"Make energy a consideration in all we do"

ENERGY express

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Energy Exchange comes to Tampa

By Brian Garmon
AFCEC Public Affairs

TYNDALL AIR FORCE BASE, Fla. - The U.S. Department of Energy Federal Energy Management Program's third annual Energy Exchange conference is coming to Tampa, Florida, from Aug. 15-17.

According to the Energy Exchange website, "The Energy Exchange is an educational and networking forum for those seeking to expand their knowledge of building operations, energy security and management in the federal sector." The event also includes a trade show that features cutting-edge technologies and services to help agencies improve measurable outcomes and reduce costs.

The Air Force Civil Engineer Center's Energy Directorate and the Office of Energy Assurance will be well represented at this conference, with speakers presenting across multiple programming tracks on a number of topics.

"To provide the best travel experience for our Air Force participants, there will be an informal mixer from 3-5 p.m. (Aug. 14) to kick off the event and provide information on program agendas, local dining options, entertainment and planned after-hours gatherings," said Dan Gerdes, rates and renewables' division chief at AFCEC.

The Air Force has expanded the schedule to accommodate service-specific discussion the afternoon of Aug. 17

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Evening view of the Tampa Convention Center. The U.S. Department of Energy Federal Energy Management Program's annual Energy Exchange convention will take place in Tampa from Aug. 15-17, 2017. (Photo by Tampa Convention Center/Released)

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following the end of the Department of Defense session and Aug. 18 from 8 a.m. until 12:45 p.m.

"Thursday's theme will be senior official engagement and will include discussions on topics such as Cybersecurity and Energy Resilience. Friday will focus on base energy managers' interaction and training," said Gerdes. "This extra day-and-a-half is a perfect opportunity to engage with Air Force Energy's senior leaders, have energy managers network with their peers from installations around the world, and learn about new and innovative approaches and policies."

All Air Force participants attending Energy Exchange are asked to plan their trip to include these additional "Air Force days."

To register, visit the 2017 Energy Exchange Registration at http://www.2017energyexchange.com/registration/.

The cost for this event is $295 for government employees and $450 for government contractors or private industry.

AFCEC facilitating millions in energy savings worldwide

By Brian Garmon
AFCEC Public Affairs

TYNDALL AIR FORCE BASE, Fla. - A tool with potential to save millions of dollars in annual energy expenditures is within reach for Air Force bases worldwide.

Energy savings performance contracts, or ESPCs, are partnerships between federal agencies and energy service companies that provide energy savings and facility improvements with no up-front capital costs to the government. Since 2014, the Air Force has awarded four task orders and has 25 other projects in various stages of acquisition, all within the continental United States, or CONUS.

This year, the Air Force has taken ESPCs to the global stage. The Air Force Civil Engineer Center has seven projects currently in development in countries around the world, including Germany, Japan and Korea. These projects present opportunities that could result in massive energy savings for the bases, with annual estimates on current projects ranging between 20 and 50 percent.

ESPC projects make major improvements to the bases' energy infrastructure, and can include items such as: installing renewable or other high-efficiency sources of power, decentralizing utility infrastructure to increase efficiency, retrofitting existing exterior lighting with new high-efficiency fixtures and addressing climate issues in buildings identified by the base.

One overseas ESPC that AFCEC is currently developing is located at Spangdahlem Air Base, Germany. Upon completion, the Air Force estimates that it will save approximately $3 million per year in energy expenditures through a new combined heat and power plant, boiler plant improvements, lighting improvements, distributed generation and other equipment upgrades.

