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ENERGY express

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SMC hosts SecAF, other leaders on transformational innovation

by James Spellman, Jr.

Space and Missile Systems Center Public Affairs

Air Force Space Command's Space and Missile Systems Center hosted Secretary of the Air Force Deborah Lee James along with other high-ranking officials Aug. 12 to a demonstration of transformational innovation.

Through the use of plug-in electric vehicles, plug-in hybrid electric vehicles and vehicle-to-grid technology, collectively known as PEV-V2G,

Los Angeles Air Force Base, California, demonstrated how a military installation could reduce its energy costs and greenhouse gas emissions and increase energy diversity and security. The base is the first facility in the federal government to replace 100 percent of its non-tactical vehicle fleet with plug-in electric vehicles, making it the largest V2G demonstration in the world.

U.S. Representative Ted Lieu from

California's 33rd congressional district and Dr. Camron Gorgunpour, director of Transformational Innovation to the Assistant Secretary of the Air Force

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Secretary of the Air Force Deborah Lee James is briefed on the benefits of plug-in electric vehicles by Michael Gravely, research and development division chief of the California Energy Commission. (U.S. Air Force photo/Joseph Juarez/Released)

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- Energy conference connects Air Force and industry
- Energy Express Profile: Maj. Gen. Timothy Green
- and more!



Air Force leads DOD in 2015 energy awards during best year ever

by Kevin Elliott
AFCEC Public Affairs

The Department of Energy recently announced the winners of the 2015 Federal Energy Management Program awards with the Air Force leading the Department of Defense with its most wins ever.

Of the nine government agencies that won 32 total awards, the Air Force won 10 across three categories; the Army won six and the Navy three.

The Air Force Civil Engineer Center received nomination packages from around the Air Force in May, evaluated them and submitted the maximum-allowed 15 best nominations for consideration by FEMP.

And the winners are:

Career Exceptional Service Award

Timothy Pugh of Air Force Space Command at Peterson Air Force Base, Colorado, won for his 37-year Air Force engineering career, which includes 22 years supporting AFSPC energy initiatives at base and major command levels.

Program Awards

The Cheyenne Mountain Air Force Station, Colorado, energy team of Dino Bonaldo, Jason Cook, Jerry Milliman, Tyler Nielsen and Brian O'Leary formed and implemented the CMAFS Energy Management Strategy to reduce the station's fiscal 2014 energy consumption by 8.6 percent relative to fiscal 2013, and shrink its energy bill by \$51,000, or 3.4 percent.

Morgan Benson, Jonathan Dalsfoist, Richard I. Hiatt and Griffith Turpin of the 673rd Civil Engineering Squadron at Joint Base Elmendorf-Richardson, Alaska, focused on implementing projects and initiatives at the base to improve facility heating and lighting efficiencies, along with reducing associated energy

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Photo: Cape Cod Air Force Station, Massachusetts, home to the PAVE PAWS radar warning system, partnered with its local utility to conduct an energy assessment that garnered \$300,000 in energy efficiency projects. (U.S. Air Force photo/Released)

consumption. As a result, JBER garnered energy savings of more than \$2 million in fiscal 2014, and reduced base energy consumption and energy intensity by 42 percent and 64 percent respectively.

At Hill Air Force Base, Utah, the energy team of David Abbott, Karen G. Bastian, Mary Boyle, Anthony Hiatt and Brian Walsh partnered with local utility Rocky Mountain Power through the utility's Watt-Smart Business program to generate \$269,897 in incentives and bill credits for the base, and saved nearly 1.8 million kilowatt hours of power.

Stephen Mellin at Air Force Space Command's Cape Cod Air Force Station, Massachusetts, partnered with local utility-funded organization Cape Light Compact to conduct an energy assessment at the air station. From these assessments, \$300,000 in projects was identified, including lighting upgrades and the installation of variable frequency drives for electric motors. The Cape Light Compact funded this work at no additional cost to the Air Force. The projects deliver \$150,000 in annual energy savings. These efforts, combined with light emitting diode, or LED, lighting upgrades and the installation of two 450-ton chillers with plate and frame cooling systems reduced CCAFS's electricity usage by 21 percent, compared to the fiscal 2003 baseline.

