development centers, company operations facilities and Army Reserve centers.

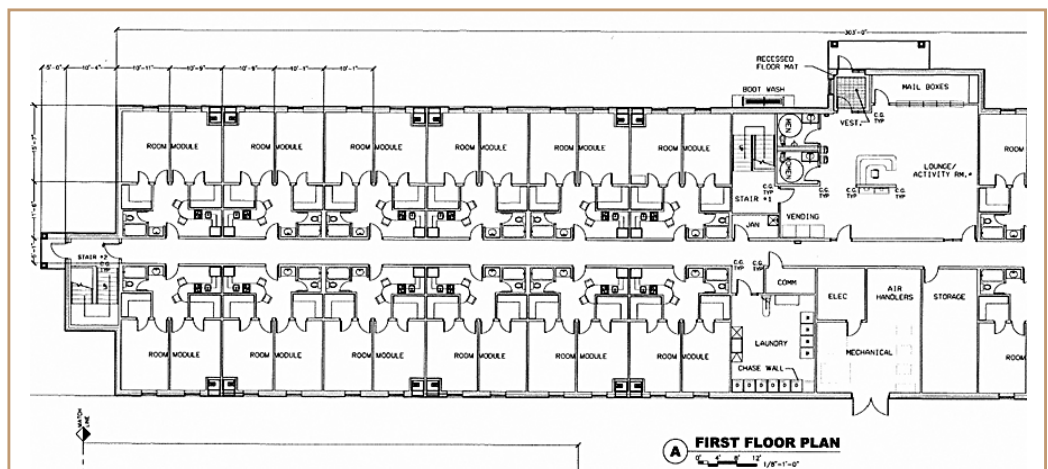
For each of these facilities, the study team will develop a baseline representative building design that just complies with ASHRAE 90.1-2004 for each of the 15 DOE-defined climate zones in the United States where Army facilities are located. The baseline building designs will be evaluated using the DOE's EnergyPlus software to determine the annual energy performance in each climate zone. The building

designs will be improved using life-cycle cost-effective technologies until at least 30-percent-better energy performance is achieved according to analysis by EnergyPlus.

The result for each of the eight building types will be both the baseline energy performance for that facility and a design guide for that facility in each of the 15 climate zones. The design guides will describe the new technologies and improvements needed in the design to achieve the 30-percent-better goal in a life-cycle cost-effective manner.

When the study is completed for a given facility type, the Army new facility guidance will be revised to allow the designer two options for being in compliance. The designer may exactly follow the design guide for that facility type and climate zone and will be deemed to be in compliance without further analyses, or the designer may produce a unique facility design that must be shown by approved energy and life-cycle cost analyses to result in an annual energy consumption that is 30 percent better than the baseline building energy consumption determined for that facility type and climate in this study.

Either path chosen by the designer ➤



The study team has completed analyses for unaccompanied enlisted personnel housing facilities. Graphic courtesy of the Engineer Research and Development Center



Energy team now part of Operations Directorate


by Curt Wexel

The Army Headquarters Energy and Utility Team is part of the Facilities Policy Division in the newly organized Operations Directorate, Office of the Assistant Chief of Staff for Installation Management. The contact table provides information for team members.

The team recently lost the valuable services of senior staff member David Williams, who was selected for the Army Senior Fellows Program. Recruitment actions are being processed to fill two vacancies.

For policy guidance or assistance with a particular energy or utilities program area, the other table identifies the designated subject matter experts.

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of record will significantly reduce design effort and improve the energy performance of new Army facilities compared to current practice.

The study team has completed analyses for training barracks and UEPH facilities. Studies for BHQ and TEMF are currently underway. The goal is to have all studies completed in time to affect fiscal year 2008 and beyond Army facility construction projects.

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Jeffrey Ward	Program manager	jeffrey.ward@hqda.army.mil	703-601-0364

Energy and Utilities Program Managers (PM)		
Major Functions	Primary PM	Alternate PM
Army Energy Program (AR 11-27)	Don Juhasz PE, CEM	David Purcell
Alternative Fuels	Ronald Diehl, PE, CEM	Jeffrey Ward
Energy Strategy and Campaign Plan	Curt Wexel, PE	James Paton, CEM
Energy Conservation Investment Program	Ronald Diehl, PE, CEM	Curt Wexel, PE
Energy Saving Performance Contracts	James Paton, CEM	Jeffrey Ward
Utility Partnerships (UESC)	James Paton, CEM	Jeffrey Ward
Energy Security	James Paton, CEM	Jeffrey Ward
Energy Awards	David Purcell	Jeffrey Ward
Utilities Policy (AR 420-49)	Don Juhasz, PE, CEM	William Eng, PE, CEM
Utility Project Approval	Ronald Diehl, PE, CEM	Jeffrey Ward
Utility Systems & Modernization	James Paton, CEM	Jeffrey Ward
Water Supply and Wastewater	William Eng, PE, CEM	Curt Wexel, PE
Solid Waste Management Policy	William Eng, PE, CEM	Curt Wexel, PE
Source Reduction, Recycling	William Eng, PE, CEM	Curt Wexel, PE
Renewable Energy Sources	Jeffrey Ward	Ronald Diehl, PE, CEM
Other Programs & Issues		
Sustainability	Curt Wexel, PE	Ronald Diehl, PE, CEM
Metering	David Purcell	James Paton, CEM
Energy & Water Reporting (AEWRS)	David Purcell	James Paton, CEM
Corrosion Prevention & Control	David Purcell	Curt Wexel, PE
Utility Privatization (UP) Policy	Jeffrey Ward	William Eng, PE, CEM



IMCOM, ERDC push for energy-saving barracks

by Paul Volkman and Dale Herron

Improvement of barracks is a continuing Army goal. Headquarters, Installation Management Command is currently working or has recently completed multiple barracks retrofit/upgrade programs including the Barracks Improvement Program (BIP), Training Barracks Improvement Program (TBIP), Barracks Upgrade Program (BUP) and the Flagship Renovation Program barracks. The total value of these programs is about \$500 million over four years.

Chronic life, health and safety issues to be corrected in the barracks during these retrofits include remediation and prevention of mold and mildew; repair and improvement of heating, ventilating and air-conditioning (HVAC) systems; effective repair of building envelopes, including roofs, doors and windows; repair of nonoperational latrines, showers, laundries and other plumbing systems; and improved energy performance.

HQ IMCOM is concerned that barracks retrofit projects completed under these programs may not have fully addressed these chronic issues. Accordingly, HQ IMCOM provided funds to the Engineer Research and Development Center (ERDC) to survey completed and ongoing barracks renovations. The goals were to determine effectiveness at resolving these chronic issues and to propose additional and alternative solutions that can be systematically included in future projects.

The ERDC study approach included:

- Establishing a team of U.S. Army Corps of Engineers and industry technical experts;
- Selecting representative barracks retrofit projects for study based on type and location;
- Conducting visual inspections and limited measurements, including blow door tests, during on-site assessments;
- Identifying recommended design, operation and technology improvements resulting in life, health, safety-condition



Thermographic image (left) of retrofitted barracks' windows (right) shows energy leakage. Photo by Alexander Zhivov, Construction Engineering Research Laboratory, Engineer Research and Development Center

improvement and energy conservation opportunities with minimal or no additional cost;

- Developing a “must-do” list of technologies and measures to be considered when barracks are retrofitted or improved under BIP, BUP, TBIP and Flagship projects; and
- Develop a concept design for implementing the “must-do” technologies in an example barracks project.

During fiscal years 2006 and 2007, the ERDC team visited projects at Aberdeen Proving Ground, Md.; and Forts Bragg, N.C.; Drum, N.Y.; Jackson, S.C.; Leonard Wood, Mo.; Myer, Va.; Polk, La.; Stewart, Ga.; and other installations. Barracks were found to be improved by these projects. However, some of the chronic issues were not fully addressed.

Examples of issues found during these site visits are:

- Barracks reconfigured into the current “1+1” standard were more airtight before renovation than after.
- Barracks' windows that were renovated to improve energy conservation showed very great energy waste based on thermography.
- Humidity control problems, and therefore mold and mildew problems, continued to exist in the retrofitted barracks.

After completing the site visits, the

ERDC team developed a list of critical issues that should be considered in every barracks retrofit/upgrade project:

- Complete whole barracks assessment first to identify all issues before beginning the design of a specific retrofit.
- Ensure that the resulting renovation design resolves all important issues.
- Maximize air tightness in the barracks envelope.
- Where humidity is a problem, design a separate ventilation system with direct-expansion or desiccant units for “deep” dehumidification to control building infiltration and humidity. Use room HVAC for heating and sensible cooling only.
- Locate room HVAC units to allow maintenance without entering Soldiers' rooms.
- Do not locate ventilation systems in inaccessible attics.

The ERDC team also developed a list of critical technologies that have very high potential for resolving chronic health, safety and energy issues in barracks:

- Improved building air tightness and testing for same;
- Dedicated outdoor air systems for ventilation and humidity control;
- Cool roofs;
- Improved HVAC duct tightness and testing for same; and
- Drain water heat recovery on showers. ➤



IMCOM holds Energy Summit

by Paul Volkman

Headquarters, Installation Management Command convened the first-ever IMCOM Energy Summit June 27. The summit was the brainchild of Brig. Gen. John A. Macdonald, IMCOM deputy commander, who saw a need to bring together the principal stakeholders involved in the Army's Energy Program to discuss cross-functional issues.

More than 35 representatives from the Office of the Deputy Assistant Secretary of the Army for Installations and Housing, the Office of the Assistant Chief of Staff for Installation Management, IMCOM, the U.S. Army Corps of Engineers, Defense Energy Support Center (DESC), the Department of Energy (DOE) and the Army Contracting Center (ACA) attended. The summit focused on four areas: use of Energy Savings Performance Contracts (ESPCs), utilities privatization, renewable energy and utility commodity purchasing.

The stakeholders began the first day by discussing the ESPC program and the reasons behind the recent slowdown in the number of awarded contracts. They identified six reasons for the program's slowdown:

- Garrison personnel's discomfort with the program and how it works;
- Garrisons' lack of trained staff to execute or administer the program;
- Up-front costs for contracting that stall development of projects;
- Sustainment of measurement and verification over the project's life;

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Other promising technologies include:

- Radiant ceiling panels for heating and cooling;
- Ground-source heat pumps for room heating and sensible cooling;
- Window shading or film; and
- Occupancy sensors or keyless entry switch for room HVAC and plug loads.



Paul Volkman
Photo by Mary Beth Thompson

- Post-award contract responsibility; and
- A few "problem" legacy projects that give the overall program a bad reputation.

The participants developed recommendations for improving the program and addressing the areas of concern. Recommendations included: providing training for garrison commanders and senior garrison staff principals to become familiar with the program and its benefits; having DOE provide "technical" training for the garrison staff either on site or through regional or national training courses; centrally funding project facilitators and up-front contracting costs; and transferring post-award administration to ACA.

The ESPC conversation was followed by an afternoon discussion on utilities privatization post-award contract administration responsibilities. The session culminated in a conceptual agreement by ACA to assume all post-award contract management

responsibilities if adequate resources can be provided by the Army.

The second day kicked off with a brief dialogue on the Army's progress with implementing renewable energy at its garrisons. While certain garrisons have successfully implemented renewable energy projects, the trend has not caught on. Much work remains to be done in this area if the Army is to meet the Department of Defense renewable energy use goal of 25 percent by 2025.

A discussion of electric and natural gas commodity purchasing wrapped up the summit. DESC explained how the Army currently buys its electricity and natural gas and suggested ways for improving the processes, such as increasing garrison participation in the natural gas purchasing program.

The June event was such a resounding success that a second summit is in the planning stages for Dec. 4-5. This summit will be hosted by the U.S. Army Engineering and Support Center, Huntsville, Ala., and will take place in Huntsville. The theme of the December get-together will be renewable energy. In the meantime, the stakeholders will continue working on the issues uncovered during the first summit.

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Paul Volkman is the Energy and Utilities Program manager, Installation Management Command.



The ERDC team is now developing a 30-percent concept design for a major barracks renovation that will demonstrate how the above critical issues and technologies can be cost-effectively incorporated into the project. Support for addressing the critical issues and for incorporating these critical technologies in all FY 2008 and beyond barracks retrofit/upgrade projects is available from Headquarters IMCOM and ERDC's Construction Engineering

Research Laboratory.

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Paul Volkman is the Energy and Utilities Program manager, Installation Management Command; and Dale Herron is a mechanical engineer and project manager, Construction Engineering Research Laboratory, Engineer Research and Development Center.





DoD receives energy strategy input from Defense Science Board

by Scott McCain

Around the world, access to and control of petroleum is recognized as a key requirement for the development and retention of economic prosperity and national security. The two are irrevocably connected. Increasing global petroleum demand in the face of declining world oil supplies is forcing the United States and the rest of the industrialized countries to strategically reassess their energy supplies and sources.

The Army's response to the world's growing petroleum supply-demand imbalance has been addressed in the *Energy Strategy for Installations*. The strategy provides a clear road map for responding to rising energy prices and growing supply availability. Likewise, in the fall of 2006, the secretary of Defense directed the Defense Science Board (DSB) to conduct a study on the department's strategy for managing the uncertainties associated with energy.

