

"Make energy a consideration in all we do"

ENERGY | express

A product of the Air Force Civil Engineer Center

October 2016



U.S. Air Force

MISSION ASSURANCE THROUGH

**ENERGY
ASSURANCE**

Air Force urges Airmen to 'Protect the Power' this Energy Action Month

By Jess Dupree
AFCEC Public Affairs

The Air Force Civil Engineer Center is joining the Air Force and the rest of the federal government in a month-long observance of energy awareness this October.

Energy Action Month, hosted by the Department of Energy, is part of the Air Force's initiative to increase awareness of energy as a key component of the mission.

This year's theme of "Protect the Power" serves as a call to action for

members of the Air Force community to practice energy-efficient habits in their daily lives.

The Air Force spent about \$8.45 billion towards electricity and fuel to power the mission in fiscal 2015. The focus on demand reduction in previous years led to a cost avoidance of more than \$2.5 billion in the same fiscal year.

Air Force personnel can protect the power in a variety of ways, both at home and work. Even small changes by individual Airmen can have a large impact on protecting the power and

assuring that energy is available for mission or to conduct the mission.

"Here at the Air Force, energy's role in national security has always been at the top of our minds," said Secretary of the
continued on pg. 3

Solar panels collect sunlight at Davis-Monthan Air Force Base, Arizona. The Davis-Monthan solar array project, erected in 2014, has contributed to the Air Force's goal of increasing renewable energy consumption to 25 percent throughout the Air Force by 2025. (Air Force photo/Senior Airman Camilla Elizeu)

- In this issue:
- 133rd Air Wing wins community energy award
 - Meet AFCEC's energy director
 - JBER energy manager earns FEMP career award
 - ... and more!



Air National Guard's 133rd AW named Clean Energy Community Award finalist

By Tech. Sgt. Lynette Olivares
133rd Airlift Wing

St. Paul, Minn. -- The 2016 Minnesota State Fair, or the "Great Minnesota Get-Together," was an excellent venue to recognize the work by Minnesota cities, communities and organizations to further clean energy goals. The 133rd Airlift Wing was part of this special recognition as the Minnesota Department of Commerce announced the eight finalist for this year's Clean Energy Community Award.

The Clean Energy Community Awards acknowledge the work done by Minnesota communities to further the state's clean energy goals by implementing programs, policies and technologies that encourage energy efficiency, conservation and renewable energy generation.

Other finalists include the city of St. Cloud, the cities of Pelican Rapids and Fergus Falls, the city of Minneapolis, the city of Morris, the cities of Hutchinson, Leech Lake Band of Ojibwe and the Chisago County's Clean Energy Hub.

"This award is an apex of energy conservation efforts of everyone in the wing," said Capt. Fernando Nacionales, deputy base civil engineer and energy manager of the 133rd Civil Engineering Squadron. "We have come a long way in improving our energy efficiency, but we still have a ways to go with achieving energy resiliency."

The 133rd Airlift Wing has been a leader in practicing energy efficiency. Maximizing on education and leveraging large operations to realize greater efficiency are just a few things that have helped the unit lead the way in its energy efforts.

"The communities and organizations have played a big role in achieving these goals," said Bill Grant, deputy commissioner of



Left to right: Col. James Wentzlaff, Mission Support Group commander; Lt. Col. Mike Piontek, 133rd Civil Engineer commander; Bill Grant, deputy commissioner of energy and telecommunications for the Minnesota Department of Commerce; Brig. Gen. Sandy Best, chief of staff with the Minnesota Air National Guard, Joint Force Headquarters; and Capt. Fernando Nacionales, deputy base civil engineer and energy manager of the 133rd Civil Engineering Squadron pose for a picture after the official announcement of the finalist for the Clean Energy Community Award. (Air Force photo)

energy and telecommunications for the Minnesota Department of Commerce. "By implementing programs and policies that not only benefit their communities, they are benefiting the state as a whole."

Minnesota has a number of clean energy goals including: Minnesota Next Generation Energy Act, Renewable Electricity Standard, Solar Electricity Standard, Petroleum Replacement Goal and Biofuel and Biodiesel Content Mandates.