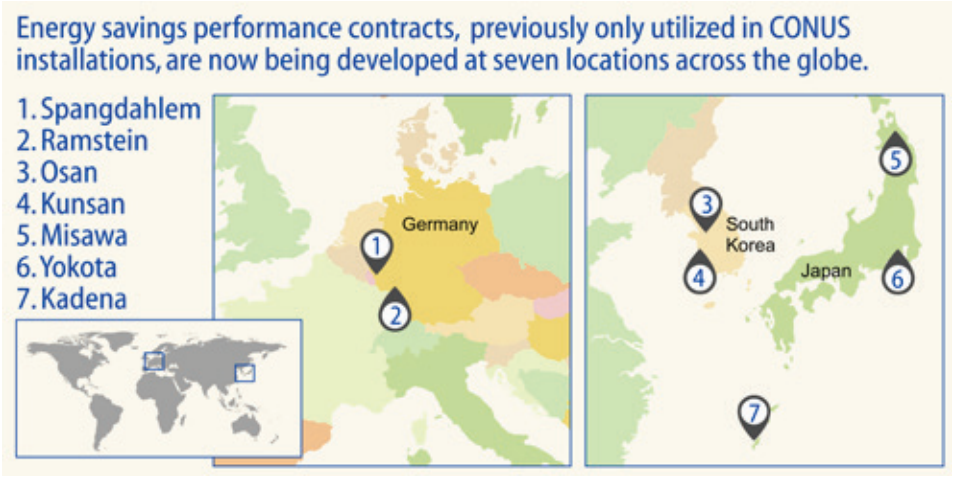
In some cases, the complexities of working on global projects present a unique set of challenges. As a partner in the ESPC process, AFCEC is able to work with local bases and host nations to provide assistance in navigating issues that may arise along the way.

"The biggest hurdle for Spangdahlem Air Base was understanding and working with host nation requirements for construction approval and German labor, said Morgan Hurst, AFCEC professional engineer. "No matter what challenge is presented in an ESPC project at an (overseas) Air Force base, AFCEC is committed to supporting the base in awarding an ESPC task order."

Success in developing these projects is directly linked to engagement by base energy managers and resource efficiency managers. These individuals not only help to identify the potential savings that can be accomplished before implementation, but also play a role in discovering issues that can play out as the contract process unfolds.

AFCEC is looking for base-level partners around the world who want to bring energy cost-savings to their corner of the globe.

"With a new simplified process that significantly reduces the upfront workload on the base energy manager, it's easy to get started. I look forward to the opportunity to educate installations on the ESPC process, and provide assistance with developing holistically approached projects that maximize energy savings," said Mike Ringenberg, program manager for AFCEC's Energy Program Development Division.



WAPA partners with Air Force to lower utility costs

By Nancy Coleal
AFCEC Utility Rate Management Team Chief

To many federal agencies, the Western Area Power Administration, commonly known as Western or WAPA, is synonymous with low-cost hydro power. It's true, for almost 40 years, Western has made good on its mission "to market and deliver reliable, renewable, cost-based hydroelectric power." But Western isn't just a hydro provider. In recent years, Western has actively partnered with the Air Force Civil Engineer Center's Utility Rate Management Team and its utility rate experts at Exeter Associates, helping individual bases meet a variety of energy goals. The following success stories highlight three of Western's "non-hydro" services and their benefits to the Air Force's bottom line.

Power Purchaser

Western has authority to purchase power and typically does so to supplement its hydro production during dry spells. Western can also use its power purchasing authority to help customers address broader energy goals. In 2016, for example, Western agreed to issue a Request for Proposal for all the power Ellsworth Air Force Base, South Dakota, needs in excess of its hydro allocation. The bids that came in were roughly half the price that Ellsworth had been paying Basin Electric Cooperative. Between issuing this RFP, and adopting a new method for allocating Ellsworth's hydro resource, Western has helped the base save an estimated $750,000 per year.

Resiliency Provider

Western allows customers to apply to interconnect directly with its transmission lines, in order to increase the reliability of an existing load. Beale AFB in California is in the midst of pursuing this possibility. Currently, Beale is served by a Pacific Gas and Electric-owned distribution line that runs along miles of wooden poles to the base. A Western-owned transmission line runs just west of Beale and the base believes Western's large metal structures would add resiliency in events such as a wildfire.

Facilitator

Western can be a strong ally in three-way contract discussions. According to Exeter's Christina Mudd, Western was a "heroic middleman" during 2009 discussions with Southern California Edison. SCE had concerns about a power displacement agreement, or PDA, that allowed Edwards AFB, California, to receive its Western hydro allocation and fulfill its federal renewable energy obligations through additional power and Renewable Energy Credit purchases, but conflicted with previously approved nodal pricing by the California Public Utilities Commission. As a full-load service utility provider for the Air Force, SCE is not obligated to accept scheduled deliveries of power from other providers to benefit its franchised retail customers, and AFCEC worried that SCE would simply refuse to sign a new PDA. Western participated in a series of meetings, helping to explain the opportunities and limitations of federal power marketing, and providing technical advice for working within the constraints of the California Independent System Operator marketplace. In the end, URMT and Exeter facilitated SCE, Western and Edwards, forging an entirely new PDA that helped the base save more than $3 million per year.

