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ENERGY express

The Air Force Facility Energy Center Newsletter

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Air Force awards massive energy-saving project at Tinker

Ms. Jennifer Elmore
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Tinker Public Affairs

This week the Air Force signed an Energy Savings Performance Contract at Tinker Air Force Base, Oklahoma's largest single site employer and the largest Air Force facility energy consumer.

"Upon completion, the project will reduce Tinker's energy intensity by 30 percent and will save an estimated \$6.4 million a year to be used to repay the loan for the ESPC work," said Tinker's Energy Project Manager, Rex Stanford.

The project is a joint effort between Tinker, Honeywell, Department of Energy, Headquarters Air Force Materiel Command and the Air Force Civil Engineer Support Agency. The ESPC will improve energy efficiencies for 70 buildings, some dating to the 1940s, and save enough energy to power 12,424 average homes a year.

"One of our top priorities is reducing the size of our energy footprint, not only here at Tinker AFB but across the Air Force Sustainment Center," said Lt. Gen. Bruce Litchfield, Air Force Sustainment Center commander. "Pursuit of energy-saving initiatives is a factor in driving down the cost of sustaining weapons systems, which results in more capability

per available dollar for our operational Air Force, and represents good stewardship of America's resources. This is a true win-win scenario."

"The Air Force is committed to transforming its energy posture," said the Air Force Civil Engineer Maj. Gen. Timothy Byers. "As such, I am pleased to see this Energy Savings Performance Contract project move forward. It's a win for taxpayers, a win for our private investment partners, and a win for Tinker and the Air Force!"

ESPCs are an execution tool used by federal agencies to contract for energy conservation projects with no upfront cost to taxpayers. They are executed through an Energy Service Company, or ESCO, that acquires financing for the infrastructure or equipment system modifications to reduce Air Force energy costs and consumption. The \$80.7 million Tinker ESPC will take just over 20 years to pay back using dollars saved through lower utility and operation/maintenance costs.

President Obama signed a presidential memo in December 2011 directing "all federal agencies to make at least \$2 billion worth of energy efficiency upgrades over the next two years at no up-front cost to the taxpayer." Large ESPC projects, like the one at Tinker, are an example of the Air Force's effort to

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The fire station at Charlotte ANGB, N.C., receives most of the power it needs from this 200 kw solar field. The facility is well on its way to becoming net zero for energy. Read about the Air Force's new Net Zero Policy on page 4. (U.S. Air Force photo/Mr. Eddie Green)



California utility gives training to Airmen

Foreword by Mr. Dick Woodworth, AFCESA/CENU

Privatizing electric distribution system operations and maintenance has been an Air Force goal since OSD directives were issued in 1999. Twenty-five Air Force electric distribution contracts have been awarded to Utilities Privatization system owners. These system owners provide an industry standard level of support to the installation that has improved reliability and access to the latest technology and expertise in the electrical industry.

At Travis Air Force Base, Calif., the UP system owner, City Light and Power, is very active in upgrading the base electrical distribution system since the contract award in September 2011. This article describes how they identified and corrected an electrical line design flaw that was harmful to wildlife. It also highlights how highly-qualified system owner craftsmen provide training support to Airmen assigned to the base civil engineer squadron. The results of the base civil engineer and UP system owner partnership have enhanced mission accomplishments through improved electrical system reliability and training opportunities and have even provided a safe environment for wildlife.

Senior Master Sgt. Roel Davz
60th Civil Engineer Squadron

City Light and Power, the contractor that maintains the electrical power distribution at Travis AFB, Calif., is embarking on a project that will improve the reliability of the base's vast high voltage electrical distribution system.

CLP and Air Force Civil Engineer linemen will increase the gap between each phase of the 12,000 volt primary lines at the Duck Pond. This project aims to reduce nuisance power outages caused by large birds.

You are probably wondering how birds can cause an outage. It's very common to see them land and stand on power lines and everything seems fine. Birds standing on power lines have no effect on the electrical integrity of the system, as long as they are standing or touching only one electrical line. The problem occurs if their wings are wide enough to touch two phases of the high voltage lines. It will cause a direct electrical short circuit resulting in a blown fuse or it will trip a substation main breaker and ultimately cause a major power outage. It would be great if we could teach the birds and ducks about flight and electrical safety rules, but that's impossible.