"Minnesota is increasingly being recognized as an emerging leader on clean energy," said Jothisna Harris,

public engagement manager at Climate Generation: A Will Steger Legacy and a member on the selection committee for the Clean Energy Community Awards Program. "Truly paving the way on this issue will take lasting dedication from decision makers, as well as from people on the ground who are seeing and feeling the impacts of climate change, and who care about protecting the space and the people that make Minnesota their home."

The final decision for the award winner will be announced this month.

EAM, continued from pg. 1

Air Force Deborah Lee James. "Energy is the backbone for every element of the fly, flight and win mission."

Friendly competitions between units at Air Force installations can show Airmen where they might be using more energy than they need. For example, Airmen who live in Dormitory 1346 at Osan Air Base, Republic of Korea, were able to save about \$52,000 in energy costs during a nine-month Energy Consumption Reduction Competition

hosted by the 51st Civil Engineer Squadron.

"Energy competitions between units can have a huge impact on energy awareness," said AFCEC Energy Director Robert Gill. "It forces Airmen to look at how much energy they use and the real costs to the Air Force."

To instill a culture of energy awareness, installations are encouraged to involve Air Force families in the discussion. Activity sheets and games are being provided to Air Force energy

managers to teach Air Force youth how they can protect the power.

"Reaching out to our youth is a key component to making energy awareness a part of Air Force culture," said AFCEC Energy Deputy Director Lt. Col. Brian George. "We want the next generation of Airmen to already have energy at the front of their minds."

For Energy Action Month materials, and for more information about the event, visit <http://www.safie.hq.af.mil/Programs/Energy/Action-Month>.

Need Energy Action Month materials?
Use the links below and visit the [SAF/IE Energy Action Month website](http://www.safie.hq.af.mil/Programs/Energy/Action-Month) for more, including youth and social media materials.

Home Energy Checklist

Dorms – Top Five Ways to Protect the Power

Office Energy Checklist

Office Top Five Ways to Protect the Power

Vehicle Usage Top Five Ways to Protect the Power

Protect the Power Energy Fitness Challenge

AIR FORCE CIVIL ENGINEERING

Energy Action Month Talking Points

October 2016

Director of Energy
Air Force Civil Engineer Center

Gill officially began as AFCEC's energy director July 2016. As the Air Force continues to shift focus to energy resiliency and assurance, Gill is excited to lead the AFCEC team in this new direction.

1. What did you learn in your previous positions that prepared you to lead at AFCEC?

What I've learned to do is to tap into each person's expertise, give them some direction to point the way, and then get out of their way.

I'd also like to make sure that direction is made clear to our Air Force energy personnel in the field. AFCEC would be nothing without the valuable work the energy managers, resource efficiency managers and others are doing at the installation level. To this end, having frequent and transparent communications with this team, and creating forums where they can hear what direction we are heading in, will create a cohesive environment where we can do good work for the Air Force.

Additionally, Congress and the Office of the Secretary of Defense are very interested in our energy program. They are going to have a say in what we do and we need to pay attention to that in order to tailor our efforts and products. The direction I'd like to point my team in right now is: we want to make sure we are responding to what Congress and OSD are saying they want Air Force energy to look like. I think the team of experts here at AFCEC will be able to take that direction and run with it.

2. What excited you most about your new position, and about Air Force energy?

The first thing that excites me is the team here. In my meetings with the personnel here, I quickly realized what a talented group we have. Each person brings a unique energy and expertise to the table.

The second thing is the times. We are very much at a

continued on pg. 5



Gill, continued from pg. 4

threshold for energy right now in the Air Force. There is a different focus for energy than we've had in the past. We are using it as a method to achieve mission assurance. It's an extraordinary opportunity for me, with where we are as an Air Force – and with the nation even – to leverage our energy as not just part of the support, but part of the power projection and part of the mission accomplishment.

