

First Regional Super ESPC A Success on Kodiak Island, Alaska

Project saves Coast Guard energy and money and paves the way for future ESPC projects



ESPC Case Study

Overview

By taking a leadership role in a pilot program to streamline Federal financing and procurement for energy saving projects, the Coast Guard is saving more than \$220,000 a year in energy costs at their Kodiak Island, Alaska, facility.

The project was the first under the regional Super Energy Saving Performance Contract (ESPC) program, run by the U.S. Department of Energy's Federal Energy Management Program (FEMP). Coast Guard staff completed \$1.1 million of work, without needing congressional appropriations, by contracting with ERI Services, Inc.—one of FEMP's approved energy services contractors in the Western Region.

Working together, ERI and the Coast Guard determined areas of potential energy savings and designed a retrofit to upgrade inefficient equipment and infrastructure. Due to the success of the first delivery order, a second delivery order has been signed and additional work is being considered. Tasks underway or being considered include:

- Upgrading boiler controls, feedwater motors, pumps, and fueling system at the steam plant
- Upgrading lighting and controls
- Upgrading heating, ventilation, and air conditioning (HVAC) systems and controls
- Replacing residential boilers and electric water heaters
- Replacing double doors in housing units
- Repairing and replacing existing steam distribution systems and adding additional steam piping
- Replacing old, maintenance-intensive steam traps with Venturi traps.

ERI paid for the retrofit and will be repaid over the life of the project with yearly energy savings. At the end of ERI's contract, yearly savings will go to the Coast Guard.

Background

The Coast Guard military base on Kodiak Island, Alaska, is the largest Coast Guard base in the world. The base consists of more than 400 buildings, including three large aircraft hangars, a communication command center, a medical clinic, several

ships, and almost 600 units of housing. The island is in an isolated area 250 miles south of Anchorage, and electricity to run the station is expensive—utility costs average 187% higher than the rest of the nation. In 1995, total energy costs at the base were \$6.4 million.

Executive Order 13123 directs Federal agencies to reduce energy consumption by 35% from 1985 levels by the year 2010. Staff at Kodiak knew that their facility would not reach the goal if they waited for funds to become available through traditional avenues.



When energy-efficient modifications are complete, the base will be 30% more cost effective (above). The first delivery order included upgrades to the steam plant and boilers (right).



Coast Guard staff engineer John Governale said that being the first agency to participate in the DOE/FEMP Super ESPC program required foresight and tenacity, but was worth the effort. "No congressional funding is necessary, which usually takes 3–5 years," he said. "We can do the work in 2–3 years without having to hunt down capital and with absolutely minimal risk to the government."

Project Summary

During the assessment of the base, ERI and the project team determined that steam plant modifications, computer controls for the HVAC system, and a

Jerry Reilley, ERI Services, Inc./PIX08439

Jerry Reilley, ERI Services, Inc./PIX08445

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lighting retrofit would most reduce energy costs and increase efficiency.

The first delivery order added boiler controls for fuel systems, new computer controls, an oxygen trim, and a system to preheat the makeup water before it reaches the boiler. These changes increased steam plant efficiency from 83% to 89%. In addition, computer controls for the HVAC system in the medical clinic and a lighting retrofit in nine of the industrial buildings have been completed. Total savings from the first delivery order, which was signed in June 1998 and completed in October 1998, is \$222,400 a year.

Signed in June 1999, the second delivery order allows for upgrades in lighting and storm doors throughout the base. Brown said that these two projects will save an additional estimated \$500,000 a year.

Benefits of Using the Super ESPC Program

Using the Super ESPC program, the Coast Guard was able to quickly contract with an experienced contractor with specific energy savings expertise. In a remote area such as Kodiak Island, said Senior Project Developer Scott Silver of ERI, it's sometimes hard to find qualified contractors to do the work. "Contractors just don't go there—who does marketing calls in remote Alaska?" he said. "It would have been difficult for Kodiak to get a qualified ESCO who can identify, design, build, and verify energy conservation improvements."

In addition, Coast Guard leadership at Kodiak Island helped pave the way for additional Super ESPC projects at other agencies.

"For these projects to be successful, the agency needs to be committed at the site and national level and the Coast Guard was," said Brad Gustafson, FEMP's utility services program manager. "Coast Guard headquarters and regional and site support were a good group; they saw it as a means to get things done and made it happen."

The team used FEMP services that provide technical and advisory assistance to agencies during the ESPC process from resources within the Department of Energy, its laboratories, and private-sector contractors.

Lessons Learned

As the first agency using the Super ESPC process, Mike Brown, chief of engineering design at the Kodiak facility, said that one challenge was keeping the delivery orders a manageable size and being

Cost Savings Per Year Delivery Orders 1 & 2				
	Consumption/ year	Btus/year	Dollars/ year*	Simple Payback
Steam Plant				
Boiler controls	148,000 gal JPS	17,702,145,000	129,300	3.3 years
Feedwater motors/pumps	100,740 kWh	283,686,330	12,470	2.4 years
Lighting upgrades	2,316,600 kWh	7,812,000,000	296,212	5.2 years
Door replacement	36,420 gal DF-2	5,044,000,000	43,536	9.8 years
Fuel tank/pipeline modifications	159,473 gal JP-5	19,909,000,000	273,141	5.6 years
Health Facility	25,211 kWh	612,570,354	22,700	3.9 years
Modifications	3,900 gal JP-5			
Administration Building	32,013 kWh	109,292,382	4,482	4.0 years
Modifications				
Total Savings			777,359	

*O&M cost savings/year included

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steadfast while all the personnel involved learned about the new process. "If you take too big a bite on these projects, people get nervous," he said. "ESPC allows you to commit money ahead of time, unlike the usual government process."

Looking Ahead

A third delivery order is in progress. Under this order, the team would retrofit the remainder of the industrial buildings with energy-efficient lighting and modify boilers in residential buildings from electric hot water to fuel-generated hot water systems, among other projects. When all work is completed, Brown said the base will be 30% more cost effective.

For More Information

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