In Nevada, the Reno Air National Guard Base energy team of Irving Gellman, James Lindsay, Glen Martel, James Speth and Brian Woodford established a base-wide energy awareness and action program that included reducing energy consumption during "no-heat, no-cool" weeks of the year, where artificial climate control is less necessary, as well as conducting regular walk-throughs of base facilities, looking for savings opportunities. The policies, strategies and processes implemented at Reno ANGB helped reduce the base's fiscal 2014 energy intensity by 5.5 percent compared to fiscal 2013 and 36

percent compared to the fiscal 2003 baseline. Water intensity was also reduced by 60 percent compared to the fiscal 2007 baseline.

Josh Jones at Seymour Johnson Air Force Base, North Carolina, implemented a robust energy awareness campaign that leveraged the Air Force's Energy Action Month efforts and focused on reducing energy usage in daily operations. This effort contributed to an energy intensity reduction of 54 percent since the fiscal 2003 baseline, as well as a 42-percent water intensity reduction compared to the 2007

Jack Quin implemented the Dynamic Burner Management Unit, a solid-state electronic boiler controller that optimizes the firing pattern of gas or oil boilers by monitoring their flow and return.

DBMU extends the period between natural firing sequences in the equipment without loss in overall heat performance; by reducing the number of firing sequences over a given period, the amount of oil or gas being consumed decreases.

DBMU was implemented in two buildings at Mildenhall with a total fuel oil savings of 2,954 gallons, or \$10,368, which amounts to a simple payback of 10.5 months for the innovation.

John Kiger and the energy team at Eglin Air Force Base, Florida, combined the base energy management control system with real-time pricing to save 181,003 million British Thermal Units of electricity and natural gas in 131 buildings, garnering a net savings of \$1.5 million for Eglin in fiscal 2014. The project has a simple payback of two years, and was used as a benchmark in the new Air Force Civil Engineer Center EMCS playbook.

Just outside the Chihuahuan desert of Del Rio, Texas, Tammie Harris and the energy staff at Laughlin Air Force Base xeriscaped base landscaping to incorporate native plant species and reduce the installation's irrigation requirements. By removing water-intensive turf grass and installing a centrally controlled smart irrigation sys-

tem, the project has already reduced the base's water costs by more than 30 percent against the fiscal 2007 baseline and nearly 18 percent compared to fiscal 2013. Total water consumption has been reduced 10 percent from the 2007 baseline.

DOE will hold an awards ceremony later this year in Washington D.C. To see the complete list of winners, go to <http://energy.gov/eere/femp/2015-federal-energy-and-water-management-award-winners>.

Air Force 2015 FEMP Awards



10
awards

6
major
commands

3
categories

baseline. Other projects at Seymour Johnson included installation of remote heating, ventilation and air conditioning control and monitoring systems, replacement of parking lot and walkway lights with LED fixtures and implementing new HVAC system controls to increase system lifecycles.

Project Awards

At Royal Air Force Mildenhall, England, Gary Hodson, Nicholas Lobar, Michael Odenweller, Steve Perry and



Air Force Secretary Deborah Lee James is escorted by Lt. Gen. Samuel Greaves, Space and Missile Systems Center commander, and Maj. Gen. Robert McMurry, Air Force program executive officer for space during a visit to Los Angeles Air Force Base in El Segundo, California Aug. 12. (U.S. Air Force photo/Joseph Juarez/Released)

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for Acquisitions, were welcomed by Lt. Gen. Samuel Greaves, SMC commander and Air Force program executive officer for space, Maj. Gen. Robert McMurry, SMC vice commander; Tom Fitzgerald, acting SMC executive director; Col. Donna Turner, 61st Air Base Group commander; Lt. Col. Todd Inouye, 61st Civil Engineer and Logistics Squadron commander; and Chief Master Sgt. Craig Hall SMC command chief; during the distinguished visit to the South Bay area.

"I am honored Secretary James made the trip out today. We had a productive visit and she was able to see the base's unique ability, located in the South Bay aerospace cluster, to carry out the mission of the Space and Missile Systems Center," said Lieu.

"I was also thrilled the secretary received a demonstration of the PEV fleet and the V2G program, the first-of-its-kind in the nation," he added. "Los Angeles takes immense pride that their local Air Force base is leading the charge in lowering carbon emissions while helping to stabilize the electric grid, and I commend the Air Force and SMC commander Lt. Gen. Samuel Greaves on moving forward with this innovative program."

The secretary's visit was highlighted

by a display of the latest generation of PEVs and PHEVs parked outside the Gordon Conference Center with representatives from the California Energy Commission and Southern California Edison in attendance. James examined some examples of electric vehicles in the courtyard of the Schriever Space Complex before taking a demonstration ride around SMC headquarters in a Phoenix Motorcars 100-percent electric shuttle van.

