



CASE STUDY

Naval Air Station Whiting Field

creating the perfect place
to achieve their mission

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Utility Energy Service Contract (UESC) improves reliability and comfort of facilities.

Just north of Pensacola, Florida, Naval Air Station (NAS) Whiting Field is one of the Navy's primary pilot training bases. The mission is "to produce the military's best-trained Aviation Warfighter," and it's where the future of Naval Aviation begins.



We want to continue to create an environment of energy awareness, to keep our buildings efficient and our base resilient. For us, energy resiliency means having backup generation for our mission-critical facilities.

The base provides training for the U.S. Navy, Marine Corps, Coast Guard, and Air Force student pilots, as well as pilots from allied nations. NAS Whiting Field once served as the home of the famed Blue Angels Flight Demonstration Team and was home to the Navy's first jet training unit.

Its facilities sprawl across 12,000 acres and two airfields, as well as 13 outlying fields that stretch from Florida to Alabama. NAS Whiting Field has operated for 75 years since its commissioning ceremonies were held on July 16, 1943. Home to six Training Squadrons and two Instructor Squadrons, NAS Whiting Field is the busiest air station in the world, accounting for approximately 1.5 million annual flight operations.

According to Installation Energy Manager Jason Poe, as a result of 2015 Executive Order 13693, NAS Whiting Field must reduce energy intensity 25% by 2025 relative to a 2015 baseline; they must also reduce water intensity 36% by 2025 relative to a 2007 baseline. "Beyond these mandates, we want to continue to create an environment of energy awareness, to keep our buildings efficient and our base resilient. For us, energy resiliency means having backup generation for our mission-critical facilities," explains Poe.

Effectively supporting this critical installation has meant finding new strategies for conserving energy and water, thus creating the perfect place to achieve their mission. However, funding for these types of projects can be challenging to find and obtain. As such, NAS Whiting Field has turned to the Utility Energy Service Contract (UESC) vehicle with Gulf Power Company, their local electric utility, and Siemens.

A UESC is specifically designed for federal agencies, enabling them to coordinate with local serving utilities to make energy efficiency improvements in their facilities that ultimately reduce utility demand. Initial project costs are typically financed through a third party and repaid with the future utility savings. Christopher Hood, Energy Services Supervisor for Gulf Power, says that his organization predominantly pursues UESC projects with Department of Defense (DoD) customers: "We support the missions of our DoD customers, and energy services is part of that support for our defense community at large."



Addressing an aging infrastructure for long-term reliability

NAS Whiting Field, as an older installation, had considerable mechanical infrastructure needs, including aging air handlers, chillers, pneumatic controls, and lighting. In addition, officials at the base were interested in other improvements to make operations more efficient, both operationally and from an energy standpoint. “An aging facility is less resilient,” notes Poe. “Your equipment is less reliable and more maintenance-prone. We were having a range of challenges as a result, from issues with occupant comfort and humidity to problems with our transformer infrastructure.”

Demand Flow® enables virtual chiller plant

In addition to the other ECMs, Siemens energy engineers uncovered an opportunity to combine several of the base’s single building chilled water plants into one “virtual chiller” plant. Demand Flow® chilled water

optimization solution targeted the most energy-intensive buildings that operate nearly 24/7 with the installation’s advanced aviation simulators.

An older, existing chiller in one of the connected buildings was replaced with a new, high-efficiency chiller to support the virtual plant, since it now has the ability to affect the efficiency of all of the connected buildings while also improving the reliability and redundancy of the whole system. The addition of a heat recovery chiller enabled even more energy savings for NAS Whiting Field. To date, the new virtual chiller plant, which uses Siemens Demand Flow, has achieved energy efficiencies as low as 0.33 kilowatts per ton (kW/ton), a key energy plant metric. Poe notes that the original projection for the virtual chiller plant project was to “reduce energy costs by 34%. To date, we have achieved a 43% reduction.”

