

"Make Energy a Consideration in All We Do"

ENERGY

express

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USAFE-AFAFRICA targets military housing in search of energy savings

Think you pay a lot for your power bill at home? Imagine paying for an entire Air Force major command!

United States Air Forces Europe – Air Forces Africa spends \$23.7 million annually to power and heat military family housing communities. "If we set a goal to reduce MFH energy consumption by only 10 percent, we will save \$2.37 million across the command every year," said Kelly Jaramillo, HQ USAFE-AFAFRICA energy manager.

Jaramillo, along with Andy Johnson, the HQ USAFE-AFAFRICA Command Housing Programmer, have formed a strategic partnership between energy and housing to create the HQ USAFE-AFAFRICA Resident Energy Efficiency Program, or REEP. Together, the two program managers established the Command-Wide REEP Working Group to lead the effort across the command.

"We're asking every USAFE-AFAFRICA MFH resident to help us achieve a minimum 10 percent reduction in our annual MFH energy consumption across the command by the end of fiscal 2016," said Johnson.

Before forming the REEP program, the working group did its homework by researching how much more energy is used in the average MFH unit versus similar type units outside a base. They

learned that several years ago, MFH energy initiatives were conducted at numerous military bases throughout the United States including Fort Lewis, Wash.; Yuma Marine Corps Air Station, Ariz.; as well as Travis AFB, Calif. Studies at Travis indicated that on-base MFH residents consumed an average of 20 to 30 percent more than similar sized residences off-base.

Energy used by MFH communities outside the U.S. is counted toward Air Force energy consumption and must be reduced to meet federal goals and mandates. MFH is largely privatized in the continental United States, but overseas, it is primarily government, which means that on-base residents do not pay their own utility bills.

"Is it possible to motivate residents to save energy if they do not pay their own bills? Absolutely!" said Jaramillo. "Do residents have to radically change their behavior? Absolutely not."

"The results of the residential energy initiatives were truly impressive," said Johnson. By making relatively small changes in family behaviors, Fort Lewis and Yuma achieved an overall 10 percent reduction in MFH energy costs, while Travis reduced energy use by almost 18 percent throughout its MFH community.

STORY CONTINUED ON PAGE 2

Kaiserslautern military communities like this one plan to implement a new USAFE-AFAFRICA program known as REEP – Resident Energy Efficiency Program. Housing and energy personnel will engage with leadership, provide personalized coaching for military housing families, install in-home energy monitors and use rewards and recognition programs. (Courtesy photo)



USAFE-AFAFRICA targets...

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Johnson and Jaramillo decided it was time for housing and energy to join forces to lead a USAFE-AFAFRICA REEP effort overseas.

RAF Lakenheath volunteered to pilot the REEP beginning in October 2012. RAF Lakenheath's first quarter results exceeded all expectations. Overall electricity consumption of REEP participants showed an average reduction of over 25 percent, while natural gas consumption went down approximately 17 percent. Now the base is expanding the initiative across the entire housing community which includes RAF Mildenhall and RAF Ely.

How did they do it at RAF Lakenheath? MFH REEP members engaged the installation and MFH community leadership, provided personalized coaching for REEP participants, installed in-home energy monitors, and employed rewards and recognition programs.

RAF Lakenheath's MFH REEP leader, Helen Kenyon, said, "The concept is to provide people with the energy meters and mock billing so they can see results right away. We combine that with education to make people aware of what



From Left: Vivienne Spittles, Secretary, Installation Management Flight; Bev Uter, Housing Inspector; SMSgt Chris Roth, Superintendent, Installation Management Flight; Ed Salinas, Housing Assistance Chief; Mike Fischer, Housing Assistance Supervisor; Umit Spencer, Housing Manager; Sean Cockrell, Base Energy Manager; Dave Ketchum, Facilities Chief; Helen Kenyon, Housing Assistance and REEP Coordinator; and Allen Fry, Chief, Installation Management Flight.

steps to take to reduce their energy consumption."

Kenyon says start small and use common sense. "We're not telling them to turn off their heat and freeze. We're talking about small changes such as turning off your lights and turning your heat down a little bit," said Kenyon. "But when applied across all the housing, it's going to save a lot of money."

