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Energy conservation projects announced, Air Force awarded most in DOD

By Kevin Elliott
AFCEC Public Affairs

The Office of the Secretary of Defense recently announced Energy Conservation Investment Program projects it will fund for fiscal 2016. The Air Force was awarded nearly half of them, more than any other Department of Defense agency.

Of the 33 energy conservation or production projects awarded, the Air Force garnered 15, capturing \$44 million of

the \$150 million available ECIP funds for the year. The Army was awarded seven projects, the Navy five and the Marine Corps two.

"We normally see funding in the \$35 million range," said John Byrnes, ECIP program manager at the Air Force Civil Engineer Center. "This is the best year the Air Force ECIP program has ever had, both in terms of number of

projects and total programmed cost."

Air Force projects selected include 12 energy conservation, two renewable energy production and one water

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A worker stands atop a wind turbine on Ascension Island, American Samoa. The site was awarded funding for additional wind projects in the fiscal 2016 ECIP budget. (U.S. Air Force photo/Lance Cheung/Released)

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- *Keesler utilities to be privatized*
- *Laughlin xeriscaping project enters phase II*
- *And more!*





Robins ESPC takes major step forward

By Kevin Elliott
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The Air Force Civil Engineer Center recently announced the accomplishment of a significant milestone in a sweeping energy savings performance contract, or ESPC, at Robins Air Force Base, Georgia.

An Air Force team of installation, major command and AFCEC subject matter experts has selected the private sector energy savings company, or ESCO, that provided the best preliminary assessment of the project and will move forward with the ESPC. Schneider Electric Buildings Americas, Inc. is now invited to conduct a detailed investment grade energy audit of base facilities; the next step in the ESPC process.

The scope of the ESPC includes optimizing or decentralizing a central steam heating plant, installing industrial control systems to coordinate all heating, ventilation and air conditioning systems, lighting and

hot water systems for each facility, creating a "net-zero energy" complex within the dormitory area and retro-commissioning up to 40 other facilities across the base. Schneider Electric can also propose other energy conservation measures they discover in the facilities included in the project scope during the investment grade audit. Because of this, the magnitude of this effort will likely grow.

As part of Air Force Materiel Command, Robins is a depot base, so the project is large and will have significant impact, especially considering heat plant decentralization," said Mike Ringenberg, AFCEC project manager for the ESPC. "This is really going to move the needle on energy savings for the Air Force."

Robins AFB is home to the Warner Robins Air Logistics Center, an industrial-scale complex of hangars and other facilities responsible for the repair, modification and overhaul of the F-15 Eagle, C-130 Hercules and C-5 Galaxy aircraft, and management

support for airframes to include the U-2 Dragon Lady and all Air Force helicopters. As such, Robins is one of the largest industrial centers in the state of Georgia, with an average annual utility bill of more than \$24 million. This massive need for energy made the ESPC an attractive option for accomplishing energy efficiencies to trim consumption, said Ringenberg.

Due to a constrained budget environment, the Air Force is utilizing third-party financing tools like ESPCs to accomplish energy-efficiency upgrades at its installations. Under the ESPC model, energy savings companies compete to finance, design,

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Robins Air Force Base, Georgia, is home to the Warner Robins Air Logistics Center. A new energy savings performance contract at the base will include assessing and upgrading up to 40 buildings on the installation. The effort is expected to save millions of British Thermal Units per year. (U.S. Air Force photo/Sue Sapp/Released)

Keesler AFB utilities to be privatized

By Kevin Elliott
AFCEC Public Affairs

The Air Force Civil Engineer Center and Defense Logistics Agency Energy recently issued a request for proposals for a comprehensive utilities privatization contract at Keesler Air Force Base, Mississippi. The project includes all four major utility systems on the base including electric, natural gas, water and wastewater distribution systems.

Defense Logistics Agency Energy, the contracting agent for the project, defines utilities privatization in the RFP as, "the transfer of ownership and responsibility for the operations, maintenance, repair, future upgrades and future utility systems replacements."