The mission of the DSB is to advise the secretary on scientific and technical matters as they affect the perceived needs of the Department of Defense, in this case as they relate to energy. The secretary asked the DSB to develop a DoD energy strategy that would identify opportunities to reduce fuel demand, deploy renewable and alternative energy sources, and identify institutional barriers to implementing the strategy.

After nearly a year spent reviewing the issues, analyzing the facts and speaking with industry experts, the DSB completed its 2006 study, *DoD Energy Strategy*. In the study, the DSB confirms that petroleum and electricity not only power the nation's economic engine and enable the warfighter but are absolutely essential to all warfighting equipment and deployed military forces. The study also points out that electricity drives critical DoD capabilities and installations worldwide, as well as nearly everything else, as the country moves to a digital economy.

Compelling the need to address the DoD's energy strategy has been the continued increase in global petroleum demand, driven primarily by the growing economies of China and India, which has placed a strain on the oil producing regions of the world. As global petroleum demand outpaced supplies, DoD is confronted by the fact that fossil fuels will remain the primary energy source for mobility platforms for the next 25 years or more. Compared to daily global petroleum demand, even domestic demand, DoD is a very small consumer but is completely dependent on petroleum-based fuels.

Fighting forces, in terms of endurance, cannot function without access to petroleum-based fuels. Endurance is defined as the ability to sustain operations for an extended period of time without support or replenishment.

According to the DSB, petroleum demand is high and rising. For example, daily fuel consumption per deployed combatant rose from 1.67 gallons in World War II to 27.3 gallons in the second Gulf War. Furthermore, fuel logistics are also a significant operational and financial burden as 70 percent of warfighting logistics by weight are for fuel. Supplying fuel to front lines requires considerable protection and diverts combat forces from combat operations to force protection.

Electricity is also important in supporting DoD capabilities and represents its own set of challenges. Mission-critical loads in the field and on installations depend on electricity provided by a combination of the grid and backup generators. Included in the mission-critical loads are command and control functions, situational awareness and



strategic detection.

The vulnerability associated with electricity is that the grid was built for efficiency not resilience. Furthermore, since electricity was deregulated, reserve generation capacity has been greatly reduced. The nation's power grid is remarkably fragile and represents an attractive target for physical and cyber attacks.

The bottom line is that the DSB study observed that DoD should manage energy consumption as it manages other critical functions. For weapons platforms, DoD should improve petroleum energy efficiency, which translates into greater warfighter capability through increased range for weapon systems and the ability to remain on the battlefield. For installations, DoD should focus on assuring access to reliable electrical power both from conventional and renewable sources.

The final report from the DSB was due to be released during September.

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Selection guide published for detergents at Army washracks

by Gary Gerdes

The U.S. Army Corps of Engineers has published new information to help facility engineers choose detergent products that will not interfere with wastewater treatment plants when discharged from vehicle washing operations. Public Works Technical Bulletin (PWTB) 200-1-47, Guidance to Select Detergents for use at Army Washracks can be downloaded from http://www.wbdg.org/ccb/browse_cat.php?o=31&c=215.

Most detergents tend to cause stable emulsions of oil in water, rendering conventional oil-water separators useless. Emulsified oil will pass through simple gravity or coalescing-type gravity separators and flow into the receiving sanitary sewer or, in some cases, a receiving stream. In locations where a separator discharges to a publicly owned treatment works (POTW), emulsified oil in the separator effluent may exceed pretreatment discharge limits placed on that separator.

Emulsified oil discharged to a POTW may cause the treatment works to be in violation of a National Pollutant Discharge Elimination System permit. Because of this potential, installation environmental offices

have issued directives that prohibit or limit the use of detergents at most Army ground-vehicle washracks.

High-pressure, hot-water washing is the recommended alternative. However, this method does not always clean components heavily soiled with oil and grease. Soldiers often circumvent the ban and purchase detergents locally to clean their tactical vehicles.

Recognizing the need for cleaning products that are compatible with wastewater pretreatment systems, detergent manufacturers are now marketing detergents that form unstable emulsions. These detergents — sometimes called “quick release,” “quick splitting” or “separator friendly” — are said to allow oil to coalesce and separate from wash water after short periods of time. As long as the oil globules are able to rise to the surface of the water in an oil-water separator within the design detention time, then the separator will function properly. The quick-release detergent could be used without concern for regulatory violations.


The Fort Benning, Ga., Environmental Division asked the Engineer Research and Development Center to evaluate some of

these products for potential use at washracks. The study described in the PWTB is an evaluation of 20 detergents, most of which are quick-release types currently used at Army installations.

The study determined whether each detergent was likely to cause oil to pass through a typical Army oil-water separator. It also assessed toxicity effects of the various detergent products and whether some detergents may interfere with the Environmental Protection Agency Method 1664A, HEM (n-Hexane Extractable Material) Oil and Grease.

The results of these laboratory tests should not be interpreted as an endorsement for use of any particular detergent. However, installation environmental personnel can use the PWTB guidance when selecting detergents to be used at washracks on a trial basis.

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Training produces 16 new Certified Energy Managers

by David Purcell

Executive Order 13123 and the Energy Policy Act of 2005 (EPAAct05) mandate formal training for energy managers. The Office of the Assistant Chief of Staff for Installation Management has annually sponsored Certified Energy Manager instruction to address this requirement.

The training is conducted by the Association of Energy Engineers and culminates in a four-hour certification examination. Upon successful completion of the course, examination and credentials review, the student receives nationally recognized cer-


tification as a Certified Energy Manager, or CEM.

This year, the training was conducted in Arlington, Va., June 25-29 for 30 Army energy managers. Attendees came from all Installation Management Command regions and from the U.S. Medical Command, the National Guard Bureau and Headquarters, Department of the Army. Sixteen students passed the certification examination. As nationally recognized experts, they will be an invaluable resource for the development and implementation of their installations' energy and water man-

agement and conservation programs as the Army strives to meet the challenge of compliance with EPAAct05.

Beginning in fiscal year 2008, Headquarters, IMCOM will be responsible for coordinating the annual CEM training.

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Secretary of the Army recognizes energy, water achievements

by David Purcell

The winners of this year's *Secretary of the Army Energy and Water Management Awards* were presented their achievement awards at the Department of Defense All-Hands Energy meeting in New Orleans, La., Aug. 8.

Principal Deputy Assistant Secretary of the Army for Installations and Environment Geoffrey Prosch and Assistant Deputy Under Secretary of Defense for Installations John C. "Chuck" Williams presented the awards.

Each awardee received an engraved plaque, a certificate and a monetary award. The award categories and winners are:

Installation

- *Energy Efficiency/Energy Management* – U.S. Army Garrison Benelux, Belgium – Steve Dunham, Jeffrey Romero, Linda Moens and Patrick Retour

Small Group

- *Renewable/Alternatives* – Fort Knox, Ky. – Gary Meredith, David Blandford, Patrick Walsh, Pat Appelman and Matt Bowman
- *Water Conservation* – Fort Detrick, Md. – Jeff Beck and Charles Sisk
- *Energy Efficiency/Energy Management* – Rock Island Arsenal, Ill. – David Osborn, Gary Cook, Carlo Facciolla, Heath Helstrom, Jay Richter, Charles Swynenberg and James Thompson
- *Energy Efficiency/Energy Management* – Camp Shelby, Miss., Mississippi Army National Guard – Larry Daughtry, Chuck Evans, John Harnish and Kato Escaner
- *Energy Efficiency/Energy Management* – Fort Stewart, Ga. – Fred Pierre-Louis, Willie Barnett and Denise Kelley
- *Energy Efficiency/Energy Management* – U.S. Army Garrison Ansbach, Germany – Regina Kranz, Gabriele Berner and


Rudolf Gmelch

- *Energy Efficiency/Energy Management* – U.S. Army Garrison Hessen (Hanau), Germany – Karl-Heinz Schneider, Walter Rausch and Peter Adrian

Individual

- *Life Time Impact Award for Energy Efficiency/Energy Management* – Ernst Kusiak, U.S. Army Garrison Wiesbaden, Germany
- *Individual Leadership Contribution Award for Energy Efficiency/Energy Management* – Scott Naeseth, Fort McCoy, Wis., U.S. Army Reserves

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The winners of the 2007 Secretary of the Army Energy and Water Management Awards pose for the camera after receiving their awards in August. Photo by Theresa Shoemaker, Pacific Northwest National Laboratory



Energy and water campaign plan charts way forward

by Curt Wexel

The *Army Energy Strategy for Installations* contains the Army's 25-year energy vision. The strategy, signed in July 2005 by the secretary of the Army, consists of five key initiatives. The road map for executing those initiatives is the *Army Energy and Water Campaign Plan for Installations*.

Because the campaign plan is the centerpiece of the Army energy program, this issue of *Public Works Digest* devotes a series of articles, written by their respective lead proponents, to cover each of the five key initiatives. The articles describe the governing policies and performance standards, the status of progress and plans for the future.

The initiatives and their proponents are:

1. Energy waste reduction – Jeffrey Ward
2. Energy efficiency improvements – David Purcell

3. Reduce dependency on fossil fuels – Ronald Diehl
4. Reduce water consumption – William Eng
5. Energy security – James Paton

An additional article addresses the update of the campaign plan currently in progress. This first biennial update is an essential tool for defense of the Army's energy budget requests for the fiscal years 2010-2015 Program Objective Memorandum.

To read the energy strategy, campaign plan and related guidance, visit the Army's Energy Program web page, <http://army-energy.hqda.pentagon.mil>.

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The campaign plan shows the way to reduce energy and water use on Army installations.

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Initiative 1 – Energy waste reduction

by Jeffrey Ward

The Army's fiscal year 2006 energy consumption rate was unchanged from FY 2003. Reductions in energy consumption were offset by heightened mission operational tempo from fighting the Global War on Terror, response to natural disasters and the extensive use of relocatable buildings worldwide. This situation did not meet the 2 percent reduction target of the Energy Policy Act of 2005. And Executive Order 13423, signed Jan. 24, now directs a 3 percent annual reduction in energy use.

Armywide efforts are underway to achieve these goals over an extended period of years. The first initiative of the *Army Energy and Water Campaign Plan for Installations* states, "Eliminate energy inefficiencies that waste natural and financial resources, and do so in a manner that does not adversely impact comfort and quality of the facilities in which Soldiers, their Families, civilians and contractors



Turning off heating and cooling systems when the outdoor temperatures are in the low- to mid-70s is one way to reduce energy use.

work and live."

Everyone must bring to the forefront of their consciousness the recognition of energy waste and an attitude of action to do something about it. That statement may seem obvious, but the important point is that efforts by each individual can help

reduce dependency on energy supplied by others who may wish to do the United States harm.

What can I do in my office? What do I look for?

- First and foremost, turn off everything when not in use. Turn off the lights when you leave the room. Turn off the overhead lights, and turn off the desk lighting. Turn off your computer monitor and the computer itself if not set up to automatically move into the sleep or hibernation mode after 20 minutes of inactivity. Turn off sections of lighting in rooms or hallways to provide only the needed light levels for your activities, and turn them all off when you are finished.
- Close windows and do not prop open doors when heating and air conditioning systems are on in the building. Most offices do not have individual room ➤



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thermostat controls for their systems. Windows are generally the largest source of temperature differentials between offices and the outside. Leaving them open when comfort systems are operating is a no-win situation. Do not be an energy hog by leaving windows open during heating and cooling seasons.

- During low humidity and low-70s-degree days, work with office colleagues and others in the building to turn off heating and cooling systems. Use natural ventilation

by opening windows and those in nearby spaces to create cross-building ventilation. Find the aspiring weatherperson in the group to check temperature and humidity, so that windows are closed when atmospheric conditions become uncomfortable to the occupants.

- Save energy required to heat water by turning the flow rate down for hot water at the faucet. Do not “pool” water in the sink when washing hands.

Everyone can save energy and water at work. Become self-aware and actively fol-

low through. Waste occurs in the workplace everyday. Team up with office colleagues to be part of the solution, not the problem, and save energy.

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Initiative 2 – Energy efficiency improvements

by David Purcell

Initiative 2 of the *Army Energy and Water Campaign Plan* for Installations states, “Increase the use of energy technologies in construction and major renovation projects that provide the greatest cost-effective energy efficiency and support the Army’s environmental objectives.” The initiative is then expanded into nine specific action items.

1. *Develop energy performance requirements for new construction and renovations, including support facilities for utility systems that meet or exceed American Society of Heating, Refrigeration and Air-conditioning Engineers (ASHRAE) standards* – Design standards that perform 30 percent better than ASHRAE requirements for energy efficiency have been developed for barracks and trainee barracks. Design standards for battalion headquarters and temporary billeting will be completed in the near future.
2. *Develop energy design standards for new and renovated facilities to meet or exceed federal energy performance requirements* – Complete 30-percent better-than-ASHRAE design standards for the first five facility types, then expand the effort to incorporate additional facility types to include design standards for remodeling. Ulti-

mately, ensure the new standards are integrated into the unified facilities criteria.