In the summer of 2015, Western helped Minot AFB, North Dakota, open up productive dialogues with the two co-ops that provide electric utility service to Minot's missile sites, Burke-Divide and Mountrail Williams. Historically, the base has assigned its hydropower to the co-ops for distribution to missile sites. However, when Exeter reviewed the missile site utility bills, the co-ops' charges were higher than expected. The average rate per kilowatt-hour was on par with the co-ops' highest rates for residential customers. Western played a key role in urging the co-ops to conduct cost-of-service studies that would illuminate the matter. While there are details that still remain to be ironed out, AFCEC anticipates Minot will have significant savings.

Both AFCEC and Exeter hope to continue broadening their partnership with Western in the coming years.

A construction worker prepares a power pole for removal at Beale Air Force Base, California, April 24, 2017. Beale is considering the possibility of interconnecting directly with Western transmission lines to increase reliability of their existing load. (U.S. Air Force photo by Airman 1st Class Douglas Lorance)

AFRL's Advanced Power Technology Office efficiently 'lifts' C-5 maintainers

Marisa Novobilski,
Air Force Research Laboratory

WRIGHT-PATTERSON AIR FORCE BASE, Ohio – Transforming the way the Air Force uses energy is a key focus of the Air Force Research Laboratory's Advanced Power Technology Office as it seeks to enable the use of alternative energy and energy efficient technologies.

A new, hybrid electric and battery-powered mobile dock system for aircraft depot maintenance is one way that the APTO team is refining capabilities for Air Force teams, developing a clean, efficient energy saving system in the process.

"Traditional lift platforms are either diesel or battery powered. The battery-powered lifts have limited range; the batteries are typically depleted over the course of a shift, and they have a lengthy recharge time. This system includes a direct methanol fuel cell for onboard battery charging," said Eric Griesenbrock, the APTO Installation Energy Working Group Lead. "It's an electric, battery-powered, mobile dock but it has a fuel cell that continuously charges the battery—it's like a 'Prius' for maintainers."

Lift platforms and hard stands play a key role in the maintenance of Air Force platforms, enabling maintainers to safely access panels and components of an aircraft during routine maintenance at a hangar.

Existing lift platforms are typically battery-powered, with a limited range and lengthy recharge time, or they are diesel-fueled, which is costly and limits its indoor operations with the hangar doors closed.

Hard stands—similar to scaffolding—require maintainers to construct and relocate as they move around an aircraft to complete maintenance duties. Setting up and moving the hard stands can add a week to the time it takes to get an aircraft ready to begin the maintenance process.

Taking cues from commercial industry giants such as Walmart, which uses fuel cell powered systems to operate indoors at distribution centers, the APTO team retrofitted commercial lift platforms with direct methanol fuel cells, aircraft maintenance platforms and safety devices and controls.

The Air Force Research Laboratory's Advanced Power Technology Office is in the process of testing a newly designed hybrid electric and battery powered mobile dock system for C-5 maintenance at Warner Robins Air Logistics Complex, Georgia. The new system integrates 'clean' technology and has the potential to save maintenance time while increasing operational readiness of Air Force platforms. (Air Force courtesy photo/released).

The result is a new mobile lift platform that is able to move and shift as maintainers move around an aircraft, eliminating the time required of traditional hard stands. Direct methanol fuel cells provide on-board battery charging, thereby enabling around-the-clock maintenance operations.

"This is a key enabler of systems sustainment," Griesenbrock said.

"Typical maintenance cycles for large aircraft can range from about 100 days up to a year in length for the C-5. Shaving off a day or week by improving equipment can save maintenance time and increase operational readiness for an aircraft."

Another benefit of the new mobile platform is the integration of 'clean' technology which enables maintenance teams to operate the system with hangar doors closed. The enclosed methanol fuel cells for onboard battery charging meet Occupational Safety and Health Administration air, noise, heat and vibration requirements for indoor operations—a direct benefit over diesel fuel operation. Methanol tanks can be refueled in a matter of minutes, similar to a gasoline tank, thereby enabling a quick refueling time.