To solve the problem, Tony Lercara, CLP project manager, says CLP linemen will widen the gap between electrical phases of the overhead high voltage lines.

First, they will isolate the primary circuit

they will be working on so that housing residents will not be affected. Then, they will move the middle phase of the circuit to the top of the utility pole, thereby broadening the gap between phases. They will do this to about 10 utility poles totaling 1,000 feet of overhead lines.

Normally this work can be completed in one day. However, CLP will extend this to two full days to incorporate electrical training. Master Sgt. Lee Shanks, 60th Civil Engineer Squadron contracting officer representative, in coordination with Staff Sgt. Leo Amaya, 60th CES combat electrical trainer, and CLP took advantage of this rare opportunity to

integrate training during the event.

CLP technicians will provide hands-on training to CE linemen in working with power lines and all associated equipment safely and correctly. This is a valuable skill to have especially when responding to crisis situations such as humanitarian assistance and disaster relief operations.

This project has multiple benefits. It will minimize power interruptions at base housing, protect the life and safety of the ducks and other migratory birds at the pond and provide an excellent opportunity to teach young linemen the tricks of the trade.



City Light and Power and Civil Engineer linemen increase the gap between each phase of the 12,000 volt primary lines at the Travis Air Force Base Duck Pond. This project aims to reduce nuisance power outages caused by large birds. (Courtesy photo)

Dept of Energy lauds Air Force conservation efforts

Mr. Jennifer Elmore
AFCESA/CEBH

The Air Force's innovative ideas and procedures for saving facility energy and aviation fuel have earned it recognition by the Department of Energy.

Each year, the DOE presents a Federal Energy Management Program award to individuals and organizations within the federal government that significantly contribute to the efficient use of energy and water resources.

The Air Force has won six FEMP awards. Winners include Air Mobility Command, Scott Air Force Base, Ill., Yokota Air Base, Japan; Dyess AFB, Texas; and three individuals: Lawrence Johnson, Minot AFB, N.D.; Capt. Reid Touchberry, Misawa AB, Japan; and Elizabeth Toftemark, Scott AFB.

Program winners

AMC successfully implemented a mission index flying optimization tool. The software gives pilots the most energy-efficient altitude and speed based on atmospheric conditions. AMC also secured funding for the KC-135 engine upgrade and KC-10 drag clean-up fuel efficiency initiatives. These three initiatives, officials said, are projected to save the Department of Defense \$284 million over the next 10 years.

Yokota AB led an Air Force Smart Operations for the 21st Century solution for the repair of the military family housing high temperature-hot water network, which became the benchmark for more than 1,000 systems throughout the Air Force. Another Yokota AB project involved conducting an aerial thermal imaging survey of the base to detect steam leaks that waste both energy and water. The survey pinpointed 47 leaks and created repair projects estimated to reduce consumption by more than 200 gallons of fuel per day.

Project winner

The energy team at Dyess AFB completed eight significant energy initiatives in fiscal year 2011 to reduce energy intensity, save money and improve infrastructure. The team installed ceramic bead coatings on 63,000 square feet of roofs and walls to reflect solar radiation and installed 2,600 occupancy sensors in 84 facilities that use sound and motion to control the lights.

The team also entered into a demand reduction agreement with the local utility for the base to use generators when possible to reduce the load on the Texas power grid.

Individual winners

Touchberry, Misawa energy manager, developed a plan to operate the base with limited electrical power availability following an earthquake and tsunami. He used GeoBase earthquake response maps to track deployment of generator assets and develop alternative refueling methods after significant refueling port compromise. Touchberry organized personnel into a team he dubbed "Rolling Blackout," which toured the base on bicycles promoting energy conservation and identifying energy-saving opportunities.

At Minot AFB, Johnson has helped change the way the Air Force designs and uses ground source heat pump technology. Realizing the void in the appropriate use of GSHP technology, over the past decade, he has successfully implemented GSHP systems for 25 buildings and has designed an additional six systems awaiting funding.

Toftemark, utility engineer and energy manager at Scott AFB, successfully negotiated electrical contracts over the past two years that will save the Air Force

\$5.5 million. She helped implement energy-saving projects such as heating, cooling, lighting, and window upgrades that will save \$4 million over the life of the projects. Through her efforts, the base library now has a reflective "cool" roof and 55 skylights which reduced the electrical usage 30 percent at the facility.