3. *Improve energy efficiency in sustainable design of new and renovated construction through the Leadership in Energy and Environmental Design (LEED) Green Building Rating System* – Army policy requires all new and major construction projects to be at least LEED Silver certifiable by fiscal year 2008. The policy must continue to be enforced during project reviews and coordinated with the U.S. Army Corps of Engineers during the design phase to ensure the LEED attributes are not designed out of the project.
4. *Provide training in building design and renovations with energy efficiency technologies* – USACE has developed a training program to help its district design and construction engineers and other Army energy professionals implement energy conservation requirements for new construction per the Energy Policy Act of 2005 (EPAAct05).
5. *Increase management tools for utility systems to meet the Energy Use Measurement and Accountability goals of EPAAct05* – Imple-



New daylighting retrofits for Army facilities in Hawaii include new skylights in a bangar at Wheeler Army Airfield. Photo by Scott Bly

mentation plans for the installation of advanced meters and meter management software for electric consumption has been developed. The procurement plan is under development, and systems will be installed at 22 installations in FY 2008. Metering systems for natural gas and water are also being planned to start in mid-FY 2008. Implementation will continue through FY 2012 to ensure compliance with the metering requirement of EPAAct05 and the Department of Defense. ➤



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- 6. *Minimize the impact of fuel cost and availability at installations* – A policy is under consideration that would ensure price volatility is a consideration in fuel source and technology decisions in facility projects managed by the installation.
- 7. *Establish an Army utility source (electric, natural gas and other fuels) evaluation program that selects a cost-effective and secure energy source option and includes alternative sources* – A study is underway to determine the impact of the natural gas, world-supply-and-demand situation over the next 25 years. The results of the study are expected in January and will

assist the Army in the design of future utility support.

- 8. *Implement authorization that allows monies retained at the installation level based on utility savings to be used for utility projects* – The authority to retain energy savings at agency level, i.e. DoD, as a result of energy conservation measures was established by EPAct05, however, the mechanism to implement this authority has not been established. The process is complicated by the fact that only future cost avoidance is actually achieved. Rising utility prices negate any true savings.
- 9. *Increase performance verification in the use of alternative financing and available appropri-*

ated funds – A pending study will validate savings on several installations. The results of the study will be used to document and implement best business practices that become evident. In addition, a policy will be established to strengthen the metering and validation requirement prior to entering into an alternatively financed project.

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Initiative 3 – Reduce dependency on fossil fuels

by Ronald Diehl

Initiative 3 of the *Army Energy and Water Campaign Plan for Installations* states, “**Increase use of clean, renewable energy to reduce dependence on fossil fuels and to optimize environmental benefits and sustainability.**” The initiative is then expanded into five specific steps.

- 1. *Substitute renewable resources for purchases of electricity from fossil fuels when life-cycle cost effective* – This step requires that attempts be made to purchase electricity from renewable resources and not through the use of renewable energy credits.
- 2. *Develop all cost-effective, on-site renewable generation consistent with mission requirements* – This step includes Energy Conservation Investment Program projects as well as third-party collaborations that use nonfederal financing on federal property.
- 3. *Modernize and sustain central energy systems to reduce fossil fuel consumption* – This step involves repair and maintenance of existing, nonprivatized utility systems to increase efficiency and reduce fossil-fuel consumption.

- 4. *Reduce on-site fuel use for building space heating and domestic hot water* – This step can be achieved by either replacing fossil-fuel-consuming systems with renewable systems or improving the efficiency of existing systems.

- 5. *Reduce fossil fuel use in non-tactical vehicles (NTV)* – The Army currently has about 23,500 NTVs that operate on alternative fuels. This step involves creating and using infrastructure at or near Army installations where alternative-fueled NTVs can be refueled with alternative fuel. In addition, the location of existing alternative fuel infrastructure can be found on several web sites such as that of the National Ethanol Vehicle Coalition.


It is the responsibility of every Army Soldier, civilian and contractor to know, understand and adopt these steps to optimize and reduce the consumption of fossil fuels. These actions are an essential part of our national energy security plan and of the Army’s ability to meet energy reduction goals that are embodied in the Energy



Wind is a source of renewable energy that can be explored by Army installations. Photo by Todd Spink

Policy Act of 2005 and, more recently, in Executive Order 13423.

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Initiative 4 – Water conservation

by William F. Eng

Federal agencies, in accordance with Executive Order (EO) 13423, *Strengthening Federal Environmental, Energy and Transportation Management*, will reduce water consumption intensity beginning in fiscal year 2008 by 2 percent per year through the end of FY 2015, relative to a baseline consumption in FY 2007, using life-cycle cost-effective measures, or a total of 16 percent by the end of FY 2015.

Completion of the eight supporting actions under Initiative 4 of the *Army Energy and Water Campaign Plan for Installations* will ensure that the Army meets the EO-mandated water-consumption reduction targets while providing safe, secure, reliable, environmentally compliant and cost-effective water services to Soldiers, Families, civilians and contractors on Army installations.

Initiative 4 says, “**Reduce water use to conserve water resources for drinking and domestic purposes.**” Progress on each of the supporting actions is slow but steady.

The first action — *assess the current water use, costs and availability at Army installations to prioritize sites for analysis of water conservation opportunities* — requires full funding and timely execution of the metering program being carried out under Initiative 1.5. Installing modern, digitally recording and remote-reading water meters will provide the data that garrisons need to improve water system management and data quality in the Army Energy and Water Reporting System.

Actions to *improve the water storage and distribution system integrity and to increase water efficiency of all plumbing fixtures* will be greatly enhanced by installing and using modern meters and making other improvements in overall water management. Systemwide leak-detection programs and targeted repair projects will tighten up water systems and reduce water costs significantly.

Although not stated as goals of this EO, the Army is committed to two important

planning and management tools needed for an effective water conservation and management program: development and maintenance of installation water management plans, and the adoption by each installation of at least four Best Management Practices (BMPs) recommended by the Federal Energy Management Program. As of FY 2006, 59 percent of Army installations have implemented at least four BMPs, exceeding the 30 percent target under the previous EO, while 81 percent have water management plans. Installations are encouraged to implement and sustain as many BMPs as feasible.

The Office of the Assistant Chief of Staff for Installation Management will continue to track and monitor the BMPs as management indicators. BMPs for water management may be found at: http://www1.eere.energy.gov/femp/water/water_fedrequire.html.

Nondrinking water uses like irrigation, industrial or mechanical processes provide the Army with opportunities to use water more than once before disposing to the environment and to save the cost of treating water to drinking-water quality. By limiting the amount, or eliminating entirely the use, of potable water for irrigation, for example, and increasing the use of native plants in landscaping, known as xeriscaping, installations will be more sustainable and less vulnerable during periods of drought or when threatened by manmade or natural disasters.

The action that says *increase efficiency and reduce losses in process water use (cooling towers, equipment that uses single pass cooling, boiler/steam systems, vehicle wash station, construction)*” is a perfect fit for programming basewide initiatives to replace high water-using processes and equipment with more energy-efficient, low water-using models, in accordance with the principles outlined in



Sprinklers at the Fort Meade, Md., golf complex use nonpotable reclaimed water from wastewater treatment to irrigate. Photo by Christine Frankovitch

water BMP #6, *Boiler/Steam Systems*; BMP #7, *Single-Pass Cooling Equipment*; BMP #8, *Cooling Tower Management*; and BMP #9, *Miscellaneous High Water-Using Processes*.

Water is relatively inexpensive compared on a unit-cost basis to other utilities. So, water-related projects — unless they are in response to a legal notice of violation or enforcement action — do not compete well with other utility projects on a return-on-investment basis. Installations will have to be creative and imaginative in packaging and prioritizing projects, and in developing implementation strategies.

The OACSIM centrally funds a program to prepare qualified individuals for the Certified Energy Manager’s (CEM) exam. However, the CEM training is not focused on facilitating project development or implementation, which are vital to put plans into practice. There is a need to establish an ad hoc training committee — consisting of experts from OACSIM, Installation Management Command, U.S. Army Corps of Engineers, industry and academia — to develop the knowledge set of subject matters and levels of expertise required to function in water-resources planning, utility operations and conservation.

The committee will canvas educational providers within the Army, the sister services, the Department of Defense, other ►



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federal agencies, industry and academia for college-level or technical proficiency classes to develop a core curriculum to train subject matter experts in water-related subjects. Of course, all this requires a commitment by the Army leadership and a funding stream. To begin, the committee must prepare guidance for implementing a training program.

Army installations share land, air and water resources with many users. Competition for water resources is becoming fiercer, and the Army's mission to train and defend the nation does not automatically grant it full access to water, especially when the


supply is limited. Identifying water resources for future mission-critical needs must begin now.

Each of these actions outlines specific steps for completing that action and defining the intended end state. Installations must maximize water conservation, reuse and recycling opportunities. The Army must invest in technology transfer of innovative solutions to water supply, treatment, distribution and storage issues and problems. It must engage state and regional water resource authorities in the long-term planning, allocation and development of water resources. There must be planning, programming and budgeting of funds for long-term comprehensive management of

installation water resources.

Initiative 4 is a road map to follow for the next 25 years that will make significant and meaningful reductions in water use on Army installations worldwide, which will conserve water resources for drinking and domestic purposes.

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Campaign Plan Initiative 5 – Energy security

by David Purcell and James Paton

Initiative 5 of the *Army Energy and Water Campaign Plan* for Installations states, **“Improve the security and reliability of our energy and water systems in order to provide dependable utility service.”** The initiative is then expanded into three specific action items.

1. *Institute energy security concepts and methodologies in Army installation management operations* – The Office of the Assistant Chief of Staff for Installation Management commissioned the development of an energy security planning guide for installations' use and has received the final version of that document. Efforts to determine definition and prioritization of critical facilities are ongoing, and the document will not be put out to the field until it includes that supplemental guidance. In conjunction with distribution of revised guidance, installations will be asked to review and update their energy security plans accordingly.
2. *Implement energy security plans and continuously improve the Army Energy Security Program* – OACSIM received support from Oak Ridge National Laboratory

with the development of a framework for a computer-based cost-estimating tool for energy security remediation projects. Initial efforts were focused on single projects, however, the tool is being looked at for possible use in estimating Armywide budget requirements for energy security. Actions also found in this section include incorporating energy security considerations into utilities and utilities privatization contracts, and refining Installation Status Report standards to assess effectiveness of energy security plans and programs.

3. *Use current and projected energy sources with greatest potential for availability and economy* – A contract has been awarded to evaluate long-range availability of natural gas and its use as a viable fuel for the Army. Results will be available in early calendar



Facility and utility managers should understand where potential utility reliability issues of the infrastructure for which they are responsible exist. Photo by David Parsons

year 2008. Other efforts that will assist in accomplishing this action include partnering with other services, the Department of Energy and academia to assess energy supply trends and develop a facility energy source evaluation and implementation strategy; and incorporating recommended energy source-selection criteria into design guidance. ➤




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OACSIM has developed an extensive process for looking at installation energy security considerations, to include what constitutes mission critical facilities. However, efforts continue to determine how much energy security is enough, among ever-present budget constraints, requirements for strong funding justification and more obvious funding priorities.

Nonetheless, facility and utility managers should have some understanding of

where potential utility reliability issues of the infrastructure for which they are responsible exist. For areas at which potential vulnerabilities exist, installations that have not already identified remediation projects should be prepared to do so with the expectation that expanded energy security guidance from the Departments of Defense and the Army is coming, along with the potential for increased funding for well-justified energy vulnerability remediation projects.

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Updated campaign plan to support FY 2010-15 budgets

by Curt Wexel

The first biennial update of the U.S. Army Energy and Water Campaign Plan for Installations is scheduled for completion this fall. The campaign plan will be used to defend program requirements in the fiscal year 2010-15 Program Objective Memorandum (POM) budget reviews.

As with development of the original plan, stakeholder input has been a valuable contribution to the update process. The update also reflects new directives, such as Executive Order 13423, new technologies and opportunities, and resource constraints.

The campaign plan is the road map for executing energy and water measures to address the five key initiatives of the Army Energy Strategy for Installations. The campaign plan serves to develop policy and management guidance and tools, increase staffing and training, double metering coverage and other measures. It is critical that the funding requirements be supported by the budgeting process in order to execute the energy campaign plan.

The campaign plan:

- provides the way ahead by identifying specific actions, milestones and funding strategies to meet the energy and water conservation goals of the Energy Policy Act of 2005 and other applicable policies

and regulations;

- identifies management and institutional requirements to achieve actions;
- identifies funding strategies and resources;
- describes the desired end state for the actions and identifies the metrics of success; and
- provides a year-by-year investment plan that coordinates all Army energy and water users and policy components — security, privatization, procurement, technology, construction and environment — into cohesive and measurable objectives designed to meet the goals.

For energy-saving projects, installations should continue to use existing funding alternatives such as Energy Conservation Investment Program Military Construction projects or partnerships with private investors through Utility Energy Service Contracts or Energy Savings Performance Contracts. The campaign plan is intended to provide the right people with the best training and tools to make smart design and operational decisions.


The Army's Energy Program web page, <http://army-energy.hqda.pentagon.mil>, links to the public-release version of the cam-

campaign plan. The public-release document provides a discussion of funding strategies and resources for each action, under each subinitiative.

The limited-release version goes much further, identifying the five cost accounts that fund the energy program, with a multi-year schedule of action-specific funding requirements. It details specific projects, funding requirements and budgetary sources to accomplish the plan. For each action, under each initiative, funding requirements were estimated and tabulated by fiscal year.

The energy program plan is a cost-effective strategy towards a sustainable operating platform. Additional justification for defense of the FY 2010-15 POM energy budget comes from the combination of performance mandates and a solid plan for their accomplishment.

