

Harvesting the wind at Cape Cod Air Force Station

*by Randy Pieper
21st Civil Engineer Squadron*

It's not just the leaves that are changing at Cape Cod Air Force Station. The Air Force station is also changing the way it gets electricity as two new giant wind turbines are being installed at the 6th Space Warning Squadron.

The new wind turbines can produce up to 3.2 megawatts of power combined. When the wind is blowing, as it often does near the coastal New England site, the turbines will produce more electricity than the station consumes. Through a net metering agreement with the local electric company, the 6th SWS will make money selling wind energy. With a little help from Mother Nature, the annual savings is estimated to be more than \$600,000 a year, recouping more than 50 percent of Cape Cod AFS's annual electric bill.

The installation of the wind turbines will let Cape Cod AFS contribute to the Air Force's goal of using 25 percent renewable energy by 2025, said Steve Mellin, 6th SWS support officer.

"Where we're stationed here on the Massachusetts seashore, there is extremely high potential to generate wind energy. We're in one of the better



The turbine's 120-foot long blades are assembled before being hoisted into place. The two turbines can together produce up to 3.2 megawatts of power putting the 21st Space Wing in line with the Air Force's goal of using 25 percent renewable energy by 2025. (U.S. Air Force photo)



The turbine's blade assembly is hoisted into place atop the 260-foot tall tower. (U.S. Air Force photo)

spots on the east coast to take advantage of the wind energy," he said.

Formerly known as the Massachusetts Military Reservation, Massachusetts Governor Deval Patrick renamed the MMR, Joint Base Cape Cod, in July. The JBCC includes the station, Otis Air National Guard base, a U.S. Coast Guard air station and Camp Edwards. The new turbines, bring the total to five at JBCC and will be used to power the Pave PAWs radar system operated by the 6th SWS.

The project was funded by the Department of Defense's Energy

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**Maxwell CEs Cut Energy Costs
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Tapping “innovative” Airmen for energy savings

by Capt. Natasha Waggoner
SAF Public Affairs

Air Force leaders continue to call upon Airmen to come up with innovative ideas to provide the Air Force an assured energy advantage in air, space and cyberspace.

In fiscal 2012, the Air Force spent \$9.2 billion on energy, almost 10 percent of the total budget. In a time of fiscal uncertainty, it is even more important everyone does their part in helping conserve resources, said Kathy Ferguson, Air Force Installations, Environment and Logistics assistant secretary.

“Energy is a key part of the effort to modernize our Air Force and do more with less,” Ferguson said. “Every gallon of fuel and watt of energy we save allows us to have more resources to meet other Air Force priorities.”

More efficient flight descent procedures, new ways of loading cargo, and vehicle idle time reduction are just a few of the ways Airmen can help the Air Force achieve its energy goals and maximize its energy advantage to support the mission.

Beginning in October, which is deemed Energy Action Month, and throughout the year, the Air Force will highlight the month's theme “I am Air Force Energy” with specific steps Airmen can take in their jobs to be more energy aware.



Hundreds of Airmen have gone above and beyond to help increase our energy security, Ferguson said. A few examples include **Energy Manager David Morin** who led an energy program at Laughlin

AFB, Texas, that collected and analyzed energy use data to increase energy efficiency. Morin also implemented xeriscopic landscaping wherever possible. Xeriscaping is growing native plants that not only save money on the water bill, but also save time because the plants don't need much care and are more heat and drought tolerant than the normal garden variety plants. Through these efforts, Morin helped reduce base energy consumption by 27 percent, water by 24 percent and save \$1.9 million.



U.S. Air Force Europe Energy Manager Kelly Jaramillo oversaw an energy program that included 46 projects that are estimated to save more than \$5.5 million a year. Jaramillo also implemented an energy awareness campaign that engaged residents in military family housing and helped them reduce energy consumption 25 percent and natural gas 17 percent.



The Seymour Johnson Air Force Base Support Center earned a Leadership in Energy and Environmental Design Gold rating by consolidating five functional organizations into a single facility, which cut energy consumption 60 percent and costs 50 percent. The building utilizes a high-efficiency variable refrigerant flow heating, ventilation and air conditioning system, centrally maintained temperature set points, and low-flow

plumbing. These features helped the base reduce potable water use by 50 percent and save \$55,000.



The Air Combat Command facility energy team at Langley AFB, Va., oversaw facility energy optimization at 16 installations, and helped reduce energy by 5.9 percent from 2011. The ACC team awarded 39 energy projects to save 447,471 MBTUs and \$5.4 million annually. In total, the programs implemented by ACC reduced energy consumption by 539,809 MBTUs and saved \$6.67 million annually.