The next location entering the program is the Kaiserslautern Military Community, which sponsors the largest MFH community under USAFE-AFAFRICA. Conservative estimates indicate the potential for more than \$1 million in annual MFH energy savings in the KMC alone.

Goodfellow receives energy efficiency check

From Left: Gary Throckmorton, American Electric Power (AEP) program coordinator, Grace Hsieh, AEP CitySmart program specialist, Mary Lumsdon, base energy manager and recipient of the check, Col. Paul Bugenske, 17th Mission Support Group Commander, Matthew Romero AEP program manager, and Maj. Kurt Muller, 17th CES Commander stand holding a check from the AEP CitySmart program March 27 at the Civil Engineers building. The CitySmart program provides governmental agencies monetary incentives to implement energy saving projects in existing and new facilities. Every time Goodfellow engineers install energy-saving projects such as chiller, HVAC, and lighting replacements or new construction, the information is given to AEP which determines the rebate amount. This check is the culmination of Goodfellow's efforts over five years. (U.S. Air Force photo/Airman 1st Breonna Fields)



EPA recognizes Air Force renewable energy efforts

By Jennifer Elmore
AFCEC Public Affairs

The U.S. Environmental Protection Agency's Top 50 list of Green Power Partners released this month ranks the Air Force number one in the Department of Defense and number two in the federal government for its purchase and on-site production of green power. In 2012, the Air Force used 283 million kilowatt hours of renewable energy.

Since becoming a Green Power Partner in 2003, the Air Force has always appeared near the top of the list among Fortune 500 companies such as Intel, Microsoft and Wal-Mart. The Air Force ranks 19th nationwide and is one of only four federal agencies in the top 50 – the Department of Energy is 6th, the Environmental Protection Agency is 22nd and the Department of Veterans Affairs ranks 26th.

The Green Power Partnership is a voluntary program that encourages organizations to use green power as a way to reduce environmental impacts associated with conventional electricity use.

More than six percent of all facility electricity used by the Air Force came from green power sources in 2012. The Energy Policy Act of 2005 requires that number to increase to 7.5 percent this year. United States statute also requires the Department of Defense to increase on-base renewable energy production to 25 percent by 2025.

"We're working to meet the mandates," said Ken Gray, acting energy director at the Air Force Civil Energy Center, Tyndall Air Force Base, Fla. "We get a two to one return on what we invest in energy."

For every dollar the Air Force spends



A wind project at Cape Cod Air Force Station, Mass., is moving forward watchfully as endangered eastern box turtles nest in the area. The construction area has to be swept by qualified turtle biologists, posing some slow-down to contractors, but engineers predict the project will remain on schedule. (U.S. Air Force photo)

Archaeologists excavate land at Luke Air Force Base in order to make way for a solar array the base is planning to build. The excavation team has found thousands of artifacts dating back to 3000 B.C. (U.S. Air Force photo/Senior Airman Sandra Welch)



on an energy-focused reduction effort, it gets two dollars back to invest in the mission, which makes overcoming energy challenges worth the effort.

The Air Force more than doubled its number of renewable energy projects in the past two years. There are 256 projects in operation or under construction on 89 installations, which include solar photovoltaic, solar thermal, geothermal in the form of ground source heat pumps, wind, daylighting and landfill gas. The Air Force is also exploring the use of waste-to-energy and geothermal electricity production.

According to the Air Force Renewable Energy Game Plan, the Air Force will use enhanced use leases and power

purchase agreements to add 488 megawatts of capacity by fiscal 2018. Seven projects are in construction including photovoltaic arrays in Arizona, California, Florida and New York; a landfill gas project in Alaska; and wind projects in Massachusetts and Ohio.

It can take up to two years or more to develop, gain approval and construct a renewable energy project. AFCEC is working with the Air Force Secretariat level and the Office of the Secretary of Defense to streamline the process.

Unforeseeable factors also affect renewable energy development. For example, a solar project that will provide half of the energy needed to power Luke AFB was put on hold in 2012 when crews unearthed artifacts dating back as far as 3,000 B.C.