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BIM enables early design energy analysis

by Annette Stumpf and Beth Brucker

Building Information Modeling (BIM) offers yet another powerful capability to design teams: they can assess alternative energy strategies and systems in the earliest phases of design. New and emerging tools allow a user to submit data from project BIMs to test energy-saving ideas and see results quickly.

This capability will help teams make energy-conscious decisions early in design — when those decisions have greatest impact on the building's life cycle. It will also help project teams make cost-effective retrofit decisions, such as how many inches of rigid insulation to place on a roof for a re-roofing project.

As the U.S. Army Corps of Engineers transitions to a BIM-enabled business process, the software industry is experiencing a concurrent surge in the development of energy-analysis tools and interoperable formats. This climate creates new opportunities for building analysis by pairing BIM and analysis software to assess building performance.

For decades, energy simulation software tools have been available to assist in designing energy-efficient buildings. However, most building energy analysis is conducted late in design, when other building features cannot be changed. The ability to model energy decisions early in the design process, and then choose the best alternative, is not fully exploited due to the difficulty and expense of modeling the building and energy systems after the design is complete.

New tools use BIM input

Several software vendors are now providing tools to conduct energy analyses by taking advantage of the data contained in BIM. The current products each have advantages and drawbacks.

Stand-alone energy analysis/simulation tools have been available for years, but the process is typically costly and labor-intensive to recreate the building model for analysis; hence, these tools are mostly used late in the design process for finalizing or docu-

menting energy decisions.

The Industry Foundation Class (IFC) file exchange format can be exported from the BIM environments for input into energy-analysis tools, but there are also some limitations in this process. One restriction is that current BIM models do not contain all the information necessary for energy modeling. Also, the export to IFC may lose some important energy-related building data. BIM software vendors and standards organizations, such as the International Alliance for Interoperability and the National Building Information Modeling Standard groups, are addressing these issues.

Embedded energy analysis tools are currently being integrated into several of the BIM software environments. This approach eliminates the need to import and export building geometry and data through IFC or other formats. However, it incurs a cost for maintaining the energy software as new versions of the BIM software environments are released.

The Green Building XML (gbXML) file format is being adopted by many in the heating, ventilating and air-conditioning (HVAC) industry, including Trane, Carrier and York International. The goal is

to streamline the building design process and provide improved interoperability for project design teams. Several of the leading BIM applications enable users to create BIM output in the gbXML format, including Autodesk, Graphisoft, Bentley Systems, Elite Software, ECOTECT and GeoPraxis.

Green Building Studio, a web-based service that works with a gbXML file exported from various BIM applications, uses the building information to perform an energy evaluation with established tools such as DOE-2, eQuest and EnergyPlus. Its "Design Alternatives" feature quickly analyzes the building to determine which option is the most energy-efficient by demonstrating various changes to the building design such as orientation, glazing options, envelope constructions, lighting and HVAC.

Test planned

The private sector has been experimenting with using BIM to run energy models, but there are no known applications in the Army to date. Working with one of the Corps' Design Centers of Standardization, the Engineer Research and Development Center (ERDC) plans to test Green Building Studio during an actual project in the January timeframe. ➤



An Army Reserve Training Center is displayed using Building Information Modeling (BIM). Graphic courtesy of U.S. Army Corps of Engineers, Louisville District BIM Team



IMCOM's energy program can help garrisons lower energy costs

by Debra Valine

Just like civilians can call their local power companies for energy-use assessments, Army garrisons can call on the energy experts of the Installation Management Command's Energy Engineering Analysis Program (EEAP).

Headquarters IMCOM implemented EEAP to assist garrisons in achieving energy reduction goals mandated in the Energy Policy Act of 2005 and Executive Order 13423, said Paul Volkman, IMCOM's Energy and Utilities Program manager.

The EEAP team includes the U.S. Army Engineering and Support Center, Huntsville, the Construction Engineering Research Lab, the Department of Energy's Pacific Northwest National Lab, contractors and the garrison staff.

"The team performs building surveys to observe operations and identify energy savings opportunities," Volkman said. "Region and garrison support and participation are essential for a successful assessment and follow-up action. The team works with the garrison to identify energy saving opportunities and funding strategies, then provides garrison DPWs with technical assistance in developing projects."

The objectives of the energy assessments are to identify potential energy and water saving opportunities, promote energy



An engineer checks the temperature setpoint of domestic hot water heaters. Photos by David Underwood, Construction Engineering Research Lab, U.S. Army Corps of Engineers

awareness and assist the garrisons in reducing their energy costs while maintaining the quality of life for Army personnel.

Recent energy assessments at Fort Polk, La., and Rock Island Arsenal, Ill., could mean big savings in energy cost and consumption if the garrisons decide to implement the suggestions.

At Fort Polk, the study identified 247 energy conservation measures that were

presented in four packages: low-cost improvements, including building envelope insulation upgrades; lighting improvements; heating, ventilation and air conditioning improvements; and central energy plant improvements.

According to study results, these packages have simple paybacks between 0.8 and 4.2 years, without consideration of avoided costs. If these ideas are implemented, they can save Fort Polk about \$3.6 million

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The goal will be to keep trying different options until the building reaches the 30 percent energy savings mandated by the Energy Policy Act of 2005. If the test is successful, ERDC will provide guidance for the Army's adoption of Early Design and Energy Analysis using BIM, which will improve the energy efficiency of all its future buildings and retrofits.

"One of my greatest design experiences has been our introduction to BIM," said Richard Grulich, chief of the Architectural


Branch, Huntsville Engineering and Support Center. "Our first BIM design for a medium-size child care center is affording a unique opportunity to incorporate early LEED (Leadership in Energy and Environmental Design) planning into the three-dimensional model. The working drawing aspect of BIM also identifies quantities and cost projections.

"The missing component is an energy analysis tool that can be used when the building envelope is developed within the first three weeks of the project," Grulich

said. "Testing different geometries, orientation and envelope insulation scenarios will save time and design rework costs."

Visit the Corps' Sustainable Design and Development website, <https://eko.usace.army.mil/fa/sdd/>.

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per year in energy cost and an additional \$547,000 in maintenance costs, while reducing annual energy consumption by as much as 26.2 percent. These projects have an estimated total capital cost of \$13.6 million with a simple payback of 3.3 years.

At Rock Island Arsenal, the study identified 259 energy conservation measures that were presented in eight packages that include building envelope insulation improvements and lighting, mechanical, steam distribution and central energy plant measures. The measures have different impacts on the size of the new power plant and differ in implementation costs and pay-back periods.

Four of the packages have simple pay-backs between 4.7 and 6.1 years, without consideration of the central energy plant costs. When the avoided cost of the larger-capacity replacement central energy plant is considered, the simple payback of eight packages is between zero and 6.1 years. If the packages are implemented, savings could reach \$21.8 million and reduce the arsenal's annual energy use by up to 26 percent.



Engineers check ceiling and roof insulation to determine adequacy.

The primary energy uses on an installation are heating, cooling and lighting, according to Mark Allen, an electrical engineer functioning as the EEAP technical manager for the Huntsville Center. EEAP improves savings by developing strategies that decrease energy transfers to and from conditioned building spaces and optimize the delivery and use of energy during the times the buildings are in use.

“There are more energy-efficient lighting fixtures than those the Army currently uses in many cases, and improvements can be made in heating, ventilation and air conditioning, and renewable resources,” Allen said. Examples include lighting piped into buildings, solar generation of electricity for small uses, solar water heating and geothermal (ground) heating and cooling.

Ground temperature averages 55 F year round. When ambient atmospheric temperature is higher than 55 F, pipes in the ground can be used to transfer heat from buildings to the ground, Allen explained. When the temperature is below 55 degrees, the ground is a better heat source, so heat can be transferred from the ground back into the building.

“We can optimize size of windows in the building and use double pane windows, improve on doors, and improve gaskets around windows and doors, and put in better insulation,” Allen said. “Additionally, we need to be installing roof systems that have higher reflectivity, because higher reflectivity means less heat transferred to the interior of the building. It has to do with the coating material more than it does the color.”

IMCOM's goal is that Huntsville Center serve as a resource for garrisons to implement energy conservation opportunities, Allen said. There are three steps: identify the process, write the scope of work and find funding. Funding is the hardest part.

“If a lot of these measures are implemented, there will be real cost savings in consumption, and that would provide funds for paying back the capital investment in doing these things,” Allen said. “There

EEAP efforts include:

- Energy consumption assessments for selected facilities and installations
- Evaluation, identification and recommendations of implementation options for energy conservation projects
- Overseeing implementation of selected options
- Assistance in sustaining local energy programs
- Providing energy-related training and
- Water conservation and waste water treatment

is a pay-back period associated with each project — typically less than 10 years. After that, the measures continue to produce savings that result in a reduction in the costs for energy and water.”

Once measures are identified and funds are available through garrisons or IMCOM, the installation can go directly to contractors under the Facilities and Medical Repair and Renewal or Utility Monitoring and Controls programs to get these things implemented, Allen said.

“If the garrisons don't have the money in their budgets, they can apply for funds through the Energy Conservation Improvement Program through the Office of the Assistant Chief of Staff for Installation Management,” Allen said. “Alternatively, we can use the Energy Savings Performance Contract, where we get a third party to fund the projects. We pay more for doing it that way, and it is not as cost effective, but it is a way to get the work done where garrisons don't have capital to invest in energy conservation measures.”

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ESPC-Army partnership regaining momentum

by Jeff Ward

Energy efficiency, water conservation and renewable energy goals have been raised once again. Energy Savings Performance Contracts (ESPCs) are a key tool available to help meet these goals through cost-efficient modernization of new and existing facilities. ESPCs provide an alternative method of implementing energy savings projects when installation resources such as manpower, technical expertise or funding are not available.

President Bush signed Executive Order (EO) 13423 Jan. 24, increasing the energy reduction goal for all federal facilities to 3 percent per year as compared to energy use in 2003. The previous goal had been set at 2 percent per year, compared to 2003, by the Energy Policy Act of 2005. The Army had posted strong historical performance in meeting energy reduction goals but fell just short in 2006.

EO 13423 also sets the increase of use of renewable energy to at least 3 percent of total electricity use in 2007 through 2009 along with increasing percentages in years thereafter. In addition, the EO mandates a 2 percent reduction of water consumption at federal facilities, a new goal set to begin in 2008.

ESPCs use alternative financing to fund energy and water saving projects at Army facilities when appropriated funds or other subsidies are not available. A private contractor evaluates, designs, finances, acquires, installs and maintains energy-saving equipment. The contractor ultimately receives compensation based on the performance of that equipment. The level of payment is based on the conditions of the contract and a percentage of the energy savings. Additional savings are retained by the government.

Using an ESPC, an installation can contract with an energy service company (ESCO) for a period up to 25 years to improve energy efficiency in one or more installation facilities with minimal up-front direct cost to the installation. The ESCO finances the capital costs of implementing

energy conservation measures (ECMs).

ECMs include efficiency upgrades to lighting; boilers; chiller plants; refrigeration; heating, ventilation and air-conditioning equipment; conditioned water and steam distribution systems; building automation and energy management control systems; electric motors and drives; distributed power generation systems; and energy or utility distribution systems. They also can include electricity peak shaving, load shifting, process improvements and energy cost reduction through rate adjustments.

With few exceptions, ESPC projects should not be used for building envelope modifications, as these types of ECMs are normally long paybacks and should be resolved during remodeling. ESPCs are not a replacement for ineffective maintenance programs or to subsidize maintenance and replacement dollars. They are a means to reduce energy intensity, in terms of British thermal units per square foot-year, in existing facilities that have inefficient equipment and/or controls. The cost to replace or upgrade the equipment or controls must be paid by the difference in cost to operate the old versus the cost to run the new.

An ESCO can also help meet renewable energy and water conservation goals through ESPC projects involving biomass and alternative methane fuels, photovoltaics, solar heating, geothermal heat pumps and repair of water leaks in main supply lines. The ESCO is compensated by the contractually determined share of guaranteed cost savings that result.

Critical to the success of ESPC is the development of a sound baseline, an effective technical and economic evaluation process, a detailed measurement and verification (M&V) process and an independent project facilitator (PF). Measuring results is the only way the Army installation can



Energy Savings Performance Contracts can be used for biomass projects like this one at Fort Stewart, Ga. U.S. Army photo

verify that the energy-efficient equipment is operating properly and at the established specifications. The results determine whether or not the ESCO has met the terms and conditions of the contract and if the actual and guaranteed savings are realized. The PF provides the quality control to assure that the baseline, M&V and the guaranteed baseline are reasonable, defensible and executable.

Investment since 1996 by private sector ESCOs in Army ESPC energy projects exceeds \$534 million with projected life-cycle cost savings of \$1.4 billion. The average life of Army ESPCs is 16 years. ESPC contracts awarded since 1996 have resulted in more than 4.4 trillion Btu of energy savings annually for the Army, representing a 6 percent reduction in its overall energy demand.

ESPCs have been authorized for use through 2016. The mechanism is a key tool in the Army's Energy Campaign Plan's ongoing efforts to meet energy reduction goals, increase use of renewable energy sources and reduce water consumption. An ESPC enables the Army to evaluate, finance, acquire, install and maintain energy saving equipment using private sector capital and expertise. All Army installations should investigate ESPC investment opportunities.