This total transfer, or conveyance, of utilities systems ownership to a third party is one of the main advantages of utilities privatization, said Rick Weston, AFCEC Utilities Privatization chief.

"The Air Force becomes a paying customer, which means all the maintenance and operation costs of the systems rest with the company."

Keesler Air Force Base, built for the Army Air Corps in 1941, covers 1,960 acres, with an additional 18 acres of easements for runway clearance and 45 acres for gas lines. The base has 1,028 family housing units and 322 non-housing facilities.

The UP project involves conveying more than 440 miles of electrical lines with 455 pad-mounted transformers, 51 miles of natural gas lines, part of which runs 10.45 miles from a utility-owned meter in Gulfport, Mississippi, to the base, and includes 287 regulators with 372 valves. There are also 69 miles of water piping with 402 hydrants, and 51 miles of wastewater piping with dozens of lift stations and nearly 1,000 manholes, as well as all the ancillary equipment and facilities associated with these systems.

The privatization will be a welcome relief

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AFCEC recently released a request for proposals for the privatization of all four major utility systems at Keesler AFB, Mississippi. The project includes the conveyance of Keesler's electric, natural gas, water and wastewater/sewer systems to a third party, that is then responsible for operation and maintenance, repair, future upgrades and future replacements of the systems. (U.S. Air Force photo/Released)



AIR FORCE UTILITIES PRIVATIZATION QUICK FACTS

UP is:

The total conveyance of Air Force utility systems to a third party, such as a municipal, private, regional, district or cooperative utility company.

1998

Defense Reform Initiative Directive 49 mandated all military departments develop plans to privatize utilities on military bases.

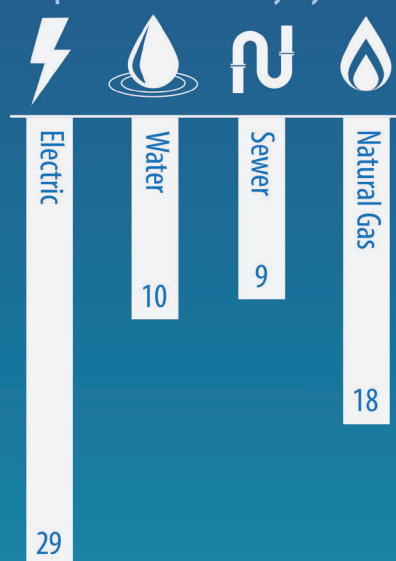
Current privatized systems value

\$3.6 BILLION

50 years

Average life of
a UP contract

66 privatized utility systems



Total cost avoidance
for the Air Force

\$511 MILLION

KEESLER cont.

for Keesler's base maintenance staff, said AFCEC deputy UP manager Tim Laferty.

"There are only three government employees responsible for maintaining the entire base construction and maintenance infrastructure. Having the operation and maintenance of all of Keesler's utility systems managed by a private company will relieve them to focus on other issues at the base."

Once proposals for the Keesler UP are submitted, DLAE will negotiate with offering companies and then final proposals will be submitted. After a review process, and if the project is deemed economically advantageous to the Air Force, it will be awarded. The Keesler UP is projected for an award decision in fiscal 2017.

The 1998 Defense Reform Initiative Directive 49 mandates all U.S. military installations privatize their utilities systems where feasible and economically viable. Since then, the Air Force has been in the process of privatizing most of the utility systems on its bases in the continental United States; over the last 16 years, 66 systems have been privatized, amounting to a \$3.6 billion value and a cost avoidance of \$511 million for the Air Force. Currently, all Air Force UP awards are anticipated to be complete by 2021.

ROBINS cont.

construct and manage energy projects, and maintain the systems long-term. ESCPs range from 10 years to a maximum of 25 years, with the Air Force paying the ESCO back over the term of the contract from cost savings garnered by the higher-efficiency equipment.

