"Make Energy a Consideration in All We Do"

ENERGY eXpress

The Air Force Facility Energy Center Newsletter February 2012

New online tool tracks Air Force energy technology

Ms. Jennifer Elmore
AFCESA/CEBH

Efforts to identify and evaluate new energy technologies, and communicate that information across several Air Force agencies will soon be easier with a new tool that came online in February.

The Air Force Energy Technology Tracking Tool, known as "E3T," is an online database designed to document and categorize energy technologies that need further research, development, and evaluation versus those that are fully vetted. E3T will provide the Air Force Civil Engineering community quick access to thoroughly reviewed companies. It will improve collaboration between the Air Force Civil Engineer Support Agency, Air Force Research Laboratory (AFRL), Headquarters Air Force, MAJCOMs, installations, and the Office of the Deputy Assistant Secretary of the Air Force, Energy (SAF/IEN).

E3T can be found on the CE Portal at https://cs.eis.af.mil/a7cportal/Pages/default.aspx. Click the Program Groups tab, then click Energy, and scroll down to the Energy Technology Tracking Tool.

E3T Data

E3T will display industry feedback AFCESA gains through vendor visits, referrals and requests for information. RFIs help the Air Force gain industry perspectives, ideas and inputs on renewable energy technologies and projects, and may accelerate the procurement process for project identification and execution to the field. In 2011, AFCESA issued six RFIs to industry on the following technologies: small wind (<500kW), geothermal, small solar (<750 kW), large wind, large solar, and biomass/waste-to-energy. Manufacturers, product developers, system integrators, project managers, and consultants submitted 139 responses. AFCESA sent 28 RFIs to AFRL for further vendor authentication and concept analysis. Nineteen vendor responses could result in requests for proposals and may eventually have successful project awards including:

- **Small wind projects:** Malmstrom Air Force Base, Mont.; Altus AFB, Okla.
- **Large wind projects:** Sheppard AFB, Texas; Cape Cod AFS, Mass.; Vandenberg AFB, Calif.
- **Small solar project:** F.E. Warren AFB, Wyo.
- **Large solar projects:** Goodfellow AFB, Texas; JB McGuire-Dix-Lakehurst AFB, N.J.
- **Geothermal projects:** Luke AFB, Ariz.; Nellis AFB, Nev.; Mountain Home AFB, Idaho
- **Biomass /Waste-to-energy projects:** Kirtland AFB, N.M.; Keesler AFB, Miss.; Tyndall AFB, Fla.; Eglin AFB, Fla.

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Sidebar photo: TSgt William Shepher II, 90th Civil Engineer Squadron structural supervisor and contracting officer representative, stands in front of one of FE Warren AFB's three wind turbines. (U.S. Air Force photo by Mr. Matt Bilden)

New Tool...