Department of the Army Policy Guidance for Implementation of Energy Savings ➤



Who do you call when utility rates are going up?

by Karl S. Thompson

Utility billing is big business. With the Army's utility bill expected to surpass \$1.2 billion this fiscal year, energy managers must look for ways to control costs when and where they can.

Many parts of the country are seeing sharp increases in electrical and gas billings. For example, a utility in Delaware is expected to raise its customer tariff rate schedules 59 percent to 117 percent. In Connecticut, a 22 percent increase is anticipated, and for the biggest utility in Texas, a rise of more than 80 percent is foreseen.

These increases can be attributed mostly to increasing fuel, environmental and security costs, but deregulation of the retail electricity market in the 1990s is now beginning to cause spikes in rates. These spikes can be ascribed to expiration of reduced rates and frozen rate caps that many states implemented to encourage competition. Deregulation was envisioned to be a major utilities self-regulating measure to keep rates competitive, but the level of competition that was expected did not occur.

Due to these rate freezes and caps, many utilities accumulated deferred costs. With interest rates now rising, they can no longer absorb the deferred costs. As a result, many utilities are seeking approval from their regulating agencies to recover these deferred costs, plus other escalating costs, by raising their rates. In 2005, base rate increases of \$1.4 billion for electricity and \$460 million for gas were authorized by respective regulatory bodies.

Although it cannot be accurately predicted when a utility will file a rate increase request, it is possible to anticipate and take some proactive actions. One action that has had significant payback is rate intervention. The Army takes this action when a utility proposes a change in rates, terms or conditions of service to the government.



The Federal Acquisition Regulation 41 and Army Regulation 420-41 provide procedures for working a rate increase. Generally, the Army undertakes intervention efforts whenever significant rate increases are proposed, where utility operating costs are declining or where the military installations are paying a disproportionate share of the utility's return on investment.

Experience has proven that without intervention and representation, the federal government, with its perceived "deep pockets," pays a disproportionate share of any increase that is negotiated or litigated, and may be deprived of its fair share of rate reductions ordered by the regulatory commission. Intervention in 48 cases has produced more than \$68 million in savings and cost avoidance since 1999.

Energy and utilities managers should review all notices received from their utility providers — particularly those that propose a change in rates or rate structure. Most states require that consumers be notified of any rate changes prior to implementation, and most Army utility contracts provide that a notice of a proposed rate change be given to the affected Army installation. That notice is normally sent with the monthly utility invoice.

An installation that receives such a notice should write to the U.S. Army Engineering and Support Center, Huntsville, Attn: CEHNC-IS-FS, Karl S. Thompson, 4820 University Square, Huntsville, AL 35816; or call 256-895-1275.

If an intervention action is warranted, Huntsville Center will initiate action to provide necessary counsel and expert witness support to protect the Army's consumer interest. Expert witness support and testimony is highly technical and can focus on a variety of topics ranging from traditional revenue requirements, rate design, industry restructuring or return on investment and cost of service.

The normal rate case will take about six to nine months for a final ruling. However, the amount of time hinges primarily on the commission's prescribed procedural schedule and the complexity of the rate design factors. Several cases have dragged on for more than two years.

Installations play a vital part in helping the Army control escalating utility costs. Taking advantage of this service — letting Huntsville know if a notice of a planned rate increase is received — will ensure the Army continues to receive fair and reasonable rates.

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Performance Contracts is currently under final revision with publication and release expected in late October. The Army ESPC program guidance generally falls within the Department of Energy's Federal Energy Management Program. Further information on ESPC can be found at <http://army-energy.hqda.pentagon.mil> (Policies and Regulations/ESPC Guidance)

and www.eere.energy.gov/femp.

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ECIP increases installations' energy efficiency

by Ron Diehl

To help meet federally mandated energy reduction requirements, the Army actively participates in the Department of Defense's Energy Conservation Investment Program (ECIP). ECIP uses Military Construction funds appropriated by Congress to accomplish projects at garrisons and installations that improve the energy efficiency of existing facilities and utility systems and that install renewable energy systems. The net effect is to reduce petroleum-based energy consumption or replace those systems with renewable energy sources that require no petroleum.

ECIP projects are generated by installations, and the DD Form 1391 is used to describe the project scope, impact and cost. In addition, a Life Cycle Cost Analysis form indicates if the project is cost effective based on utility rates, energy saved and pay-back period. The more that a project saves in energy costs, the more likely it is to be approved and funded.

Examples of current ECIP projects approved include: computer-controlled energy-monitoring systems that regulate and monitor energy consumption based on actual demand; energy-efficient lighting systems; "gray" water systems, which reuse drain water and rainwater to reduce water demand; wind turbines; photovoltaic electric systems; geothermal systems; and solar walls that reduce the heating of buildings.

The fiscal year 2007 ECIP was funded at \$55 million. The Army portion of this was \$19.86 million, which was used to accomplish 11 projects:

- Rock Island Arsenal, Ill. – Industrial Energy Optimization
- Fort Carson, Colo. – Expand Energy Management Control System
- Fort Lee, Va. – Energy Management Control System Upgrade Postwide
- Tooele Army Depot, Utah – Wind Powered Electrical Generation
- Blue Grass Army Depot, Ky. – Facility Energy Improvements



Solar walls, like this one at Fort Lewis, Wash., reduce the heating of buildings. Photo by Jini Ryan

- Fort Knox, Ky. – Barracks Geothermal Conversion, Phase 3
- Fort Sill, Okla. – Install Geothermal Heat Pumps
- Fort Knox, Ky. – Barracks Geothermal Conversion, Phase 2
- Fort Lee, Va. – High-Efficiency Lighting
- Fort Buchanan, Puerto Rico – Install Photovoltaic Solar Systems
- Kaiserslautern, Germany – Radiant Heaters and Controls

Generally, project execution is the responsibility of the U.S. Army Corps of Engineers. The Corps receives design funds for each project and, when designed projects are ready to award, construction funds.


The Army submitted its proposed FY 2008 ECIP project list, consisting of 18 projects, with an initial programmed amount total of \$25.8 million. Projects in the FY 2008 program include:

- Fort Hood, Texas – Install Light-Emitting Diode Lights
- Fort Buchanan, Puerto Rico – Install Wireless Digital Heating, Ventilation and Air-Conditioning Controls
- Fort Greely, Alaska – Facility Energy Improvements
- Fort Carson, Colo. – Replace Boilers/Furnaces
- U.S. Army Garrison Humphreys, Korea – Heating Plant, Geothermal

- Fort Lee, Va. – High-Efficiency Lighting, Phase III
- McAlester Army Ammunition Plant, Okla. – Geothermal Heat Pump and Hot Water Systems to Replace Three Boiler Houses
- Fort Rucker, Ala. – Water Conservation Project
- Fort Gordon, Ga. – Geothermal Heat Pumps 13 Buildings
- Fort Stewart, Ga. – Utility Monitoring and Control System in 30 Buildings
- U.S. Army Garrison Ansbach, Germany – Install Radiant Heating Systems
- Fort Leavenworth, Kan. – Energy Management Control System Consolidation to Building Automated Control Network
- Fort Sill, Okla. – Install Geothermal Heat Pumps for Buildings
- Fort Bragg, N.C. – Chilled Water Storage System
- Fort Benning, Ga. – Ground-Coupled Heat Pumps
- Anniston Army Depot, Ala. – Energy Management Control System, Phase 2
- Blue Grass Army Depot, Ky. – Efficiency Improvements Multiple Locations, Phase 2
- Sea Girt, N.J. – Electric Power Photovoltaic System 400 kw

Congress recognized the importance of the ECIP program by agreeing to increase annual funding by \$10 million through FY 2013, at which time the annual appropriation is expected to be \$120 million.

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Sustainability guide supports reuse decisions for historic buildings

by Julie Webster and Dana Finney

By placing historic properties back into active use, military installations can achieve two priority goals: support expanding missions and meet Department of Defense sustainability mandates. A newly published, comprehensive guide uses the U.S. Green Building Council's Leadership in Energy and Environmental Design for Existing Building (LEED-EB) tool to help installations identify and implement viable sustainability strategies for DoD historic building projects.

The 330-plus page *DoD Sustainability Application Guide for Historic Properties* is now available at <https://eko.usace.army.mil/fa/sdd/?syspage=Announcements&id=33647>. The U.S. Army Engineer Research and Development Center (ERDC) completed the study for the DoD Legacy Resource Management Program.

A unique potential DoD resource for promoting federal sustainability goals is the large inventory of military buildings listed or eligible for listing in the National Register of Historic Places (NRHP). Section 110 of the National Historic Preservation Act requires federal agencies to use their historic properties to the greatest extent feasible for heritage reasons, and major resources are already dedicated to this activity. However, there are also compelling economic reasons to consider reusing historic infrastructure.

Many historic buildings have inherent energy-conserving features because they were designed in times when electrical service and air conditioning equipment were not readily available. By preserving or renovating these significant historic property characteristics in accordance with the secretary of the Interior's (SOI) standards, installations can revitalize a building's original passive energy-conservation features such as skylights, operable windows and transoms. These renovations can restore the historic building's integrity while improving daylighting, indoor air exchange and other features for better energy management,

healthier indoor environments and reduced life-cycle costs.

Various military directives provide basic guidance for incorporating sustainability principles into the design, construction and operation of new facilities. However, the emphasis of those directives is on new construction rather than rehabilitation of buildings. Appropriate renovation and reuse of facilities, rather than new construction, may be the single most important way for an installation to improve its sustainability rating while meeting current and evolving mission requirements.

Reuse reduces the consumption of virgin materials and the energy required to process them, as well as waste and ecological stress. Building reuse also exploits yesterday's investment in materials and construction-related energy to reduce today's construction bills and extract new value from buildings long since paid for.

However, while the SOI standards and sustainability design principles reinforce each other to a great extent, they also may pose conflicting demands. The new guidance uses LEED-EB to identify and address these conflicts and to better integrate DoD's cultural resource and sustainability goals. Unlike LEED-New Construction, LEED-EB allows many sustainability points to be earned independently of project funding or schedules.

The ERDC report covers:

- sustainable sites;
- water efficiency;
- energy and atmosphere;
- materials and resources;
- indoor environmental quality; and



This historic barracks exhibits inherent energy-conserving features, such as a crawlspace, screened windows, deep overhangs, ridge ventilators and hip-on-gable vents. Photo courtesy of Engineer Research and Development Center

- innovation in upgrades, operations and maintenance — creative solutions that allow properties to perform above the requirements set by LEED-EB.

The Legacy study that produced the guidance involved:

- investigating inherent features of historic buildings and sites that support sustainability objectives;
- surveying existing LEED-EB qualifying historic building projects and assessing them to determine the best ways of obtaining LEED-EB credits without major impact on historic, character-defining features;
- compiling a comprehensive list of sustainable design and development strategies for achieving LEED-EB credits and developing guidelines for implementing heritage and sustainability design; and
- providing resource lists for obtaining cost data associated with sustainable design, green products and materials for LEED point accumulation, and information on the LEED certification process.

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Initiative addresses regional resources

by Natalie R.D. Myers and Yadira M. Perez

In “The Art of War,” Sun Tzu wrote, “If you know the enemy and know yourself, you need not fear the result of a hundred battles.” His teaching has particular relevance for today’s military installations, not in terms of conquering an enemy, but rather in knowing their partners.

Installations are just one of many regional stakeholders striving toward a future that meets their specific needs and mission. To head off potential long-range conflicts, installations, local governments and regional organizations must collaborate on decisions and support joint efforts to foster understanding of one another. The Strategic Sustainability Assessment (SSA) is a way to bring these regional players together to ensure everyone’s needs are met in the future.

Collaborating regionally is of particular importance in addressing water and energy issues because they extend beyond the installation fence line. Without cooperation at the watershed or energy-grid level, local organizations have little control over these resources, which are critical to sustaining the environment, society and the mission.

Fort Lewis, Wash., is one example of an installation complying with energy- and water-related regulations and, due to regional conditions, concerned about sufficient supplies. Population pressures from the Seattle-Tacoma area are taxing area aquifers and turning water into a precious resource. Annual energy costs for Fort Lewis have fluctuated between \$12.2 million and \$20 million over the past 10 years, diverting funds from other critical activities to meet this must-pay bill. These conditions illuminate the regional nature of attaining sustainability goals.

By looking at a larger area over a 30-year timeframe, decision makers are armed with the ability to foresee the impacts that adjacent communities may have on vital water and energy resources. The SSA provides regions with the steps needed to collaborate on long-term decisions and support joint efforts. The SSA is not a program that

prescribes a future or finalizes a plan to get there. Instead, it directs installations, governments and regional organizations to talk with one another, build relationships and respond to concerns in a mutually beneficial way.

Fort Bragg, N.C., and its adjacent counties have applied the SSA steps to the possible future of regional water supply. If current water consumption levels are maintained, regional population gains will increase annual water withdrawals by an estimated 10 billion gallons by 2030.

With continued dialogue, Fort Bragg and its adjacent counties shared best-management programs that may successfully reduce future water withdrawal to sustainable levels. Pooling their efforts, regional planners modeled the impacts of implementing the water management programs across the region, illustrated in the graphic as “with intervention.”

The results may or may not reach the expected goals, but such a process gives decision makers an idea of what is required to reach a given target. By establishing a dialogue between regional organizations and institutions, decision makers are empowered to understand where the region is headed, identify where the region wants to be and discover how to get there.