"This is an exciting project for the Schneider Electric team as we work to help Robins Air Force Base become a leader in energy efficiency," said Michael Reed of Schneider Electric's Energy and Sustainability Services. "This energy project will save millions of British Thermal Units while making improvements to the installation infrastructure and helping improve the local environment."

Once Schneider Electric completes the investment grade audit, the report will be submitted to the Air Force for review. After review and any necessary adjustments, the ESCO will submit a final proposal, followed by contract award and construction.

The Air Force is currently pursuing potential ESPC opportunities across its installations valued at approximately \$416 million by the end of 2016.

Laughlin uses desert to save water

By Kevin Elliott
AFCEC Public Affairs



The Air Force Civil Engineer Center recently announced completion of the first phase of a two-phase water conservation project at Laughlin Air Force Base, Texas, which is expected to save more than 61 million gallons of water per year and an estimated \$500,000 in annual utility and maintenance costs.

A large part of the project involved removing most of the base's landscaping, which included water-intensive plantings, irrigation and turf grass, and replacing it with native desert plant species, rock features and a centrally controlled drip line irrigation system.

The process of utilizing native, drought-tolerant plants and landscaping to reduce water consumption is called xeriscaping, and has been implemented at a number of other Air Force installations.

Laughlin is located in a semi-arid ecosystem, just outside Del Rio, Texas, near the Mexico border. Average annual rainfall in the area is 19.5 inches per year, making water resources limited and artificial irrigation a necessity for conventional

landscaping elements like Bermuda turf lawns.

Previous landscape design and irrigation practices on the base weren't tailored to the local climate. According to the ECIP form DD1391 submitted by the 47th Civil Engineer Squadron for the project, between 2003 and 2014, Laughlin was the highest water-consuming base in Air Education and Training Command, consuming an average of 216 million gallons of potable water each year. Most of that consumption came from conventional manual irrigation of 220 acres of base landscaping.

"The existing landscaping at Laughlin was water intensive and thus relatively costly in terms of resources," said Mark Dent, AFCEC project manager for the Laughlin xeriscaping effort, and a member of the AFCEC energy conservation investment program, or ECIP, team.

"It is not the most cost effective choice to grow large swaths of non-native grass and plants at a place like Laughlin," Dent said, "However, it is also important to

enhance the decorum and professionalism of a military base through the landscape. Xeriscaping is an effective way to create a water-efficient landscape that can be both beautiful and less costly to maintain."

The xeriscaping effort includes reducing the footprint of irrigated landscape from 220 acres to 68, utilizing a centrally controlled irrigation system with solar powered smart radio frequency technology and targeted drip emitters, replacing Bermuda grass lawns with water-efficient Buffalo grass, and installing native plants, grasses and gravel mulch on the remaining acreage. This multi-faceted plan is expected to reduce Laughlin's water consumption by approximately 50 percent.

The drip irrigation system is key to xeriscaping success, said Philip Heikkila, a member of the American Society of Landscape Architects and senior project manager and landscape architect at Environmental Quality Management, Inc., the company hired to install the xeriscaping system.

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ECIP cont.

conservation. They range across installations in six U.S. states including Alaska, as well as Ascension Auxiliary Airfield in the South Atlantic Ocean and Wake Island Airfield, American Samoa.

"Direct investment in energy and water conservation, and renewable energy projects through programs like ECIP, versus third-party financed investment, are the most effective way to achieve Air Force energy goals as well as true cost avoidance," said Ken Gleason, AFCEC Energy Program Development Division chief. "That's because when we invest directly, we avoid the added costs of financing our energy projects."

The average savings-to-investment ratio, or SIR, of selected Air Force projects is 2.0. ECIP projects are required by OSD to have a SIR of at least one to be considered. SIR is calculated by dividing the total discounted dollar savings of projects, including energy dollar savings and non-energy dollar savings, by the total investment cost. The higher the SIR, the more return on investment for the Air Force.