The new platforms are currently augmenting existing lift platforms and hard stands as part of a six month demonstration to validate their efficiency and effectiveness at Warner Robins Air Logistics Complex, Georgia, where the 402d Aircraft Maintenance Group is testing the system at the C-5 maintenance hangar. The demonstration will conclude in July, and so far the APTO team has received positive feedback about the systems capabilities.

"We (APTO) were asked to help improve maintenance productivity for Air Force depots. This new mobile dock is an example of how the technologies APTO investigates have the potential to improve maintenance not only for the C-5, but across Air Force platforms," Griesenbrock said.

E|e *Profile*

Nate Hix

NRG FSRM Program Manager
Air Force Civil Engineer Center

Nate Hix is the new energy facilities, sustainment, and modernization, or NRG FSRM, Program Manager for the Program Development division of AFCEC's Energy directorate and joined the team in February 2017. His role will coordinate and validate energy savings projects with bases, posturing these requirements to compete for funding in the FSRM program and support missions at the base level.

Nate received his Bachelor of Science in Mechanical Engineering at the University of Maryland and Master of Engineering Management at Kansas State. He brings 11 years of experience to the role. Hix spent six years with the U.S. Army Corps of Engineers working at resident offices at Ft. Riley, Kansas, and Homestead Air Reserve Base, Florida, where he administered construction contracts. He was also deployed twice as a civilian to Afghanistan supporting the Operation Enduring Freedom and Resolute Support missions and served as a program manager for the base realignment and closure program management division under the AFCEC Installations Directorate at Joint Base San Antonio - Lackland, Texas.

What is the NRG FSRM program?

The FSRM program comprises energy savings projects resulting in at least 35 percent or in lifecycle savings by reducing energy or water consumption.

What motivated you to work for Air Force Energy?

I was motivated by the opportunity to work with active bases on their efforts to reduce energy consumption, and save the Air Force money that could then become available to support critical aspects of the civil engineer enterprise.

What is the most interesting part about your role?

I enjoy working with people that are interested in reducing energy consumption and saving our Air Force money, particularly with budget constraints that I am sure will be around for some years.

What kind of support can AFCEC energy's program development division offer to energy managers at the installations?

Our program development division, or CND, is able to offer support to bases by providing assistance, guidance and clarification on the many avenues that energy savings projects can take. The programs that we support include energy savings performance contracts, utility energy service contracts, FSRM projects and projects under the energy resilience and conservation investment program. We also provide ongoing support to our base-level contacts throughout the entire life of these projects.

What advice do you have for energy managers in the field who may be interested in pursuing an NRG FSRM project for their base?

I would recommend that they become familiar with the Energy Air Force Comprehensive Asset Management Plan, or AFCAMP, guidance and submit the requirements early on following the data call to provide FSRM requirements from AFCEC Planning and Integration Directorate.

AMC pursues fuel efficiency initiatives

Air Mobility Command Public Affairs

SCOTT AIR FORCE BASE, Ill. (AFNS) -

From electronic flight bags, or EFBs, to flight management system modifications, Air Mobility Command Airmen are contributing innovative and cost-saving ways to enhance the command's fuel efficiency.

According to Lt. Col. Vince Zabala, the AMC's fuel efficiency program manager, energy costs for the Air Force total nearly $8 billion, with about 86 percent of that cost spent on aviation fuel. Air Mobility Command consumes approximately 56 percent, more than all other major commands combined.

Since 2008, AMC's fuel efficiency division has reviewed over 80 possible methods of reducing fuel consumption and improving efficiency across the mobility Air Forces, including changes to policies, procedures, planning, maintenance practices, aircraft material changes and science and technology advances.

Recent examples include the KC-135 Engine Compressor Upgrade Program, which began in fiscal year 2013. The modification improves longevity and efficiency of the engines and saves fuel and sustainment costs. Additionally, the 618th Air Operations Center's Air Refueling Liaison Office developed a plan to avoid extra fuel costs of approximately $29.5 million by using tankers already airborne to fill refueling requests, rather than launching a sortie specifically to fill that request.