A wind project at Cape Cod Air Force Station, Mass., is moving forward carefully as endangered Eastern Box turtles nest in the area. The construction area has to be swept by qualified turtle biologists, posing some slow-

down to contractors, but engineers predict the project will remain on schedule.

Air Force Space Command Energy Analyst, Fox Theriault, said, "The civil and foundation designs are complete confirming that the ground is solid enough to hold the weight of the wind turbines and the project can move forward. General Electric plans to ship the two 1.68 MW turbines in late June and we hope to commission them in December."

There are also 40 renewable energy projects in the government validation or preliminary concept phases.

TechTalk

AMRS... the fast moving train

By Jennifer Elmore
AFCEC Public Affairs

If you aren't an Air Force civil engineer assigned to work facility energy projects, this diagram below will look like a foreign language. In fact, it's quite complex even to people close to the project. After five years of planning and coordination, the Air Force is set to begin installing advanced meter reading systems (AMRS) at most major installations in May. The first two systems will come online at Beale Air Force Base, Calif., and Altus AFB, Okla. Thirty-two more will be installed by September 4th.

AMRS will provide enterprise tools to monitor and manage energy consumption in order to operate buildings as efficiently as possible and identify potential energy-saving opportunities. The system will provide critical information required by the Energy Independence and Security Act of 2007.

"It's not a simple design solution, but it is a single design solution," said Paul Carnley, chief of the AMRS Program Management Office at the Air Force Civil Engineer Center, Tyndall AFB, Fla. "It's very complex connecting different meters via radio, LAN (local area network) or some other interface devices and getting all that to report back to the AMRS servers either across the VLAN or directly through a Cisco switch." Every base is different but AFCEC engineers believe they've captured all the different types under this one design solution.

The contractor has completed site assessments at all 32 bases scheduled to receive AMRS this fiscal year. The Air Force originally planned to install 40 systems in 2013 but modified the contract to postpone six locations due to funding issues. They are Luke, McConnell, Minot, Lajes Field, F.E. Warren and Creech.

An Industrial Controls System, or ICS, team performed a factory test the end of March in Cleveland, Ohio. The team evaluated the hardware and software

set up against the compliance matrix and contract requirements. The team identified several issues. Engineers from Benchmark Construction Incorporated and TolTest spent nearly two weeks addressing deficiencies before traveling to Beale in April. Once the system is commissioned and the staff is trained at Beale, the team will go to Altus for testing and commissioning.

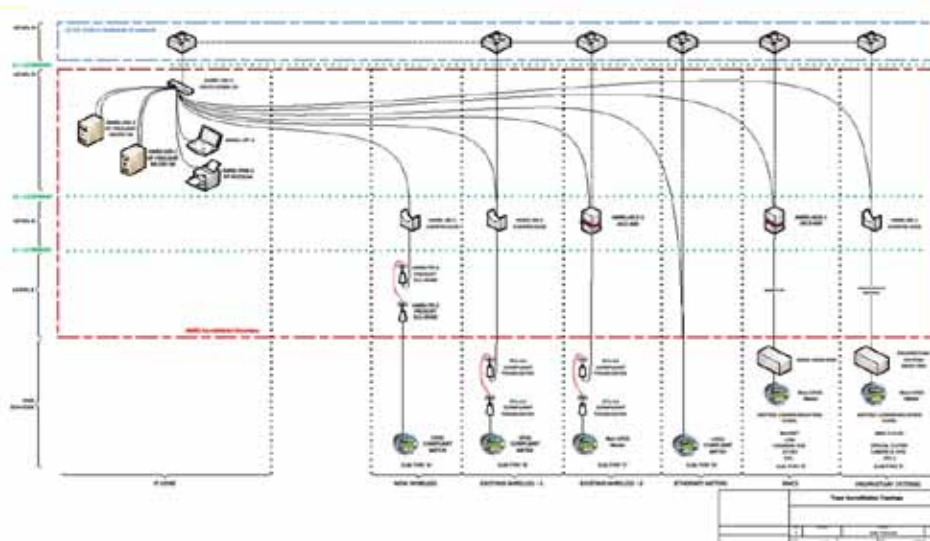
"Energy managers can expect a lot more activity from the contractor and ICS staff, which includes the 38th Communication folks from Tinker, very soon." The contractor will visit the VLAN bases twice. They will visit the base to get the meter system architecture documented. They will visit a second time to do the implementation and integration. Between those two visits, energy managers will get to look at the design.