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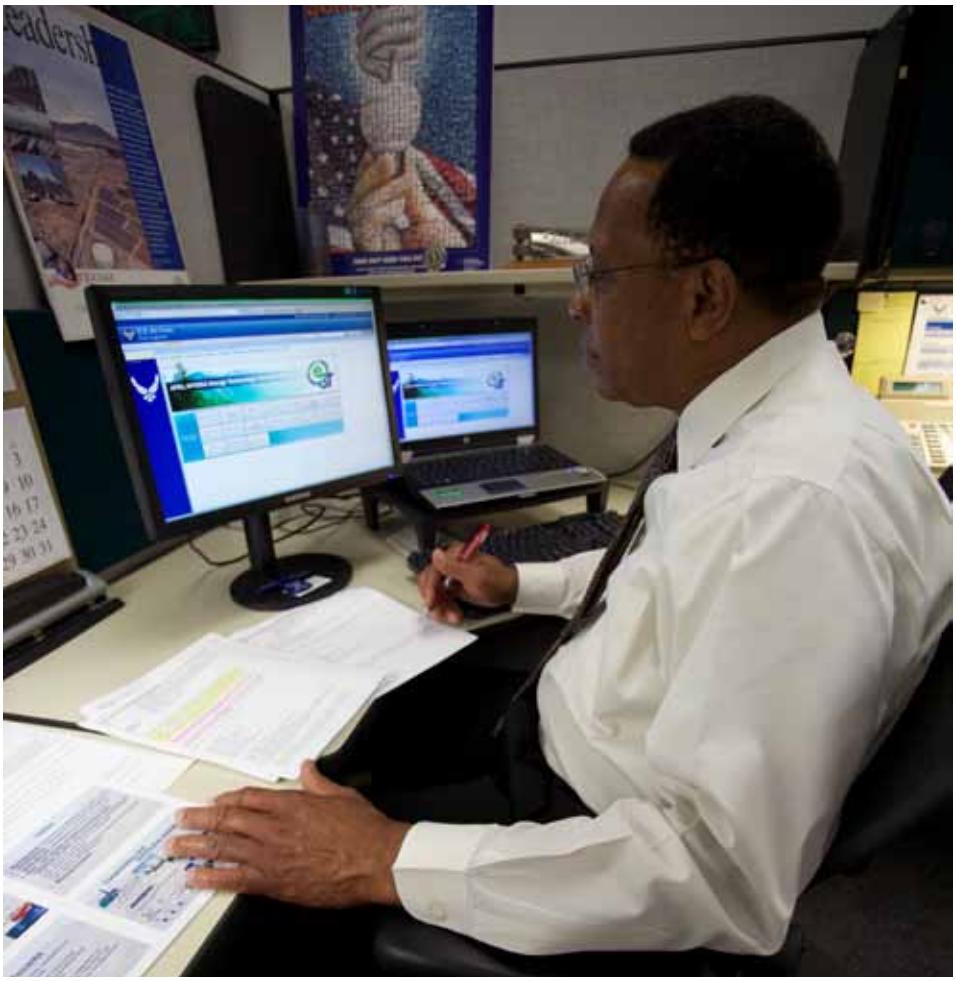
AFCESA, AFRL, Air Force Real Property Agency, and Air Force Center for Engineering and the Environment will now work with Major Commands, Air Force installations, local communities, aviation authorities, and others to develop the proposed projects.

E3T will also store the results of Rapid Technology Assessments conducted by AFRL. RTAs are typically a "quick turnaround" company-specific assessment of technology used to answer senior leader questions. The Civil Engineer community is encouraged to add inputs into E3T as vendors expose potential technologies to the Air Force. It is intended to be a ready reference for Air Force offices approached by vendors with technology they want to provide or use on bases. Air Force CE team members could check for information about a vendor's process or technology and if not shown, forward it to AFCESA and AFRL for evaluation and inclusion.

Tri-Service Technology Database

The Air Force is designing a report feature so data can easily be shared between E3T and the Tri-Service Technology Database. The Tri-Service Technology Panel is made up of representatives from the Air Force, Navy, Army, and Department of Defense who meet quarterly to discuss ways to accelerate the adoption of new renewable energy technologies across the Department of Defense. The group is in the early stages of developing a Tri-Service Technology Database to leverage the knowledge of each service to maximize limited funding for technology assessment and transition.



Mr. Josh Scott represents the Air Force Civil Engineer Support Agency on the Air Force team that worked to establish the new Energy Technology Tracking Tool known as E3T. The database came online this month and improves collaboration between AFCESA, Air Force Research Laboratory, Major Commands, installations, and Headquarters Air Force. (photo by Mr. Eddie Green)

AFFEC implements new measurement and verification program

Ms. Jennifer Elmore
AFCESA/CEBH

The Energy Independence Security Act of 2007, Section 432 Facility Management and Benchmarking, requires the Air Force to have a measurement and verification (M&V) program.

"The Air Force Facility Energy Center wants to be able to close the feedback loop, document project savings, and benchmark the tools for validating savings in the future," said Mr. Brad Scott, an AFFEC engineer. "We're just getting to the point where we can do M&V because central program funding didn't start until 2009, and it didn't get fully funded until 2010. The projects are now coming online because we had to design and construct them. Now we're at a point where we can actually do M&V as opposed to before where there was nothing to check."

Beginning in April, all projects submitted for central energy funding must have an M&V plan using the template. AFFEC will determine which ones are the best representatives from categories such as HVAC, lighting, and envelope to set the benchmarks for the rest of the projects.