3. What are your goals for AFCEC Energy?

I want to chart the path for mission assurance through energy assurance. There are a few components to that goal. One is to continue the valuable work that we've done to make the Air Force more energy efficient and cost efficient. Secondly, I'd like to integrate all of the AFCEC directorates' energy efforts into supporting mission assurance through energy assurance. For example, we can incorporate energy assurance concepts into new construction projects, or into our contingency environment, to give our deployed Airmen alternatives to fuel and generators to accomplish their missions.

4. What advice can you give to energy managers in the field who might be new to Air Force energy?

No one can really be brand new to energy, because energy touches all of us. We cannot do our jobs without reliable energy. If you find that someone believes they do not need to support energy assurance, use that as a teaching opportunity. Show them how his or her job is made possible by the energy provided to the installation, and what would happen if that energy were to disappear. In this way, and others, you can be an advocate for culture change in the next generation of Airmen.

I recognize in this day and age, man hours are at a premium and support at the base-level may not always be available. For those energy managers who have their plates full with potential and current projects, and for those collateral-duty energy managers who are completing valuable work elsewhere in civil engineering and operations, we are able and willing to offer support here at AFCEC. As I've already stated, the team here is staffed with experts who have diverse knowledge and experience in all aspects of energy. If you are experiencing a road block or other

problem, we have someone here who can help.

One obstacle you may encounter is lack of leadership buy-in. While this issue is beginning to disappear as energy crosses that threshold I spoke of earlier, it can still halt progress in an important energy project at your installation. Find past examples and case studies of similar installations implementing successful energy programs. Use your network of Air Force energy personnel, including us at AFCEC, to get the resources and information required. Publicize this information, what made them successful and how they benefited the installation and the Air Force, to your wing leadership.

5. Is there anything else you would like to add?

I'd like to express how grateful and excited I am for the opportunity to lead AFCEC's energy directorate. I will continue the good work my predecessors have shown before me, and continue to build on the new direction of Air Force energy.

The Air Force has always led the way in technology and innovation, and AFCEC's energy directorate will continue in that legacy.

Fueling the future: AF works to 'home-grow' biofuels for DOD, industry

By Marisa Novobilski
Air Force Research Laboratory

WRIGHT-PATTERSON AIR FORCE BASE, Ohio -- A need to address increases in petroleum costs with an environmentally friendly fuel source has led to a new way of looking at production — and the Defense Production Act Title III Program Office, part of the Air Force Research Laboratory, is playing a critical role in commercializing this technology.


In simplest terms, a biofuel is a fuel produced from living matter that includes plant waste and animal fat, rather than a fuel produced through the geological process, such

as coal, diesel and petroleum. Biofuels are environmentally friendly and form from renewable resources. Most of all, biofuels are helping to expand military energy sources, improving reliability while decreasing dependence on foreign fuel sources — benefits that President Barack Obama and the Defense Department stress are critical to national security.

"The military services were directed by the president to address the production of biofuels so we could mitigate the vulnerabilities faced when the price of fuel went up," said James Neely, a program manager in the DPA Title III Program Office. "When there is any disruption to the supply

continued on pg. 8

FEMP recognizes 45 years of service



Jonathan Dalsfoist, 673rd Civil Engineer Squadron mechanical engineer, sits in front of a tree outside his office building on Joint Base Elmendorf-Richardson, Alaska. Over the course of his 45-year career, Dalsfoist has saved the Air Force many times his salary in energysavings and has recently been selected for the 2016 Federal Energy Management Program's Exceptional Career Award. (Air Force photo/Senior Airman Kyle Johnson)

By Senior Airman Kyle Johnson
JBER Public Affairs

JOINT BASE ELMENDORF-RICHARDSON, Alaska -- 673rd Civil Engineer Squadron mechanical engineer Jonathan Dalsfoist has been selected by the Department of Energy for the 2016 Federal Energy Management Program Exceptional Career Award, having paid his own salary many times over in energy savings.

Dalsfoist began working for the U.S. Army Corps Of Engineers on Fort Richardson in 1979 before reaching the apex of that career, and joining the 21st Civil Engineer Squadron -- now the 673rd CES, Dalsfoist said.

Before coming to Fort Richardson, he established a reputation for efficiency

at an Air Force Station in Kodiak.