Air Force Civil Engineer Maj. Gen. Timothy Byers encourages all Airmen to do their part. "Our country is in a new energy paradigm, and we can no longer use energy at will without regard to the consequences," Byers said. "We must make a commitment, plain and simple, to rethink the way we use and view energy. The Air Force units and installations honored by DOE exemplify this new mindset. I encourage others to follow their lead."

A ceremony for all the winners is slated for October in Washington.



As part of an energy awareness campaign at Scott AFB, Ill., Energy Manager Elizabeth Toftemark placed stickers in the shape of pennies on devices throughout the base that displayed the cost of energy per device per hour. (U.S. Air Force photo)

Tiger Team working toward Air Force “Net Zero Energy, Water and Waste”

Ms. Amy Ausley
AFCESA/CEBH

A new policy memo released this summer by the Air Force Installations, Environment & Logistics Office establishes an Air Force end-state goal to achieve a “net zero” posture for installation energy, water and waste. The memo also calls for the formation of a “Tiger Team” to build an economically-sensitive Air Force-wide strategic plan to work toward these end-state goals.

The memo states, “By continuously improving energy and environmental management practices to be more effective and efficient, and carefully considering return on investment, the Air Force will ensure sustainable management of the resources that we need to adequately fly, fight and win into the future.”

A Tiger Team is a group of experts brought together and assigned to investigate and/or solve technical or systemic problems, and to deliver a specific product in a concentrated and consolidated timeframe. This Tiger Team is tasked with developing an Air Force Net Zero Strategic Plan that will leverage,

coordinate with and integrate efforts already underway throughout the Air Force. Critical to this effort is looking at the way the Air Force currently manages and works to reduce energy use, water use and waste generation, determining how to improve to reach a net zero status.



According to the memo, this does not constitute an unfunded mandate. Instead, it’s an effort to bring an element of synergy to existing programs. The Air Force already has robust programs in place to reduce energy, waste and water usage. The strategic plan is a way to look at how the components of the three separate areas have an effect

on one another and how they can be coordinated and improved to help reach the goal.

Specific requirements in the memo call for projects supporting the net zero goals to have a primary payback targeted within five years but no longer than a ten-year payback. The Tiger Team will recommend leveraging public-private partnerships and regional solutions wherever possible.

The Tiger Team has a deadline of Sept. 23, 2012 to deliver the draft strategic plan to Mr. Terry Yonkers, Assistant Secretary for Installations, Environment & Logistics, for consideration. The Office of Energy, Environment, Safety and Occupational Health and the Office of the Civil Engineer will co-chair the team.

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Tinker Project...

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help the Department of Defense meet the president’s goal. The Air Force has awarded 120 ESPCs since 1995.

The Air Force has reinvigorated the ESPC program in recent years. A proposed lighting ESPC at Lackland AFB, Texas, is under evaluation, and an ESPC that incorporates process energy savings in addition to facility energy savings is in the works at Hill AFB, Utah.

AFCESA is also working with Air Force communication experts on the first data center consolidation effort. “Data centers

can consume up to 200 times more electricity than standard office spaces,” said Les Martin, ESPC Program Manager at AFCESA. “This makes them a big target for energy conservation efforts that can reduce electricity consumption and save money. Efficiencies can be found with upgraded heating and cooling systems, information technology power systems, storage devices, and server consolidations.”

The Air Force last awarded an ESPC project in 2009 at Joint Base McGuire-Dix-Lakehurst, with a capital investment of \$48 million and annual energy savings of 37 percent. The project is nearly complete.



This is one of three central heat plants at Tinker AFB, Okla., scheduled to be decentralized. The plant produces steam which is piped throughout the base for heating and other processes. (U.S. Air Force photo/Mr. Bill Dalky)

New Energy Policies Set for Dover

*Airman 1st Class Samuel Taylor
436th Airlift Wing Public Affairs*

When President Obama visited Buckley Air Force Base, Colo., early this year, he praised the Department of Defense for “doing its part” in the effort to cut down on energy consumption throughout the world’s largest energy-consuming organization. He went on to say “the Air Force is on track to save \$500 million in fuel costs over the next five years because [it has] changed the way [it] operates.”