"M&V does two things for us," said Mr. Scott. "All we're working on now is the engineering estimate. For example, I did my engineering work, and I said this project will save 100 MBtus. Until we go back and check it, we're not sure. If it comes back at 40 or 50, then we either didn't design it correctly or maybe it's just not being maintained correctly. It gives us a way to identify issues, if there are any."

Mr. Scott recommends energy managers complete the M&V workbook while developing the project. He says it's one extra step and takes less than ten

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AFFEC implements...

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minutes. However, if it's a base-wide project including dozens of buildings for example, then energy managers should contact their AFFEC project liaison. "We'll scale that down and just M&V some of the larger buildings," said Mr. Scott.

The M&V program requires energy managers to provide AFFEC with a 12-month baseline and meter readings every six months. The requirement will be incorporated into existing data calls. All analysis will be completed at AFFEC. "We prefer it comes from a meter reading but everything's not metered. Using the baseline that's provided by the audits is acceptable at this point," said Mr. Scott. He continued by saying, "If we're funding it centrally, then we want to fund large impact facilities, which in most cases have, or are on the list to get, a meter."

The M&V workbook is an interim tool. As the program develops, more permanent M&V solutions will be incorporated using automated technology. Mr. Scott said, "We may find there are better ways to do things. We may be able to narrow down the project field better. This is our first shot at implementing the initial data collection phase and seeing what type of projects we get, how the workbooks look, and determine the best way to meet the EISA 07 Section 432 benchmarking goals."

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2012 Green Power Partner List:

Air Force leads DOD

Ms. Jennifer Elmore
AFCESA/CEBH

The U.S. Environmental Protection Agency's Top 25 list of Green Power Partners released in February 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 2011, the Air Force used 265 million kilowatt-hours of renewable energy, an increase of 15 million kWhs from the previous year.

Since becoming a Green Power Partner in 2003, the Air Force has always appeared near the top of the federal list. On the list of 1,300 Green Power Partners nationwide, which includes large corporations such as Wal-Mart, Intel, and Kohl's, and municipalities such as Houston and Austin, Texas, the Air Force is number 16.

The EPA Green Power Partner program only gives credit to renewable energy produced at U.S. facilities built after 1997. "If the Green Power Partner program gave us credit for all the 'old' power we purchase (produced at facilities built before 1997) and the power we produce at installations outside the continental United States, the Air Force would be number one in the federal government and number eight in the country," said Mr. Ken Gray, Rates and Renewables Branch Chief at the Air Force Facility Energy Center, Tyndall Air Force Base, Fla. More than six percent of all facility energy used by the Air Force comes from green power sources, which is more than the federally mandated energy goal of five percent by 2010 as defined under the Environmental Protection Act of 2005.

"We've developed a strategy we're calling the Air Force Renewable Energy Game Plan in which we plan to add 33 renewable energy projects on our installations during the next five years," said Gray. "The plan would provide as much as 27 percent of the total Air Force electric demand in the form of renewable energy and far exceed the federal mandate of 16 percent renewable energy use by fiscal year 2016."

The Air Force more than doubled its number of renewable energy projects in the past year. There are 131 projects in operation on 56 bases and an additional 50 are under construction. They 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 use of waste-to-energy at more than 20 bases identified as ideal locations during opportunity assessments last year.

EPA GREEN POWER Leadership Award Winner 2011

Data & Information:

Long-awaited meter system to begin installation this year

Ms. Jennifer Elmore
AFCESA/CEBH

We've all heard the phrase, "You can't manage what you don't measure" as well as the term "data overload." How do you strike a balance between the two? It's a challenge engineers in the Air Force Facility Energy Program have grappled with since 2007, but they're now ready to put the requirements for an advanced meter reading system (AMRS) on the street for bid that can strike that balance.

"We're going after a commercial off-the-shelf product to collect electric, water, steam, and natural gas meter data, analyze the data and provide useful information. The AMRS will be capable of pushing information to a higher-level IT system in the future," said Mr. Mike Ringenberg, meter program lead at the Air Force Facility Energy Center (AFFEC), located at AFCESA, Tyndall AFB, Fla.