Through a series of energy audits, the following key energy conservation measures (ECMs) were identified for the UESC:

LED lighting upgrades:	A “plug-and-play” tubular LED product that would enable the base to cost-effectively upgrade 10,000 interior light fixtures to LED without replacing all existing ballasts.
Electrical system improvements:	Under the UESC, NAS Whiting Field received new, high-efficiency transformers that will generate electrical savings to fund the replacements, rather than the military’s limited capital dollars.
Energy Management and Control System (EMCS) data communications system upgrades:	The EMCS at Whiting Field was still using dial-up modems at each building to communicate. Using Ethernet extenders and the existing copper wiring on the base, EMCS data communications were upgraded to provide “always on” communications without having to run expensive new fiber optic lines.
EMCS:	The implementation of new direct digital controls (DDC) is a major upgrade over the previous pneumatic controls throughout the base.
Water conservation:	Siemens installed low-flow water fixtures in 26 buildings.

These specific improvements were selected for their ability to deliver the best possible return on investment for NAS Whiting Field.

NAS Whiting Field projects recognized for energy excellence

The combination of projects under the UESC, including the virtual chiller plant, was recognized in 2018 by the Department of Energy as a Federal Energy and Management Program (FEMP) award winner. In addition, NAS Whiting Field earned the Secretary of the Navy's top Energy Award for Small Shore Installations. A flag symbolizing this award will wave proudly at the base for the remainder of this year. *"As a whole, we are on target to achieve all of our anticipated energy reductions, and have saved \$600,000 on the entire project. That's really incredible," says NAS Whiting Field Installation Energy Manager Jason Poe.*



NAS Whiting Field to achieve a total of \$800,000 in annual energy savings through Siemens' facility improvements

The combination of ECMs under the current UESC will generate nearly \$500,000 in utility savings every year, which translates into saving 17,000 MBTUs annually (approximately the equivalent of energy from 350 houses) and 26 million gallons of water (consumption of about 180 households). These improvements result in a 19.95% reduction in energy intensity at a time when NAS Whiting Field was already ahead of schedule to reach the 2025 goals established by the Secretary of the Navy.

When added to a previous UESC project Gulf Power and Siemens completed at NAS Whiting Field, the base is benefitting from approximately \$800,000 in annual utility cost savings. "Working with Gulf Power and Siemens through a UESC is attractive because it means we at NAS Whiting Field are not required to spend those appropriated funds. Instead,

we can funnel them to the war fight and other strategic priorities," explains Poe.

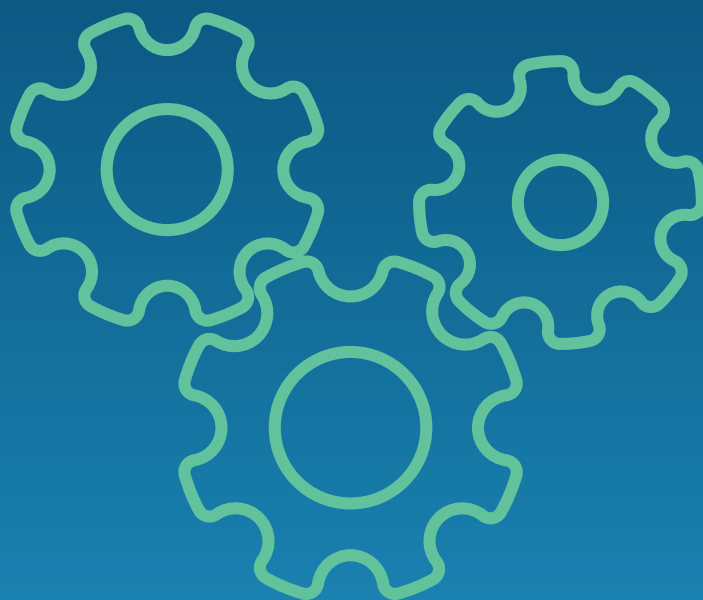
"We recommend that agencies look for places where technologies are evolving. Those are places where existing building systems can be replaced or upgraded through a UESC like the one at NAS Whiting Field," says Hood. "Siemens in particular is committed to growing and evolving with technologies, and that is part of what makes them a good partner on these projects."

Just as important as the cost savings, however, are the improvements to the reliability and comfort of the NAS Whiting Field facilities. By reducing the distractions that inevitably arise when people are uncomfortable or lack adequate lighting, Siemens is creating the perfect place for NAS Whiting Field to achieve their mission and produce the military's best-trained pilots.



The partnership between us, Gulf Power, and Siemens has been phenomenal. Siemens has provided a lot of support and has gone out of their way to accommodate our needs. The project was completed on schedule and with minimal disruption to our facility or operations, even though we worked through 60 buildings.”

NAS Whiting Field Installation Energy Manager Jason Poe



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