The SSA is currently being tested in the Fall Line Region of the southeast United States. Here, local organizations are partnering to implement the SSA guidelines for regional cooperation

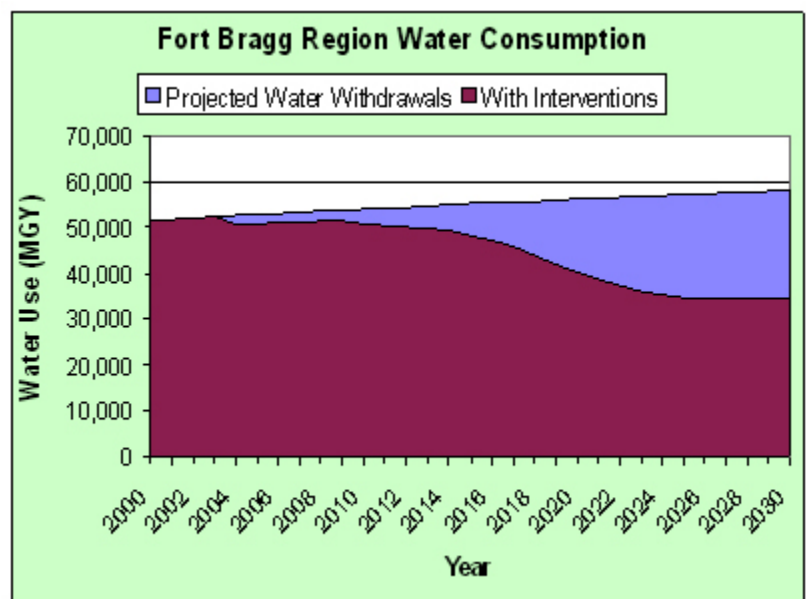
for their ongoing efforts. Each organization is sharing their data and goals with a broader audience. In return, each is visualizing the effects of their policy recommendations and forming partnerships among organizations and efforts.

The framework for this pilot study was documented by the U.S. Army (ERDC/CERL Technical Report 06-32). Documentation on the implementation of the pilot study is expected in fiscal year 2008.

The Army Environmental Policy Institute (AEPI) is sponsoring the SSA in support of the Army Strategy for the Environment.

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Fort Hood leverages technology to manage utilities

by Christine Luciano

Fort Hood, Texas, leverages technology and resources to manage installation-wide facilities and utilities through a web-based system. The Fort Hood Energy Management Office worked with the Construction Engineering Research Laboratory (CERL) of the U.S. Army Corps of Engineers to implement an open communications system known as Local Operating Network (LON Works) to serve as a single operating platform for facilities and utilities management. The utility management and control system (UMCS) is the Army's first that strictly adheres to new guidance developed by USACE, and it serves as the benchmark for the Army.

The energy team uses LON Works to log in at a computer workstation and monitor, control and manage the heating, ventilation and air conditioning (HVAC) and the water distribution systems. The technology allows the operator to set schedules, change operating temperatures, turn equipment on and off, run diagnostics and identify systems that are not operating properly. The operator also receives notification of any alarms. He or she is alerted when equipment is not operating properly and can navigate through the web-based system to investigate and take corrective measures.

Fort Hood, like other Army installations, has several different direct digital control (DDC) units in its facilities. When the installation's buildings were expanded, multiple proprietary systems were procured. With each proprietary system, software and hardware were needed for maintenance and operation. Efficiently managing its incompatible systems was challenging.

Other options were researched, and USACE looked into an open communication protocol. With an open system, information can be transmitted between two different controls systems, achieving interoperability.

Fort Hood decided in 2001 to make LON Works the platform for its control systems. The post was entering negotiations for an Energy Savings Performance

Contract (ESPC) to help conserve and manage energy use. As part of the ESPC, Johnson Controls installed new controllers with LON Works technology and a central operating station complete with servers to link facilities to a centralized workstation.

The ESPC improved HVAC controls and will serve as a primary tool to achieve the goals mandated by Executive Order (EO) 13423, *Strengthening Federal, Environmental, Energy and Transportation Management*. The EO requires that agencies improve energy efficiency and reduce greenhouse gases by reducing energy intensity by 3 percent per year through 2015 or by 30 percent by the end of fiscal year 2015.

Fort Hood continues to implement LON Works technology into existing and future facilities. The installation is managing 37 facilities under this system and will be integrating 56 more.

As part of the ESPC, Fort Hood gained a systems integrator, who works to integrate and transition LON Works compatible DDC units to the system. The systems integrator is paid for by Fort Hood's energy savings. Army installations that do not have a systems integrator would have to rely on a variety of contracts each time a facility is integrated.

Along with managing HVAC systems, the UMCS is serving as the primary collection point for building utilities metered data. This data is used in various ways, such as developing trends for energy use to assist in determining valid energy reduction projects or strategies.

"The data may also be used for billing reimbursable customers and to incite competition among organizations to be the best



Dick Strohl, Fort Hood Directorate of Public Works engineering technician, logs into the LON Works system to monitor, control and manage the installation's systems. Photo by Christine Luciano

at conserving energy," said Bobby Lynn, Directorate of Public Works Energy Management Team leader. "It's clear that you can't manage what you don't measure."

Fort Hood is also working with CERL to develop a new tool to monitor the operating times of equipment on the system.

"The operating time is imperative to the efficiency for Fort Hood," said Richard Strohl, DPW engineering technician. Whether equipment is operating when it should or shouldn't, captured data helps to evaluate the energy consumption, the dollar cost and the environmental impact.

"The energy team is looking to use that as a tool to measure those impacts and find ways to be more conservative in the operation of our systems," Strohl said. "Reasonably, within five years, Fort Hood should have the majority of its large facilities integrated."

Eliminating the supervisory control device allows Fort Hood to have the only existing flat peer-to-peer architecture with an interoperable system. Integrating facilities and utilities into a single operation system improves efficiencies that are monitored and measured, and provides information on improving processes and operations to continue reducing energy consump- ➤



Fort Detrick sounds out solution for water leaks

by Piyush J. Patel

Fort Detrick, Md., noted a significant increase in water consumption in December 2004. The Directorate of Installation Services (DIS) initiated an investigation into the cause.

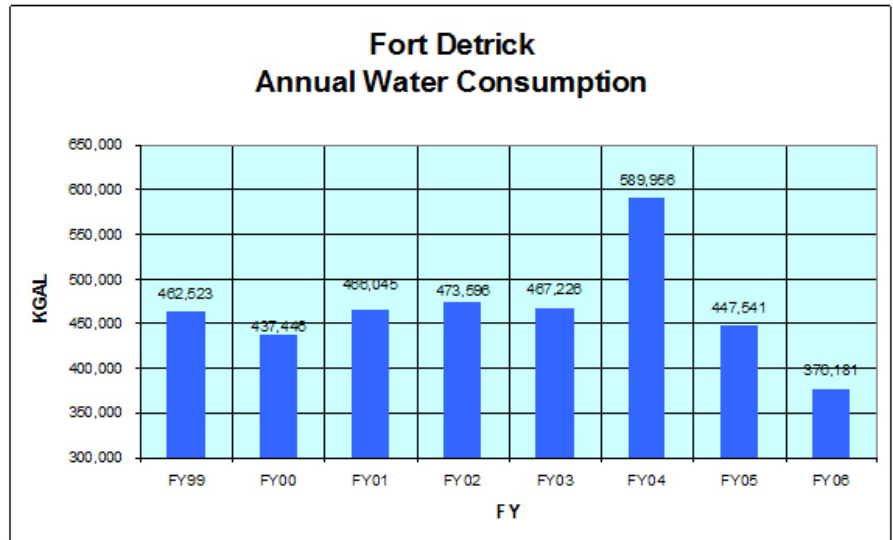
Fort Detrick is a quad-service installation that hosts the U.S. Army Medical Research and Materiel Command, the National Cancer Institute and 37 mission partners. More than 8,000 civilian and military personnel live and work there. Situated in Frederick County, where water is an issue, the installation has taken every possible step to ensure responsible water consumption and minimize waste.

Mission partners were surveyed to see if changes in operations had occurred. Maintenance crews checked all the mains for leaks, and metering devices were tested to ensure that consumption was properly recorded. Several months of intense investigation failed to identify a reason for the increase.

Installation officials were concerned for two reasons. Costs associated with the increase were significant. Possibly of more concern was the usage trend. Fort Detrick was approaching the Maryland Department of the Environment permit limit for withdrawal from its Monocacy River source, and, without some resolution, a Notice of Violation might be issued.

Unable to identify any internal reason for the increased water consumption, Fort Detrick worked with the city of Frederick to check all interconnection points for undetected leaks or open valves. Although no leaks were found, the Frederick officials described a leak detection method they had successfully used.

The method was an acoustical approach, based upon sound waves traveling through



water, soil and pipe wall. Escaping water creates vibrations due to the pressure differential between the water in the pipe and the surrounding soil, and the resulting sound is carried through the pipe and soil.

Using microphones, this sound can be picked up through the pipe at remote contact points such as valves and hydrants and, at lesser distances, through the soil. This process makes it simple to detect the presence of a leak by listening to the distribution piping at its appurtenances and then to precisely locate the leak by walking the system and listening to the soil with a handheld microphone and listening device.

Fort Detrick solicited bids for an acoustical survey and awarded a \$40,000, four-year contract in April 2005. The contractor identified several large leaks, and these were immediately repaired with spectacular results. Daily water consumption was reduced by about 500,000 gallons, a 30 percent reduction, which placed the installation well below the permit limit and yielded a first year savings of \$169,000. To sustain

these results, DIS incorporated semiannual surveys as standard practice and has now improved its system to the point that no leaks were identified during the most recent survey.

By detecting and repairing leaks in its distribution system, Fort Detrick reduced its annual water consumption from its peak of 590 million gallons in fiscal year 2004 to about 376 million gallons in FY 2006. At the present rate of \$1.75 per kilogallon, this equates to an annual savings of almost \$375,000.

Given the system's current leak-free condition, results of future surveys will be less spectacular. Nevertheless, acoustical leak detection will be instrumental in maintaining the system's present state and preventing the high cost of undetected leaks.

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Christine Luciano is the environmental outreach coordinator, Directorate of Public Works, Fort Hood, Texas.

(continued from previous page)

tions and emissions. The LON Works system allows Fort Hood to measure the reduction on greenhouse gases and track historical data on run time and consumption.

"This is cutting edge technology that will help Fort Hood not only reduce energy waste and save dollars," Strohl said "but it will also provide a standard platform to the Army, which will help reduce the Army's dependency on proprietary control systems that cost the Army millions."



Fort Wainwright hospital subject of heat loss survey

by Marie Darling

Most people go to the hospital to receive care for an illness. However, researchers with the Engineer Research and Development Center's Cold Regions Research and Engineering Laboratory (CRREL) went to a hospital for a different reason. They conducted heat loss analyses.

Jim Buska, a research civil engineer, and Kerry Claffey, a research physical scientist, provided the U.S. Army Corps of Engineers' Alaska District with an infrared (IR) survey, along with analysis and interpretation of the results, for the new Bassett Hospital on Fort Wainwright, Alaska. The facility was designed for the subarctic climate of Fairbanks, where temperatures range from minus 60 F in winter to 85 F in summer.

The Bassett Army Community Hospital is a 259,500-square-foot, \$215-million, state-of-the-art medical facility. The only Army hospital in Alaska, this facility provides medical care to an estimated 25,000 patients that include active-duty personnel and Family members from Fort Wainwright, Eielson Air Force Base and local military retirees. The hospital opened this summer.

Bassett Army Community Hospital is not what one thinks of as a "traditional" healthcare facility. The building was constructed to withstand a major earthquake and to be temporarily self-sufficient. Along with the traditional medical equipment, the hospital features a wellness facility, a conference center, classrooms, an auditorium and a chapel.

Alaska District contacted CRREL researchers to conduct an inspection and infrared survey. The purpose was to determine whether there were any building envelope problems that could be identified and resolved before the construction contract was completed.

The researchers used an infrared imaging and measurement system camera for the survey images. The camera can "see" and "measure" thermal energy emitted

from an object. Infrared energy is light that is not visible because its wavelength is too long to be detected by the human eye; it's the part of the electromagnetic spectrum that humans perceive as heat.

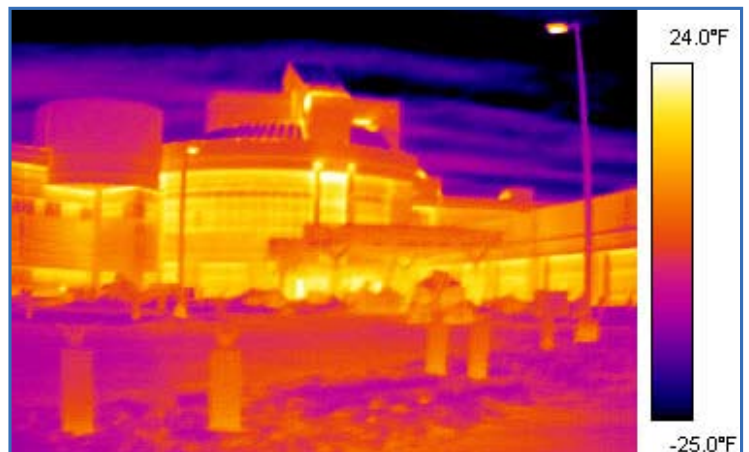
"CRREL researchers use this infrared camera for a wide variety of applications to enhance their research mission. For instance, on one particular project, I looked at trees for a researcher, and, at another time, I trained another researcher to look at sensors in a road," Claffey said.