The 22nd Operations Group Fuel Efficiency Office at McConnell AFB, Kan., designed and implemented measures to reduce and eliminate inefficiency in the fuel management of the KC-135 Stratotanker. Airmen reduced landing fuel, changed standard landing configuration, incorporated fuel efficiency software for more efficient flight planning and maximized simulator usage for training. These efforts saved the Air Force \$4.3 million even though sorties increased 42 percent.

“We need the continued commitment of every Airman and family member to help us continue to drive innovation and ensure we efficiently use every gallon of jet fuel, every watt of electricity and every drop of gasoline,” said Acting Secretary of the Air Force Eric Fanning. “During these challenging economic times, every dollar counts and your every action can count towards reducing and supporting mission effectiveness.”

Greening Tinker: Small changes lead to big savings

by Brandice J. O'Brien
Tinker Public Affairs

TINKER AIR FORCE BASE, Okla. -- Employees working in Bldg. 9001 have earned serious bragging rights.

From Oct. 1, 2012, to the end of August, they have reduced natural gas and electricity energy usage by 13 percent. They achieved that while accepting new workload, heavy-duty machinery and 300 employees.

Employees of Bldg. 9001 accomplished the feat by making small changes throughout the building that proved to be smarter and more efficient.

"That's a higher savings than we've seen in any other facility on base for the fiscal year," said Joseph Cecrle, Oklahoma City Air Logistics Complex energy manager. "It's a behavior thing. People are accepting responsibility and taking action. That's pretty cool."

Changes made were thoroughly planned to ensure there were no negative impacts to production.

76th Maintenance Support Group Energy Manager Dan Mitchell said a team reviewed the scheduling of various units so that lights could be turned off when employees are not present. Automatic light sensors were installed in bathrooms and break rooms. They identified breezeways that lose air and put corrective actions in place. Five standard garage doors were replaced with overhead rapid-action doors, which

close faster and prevent additional air from escaping the building.

"It's amazing how raising awareness gets a door shut around here," Mitchell said.

The team also turned the thermostats set point to 76 degrees, which enables the facility to remain comfortable while keeping condensation and humidity issues at bay.

They also changed the standard lighting to light-emitting diode, or LED, bulbs in several shops. The plan is to eventually change all of the building's lights to LED bulbs. Light-emitting diodes are said

to last 10 times longer than traditional fluorescents and use half the electricity.

Additionally, where feasible, machinery is turned off at night, on weekends and holidays.

"Autoclaves are huge energy hogs. You can actually see them on meters when they come on. They draw out 2,000 amps at 480 volts," said Mitchell. "We keep a real sharp eye on paint systems, autoclaves, aluminum heat-treat ovens and steel heat-treat ovens and try to monitor through metering, processes and schedules and chip away a little at a time. But, we don't impact production."



Jason Ford, 551st Commodities Maintenance Squadron aircraft mechanic, raises a KC-135 Stratotanker elevator skin panel to put in the autoclave for metal-to-metal bonding. Similar to an oven baking cookies, the autoclave cures composites under nitrogen pressure and electric heat. Autoclaves are energy hogs and to help keep costs down, workers monitor their usage but are careful not to impact production. (U.S. Air Force photo/Brandice J. O'Brien)

 **energyguiz**

*How many years has the
U.S. government observed Energy Action Month?*

Answer on the back page

Maxwell Civil Engineers use construction technology to cut energy costs

by Staff Sgt. Gregory Brook
42nd Air Base Wing Public Affairs

MAXWELL AIR FORCE BASE, Ala.

-- During a time when "government shutdown, furlough and recapitalization" are a part of the military landscape, Airmen are constantly looking for ways to save money for the service.

The 42nd Civil Engineer Squadron is doing more than just recycling and trading out incandescent light bulbs to save energy. These engineers are planning, sketching and studying how to leverage construction technology to save the Air Force millions over the next decade.

Everything the Air Force does, from launching aircraft to sending emails, costs money, and Airmen have an eye on reducing waste daily. This can mean identifying and eliminating unnecessary waste from missions or simply turning off computer screens and lights on the way out the door each day.

Designated by the Department of Defense, Energy Action Month, celebrated in October, focuses on informing the base populace about the need to conserve energy.

The initiative focuses on increasing renewable sources of energy and fostering a culture of conservation. Renewable energy increases base security by reducing reliance on outside systems vulnerable to attack and providing a backup power source in case of emergency.

Maxwell is using a program called utility energy service contracting to facilitate this process. It is a DOD and Air Force approved procurement vehicle that allows federal facilities to directly negotiate energy conservation implementation work with the utilities that serve the base.