ECIP is a subset of the Department of Defense-wide military construction, or MILCON, program, which is designed to fund smaller-scale projects that generally run from \$750,000 to \$20 million each. The projects are designed to save energy or water, produce energy or generally reduce the DOD's energy costs. ECIP supports construction of new, high-efficiency energy systems and the improvement and modernization of existing ones. However, ECIP projects are not included in the Air Force integrated priority list, or IPL, because they are not mission critical, anti-terrorist force protection or environmental projects. Project selection is based purely on economics - whether or not it will save money for the Air Force.

The scoring model OSD uses for selecting viable projects was a large factor in the high percentage of Air Force projects awarded, Gleason said.

"We work hard to put forward the best projects we can," he said. "This year, ours competed well. It's a great result."

FYI...

To assist energy companies with determining where renewable energy projects are potentially most cost effective, the Air Force calculates general pricing figures, or blended rates, for electric purchases by region of the continental United States. The rates have recently been updated to reflect fiscal 2014 calculations.

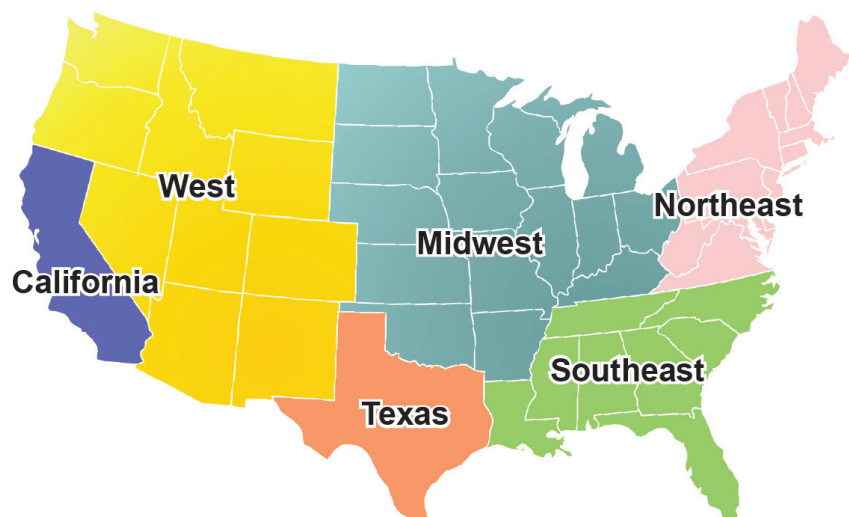
The table below shows, by region, the electric power rates and average annual electricity use per Air Force installation. For a printable version of this chart, with an explanation of blended rates, visit the AFCEC website at www.AFCEC.af.mil/energy, or click the button below.

Click here to download the chart 

CONUS Air Force Installation FY14 Electric Power Usage and Rates by Region*

Region	Low \$/kWh	High \$/kWh	Average \$/kWh	Average Annual Base Usage MWh
Northeast	0.0475	0.1456	0.0970	77,785
Southeast	0.0501	0.0889	0.0706	124,087
Midwest	0.0348	0.0980	0.0516	102,975
Texas	0.0576	0.0772	0.0728	174,752
West	0.0423	0.0837	0.0656	96,742
California	0.0659	0.1247	0.0750	72,559
CONUS	0.0348	0.1456	0.0678	109,075

*Excludes Air National Guard & Alaska installations



XERISCAPING cont.