Although looking at briefing boards, static displays and even riding as a passenger in a PEV or PHEV is one thing, getting hands-on experience with one is an entirely different matter.

After touring the V2G fleet at their charging stations on Los Angeles AFB - the largest of four test sites including Joint Base Andrews, Maryland; Joint Base McGuire-Dix-Lakehurst, New Jersey; and Fort Hood, Texas - James got behind the wheel for a test drive of one of the energy efficient electric vehicles, joined by Turner and Inouye.

"The V2G system is comprised of PEVs, bi-directional charging stations, and software controls that enable an installation to compete in utility ancillary services markets," Inouye said. "Customized for each base, the On Base-Electric Vehicle Infrastructure

software provides the communication and controls needed for all aspects of V2G."

According to Inouye, the goal of the OB-EVI is to meet the base's vehicle fleet mission requirements as well as utility system operator's charge and discharge requirements, thereby maximizing ancillary services revenues and minimizing nonconformance penalties. Energy providers will pay for V2G services, with vehicle batteries providing an energy source to help stabilize the electrical grid.

Through its V2G services, a military base is able to reduce its energy costs and greenhouse gas emissions. Los Angeles AFB is undergoing a year-long seasonal study to measure actual cost savings to determine the feasibility of implementing V2G to other installations.

"The V2G technology allows our PEVs to provide more than 700 kilowatts of power - enough to power 140 typical American homes during peak demand on a hot summer afternoon," Turner explained.

"By sponsoring the V2G demonstration here, the DoD is gaining experience in determining how to make its installation electric distribution systems more resilient while potentially earning revenues that can reduce installation utility expenses," Turner added.

"I'm always impressed by the high caliber of our Airmen and SMC as the Air Force's center of acquisition excellence for acquiring and developing military space systems," James said. "I like getting out and seeing what they're doing with cutting-edge technology like PEV-V2G to help lower our energy costs and carbon emissions as a benefit to our nation's electrical needs. It is easy to forget how the global positioning system started out 20 years ago as a military technology through SMC and has greatly impacted the world at large today as a civilian utility."

James' tour was part of a two-day visit that included some California sites including Beale AFB in the northern part of the state, Northrop Grumman Space Park in Redondo Beach and SpaceX headquarters in Hawthorne.

Working Toward a

More Efficient Force

Air Force Director of Civil Engineers Maj. Gen. Timothy Green is leading the Air Force engineering enterprise through an historic time of change. He spoke recently with Energy Express about the challenges and opportunities that he sees for Air Force Energy.

What are your thoughts on the role of the energy program in the Air Force civil engineering enterprise?

Energy management is and will continue to be an important part of our business. There's more we can do to support the Air Force's facility energy goals for efficiency and renewable capacity while improving energy resiliency at our installations, but it takes the whole team working together to find these opportunities and implement them.

As we work towards the targets set by our energy goals and mandates, we need to be smart about how we achieve them. We need to explore the opportunities that make the most sense given our fiscal environment, provide the best return on investment, and support our ultimate goal: mission assurance through energy assurance.

Considering the consolidation of installation support efforts under the Air Force Installation and Mission Support Center, what is your primary message to base-level energy managers?

It is imperative that we stay on top of energy data collection and reporting. Installation energy managers must work together with AFIMSC and the Air Force Civil Engineer Center to get information to key decision makers. Although our energy program management process no longer flows through major command personnel, communication and the use of authoritative data is still essential for Air Force leaders to make good, informed decisions.

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At the base level, energy managers and, where authorized, resource efficiency managers should coordinate regularly with the larger base energy team. This team includes engineering and operations flight personnel, especially activity management plan managers, and facility managers across their installations. The team should work together to monitor energy usage, look for savings opportunities, and then make sure those opportunities are programmed so we can fund and implement them.

What are some of the challenges you see facing Air Force facility energy, and what is needed to overcome them?

Culturally, we are often challenged when seeking energy innovations. As with any very large enterprise, many of us want to maintain a business-as-usual approach to energy, whether as energy consumers, energy managers or Air Force policy makers. Strategically, as an Air Force, we must become more flexible in our "solution sets" and enlarging our energy project execution capacity. For example, we can look at ways to partner with the Army and Navy to leverage their lessons learned and increase project capacity, as we explore innovative agreements across the energy spectrum, from installing renewables to optimizing relationships with power providers.

Operationally, we must become very efficient at using those energy tools we choose to implement in-house, such as energy savings performance contracts. So while some focus on use of multiple tools, we also need a group focused on consistent delivery of our basic agreements—on time and on target, with excellence.