A total of 1,027 visual and infrared images were obtained. Of those, about 45 percent were infrared images. All major exterior wall surfaces of the hospital were surveyed including various wall types, windows, doors and horizontal seismic joints not covered by snow. Roof surfaces were not surveyed since they were snow covered, and the infrared equipment cannot see through it.

"Our normal procedure is to take a visual image at the same time and with the same coverage as the IR images," Buska said. "The visual images are used to help interpret what we see in the IR image." Most of the infrared imagery was taken at



In a heat loss study, a "visual image," like this one of the new Bassett Army Hospital, is used for comparison to an infrared image like the one below. Photo by Tom Findtner, U.S. Army Corps of Engineers, Alaska District.



The bar to the right of this infrared image of the Bassett Army Community Hospital is a temperature scale that provides a key for the color-scale rendition. Darker colors are colder, and lighter colors are warmer. Imagery by James Buska and Kerry Claffey

night to limit the effects of solar warming on the building's exterior surfaces. The visual imagery was obtained later in the day. Consequently, visual and IR images do not always show the identical field of view.

Construction was still a work in progress during the survey. Overall, the survey results were good, with only a few heat loss problems related to construction still in progress. Yet unfinished were construction joints, seismic joints, flashing on the roof, exterior insulation finishing system surfaces, window flashing and trim, and doors and windows left out for construction purposes. ►



Fort Knox finds big savings with geothermal system

by Gary Meredith

The Fort Knox, Ky., energy team has made great strides in recent years to reduce the installation's dependence on fossil fuels and, as such, has reduced heating and cooling operating costs. Our work in renewable energies has made this possible, and we've been fortunate to be recognized by the Army and other government agencies for our efforts.

We realize there is always room for improvement that would make Fort Knox, the United States and the Earth better off at the end of the day. Nonetheless, I'd like to share with you what we have accomplished and how it has benefited our installation.

First, we identified one of our energy problems — high British thermal unit (Btu) consumption, largely due to heating ventilation and air conditioning (HVAC). Second, we sought the best solution to combat this problem. We invested in geothermal heating and cooling systems and the results have been nothing short of amazing. Specifically, we recognized that renewable ground-coupled heat pumps are the future for how best to heat and cool buildings.

Basically, this system consists of wells, usually up to 500 feet deep. In the summer, the system pumps heat and humidity from



Gary Meredith
Photo by Ryan Brus

the building into the Earth, where they are cooled and then returned to be pumped into the building's air vents. In the winter, water is run through underground pipes. The water draws radiant heat stored in the Earth and warms the air that is pumped through the vents.

The process works much more efficiently than standard methods because we only have to bring air up to "room temperature" from 57 degrees, which is the year-round temperature of the ground source.

In fiscal year 2006, the savings were about \$684,000 from the previous year's natural gas bill. Fort Knox used 57,000 fewer mcf (thousand cubic feet) of natu-


ral gas, too. This is enough to power 681 homes and replace 12,344 barrels of oil.

More than 100 buildings on the post have been converted to the ground-coupled HVAC systems, and we're planning to continue this effort. To give a better perspective, about 3.5 million square feet of building space is now, or soon will be, heated or cooled with geothermal systems.

Under federal law, all military installations are required to cut their 2003 energy consumption by 2 percent every year until 2015. The clock officially started in 2005. One of the greatest challenges we face is the fear of the unknown. Quite simply, people are sometimes reluctant to invest time, money and resources into programs without first seeing proof of their worth.

At Fort Knox, we tried something new to mitigate energy deficiencies. The result is that we've drastically reduced costs, and, at the same time, we are better stewards of our environment.

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Gary Meredith is the recently retired Energy Program manager, Department of Public Works, Fort Knox, Ky. 

(continued from previous page)

"We expected these problems to be resolved when construction is completed at the hospital," Buska said.

"The assistance CRREL provided to the project with their extremely detailed IR survey report and analysis was a key aspect of the quality-assurance verification process during construction," said Roger A. Green, Bassett Hospital program manager for the Alaska District. "It helped the (Alaska District's) Bassett Resident Office to validate the integrity of the contractor's construction by a means other than normal visual inspections, a task that can be

very difficult on a facility of this size and complexity."

It was like having "Superman eyes" on the project, Green said.

To see the complete Bassett Hospital study, go to http://www.crrel.usace.army.mil/sid/bassett_hosp/. To learn more about CRREL's Infrared Research capabilities, go to www.crrel.usace.army.mil/sid/IR_cam/.

POC is James Buska, 603-646-4588, james.s.buska@erdc.usace.army.mil.

Marie Darling is a public affairs specialist, Engineer Research and Development Center. 

Look us up on the web

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<http://www.imcom.army.mil/sites/pw/digest.asp>



IMCOM-Europe garrisons up to mandated energy challenges

by David Yacoub

While meeting the mandates of the Energy Policy Act of 2005 and Executive Order 13423 seems like a monumental task, the Installation Management Command, Europe Region's energy conservation efforts are successful. Overall energy consumption is decreasing. However, the dark side of the story is that energy costs increase 20 percent annually. Europe region is now facing a nonmandated and more painful challenge to gear efforts to both energy and energy costs.

With military communities based in 21 locations across the region, IMCOM-Europe oversees all facets of providing energy-efficient facilities, systems, central funding for Energy Saving Performance Contracts (ESPC), training and awareness, energy assessments studies and operations. It promotes strategic reduction in energy consumption and costs while maintaining and operating reliable energy services.

IMCOM-Europe has achieved about \$9.8 million in annual savings. Energy per square foot decreased in fiscal year 2006 by 6.28 percent from the base year, FY 2003. Another 10 percent reduction is projected for FY 2007, again exceeding the annual mandated goal of 3 percent.

Over the past 28 years, Europe garrisons have reduced facility energy use by more than 43 percent, meeting the goals in place at the time. The most significant accomplishments over the past 20 years were focused on installing efficient central heating plants using the privatization tool Energy Monitoring Control Systems, improving internal heating controls, adding thermal insulation to building envelopes and implementing no-cost and low-cost ways to eliminate waste.

These types of efforts helped Europe installations come closer to the new mandated goals — but not close enough. The real challenge now is cutting use another 30 percent by 2015. The program needs to approach the mandated goals with a different strategy, focused on reducing demand. Because mechanically controlled heat consumption has been implemented in

all buildings, relying on the old “turn your thermostat back” and “turn the lights off” mottos are not enough.

For the last four years, IMCOM-Europe has worked with garrisons and partner companies to incorporate energy conservation into daily operations. ESPC has become the answer to frustrated energy managers asking for project funds. Financing through the private sector isn't just an alternate anymore; it's an essential tool for meeting energy goals and reducing energy costs. It also frees a garrison's resources for other projects as ESPC provides maintenance and repair services along with new systems. Since FY 2000, private companies have invested more than \$17 million in system efficiencies, achieving more than \$4 million in annual savings.

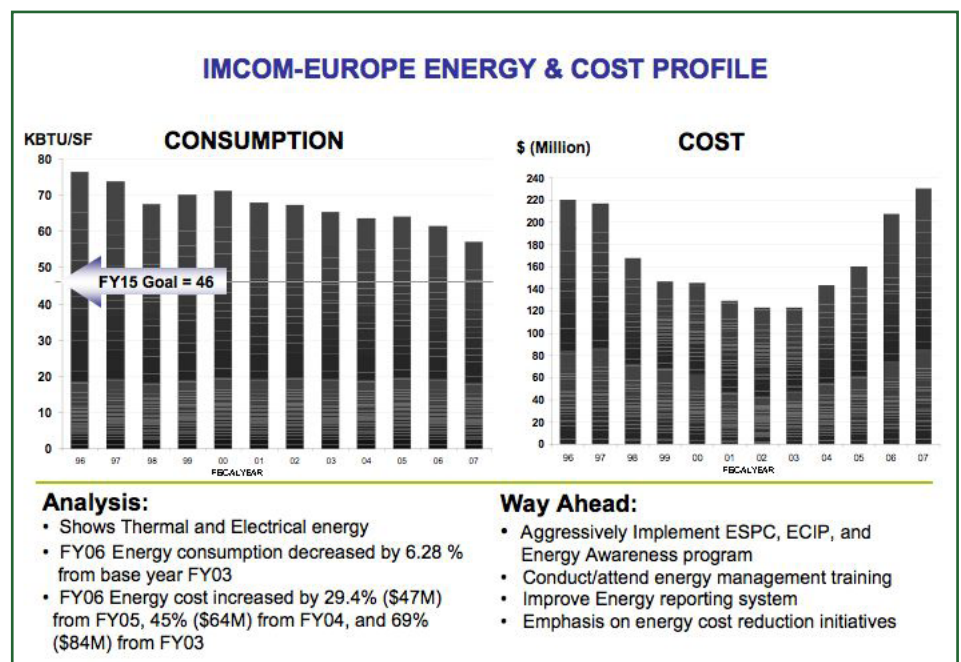
A project to co-generate electricity and heat at U.S. Army Garrison Vicenza, Italy, not only helps reduce energy and cost — saving \$600,000 annually — but also provides security and \$7 million in cost avoidance for new commercial power connections. Vicenza's success inspired other garrisons to explore similar potential projects.

In Germany, recycling rainwater on USAG Wiesbaden's golf course proved to be cost effective and also saved precious water resources. Installing radiant heat systems in maintenance facilities on USAG Kaiserslautern helped other garrisons to realize the benefits and do the same. Successfully managing vacant housing and other buildings during deployment periods at USAG Hessen and a persistent energy program at USAG Ansbach, along with smart-energy solutions while retrofitting buildings at USAG Benelux, Belgium, received secretary of the Army awards. Hessen also earned special recognition in the Department of Energy's “You Have the Power” campaign.

These garrison initiatives are taking the lead in pulling the IMCOM-Europe energy program along the new glide path targeted at reaching the mandated reduction goals.

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David Yacoub is an electrical engineer and the Energy and Water program manager, U.S. Army Installation Management Command, Europe Region.





Fort Bragg's energy program expands through teamwork, partnerships

by Jennifer McKenzie and Erin McDermott

The energy focus at Fort Bragg, N.C., is transitioning into a program integrated into many different areas including master planning, design, construction and maintenance. Using a team approach to build partnerships and improve working relationships is the main driver behind every energy initiative. The team is trying to make a difference by identifying the real problems, forming working groups and finding solutions. Its goals are real actions to reduce energy consumption and demand toward meeting or exceeding the outlined goals of the Energy Policy Act of 2005 and Executive Order 13423.

"Everyone must be conscious of the impact energy consumption has on our installation and aware of our individual responsibility to conserve limited resources for the betterment of our environment and the continuing fulfillment of our mission," said Greg Bean, Fort Bragg's director of Public Works.

It has been a challenge to make energy conservation a priority with many competing priorities and mission requirements. Energy is radically different from other DPW programs in the mechanical, electrical, civil or structural realms in that those problems and projects require much stricter monitoring to detect. For instance, if a heating or cooling system stops, a pothole develops or a roof leaks, the problem is easily identifiable. When energy is lost, abused or absent, it is not immediately apparent or easily measured.

Thus, among the first courses of action taken at Fort Bragg were the gathering of all available energy data and the review of applicable laws, policies and guidance in order to create an overall master plan for energy management. Because there are limited resources and time to devote to energy management goals, the current program focuses primarily on large-scale energy conservation measures, such as a central energy plant master plan, utility monitoring and conservation systems and metering. However, as the program grows and matures, focus will shift from development of energy

measures to execution and, later, to monitoring.

The development of cooperative partnerships will mature the program and integrate energy management principles across a variety of programs on the installation. Developing good working relationship with organization such as Pacific Northwest National Lab and the Construction Engineering Research Lab is invaluable. An example of such synergy is the Leadership in Energy and Environmental Design (LEED) program the Army recently adopted for new and existing construction. This well-established design standard, which assigns credits based upon the use of "green" building characteristics that promote increased energy efficiency and sustainable design, is beneficial to the energy program in that it relays the importance of energy conservation to a wide audience and helps the installation meet its energy goals.

In recent years, there has been a significant shift in focus toward energy consumption trends with the installation's adoption of the LEED and Energy Star programs. Through partnerships such as these, the program continues to steadily gain ground as part of Fort Bragg's growing movement toward sustainable lifestyles.

The role of the energy manager is to make a difference wherever he or she can. It is to identify opportunities to save energy, develop solutions and projects that save energy, find — and sometimes fight for — funding, execute the project and then monitor the progress. The energy manager is the champion behind the various energy initiatives and finding the ways to make



Jennifer McKenzie
Photo by Erin McDermott

thing work.


The responsibility of the energy manager for Fort Bragg is multi-faceted. Typical duties include advising the commander on ways the installation can use energy more efficiently, estimating the projected impact of various energy-related decisions, identifying areas for potential improvement with regard to energy efficiency and providing recommendations for conservation.

A successful energy manager is defined as one that reduces the per capita demand on energy in pursuit of achieving "energy security" by increasing customer awareness of energy use and improving energy conservation. At Fort Bragg, the long-term goal is to eventually generate enough renewable energy to be self-sustaining.