The initial deployment of an Air Force-wide AMRS will allow base energy managers to analyze near real-time utility information, identify anomalies, and measure energy consumption. Though this will initially occur only at the local level, AMRS provides standardized data, analysis, and reporting formats, ready for future implementation of NexGen IT. Once NexGen IT is in place and interfaced with AMRS, information can be available across the Air Force enterprise. The Energy Policy Act of 2005, Energy Independence Security Act of 2007, and DOD Instruction 4170.11 require that all Air Force bases install meters (where cost effective) to measure utilities and collect the data daily.

AFFEC has initially identified 80 bases as being cost-effective locations for implementation of the new AMRS. "It doesn't make sense to deploy the system at a location that has less than 10 meters where we cannot see enough savings to justify the initial investment," said Mr. Ringenberg.

Implementation Plan

AFFEC, in partnership with AF/A7CRT, plans to award the contract with central funds no later than April and will give the vendor up to two years to complete the project.

Initial deployment of the standardized AMRS will take place at two installations with operational systems for meter data collection, one with a wired energy management control system (EMCS) and the other utilizing a wireless system. These two sites will be used to determine typical architecture, focusing on the compliance of Engineering Technical Letter 11-1 and developing the template to use enterprise wide. The contractor will do initial assessments at each location and validate the information bases and MAJCOMs have provided the AFFEC through data calls over the past several years. The contractor will then develop a design. Once the design is approved by the AMRS Program Management Office (A7CRT, AFFEC) and the base, the vendor will begin to deploy the AMRS solution which includes hardware (servers and wireless communication where needed) and software.

"Wireless communications for AMRS is the preferred method for data collection. However, a wired EMCS is acceptable if compliant with ETL 11-1, Civil Engineering Industrial Control System Information Assurance Compliance," said Mr. Ken Walters, AFFEC Conservation Branch Chief. Those installations using an existing EMCS to collect meter data must first complete the ETL 11-1 process and receive authority to operate from AFCESA/CEO before being allowed to interface with the Air Force AMRS. This ensures the meter data is collected by the AMRS solution in a secure, Communications Squadron approved fashion.

"The users will be trained on their system at their base," said Mr. Ringenberg. "Following the training, there will be technical support; provided via telephone or on site, depending on the complexity of the problem." The contract will include four maintenance option years which includes software updates.

Roles and Responsibilities

The AMRS PMO and GSA will conduct source selection technical evaluations, award the contract, manage the integrated master schedule, resolve execution issues, and provide technical insight. MAJCOMs and bases must ensure all required meters are in place and be prepared to support AMRS implementation. The AMRS PMO expects to distribute roles and responsibilities to MAJCOM and installations in March.

Another important job for the MAJCOMs and bases is to adhere to ETL 11-1. "Because this new AMRS is stand alone, we can't gather meter data from your existing EMCS system unless it's compliant with the ETL," said Mr. Ringenberg. The approval authority is AFCESA/CEOA. "The current system at the base needs to be classified as a 'PIT' (Platform Information Technology) stand alone system. Once it's in that configuration, we will have authorization to connect this new system to it." At bases where there is no EMCS in place, AMRS will communicate directly to the meters through wireless communication.

Spotlight on Success

OSD selects FY13 ECIP Projects

OSD selected four Air Force projects totaling $29.9M for FY13 ECIP. Last year, we received $33.8M in ECIP funds. They did not select the $18M Thule AFB consolidation project. The reason given for rejecting the Thule AFB project was that although it has a good payback with a savings to investment ratio of 4.2, they considered it construction of a new building and a better candidate for regular MILCON funding. OSD selected one USMC and two Army energy security projects with a combined SIR less than 1.0 for $23.3M. (Mr. Byrnes, HQ AFCESA/CENI, DSN 523-6464)

Facility Energy January Program

AFFEC conducted the quarterly Energy PMR via DCO the end of January. Energy Conservation Investment Program changes, Sustainable Infrastructure Assessments, focus funds, advanced meter reading systems , re-baselining, and Resource Efficiency Managers were discussed. AFCEE, HQ-A7CAE, MAJCOM Energy Managers, and AFCESA participated. Slides are available on the Energy CoP. (Ms. Doornik-Surber, HQ AFCESA/CENI, DSN 523-6546)