Tactically, we have to be much more proactive than we've been in the past about communicating across the entire Air Force energy team in order to overcome the organizational changes mentioned previously. The consolidation of facility energy management to AFIMSC and AFCEC from the MAJCOMs creates new lines of communication between headquarters and the installations. We need to make sure we don't have any barriers preventing us from working

together and that we leverage the use of technology to assist in data collection and reporting. Energy team members must take the initiative to reach out to one another even as the functions reside in new places and in many cases with new faces. An installation energy manager with an issue or question should be able to contact the appropriate person at AFIMSC or AFCEC directly and vice versa. We will also need to make sure potential span of control issues don't impede our ability to provide timely reporting to the secretary of the Air Force and the Office of the Secretary of Defense.

We also need to make sure we program our projects to make optimal use of the centralized funding we have for projects that will generate savings. The whole installation energy team needs to work together to get the opportunities they identify into the system. Not only does this mean developing stand-alone energy projects with strong paybacks to compete well in the integrated priority list process, it also means working at the programming and design stages to incorporate energy strategies into all of our facility sustainment, restoration and modernization and military construction projects.

What is the greatest current opportunity for the facilities energy program?

I believe there are substantial low-cost/no-cost energy conservation opportunities at our installations. We need to continue to raise awareness on our installations about actions everyone can take to conserve energy in their homes and in our facilities. On a recent trip to Joint Base San Antonio, Texas, the automatic air conditioning temperature set point in my lodging room was 68.5 degrees Fahrenheit, well below an appropriate set point. I believe there are many examples like this across our Air Force. Installation energy teams should be educating our base leadership on the importance of energy conservation and potential energy-saving opportunities. Every dollar saved due to gained energy efficiencies is a dollar that can be used for the Air Force mission.

We can also take greater advantage of existing funding programs.

The Department of Defense Energy Conservation Investment Program competitively allocates military construction dollars for direct investment in energy conservation or production projects. For fiscal 2016 the Air Force led the way with 15 of the 33 total ECIP projects awarded in the DOD, and I know we can do even better in fiscal 2017. ESPCs and utility energy services contracts are other great opportunities. An ESPC company agrees to finance, design, construct and maintain an energy system on an installation in exchange for a share of the savings the project generates. UESCs allow the Air Force to take advantage of energy management services offered by their serving utility companies, including energy- and water-efficiency improvements, renewable energy and demand reduction. We currently have ESPCs and UESCs in place at seven installations, while another 24 installations are pursuing them. Our goal is to have a total of \$510 million in ESPCs and UESCs in place by the end of 2016. Installation energy managers should contact the AFCEC Energy Directorate for guidance on ECIP, ESPC and UESC requirements and processes.

Anything else you would like to add?

Energy management is an important part of everyone's job in the Air Force, whether they recognize it or not. We achieve mission assurance through energy assurance, which makes it our communal responsibility to get this right. This will require us to think outside the box and look across our whole portfolio for energy saving opportunities. It will require us to establish strategic partnerships with our utility providers and private industry to help us find the most optimal solutions. We also need to remember that opportunities for improving energy resiliency exist through many channels and that generators can be a solution but they are not the only solution. Technology is rapidly evolving and by leveraging strategic partnerships we will better enable ourselves to find the best solutions to achieving clean, resilient and cheap (as compared to market price) energy through third-party financing and reduced Air Force capital investment.



From left, AFCEC energy engineers Dan Gerdes, Dick Fillman and Lucy Notestine interact with attendees at the Department of Energy's "Energy Exchange" conference in Phoenix Aug. 10. (U.S. Air Force photo/Kevin Elliott/Released)

Energy Exchange conference brings industry, AFCEC together

by Kevin Elliott
AFCEC Public Affairs

Representatives from the Air Force Civil Engineer Center met with federal and industry peers to exchange ideas and learn from each other August 10-14 to during the first federal energy conference since 2011.

In Phoenix, the "Energy Exchange" event's roughly 2,000 attendees were a mix of energy engineers and energy managers, attorneys, contracting specialists and other staff from across the federal government, including the Department of Defense, and private industry players from large energy service companies to startup hardware and software firms.

"It's been four years since the last conference, and it was sorely needed," said David Bek, AFCEC Energy Directorate chief. "One of the great advantages of a conference like this is the gathering of many different federal agency representatives who all have different perspectives but similar energy goals. Equally important, we get to dialogue with industry to get a

feel for what is working out there and what isn't. It's the kind of information that is hard to get without meeting face-to-face."