"In the 1970s we had an embargo on fuel, so management started looking at us and said, 'We need to save energy.' I said OK, we've got this much savings. They said, 'Great, we need some more!' I said OK, well I can change a few more things,' and went back to them. They said -- 'some more!' It got to the point where I had every other light in the hallway off, and they still wanted more. So I got [upset] and told them the only way to save any more from this facility was if they shut her down. They did. I lost my job."

In time, Dalsfoist proved their loss would be JBER's gain.

Though the exact amount of money Dalsfoist has saved the Air Force is so high it can only be estimated, one

thing is for sure: JBER would not be the same without him -- literally.

Over his 45-year career, he has either been solely responsible, or largely responsible, for establishing the base's current electrical and gas systems. That's not considering his influence in bringing the base into the digital age, hiring computer programmers in the 1990s to create algorithms for automatically heating the concrete outside hangar doors on the flightline.

Before Anchorage had become as established as it is now, Elmendorf Air Force base relied on a steam-electric power plant to supply power and heat to the base. It was originally built by where the 3rd Wing headquarters now stands, Dalsfoist said.

continued on pg. 7

Dalsfoist, continued from pg. 6

In the mid 1960s they moved the plant to Bluff Road, using high temperature steam to turn turbines, and a network of underground pipes that transported steam and condensate, used to heat buildings, residential homes and schools. By the 1980s, the heat distribution was beginning to fail. Enter Dalsfoist.

When the condensate pipe return system began to leak badly to the point that no condensate returned to the plant, Dalsfoist was charged with coming up with a solution.

"We were having failures," Dalsfoist said. "They were underground, so I couldn't see what was going on. Once a year, the Air Force Reserve F-4 Phantoms would train taking aerial photographs. I asked them if they could do infrared."

The pilots told him they could, and asked what they could do for him.

"At 6 o'clock in the morning, I want you to fly back and forth over here – and I showed them the map – and take photos of the ground," Dalsfoist said.

With the infrared images, Dalsfoist was able to tell which pipes were compromised by the amount of heat registered on the photos.

He began replacing the pipes, one section at a time, beginning with the most-compromised. That's not all he did though. Dalsfoist went one step further, by convincing the on-base housing manager to fund a portion of the repairs.

"I noticed it was mostly housing, so I talked to them and explained if they want their heat, they need to fund the repairs or risk loss of heating," Dalsfoist said. "They were more than happy to help."

Dalsfoist was bailing water on a sinking ship. Replacing the pipes wasn't a long-term fix; it was a necessary band-aid.

"I was replacing one to two miles of pipe a year," Dalsfoist said. "They asked me when I was going to get done."

With all the tact of a lifelong engineer, Dalsfoist said, "Never. I have 53 miles of lines, I can only fix two miles a year. How long before I fix that? 25 years? The useful life of the line I'm putting in is 15 years."

Luckily, Anchorage utility had grown to the point that they could provide reliable power to the base, and Dalsfoist, along with others, began the initiative of shutting down the doomed-to-fail steam-electric plant and purchase power from the city.

Now, there was no plant to maintain, less operating cost and labor with stable power and heat to the base – at no risk of blowing up old steam lines.

That was just the first 10 years of his career. Several years later, he pioneered a movement to stop using buried oil tanks as fuel on base, and instead switch to natural gas – which he bought from a local provider, Dalsfoist said. Again, his plans saved money on labor and maintenance – not to mention the environmental improvement on base, Dalsfoist said.

In the late 1980s and early 1990s, the digital age was descending on America like a storm, and Dalsfoist pulled JBER right in the middle of it, hiring programmers to set up energy management and control systems for the base heating and ventilation. The system included maps of the base's facilities down to the room level that would show where something was damaged and in need of repair.

Unfortunately, in 2012, Dalsfoist lost

the use of his legs as a side-effect of surgery to remove a tumor wrapped around his spinal cord. The tumor was benign, but when it was removed, a pressure bubble formed within the spinal cord.