Energy leader visits Edwards AFB

The Honorable Terry A. Yonkers (center) Assistant Secretary of the Air Force for Installations, Environment and Logistics visits with Mr. David Harrell (right) a facilities specialist with the 95th Civil Engineering Division in the utility building on Jan. 19, 2012, as Col. Calvin Williams, senior military assistant with Yonkers, looks on. Yonkers visited Ridley Mission Control Center, the Rosburg Fitness Center and newly constructed solar farms during his tour of base facilities.

FY12/13 Sustainable Infrastructure Assessments

The FY12 and FY13 SIAs will complete the collection of facility condition assessments, space utilization data and real property information, and conduct level 2 energy audits using the Army Corps of Engineers (Ft Worth District). The Ft Worth team offers advantages that standard contract options do not, including the potential for Air Force personnel to augment their teams for training and Air Force "buy-in," and the enterprise-wide consistency of data collected across the Air Force. (Mr. Giniger, HQ AFCESA/CENI, DSN 523-6398)

Energy-Efficient Shelter Systems for Contingency Basing

HQ AFCESA/CEXX participated in the kickoff for this joint program funded by the Director of Operational Energy Plans and Programs at Natick, Mass. Air Force Research Laboratory and AFCESA are participating for the Air Force. The program will demonstrate the current state of the art in energy efficient shelters, develop new energy efficient technologies, and then develop and demonstrate a next generation of energy efficient shelters with the goal of reducing energy demand by 50 percent. (Mr. Fisher, HQ AFCESA/CEXX, DSN 523-6701)

President Obama visits Buckley Air Force Base

President Barack Obama and Air Force Secretary Michael Donley visited Buckley Air Force Base, Colo., on Jan. 26, where the President spoke on energy conservation and renewable energy. Buckley installed 5,040 solar panels on more than six acres of land to incorporate solar energy on the installation. The panels yield more than 3 percent of the base's energy.

Thermal Energy: Decentralize or Optimize?

Mr. Dave Abbott
75 CES/CEOS

AFFEC representatives visited Hill Air Force Base, Utah, recently to discuss options to improve Hill's steam system and take field measurements at the primary boiler plant, Building 260. Hill is one of three AFMC Maintenance Depots that have large industrial process loads along with a significant winter demand for facility heating. Mr. Tom Adams, an AFFEC engineer, said, "This effort is designed to gather all necessary information required to support the base in making informed decisions regarding improving efficiencies."

Removing buildings from the steam system (i.e., decentralization) could save energy because newer boilers are generally more efficient. Distributed steam causes losses when lines corrode or break. Facility boilers eliminate these inefficiencies by producing steam closer to the point of use. However, introducing hundreds of new boilers in place of a few boilers at a central plant could cause maintenance and Title V air permitting challenges. Optimization could include repairing corroded steam or condensate lines and removing some buildings from the steam system, while concentrating on improving the distribution system. Energy savings from either option can be used to fund improvements, such as putting steam lines in trenches for easier repair or perhaps even purchasing newer boilers.

Hill is unique in that a local Municipal Solid Waste (MSW) to Energy Facility currently provides 450M pounds of steam annually (48%) to supplement the base's primary production plant. The advantage of using MSW facility steam from Wasatch Integrated Waste Management District (WIWMD) is that while the base would need to convert natural gas into steam (with ~25% lost in the conversion process), the WIWMD steam arrives in usable form. In addition, it serves as a valuable community partnership while extending the life of the local landfill. This favorable arrangement may make decentralization here a hard sell according to Mr. Craig Priest, Hill Resource Efficiency Manager.

Hill currently has an existing three-year contract with the municipality for the raw steam with plans to expand its capabilities. AFCESA was briefed on plans for a potential upgrade of their MSW to Energy Facility as well as adding a 12½ MW electrical turbine/generator to supply one-third of the base electrical demand. WIWMD would, however, require a long-term commitment for steam before they could proceed with these plans.