"It's going to be a fast moving train," warned Carnley. "There's not a lot I can do about that because the contractor is behind schedule. When we send a design for review, we ask that you look at it as quickly as you can and get us comments back so we can communicate those to the contractor."

Bases with proprietary systems (such as Siemens, Honeywell, Johnson Controls, etc.) must have a company representative on site when the AMRS contractor evaluates the LAN architecture. "There are passwords at the administrative level that have to be entered so that the Wonderware integrator can look at all the IP addresses and the system architecture," explained Carnley. Carnley says Wonderware is the industry standard for ICS software.

Once AMRS equipment is installed at a base, BCI, TolTest and an AFCEC contractor will be on site to assist with



testing, commission and training. Carnley says a government employee from the base must witness the commissioning.



AFCEC AMRS guidance is under review by major commands and will be released to the field this summer. The document explains what AMRS can do such as:

- Provide at-a-glance near real time energy data via interactive dashboards
- Automatically create and update facility baselines
- Establish benchmarks for metered facilities
- Accurately forecast commodity consumption
- Troubleshoot excessive energy consumption
- Assist identification of energy conservation opportunities.
- Facilitate measurement and verification
- Provide utility usage and virtual bills for awareness.

An AMRS fact sheet is available on the AFCEC website at: <http://www.afcec.af.mil/shared/media/document/AFD-130220-011.pdf>

Watts Happening

D-M solar array update

SunEdison, financial partners and the Air Force have finalized details of supporting agreements for construction and debt over the last month. SunEdison will now be finalizing tax and equity agreements within the next couple of months to begin field work at Davis-Monthan AFB, Ariz., this summer. The project team currently anticipates the array will be complete in October, 2013.

LEED Silver for AFCEC

In April, the U.S. Green Building Council awarded LEED Silver certification to for the renovation project of building 1120 the Air Force Civil Engineer Center, Tyndall AFB, Fla. AFCEC was just three points shy of Gold under LEED NC 2.2. The \$9 million design/build project replaced crippled HVAC systems, lighting controls, ceilings, carpet, corrected code deficiencies, added over 100 additional cubicles, installed a 75kwh solar array and significantly improved the work environment in three main phases over two years. The project reduced energy consumption 25 percent, diverted 78 percent of construction waste from landfills and reduced water consumption 46 percent.

Energy computer tool available

The HAF/A7CART approval to load Quick Energy Simulation Tool (eQUEST) on Air Force computers is available on the Energy CoP: <https://afkm.wpafb.af.mil/DocView.asp?DocID=12514621>

The program is available by registration and download: <http://www.doe2.com/equest>.

AMRS deployed

Initial system testing of the Air Force Advanced Meter Reading System continues at Beale AFB. Commissioning is tentatively scheduled to begin April 29th and will be followed by base personnel training. The next base scheduled for AMRS deployment is Altus which will begin after the system at Beale is accepted.

LED recall

Please ensure that your facility managers and others are aware of the LED recall on Lighting Science Group (LSG) LED lamps. They pose a potential fire hazard. <http://bit.ly/14jTJ6R>

AFCEC Industry Day Forum

The Air Force Civil Engineer Center will host an Industry Day Forum Tuesday, May 7th from 12:30pm to 3:00pm. Military and industry leaders will discuss public-private collaboration opportunities to help meet the Air Force Civil Engineer needs. Industry partners can learn about AFCEC's mission at Tyndall AFB and about potential opportunities in fiscal 2013 and beyond. There will be breakout sessions when industry partners can speak to representatives from the three AFCEC-East directorates: Energy, Readiness and Operations.

Attendees must register at this link: <https://einvitations.afit.edu/inv/index.cfm?i=150345&k=0364420A7F52>



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