When the doctors went in a second time to drain it, a nerve was injured, and just like that, Dalsfoist would spend the rest of his life in a wheelchair.

That hasn't slowed him down a bit though; he's still saving the Air Force money as a mechanical engineer, and leadership is doing everything they can to keep him from retiring.

"We are concerned Jon might retire on us," said Morgan Benson, 673rd CES energy manager. "I don't say that loosely with him, I'm not trying to push him out the door; really I'm trying to keep him inside the building. He's still a very valuable contributing member of our team. I'd like to keep him. So we wanted to do something that would recognize all the contributions he's done in the years past, so we nominated him."

For now, Dalsfoist will continue paying for his own salary, but after 45 years of employment, he could have retired twice by now, and may soon hang his hat. If he does, the shoes he leaves will be hard to fill.



Joint Base Elmendorf-Richardson, Alaska, uses a sophisticated energy management control system to monitor buildings and find potential energy savings throughout the installation. The system saves JBER about \$500,000 per year. (Air Force photo)

of petroleum-based fuels, the financial impact on DOD budgets is tremendous. A \$1 change in the price of a barrel can result in billions of dollars in expense."

The DPA Title III Program Office carries out presidential directives focused on advancing "home-grown" domestic production capabilities for leading edge technologies for national security. Through government and industry partnerships and financial incentives, the program plays a role in assuring domestic ability to produce.

"We have unique authorities through Title III, allowing us to enter into partnerships with commercial industry to put a manufacturing capability in place in response to a specific DOD need for technology," Neely said. "Biofuels are determined as essential to national security; we are working to move the technology into the domestic industrial base, with the end goal of a consistent supply at a competitive cost."

The biofuel program enables Neely and his team to work with a number of different companies to develop feedstock, acquire equipment and help firms develop a business strategy enabling them to sustain the production and distribution of biofuel for use not only by the DOD, but industry as well. Overall biofuel technology has been in development for years; the Title III office is working with industry to commercialize the technology so that it is a viable and affordable option for all, Neely said.

One recent success of the biofuel program is the Bio-Synthetic Paraffinic Kerosene, or BSPK, project. The project led to the retrofitting of an idle California-based refinery, making it possible to manufacture large-scale batches of biofuel for military and

industry use. This particular type of biofuel is manufactured using the hydro-processed esters and fatty acids, or HEFA, process. The process blends non-edible natural oils and agricultural wastes with hydrogen and a catalyst. The resulting fuel is able to blend with petroleum jet fuel in a 50-50 proportion, integrating into existing engine systems, including aircraft, without modification.

The Navy integrated BSPK biofuels into the launch of the Great Green Fleet in January 2016, deploying the first carrier strike group to use alternative fuel blends and energy efficient systems to power ships for combat. The Air Force has qualified biofuels for use in almost all of their equipment and weapons systems,

said Neely, and while they have purchased units for testing, fuller implementation depends strongly on cost and availability.

While biofuels have a strong benefit for the military, industry interest has helped drive these programs forward. For example, United Airlines has purchased biofuel for use in its fleet to power regular flights between Los Angeles and San Francisco.

"The benefit to the Air Force is that we will not be dependent on a single source of supply or international supply for our military fleets in the future. We are growing the domestic base, creating jobs and building industry capability. These home-grown capabilities are helping America stay great," Neely said.



An A-10C Thunderbolt II is refueled on the flightline at Moody Air Force Base, Georgia, in 2011. The Air Force Research Lab has been partnering with other industry experts to create a biofuel that would make the Air Force less reliant on petroleum-based fuels. One hundred percent of Air Force aircraft are currently certified to fly on alternative fuels. (Air Force photo/Airman 1st Class Joshua Green)



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

*Energy Express is a publication of the
Air Force Civil Engineer Center,
Detachment 1, Tyndall AFB, Florida.*

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



ENERGY | express

AFCEC Director Mr. Randy Brown

AFCEC Deputy Director Col. Charles Kelm

Director of Energy Mr. Robert Gill

Public Affairs Mr. Mark Kinkade

Editor Ms. Jess Dupree

Graphic Designer Ms. Jess Dupree