"Our mission is to evolve (mobility Air Forces) culture to empower a more efficient fuel usage mindset to enhance (rapid global mobility's) effective delivery of cargo, fuel and passengers to joint and coalition warfighters across the globe," Zabala said. "Progressing towards this goal, we have seen a significant evolution to being more mindful of the fuel we burn and how we can be more effective with the resources we have."

The command's headquarters staff isn't the only organization becoming more mindful about fuel efficiency.

The fuel efficiency group at MacDill Air Force Base, Florida, was created to help Airmen there concentrate their efforts and help the command achieve its fuel efficiency goals. The group is composed of maintainers, reservists, pilots, schedulers and boom operators.

"The group's mission is to focus the attention of everyone at MacDill on maintaining our currency and training, and to maintain our warfighting capability, but doing it efficiently as possible and safely," said David Nelson, the 6th Air Mobility Wing lead air operations specialist and fuel efficiency officer. "The team places emphasis on total force integration, and using the knowledge and skillset from each department. They identify an issue, examine options, discuss needs versus wants, and assess the feasibility of the option."

The group also discusses fuel efficiency efforts and initiatives during training days to ensure Airmen understand the importance of fuel efficiency and its impact on other aspects of the mission.

"Fuel efficiency is extremely

An F-22 Raptor receives fuel from a KC-135 Stratotanker assigned to the 340th Expeditionary Air Refueling Squadron during a mission in support of Operation Inherent Resolve, June 20, 2017. The KC-135 is one of the aircraft that have utilized engine upgrades and a new plan for refueling requests to enhance fuel efficiency. (U.S. Air Force photo by Staff Sgt. Michael Battles)

A KC-135 Stratotanker pilot performs pre-flight checks with 340th Expeditionary Aircraft Maintenance Unit. The KC-135 is one of the aircraft that have utilized engine upgrades and a new plan for refueling requests to enhance fuel efficiency. (U.S. Air Force photo by Tech Sgt. Micah Theurich)

important because a tremendous amount of our budget goes to fuel costs. A slight change can have a huge benefit, and even greater impact if instituted across the entire Air Force and AMC," Nelson said. "This is why when we created the Fuel Efficiency Working Group, we included everyone involved — from operations, maintenance and Reserve. Having (Total Force integration) involvement formulates ideas and solutions, not only for fuel efficiency, but man-hour efficiencies."

The group's efforts were recognized when the 6th AMW garnered the overall 2016 Mobility Air Forces Fuel Efficiency Award.

MacDill AFB isn't the only AMC unit to develop and implement innovative ways to improve fuel efficiency and mission effectiveness.

In March, the final KC-10 Extender equipped with the new communication, navigation, surveillance/air traffic management (CNS/ATM) system modifications was flown home to Travis AFB, California. The achievement, which marked the culmination of a six-year project, involved Airmen from Travis AFB and Joint Base McGuire-Dix-Lakehurst, New Jersey, working with industry partners to integrate and test the system.

Additionally, in January all AMC wings were approved to use electronic flight bags. In April as part of the EFB initiative, AMC aircrews were approved to use global positioning system/automatic dependent surveillance-broadcast (GPS/ADS-B) technology.

Both CNS/ATM and GPS/ADS-B enhances safety, situational awareness and fuel efficiency, while reducing costs and decreasing harmful effects on the environment. For example, the command's EFB initiative saves the command nearly $3.8 million per year.

C-17 aircrews at Dover AFB, Delaware, are currently evaluating an application that calculates the optimal altitude and airspeed to fly, based on atmospheric conditions. The Pilots Performance Advisory System application has the potential to improve fuel efficiency on many missions worldwide, and the results of their evaluation will assist AMC in determining whether to field the app for the entire fleet.

"The Air Force's vision of mission assurance through energy assurance is ultimately about innovative and conscientious Airmen working together to do everything they can day-in and day-out to improve effectiveness," Zabala said. "As the largest consumer of aviation fuel in the Department of Defense and the great number of missions the MAF executes worldwide, AMC and its Airmen have the greatest effect on more efficiently utilizing this precious resource. We are motivated about sharing the great work our Total Force Airmen have done to improve effectiveness through efficiency. We are always looking for better ways to efficiently accomplish the mobility mission."

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