In addition to personal peer interaction, attendees were offered 90 different training modules including more than 130 speakers divided into 10 learning tracks, based on interest. Sixty-three of the modules were eligible as continuing education credits for engineers. Two AFCEC members, Energy Savings Performance Contract Program Manager Les Martin, and Drew Jernigan, Utility Law Field Support Center attorney, were also on roundtable discussion panels.

"The training allows us to hear from some of DOD's and the nation's experts in various fields to learn what makes a good deal and what doesn't," said Dan Gerdes, AFCEC Rates and Renewables chief. "We also have an opportunity to hear directly from policy makers themselves. It's a great chance to have those one-on-one discussions."

The Air Force energy program also hosted a vendor booth for the event that gave engineers, especially Air

Force base energy managers, face time with AFCEC program managers with whom they work, but have possibly never met in person.

"I think being able to put a face with a name really helps the energy managers feel more comfortable coming to us at AFCEC," said Lucy Notestine, AFCEC Project Manager. "For me, I get to hear their problems and concerns, and help them realize the benefits of what we ask them to do. It also allows us to move their issues up to leadership."

A significant amount of the event was dedicated to DOD-specific break-out sessions. The Air Force meetings included briefings and question-and-answer sessions from Assistant Secretary of the Air Force for Installations, Environment and Energy Miranda Ballantine, Deputy Assistant Secretary of the Air Force for Environment, Safety and Infrastructure Mark Correll, as well as Bek and AFCEC Measurement and Analysis Chief Dan Soto.

"This was truly an exchange," Bek said. "My message to everyone who wasn't here is you won't want to miss next year."

Energy conference 'Air Force Day' provides engineers face time with leadership

Air Force energy engineers and energy managers, attorneys, contracting specialists and other staff from across the Air Force had a valuable opportunity to meet with and ask questions of their secretariat-level leadership at the recent federal "Energy Exchange" conference in Phoenix, Arizona.

The last day of the five-day conference was dedicated to Department of Defense-specific breakout sessions. The Air Force meeting included briefings and question-and-answer sessions from Assistant Secretary of the Air Force for Installations, Environment and Energy Miranda Ballentine, Deputy Assistant Secretary of the Air Force for Environment, Safety and Infrastructure Mark Correll, as well as Air Force Civil Engineer Center Energy Directorate Chief David Bek and AFCEC Measurement and Analysis Division Chief Dan Soto. AFCEC Director Randy Brown and AFCEC Division Chiefs Dan Gerdes and Rick Weston were also in attendance.

"Forums like this are truly indispensable," Ballentine said. "Having members from the entire energy team – from Pentagon, major command, AFCEC and base level – together to talk through some of our sticky challenges and how to overcome them is invaluable."

One of the goals of Air Force Day was to connect those at the installation level directly with Pentagon policy makers in order to have a frank discussion of their issues and move toward solutions.

"We get to hear directly from folks without having to go through multiple chain of command layers," Ballentine said.

Assistant Secretary of the Air Force for Installations, Environment and Energy Miranda Ballentine speaks with a group of Air Force energy personnel at the recent Energy Exchange conference in Phoenix, Arizona. (U.S. Air Force photo/Kevin Elliott/Released)

Base- and AFCEC-level energy staff also received positive messages from leadership.

"The biggest benefit of attending Air Force day was hearing directly from our leaders not only that they support our initiatives, but that they will relook at policy and fight for what we need," said Capt. A.J. Zorn, AFCEC energy program manager and former base energy manager at Luke Air Force Base, Arizona. "As an energy manager, it's easy to feel helpless due to what feels like insurmountable obstacles. Knowing that we have bosses on the same page that have vowed to remove such obstacles gives you the confidence to challenge the status quo and take on challenges you may have shied away from

previously."

Air Force Day topics of discussion included energy's role in mission assurance, the AFCEC project pipeline, process and industrial energy and metering, data and reporting, among others. There was also a panel discussion of installation energy managers from across the Air Force to share success stories and best practices.

"We wanted to encourage our energy managers, listen to and learn from them, and maybe even bust some myths," Bek said. "We hope they go back to their staffs with the best information, along with insights from senior Pentagon leaders, and help us build a stronger, more robust and effective program."



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. Randy Brown

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

Director of Energy Mr. David Bek

Public Affairs Mr. Mark Kinkade

Editor Mr. Kevin Elliott

Graphic Designer Mr. Kevin Elliott