"The installation should take nothing off the electrical grid or the natural gas pipelines, yet still be able to produce enough renewable energy on the installation to meet the mission requirements and needs," Bean said. "The renewable energy sources should be sustainable but have no negative impacts on the environment. However, critical facilities would have backup power supplies."

Fort Bragg will one day achieve its goal of creating a self-sustaining energy system. However, to do so, energy awareness and management must be fully integrated into all aspects of decision making, daily operations and planning on Fort Bragg. Energy needs to be considered in every phase of a project, from conception to acceptance. It has to be inherent from the initial concept and design development through the commissioning. Long-term success comes from commitment and support of everyone involved.

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Jennifer McKenzie is the energy manager and Erin McDermott is the community outreach coordinator, Fort Bragg, N.C. 



CP-18 workshop promotes career development

by Lt. Gen. Robert L. Van Antwerp

On Aug. 15, I attended the opening day of the Career Program 18 (CP-18) Career Program Managers Workshop in Southbridge, Mass. I am thrilled and encouraged to know we have such an enthusiastic group of activity career program managers (ACPMs), training officers and other team members representing the U.S. Army Corps of Engineers, the Installation Management Command and the office of the Assistant Chief of Staff for Installation Management.

The opening comments and thoughts from the collective group showed me a taste of the passion and commitment needed for successful career management. My own comments reflected some of the principal concepts presented in Jim Collins' book *Good to Great*, including making sure that "the right people are in the right seats on the bus."

Career development and management centers on that concept — preparing our team members to become both technically proficient and leadership savvy. ACPMs should ensure that individuals gain both technical and leadership skills, then hone those skills through progressively challenging missions in both their regular work assignments and developmental assignments. These skills and opportunities are prime goals for the Army to build our future workforce and leadership.

The topic of the workshop, "Developing Career Program Managers," tied directly to my last column in this space, which discussed succession planning. We in the CP-18 community are facing both challenges and opportunities from the Global War on Terror, Base Realignment and Closure, Grow-the-Force initiatives, reconstruction in New Orleans and other efforts. These challenges and opportunities magnify the need for training and developing CP-18 personnel to assume both technical and leadership duties of increased complexity and responsibility. Fulfilling that need requires enthusiastic career program managers who are knowledgeable



Lt. Gen. Robert L. Van Antwerp
Photo by F.T. Eyre

and resourceful proponents for professional development.

This year's workshop offered many excellent discussions and presentations highlighting those resources that will serve as building blocks for even better programs in the years to come.

While I was unable to stay for the entire workshop, I appreciated the opportunity to meet and talk with many of the attendees. They conveyed both praises and concerns about CP-18 that will be useful toward revitalizing the program. The issues raised will help me focus our career program on taking care of people and continue building the engineer "TEAM."

As I mentioned in my last article, I have sent a personal thank-you note to each current ACPM. I also reach out to you and others in your organizations who feel passionate about developing the civilian engineer TEAM with the opportunity to serve as ACPMs. The process asks for a letter of interest and qualifications through your chain of command, indicating how you desire to contribute to the advancement of the career program.

Questions on how you can personally

contribute may be addressed to Bob Slockbower, functional chief's representative for CP-18, at robert.slockbower@usace.army.mil.

The workshop presentations will be posted on the CP-18 web site, <https://eko.usace.army.mil/careerprograms/cp18/>. My point of contact for questions on the workshop is Ed Gauvreau, 202-761-0936, DSN 763-0936, edmond.g.gauvreau@usace.army.mil.

I thank Bob, Ed and the entire planning team for their hard work over many months to pull together a highly successful workshop. That team included Trish Opheen and Molly TeVrucht of Alaska District, Mark Ohlstrom and Guy Green of Seattle District, and Scott Thieme and Charles Simon of Detroit District. I also thank New England District for their help with on-site logistics and administration. The team is already looking ahead for a location for next year's workshop, as well as closing the loop on actions that came out of the events.

Bob and other CP-18 team leaders may be contacting you in the near future to lend a hand to re-invigorate the career program. I continue to look forward to meeting many of you over the coming months to get your input and suggestions for improving Army civilian career development, thus making everyone Army Strong!

Essayons!

Lt. Gen. Robert L. Van Antwerp is chief of engineers, commanding general of the U.S. Army Corps of Engineers and functional chief of Career Program 18.



Recycler course to be offered in 2008

by William F. Eng

The Qualified Recycling Program (QRP)/Ordinance and Explosives Recognition and Safety class will be offered April 8-9, 2008, in Huntsville, Ala. The course is geared for Installation Recycling Program managers and QRP managers where the program includes the recycling of expended small arms brass and gleanings from fire range clearance. Solid waste and pollution prevention program managers at the installation or higher headquarters who supervise QRP managers and other QRP personnel are also welcome.


The course objective is to train QRP personnel in the recognition of unsafe and unauthorized material when recycling firing-range scrap consisting of expended brass and mixed metals gleaned from firing ranges through direct sales. Successful completion of this training is one of the requirements for an Army QRP to directly sell firing range scrap.

Technical content is focused on military ordinance and explosives identification, safety considerations and QRP requirements. Tuition is \$1,110. More informa-

tion is available at <http://pdsc.usace.army.mil/Default.aspx>.

To register, go to <http://pdsc.usace.army.mil/HowToRegister.aspx>.

POC is Joseph C. Pickett, course manager, 256-895-7445, joseph.c.pickett@usace.army.mil.

William F. Eng is the Army and Office of the Assistant Chief of Staff for Information Management proponent for this course. 

Sign up now for master planning class

by Jerry Zekert

The only fiscal year 2008 session of the Real Property Master Planning class is scheduled for Dec. 3-7 in Norfolk, Va., and registration is now open. Master planning has become such a focus for installation development that without a team trained in the basic fundamentals of master planning, the process can result in making poor long-range base-development decisions.

All who are interested should sign up as soon as possible so this unique training opportunity will not pass them by in 2008.

In the coming fiscal year, the other planning classes are also scheduled to be offered only one time. Following is the list of the FY 2008 planning classes:


- Course 75, Real Property Master Planning – Dec. 3-7, Norfolk, Va.
- Course 948, Real Property Master Planning Visualization Techniques (Sketch-Up) – Feb. 11-15, Huntsville, Ala.
- Course 952, Advanced Real Property Master Planning – July 14-18, Huntsville, Ala.



Students in a master planning class take part in a planning exercise. Photo by Jerry Zekert

To register, contact Sherry Whitaker at 256-895-7425/7421, or sherry.m.whitaker@usace.army.mil; or Beverly Carr at 256-895-7432 or beverly.carr@usace.army.mil.

POC is Jerry Zekert, 202-761-7525, jerry.c.zekert@usace.army.mil.

Jerry Zekert is the master planning team leader and critical infrastructure protection public works sector lead, Headquarters, U.S. Army Corps of Engineers. 



Rogers becomes IMCOM director of operations, facilities

by Mary Beth Thompson

Brig. Gen. Dennis E. Rogers arrived at Installation Management Command Headquarters July 30 to take the new position of director of operations and facilities. His job entails providing interface between the public works and operations domains in support of the deputy commanding general of IMCOM.

"I am happy to be here," Rogers said. "It is something totally new to me. I am an operator by birth and by choice, and I'm looking forward to getting to know everybody in the command, to working with them and to helping them and the command in whatever way possible that I can."

Rogers holds a bachelor's degree in history from the University of South Alabama, a master's degree in public policy administration from Shippensburg University and a master's degree in strategy from the U.S. Army War College. His previous assignment was with U.S. Army Accessions Command, where he was deputy commander and chief of staff. He has served in assignments in Georgia, Kentucky, Kansas, Virginia, California, Pennsylvania, Texas and Washington, D.C., and overseas in Korea, Germany, Kuwait and Iraq.

Rogers met the IMCOM region directors and their command sergeants major at the Senior Executive Leadership session in August just a couple weeks



Brig. Gen. Dennis E. Rogers
Photo by Stephen Oertwig

after his arrival. He spent another part of his initial weeks familiarizing himself with IMCOM and the Office of the Assistant Chief of Staff for Installation Management.

"The command is so large, and it touches so many different aspects of the Soldiers', spouses', and dependents' daily lives," he said.

He enjoys being located at IMCOM headquarters, where he can reach out to the regions and installations. He described the headquarters as the central hub with the ability to touch every Army installation around the world, ensuring that information flows up and down and that the focus

remains on the Soldier and Family for quality of life and support.

In Rogers view, the people in the field working in IMCOM regions and installations make a difference.


"Their actions ensure that the Soldiers who are in harm's way are able to focus because their Family members are being taken care of at hometown USA or in their installations around the world," he said.

In his free time, Rogers enjoys reading. His favorite authors are Robert Ludlum and James Patterson. Football is another passion.

"I love football," he said. "I played football in college, and I played flag football all of my life. But now that I've turned 49, I have to watch it instead of playing it."

Rogers played football at Kemper Military College in Missouri. His enjoyment of that experience is made clear by a huge smile that takes over his whole face as he talks about it.

"We got beat a lot, but it was fun," he said.

Mary Beth Thompson is managing editor of the Public Works Digest. 

Joyner joins IMCOM-Korea as deputy director

James M. "Mike" Joyner became the deputy director of the Installation Management Command, Korea Region July 9. Headquartered at Yongsan Garrison in Seoul, IMCOM-Korea oversees installation management of 41 Army camps and stations in South Korea.

Joyner came to the position after working for IBM Corporation Business Consulting Services. Prior to civilian service, he served 30 years in the Army both as an enlisted Soldier and as an officer with assignments in Thailand, Europe, Korea

and the United States. His last active duty assignment was as the chief of staff, Combined Arms Support Command, Fort Lee, Va.

He earned a bachelor's degree from Florida A&M University, a master's degree in logistics management from Florida Institute of Technology and a master's degree in national resource strategy from the Industrial College of the Armed Forces.

From Installation Management Command, Korea Region biography. 



James M. "Mike" Joyner
Photo courtesy of Installation Management Command, Korea Region



Installation Support Professional of the Year: Bridgestock

by David Killam

Sacramento District's Greg Bridgestock won the coveted title of *Installation Support Professional of the Year* for the U.S. Army Corps of Engineers.

Bridgestock, a 24-year veteran with the Corps, started out as a junior engineer in training from the University of Illinois. Over the years, Bridgestock took on more and more complicated projects but remains modest about his achievements.

"It's very humbling when you consider the caliber of competition and some of the previous winners," he said. "I was approached by two of my supervisors, who nominated me for the division award. I never expected to win at the national level."

Bridgestock has done a considerable amount of work for the Presidio of Monterey, Calif. He lobbied to obtain difficult-to-find installation support money for the Presidio and worked under very tight deadlines so that last-minute funding could be used for critical design processes. He also helped in the contract administration process to resolve complaints about cost and timeliness.

Bridgestock even provided real estate

support that led to obtaining faculty office space and improvement in classroom conditions for students at the Presidio.

"For many years, Greg has been a very successful project manager," said Bruce Handel, the chief of the Army-Air Force Section, Programs and Project Management Division, Sacramento District.

Bridgestock's customers also praise him.

"Greg provided us with excellent support for many years," said Jim Willison, director of Public Works for the Presidio. "He has an unsurpassed commitment to customer service. He provided the best quality projects at the best price and on schedule.

"He is an invaluable member of our



Greg Bridgestock
Photo by David Killam

team — at times I forgot that he works for the Corps!" Willison said.

Col. Pamela Martin, commander of the Presidio of Monterey Garrison and the Fort Military Community, was effusive in her tribute of Bridgestock.

"Greg has been top notch," she said. "He has given us considerable help as we work our way through master planning issues."

For Bridgestock, the demands of the job and family life have been a continuous balancing act.

"I've spent a lot of time away from home down in Monterey," he said. "But, my wife and kids have been very understanding by allowing me to provide this needed customer accommodation."

And what is the secret to his success?

"Listen to your customers," Bridgestock said. "They pay your salary and are the reason we're here. Don't try to dictate to them."

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David Killam is a public affairs specialist with U.S. Army Corps of Engineers, Sacramento District.

Reed named to installations and housing post

David M. Reed was appointed deputy assistant secretary of the Army for installations and housing Aug. 5. He serves as the senior career person within the Army Secretariat responsible for the Army's worldwide installations and housing structure.

Reed provides policy and program direction, and handles political issues involving administration, congressional, state and local officials for active Army and Reserve component facilities. He oversees the execution of key Army engineering; housing; construction; real property acquisition, management and disposal; and base realignment and closures. Reed also represents the

secretary of the Army in communications with industry, the public and the media on installations and housing programs.

Prior to this appointment, he served as the assistant for construction in the Office of the Deputy Assistant Secretary for Installations and Housing. Reed is a retired Army officer whose service included tours in Germany, Netherlands, Italy, Egypt, the Pentagon and numerous troop assignments, including the 1st Infantry Division and the 1st Cavalry Division.

Reed graduated from Lafayette College with a bachelor's degree in civil engineering. He also earned a master's degree in engineering from the University of Flor-

ida and is a graduate of the National War College. Reed is a registered professional engineer in the Commonwealth of Virginia.



From U.S. Army biography.

David M. Reed
Photo courtesy of the Office of the Deputy Assistant Secretary of the Army for Installations and Housing



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