According to April Stewart, the base energy manager with the 436th Civil Engineer Squadron, Team Dover is making its own strides towards energy efficiency in a time when the future of the American fuel supply is unknown.

“It is up to each individual on base to help save energy so the funds can be used in ways that benefit them,” said Stewart.

This is part of the motivation behind the revamped energy policies expected to take effect in the coming months. Dover AFB’s demand is approximately 10 megawatts of electricity per year – the amount of energy required to power a small city; the goal is to reduce this number three percent per year. A significant portion of the upcoming changes revolves around temperature levels in facilities throughout the base. The proposed temperatures will be 79 degrees during the summer months and 67 degrees during the winter.

Furthermore, kitchen items such as toasters, refrigerators

and microwaves will be consolidated and kept solely in common areas. These new policies will be tested throughout June and July to assess their impact on the base.

“It is the small changes that can make a big difference,” said Stewart. “Things like cell-phone chargers left plugged in, computer monitors left on, and exterior lights left lit all draw continuous power. Sometimes saving energy is just as simple as pressing a button.”

In addition to small fixes, Dover AFB has also implemented large-scale solutions to energy consumption. A solar array is scheduled to be installed at Dormitory 430 to provide hot water within the facility. The fitness center uses a state-of-the-art humidity and heat governor, which is automated to adjust to ambient temperature outside, thereby reducing

energy consumption. And each machine, with the exception of treadmills, is man-powered to reduce energy usage.

More energy-reduction measures are scheduled for the future, ones Stewart believes will put Dover AFB on the forefront of efficient energy utilization in the Air Force.

“If we adhere to the Base Energy Policy, I see the goal being achieved to reduce our energy consumption each year and well into the future,” said Stewart. “All base personnel play a key role in helping the base reduce its energy consumption. If people think, ‘this isn’t my house,’ it won’t work. If everyone works together, we can do some great things moving forward.”



Ice storage tanks were installed at several locations on Dover Air Force Base. The tanks are part of a thermal energy storage system which will help reduce energy costs by \$300,000 a year. (U.S. Air Force photo/Brianne Zimny)



Spotlight on Success



91st MW makes 'NICE'

The 91st Missile Wing Missile Operations Building was featured during the National Innovations in Climate and Energy (NICE) efficiency event held at Minot State University on June 27, 2012 for its LEED Gold certification and sustainable energy innovative design. Maj. Andrew Dries, 91st Operations Support Squadron officer, represented the 91st MW during the event, and spoke of the building's energy-efficient qualities.

UP post-award review

AFCESA and AFRC/A7OI conducted a post-award review of the UP contract for the electrical system, July 26, 2012, at Grissom Air Reserve Base. The contract started in March 2008. The system owner, Miami Cass Rural Electric Membership Cooperative, has provided all support required. After the UP contract was awarded, the system owner modified its switching network to provide more secure power availability for the base. (Mr. Giniger, HQ AFCESA/CENU, DSN 523-6398)



The 91st Missile Wing Operations building is a LEED Gold certified structure and was recently featured at a National Innovations in Climate and Energy event. (U.S. Air Force photo/Senior Airman Desiree Esposito)

Draft meter policy at MAJCOMs

AFCESA provided a revised draft facility meter policy to MAJCOMs during the Energy PMR on July 23, 2012 for their review. The revision's objective is to better align our meter policy to

the Energy Policy Act and the Energy Independence and Security Act and to clarify meter program goals. (Mr. Walters, HQ AFCESA/CENE, DSN 523-6222)

Meeting with Federal Performance Contracting Coalition

AFCESA/CENI met with representatives from the FPCC on July 25, 2012. The coalition represents a group of Energy Service Companies that advocate for increased federal use of Energy Savings Performance Contracts. CENI outlined the Air Force ESPC execution procedures. The coalition discussed ways they could assist the Air Force with meeting goals. (Mr. Martin, HQ AFCESA/CENI, DSN 523-6475)

Energy Program Management Review July 23-27, 2012

AFCEC conducted an energy PMR at Tyndall AFB. Twelve MAJCOMs, AFCEE, AFRPA, and AFCESA energy staff participated. The group closed 13 Action Items. The workshop produced 22 new Action Items and five recommendations were forwarded to the Energy Program Group for a decision. (Ms. Doornik-Surber, HQ AFCEC/CENI, DSN 523-6546)



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