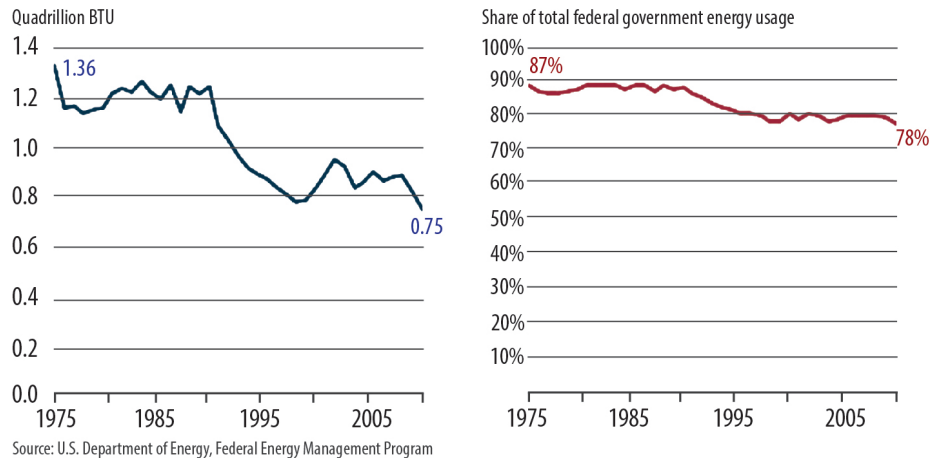
"Through a centralized drip irrigation system, we can control the amount of water going to each individual tree and shrub," Heikkila said. "This means low, but very efficient, water use. An hour of watering with drip irrigation amounts to less than a gallon of water per plant, and none of that wasted. Add to that we chose plants that naturally thrive in this dry climate and you have a much more sustainable and less expensive landscape."

The total cost of phase one was \$3.6 million. Construction began in late May 2014, employing up to 25 workers at time, and was completed in February 2015. Phase II of the xeriscaping project is slated for execution in fiscal 2015. Once both phases are complete, the project will have a 10-year payback period and a 15-year lifecycle.

The project was funded through ECIP, a direct investment funding program managed by AFCEC and dedicated to water and energy conservation projects on Air Force installations.

DOD energy use falls to lowest level since 1975

Energy used by the U.S. Department of Defense fell to 0.75 quadrillion British Thermal Units in fiscal 2013, the lowest recorded level since at least fiscal 1975, the earliest available data from the U.S. Department of Energy's Federal Energy Management Program. DOD accounts for most of the energy consumed by the federal government. The share of federal government energy use attributed to DOD fell from 87 percent in fiscal 1975 to 78 percent in fiscal 2013—the lowest share on record. To learn more, or to see the full report, click [here](#).

U.S. Defense Department energy usage, 1975-2013 fiscal years

It's that time again! The Department of Energy's Federal Energy Management Program has opened its 2015 FEMP award call for entries. The deadline for submissions is April 30.

FEMP is offering a one-hour informational meeting on March 19, 2015, that will provide an overview of the awards criteria and eligibility requirements, as well as give tips on how to prepare nomination narratives.

For submission criteria and more important information, click the button below.

Go to FEMP website

AFCEC in the news: Energy Directorate director interviewed on Federal News Radio

Jared Serbu, Federal News Radio reporter covering the Department of Defense, recently interviewed David Bek, director of the AFCEC Energy Directorate, for Serbu's "On DOD" radio show. Topics of discussion included the directorate's multiple business lines, including utility rates management, renewable energy, measurement and analysis including advanced metering, utilities privatization and energy savings performance contracts, as well as the directorate's major accomplishments thus far and priorities for the future under the Air Force Installation and Mission Support Center.

Serbu also wrote a companion article to the interview, titled "Air Force

modernizes its bases through utility privatization," describing AFCEC efforts to convey Air Force installation utility systems, where advantageous to the Air Force, to private utility companies.

To read the article, and listen to Mr. Serbu's full interview with Bek, click the button below.



Click here to read the article and listen to the interview!



Reach-Back Center
(888) 232-3721
DSN 523-6995
AFCEC.RBC@us.af.mil

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Please send your comments, story ideas and photos to afcec.pa@us.af.mil.



AFCEC Director Mr. Joe Sciabica

AFCEC Deputy Directors Dr. Marilyn Croach
Col. Anthony A. Higdon

Director of Energy Mr. David Bek

Public Affairs Mr. Mike Briggs

Editor Mr. Kevin Elliott

Graphic Designer Mr. Kevin Elliott