"The base is starting direct negotiations with Alabama Power Company and Alabama Gas Corporation in an effort to

reduce bills and increase efficiency," said Larry Rowland, 42nd CES base energy manager. "The less energy the Air Force uses and the more service members save reduces costs and enhances the ability to accomplish the mission. Energy impacts our readiness and the money we can shave off our utility expenditures can go directly to combat readiness or training depending on the function of the base."

Every year, Maxwell spends approximately \$15 million on utility costs, including electricity, gas and water.

"The environment here provides challenges to energy conservation," Rowland said. "We are very reliant on air conditioning and heating, partly because Maxwell is an education base with lots of classrooms with 20-30 students in each daily."

According to civil engineer officials, Maxwell's single biggest expense is electricity for air conditioning; however there are other ways the base can save money on energy.

"Energy conservation is a broad concept," said Kristi Rollins, 42nd CES community planner. "Landscaping and buildings in general take energy and resources to maintain. We are looking at the buildings that we are designing to ensure they are oriented properly so they use less energy. In addition, we are using river water from the Alabama River to irrigate our golf courses, which saves the base \$125,000 per year."

Cities and bases across the country provide inspiration for innovative ways in which to save energy. Cities like Boston, the most energy-efficient city in the U.S. based on analysis by the American Council for an Energy-Efficient Economy, and Nellis Air Force Base, which generates 25 percent of its own power using solar panel fields. These cities and bases set the example by implementing energy-saving initiatives that can be



Cartoon by SSgt Austin May, 100 ARW/PA

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Maxwell cuts energy costs...

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repeated here and at other Air Force bases.

One of the major initiatives the team here is undertaking is using technology to help reduce energy consumption and eliminate waste.

Currently, Maxwell employs an energy management system that remotely monitors and controls heating and cooling in many of the larger buildings on base. The system, monitored by an operator, can tell if a room is getting too hot or cold while tracking how the building's heating and cooling systems are performing. When necessary, adjustments to temperature set-points and system schedules can be made that will meet the needs of the mission while conserving energy.

"In addition to energy management systems we are looking at lighting projects that will turn the lights off when no one is around and dim them to take advantage of natural light coming in from windows. We call it 'light harvesting,'" Rowland said.

Other initiatives base civil engineers are considering include occupancy based temperature setback systems in dormitories. The temperature setback system targets a specific room and adjusts the temperature to a specific range until the resident returns.

According to Rowland, the system comes directly from observing civilian industry, specifically hotels, and adapting it to military use.


"Like any other cost-control measure, you first have to eliminate waste," Rowland

said. "It can be as simple as turning off the lights. We all forget sometimes. When people start to forget enough, then you need to look into ways of controlling it."

Maxwell will host an energy expo Nov. 15 that will give people on base the opportunity to come and see examples of what technologies could be put to use in base facilities to conserve energy. The annual event is geared toward residential and commercial applications and vehicles.

"Energy conservation is everyone's job and it is to everyone's benefit on base," Rowland said.

Every Airman -- military, civilian and contractor -- is encouraged to take energy awareness training on the AFCEC Advanced Distance Learning System at <https://afcesa.csd.disa.mil>.



Q. How many years has the U.S. government observed Energy Action Month?

A. 22 years.

On September 13, 1991, President George Bush proclaimed October as Energy Awareness Month. President Obama changed the name to Energy Action Month in 2011.

Harvest the wind...

STORY CONTINUED FROM PAGE 1

Conservation Investment Program and is expected to pay for itself within 12 years, according to the Air Force Civil Engineer Center. In addition to saving money, the turbines will also reduce air pollution. Each turbine will reduce green house gas emissions by more than 1,000 metric tons of sulfur dioxide, nitrogen oxide and carbon dioxide annually according to AFCEC.

"Watching the installation of these huge structures has been an interesting experience," said Mellin. The tower arrived in three separate pieces, he said, ranging from 72- to 97-feet long. Each blade is 120-feet long and comes in on a specially designed trailer.

"When the base of each turbine was poured, a convoy of concrete (550 CYs) trucks rolled in to deliver 1,100 tons of concrete," said Mellin. "The crane used to assemble the turbines arrived on 21 flatbed trucks and had to be assembled onsite."

The project is expected to be complete by January 2014.



Check out these videos online!

Energy Action Month
<http://www.youtube.com/watch?v=QQNW1b5vyVQ>

Expeditionary Energy News
<http://www.youtube.com/watch?v=YtNkAl7FUwo&feature=c4-overview&list=UUWNNtRiCtYQ3cqZHYNhQ53Vg>



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