



Energy Efficiency at Whiting Field

Leveraging a Utility Energy Service Contract has helped Naval Air Station Whiting Field to significantly reduce its energy and water usage.

By Jason Poe, CEM, CEA, and Carter Somerset, P.E.

Naval Air Station Whiting Field, located north of Pensacola, Fla., is one of the U.S. Navy's primary pilot training bases. The installation provides training for the Navy, U.S. Marine Corps, U.S. Coast Guard, and U.S. Air Force student pilots, as well as pilots from allied nations. Once home to the famed Blue Angels Flight Demonstration Team and the Navy's first jet training unit, Whiting Field is now home to six training squadrons and two instructor squadrons. With facilities sprawling across 12,000-acres and two airfields, it accounts for nearly 1.5 million annual flight operations.

Commissioned in 1943, Whiting Field faced an aging infrastructure that it needed to update for long-term reliability. Inefficient mechanical equipment such as air handlers, chillers, pneumatic controls, and lighting had to be replaced.

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The base found its equipment was becoming less reliable and more maintenance-prone, resulting in building occupant discomfort, fluctuating humidity levels, and transformer stability issues.

In addition to energy resiliency that would ensure backup generation, officials were interested in meeting *Executive Order 13693*, which declared the base must reduce energy usage 25 percent by 2025 relative to

a 2015 baseline and curb water usage 36 percent by 2025 relative to a 2007 baseline.

Funding for a project of this magnitude could prove challenging. Whiting Field turned to a Utility Energy Service Contract (UESC) with its local electric utility Gulf Power Company and Siemens. This is the second UESC project that the air station has undertaken with the two organizations.

CONSERVATION MEASURES

A series of energy audits helped identify key energy conservation measures (ECMs) for the more than 60 buildings on base. Modifications to lighting included upgrading 10,000 interior light fixtures with "plug-and-play" tubular LEDs that would not require replacing all existing ballasts. To conserve water, Siemens installed low-flow water fixtures in 26 buildings. New, high-efficiency transformers will offer reliability and generate electrical savings to fund the replacements, rather than using the military's limited capital dollars.

Prior to the UESC, dial-up modems were still being used to communicate data within the base's Energy Management and Control System. Using ethernet extenders and the existing telephone system copper wiring, data communications were upgraded to provide "always on" communications without having to run expensive new fiber optic lines.

In addition to the other ECMs, Siemens identified a way to combine several of the base's single-building chilled water plants into one "virtual chiller plant." An older, existing chiller in one of the connected buildings was replaced with a high-efficiency chiller to support the virtual chiller plant, which, in turn, affects the efficiency of all the connected buildings and improves the reliability and redundancy of the whole system. A heat recovery chiller was also added.

ENERGY & COST SAVINGS

The new virtual chiller plant has achieved energy efficiencies as low as 0.33-kW/T. The original projection was to reduce energy costs by 34 percent, but already it has achieved a 43 percent reduction. The combined ECMs will generate nearly \$500,000 in annual utility savings. That translates into 17,000-MBTUs (the equivalent of energy from 350 houses) and 26-million-gal of water (equal to consumption of about 180 households).

Base personnel are noticing a difference in both better lighting and greater occupant comfort. Energy efficiency and water conservation measures have also been met with positive feedback.

In 2018, the project earned Whiting Field the Department of Energy's Federal Energy and Management Program Award and contributed to it winning the top award from the Secretary of the Navy for Energy Excellence for Small Shore Installations. When added to a previous UESC completed in 2013, the base is benefiting from a total of \$800,000 in annual utility cost savings.

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UTILIZING UESCs

A Utility Energy Service Contract is designed for federal agencies to enable them to coordinate with local utilities and make energy efficiency improvements that help reduce utility demand, increase resilience and sustainability, and meet government mandates, facility goals, and operations and maintenance objectives. The practice was authorized by the *Energy Policy Act of 1992*.

Agencies that replace or upgrade existing building systems through the contract vehicle can see significant energy and cost savings. Initial project costs are typically financed through a third party and repaid with the future utility savings.