This technical analysis from the AFCESA Facility Energy team will give the installation a tool to better develop a plan to decentralize, improve or optimize our thermal energy supply system in order to save money, save energy, and improve the mission of Hill AFB.

For additional information or to request assistance from AFFEC, please contact Mr. Tom Adams, DSN: 523-6479, or at:

HQ AFCESA/CENI (attn: Mr Tom Adams)
139 Barnes Dr
Tyndall AFB, FL 32403-5319

Call for FEMP Award Nominees

In 2011, the Air Force set the standard of excellence by garnering more Federal Energy Management Awards than any other government agency. It's time to do it again.

FEMP added a new category this year, the Better Buildings Award. The other categories are: Project, Program, Individual, Contracting and FEMP Program Manager's Award. A total of 15 Air Force nominations are allowed among facilities, aviation, vehicles and operational energy submittals.

AFFEC is asking bases and MAJCOMs to send summary information no later than 23 March on the FEMP Central web site at http://www.fempcentral.com/awards. AFFEC will review the summaries and ask for complete packages for the most promising submissions. Complete packages will be due 20 April.

Earth Day 2012

Earth Day
U.S. AIR FORCE
Conserve Today. Secure Tomorrow.

The Air Force will observe Earth Day on 20 April in support of the theme, "Conserve today. Secure tomorrow." This year's focus is on pollution prevention in light of the reinvigoration of that program at Air Force level.

The Earth Day website is up and running at www.af.mil/earthday.asp. The site includes success stories and resources to help installations plan and conduct their own Earth Day events. In addition, Air Force has stood up a Facebook page under the name Blue Acts of Green (www.facebook.com/blueactsofgreen) that calls on Airmen and their families to commit to performing at least one act at home or at work to prevent pollution or support Earth Day.

Earth Day organizers will review the social media posts to capture initiatives that could provide an Air Force-wide benefit. For more information, frequent the Earth Day website for new products and updates about activities.

JOIN THE AIR FORCE ENERGY LEADERS!

Nominate your energy team project for a national FEMP award

2011 FEMP Winners from Scott AFB

FEMP

For questions contact
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CE saves Wright-Patterson nearly $500K

Ms. Amy Rollins
Skywrighter Staff

The Public Utilities Commission of Ohio has approved a rebate application from Wright-Patterson Air Force Base's Civil Engineer Directorate that will result in a one-time billing credit of almost $500,000.

WPAFB's energy management team worked closely with the Dayton Power and Light Co. during the last two years to achieve its energy savings commitment to qualify for the rebate of $488,427.

CE employees involved in this endeavor are Mr. Tyler Johnson, Mr. Kevin Osborn, Mr. Robert Flood and Mr. Dave Burkholder.

WPAFB's rebate is the largest that DP&L has paid to date as part of its energy-efficiency programs offered to customers to meet Ohio's energy efficiency targets to reduce electricity consumption by 22 percent by the end of 2025.

Since 2006, WPAFB's energy management efforts have translated into an investment of $5M in projects to increase operational energy efficiency. Engineers replaced outdated, inefficient lighting systems with energy-efficient products in 32 buildings; centralized inefficient chillers into one chiller plant complex at the Air Force Research Laboratory Propulsion Lab; and installed LED display lighting for museum artifacts at the National Museum of United States Air Force. There are several more energy projects that are soon to be completed or were recently awarded in which WPAFB could earn another large rebate from DP&L.

These projects resulted in an annual energy reduction of approximately 7.7 million kWh along with a reduced carbon footprint by 5,300 metric tons of CO^2 emissions. The amount of energy saved is equivalent to providing electricity to more than 600 homes for a year. The energy reduction allows for the projects to pay for themselves within 12 years.

Col Amanda Gladney, 88th Air Base Wing commander, credits Wright-Patterson energy personnel for saving the wing hundreds of thousands of dollars in electric fees. The base will receive a $488K rebate from Dayton Power and Light that will be applied to future billing. (L to R) Mr. David Perkins, 88th ABW Civil Engineering director, Mr. David Burkholder, Robert Flood, Col Gladney, Mr. Tyler Johnson and Mr. Kevin Osborn. (photo by Mr. Ben Strasser)

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