



Data Center Cooling

Air-Side Economizer Savings

Cooling the Data Center

Located in central Washington state, Wenatchee is known for its apples, wide-open spaces, and its abundance of activities for outdoor recreation. The area is also well suited for locating mission critical data centers. The vast open landscapes, mild dry climate, and low power rate from hydropower attract many high-tech firms needing to locate off-site data centers. The mild climate allows for “free cooling” by utilizing air-side economizers to cool the data center with outside air instead of mechanical cooling for much of the year. However, this “free cooling” only works when data center sequences and safeguards allow the equipment to utilize it.

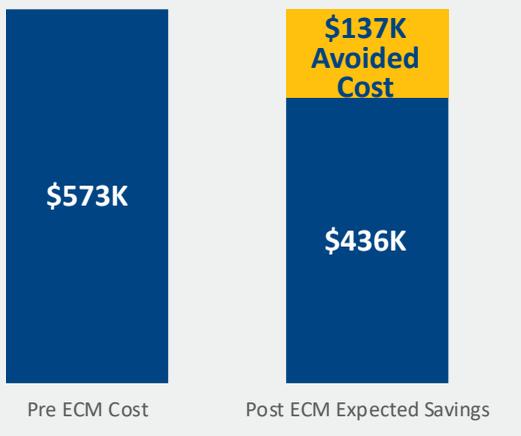
Facility staff at an international communication company’s Wenatchee data center realized they were not taking advantage of “free cooling” strategies once they began reviewing data from the ATS facilityCARE ongoing commissioning and advanced analytics service.

ATS installed the control system at the data center in 2008 utilizing the sequences specified during construction. The original sequences focused on loading the plant and letting it run, which resulted in chillers operating more hours than needed. In addition, over time, system modifications and one-off changes created conflicting overrides of the economizers. As a result, the economizers were not open during times with optimal “free cooling” conditions. The facility was not fully utilizing outside air for cooling, resulting in increased utility cost and unneeded equipment runtime.

Baseline Comparison Results

	24% year-over-year reduction in total house & mechanical consumption
	\$137,000 in avoided cost
	5.2 million kWh avoided

Avoided Utility Cost



Free Cooling Enabled

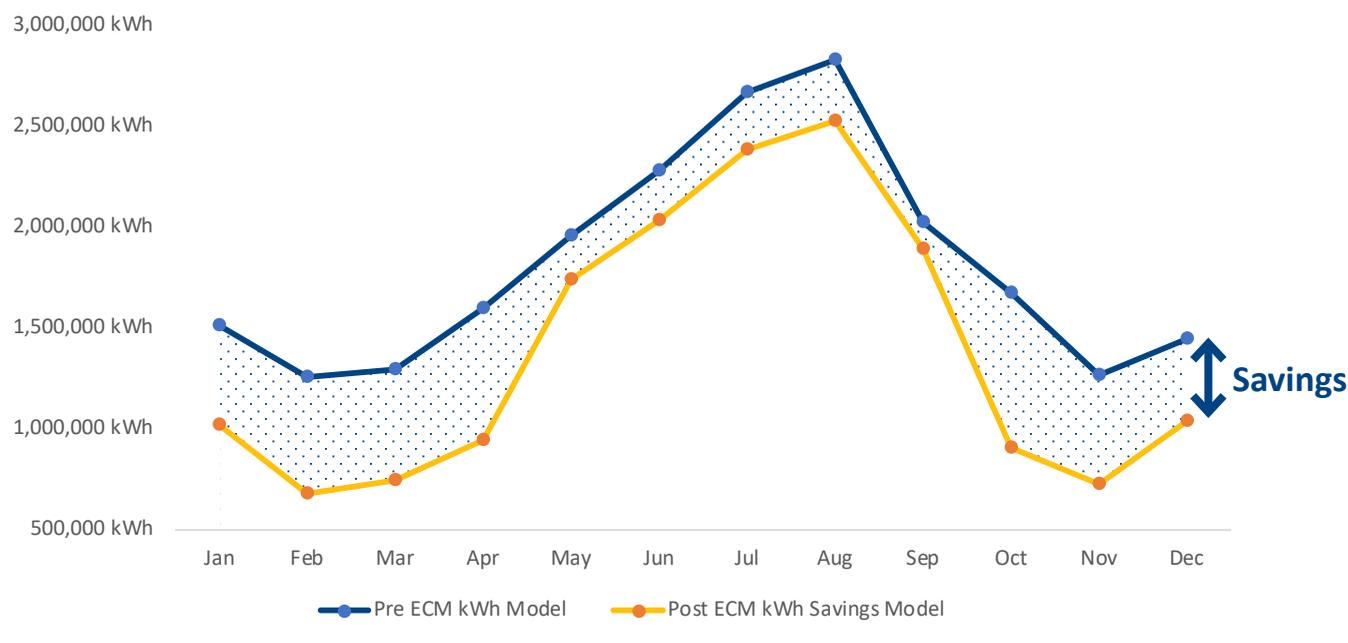
In 2015 ATS implemented facilityCARE, an ongoing commissioning and advanced analytics service to track equipment usage and highlight opportunities for operational improvement at the data center. SkySpark (www.skyfoundry.com) is used in the ongoing ATS facilityCARE service that includes monthly reviews and analysis by ATS engineers. As part of a facilityCARE review, ATS verified what facility operators had long suspected — the economizers were not functioning optimally. Using historical site data, ATS developed an estimate of savings based on the requirement that the facility use outside air for cooling when available. With data to back up the proposed changes, ATS was contracted to implement an energy conservation measure (ECM) to modify the

economizer sequences so they function when outside air conditions are optimal for cooling. Without the facilityCARE service, this issue may have gone unaddressed since the plant appeared to be operating smoothly, experiencing no temperature issues and the facility engineers were focused on more immediate concerns.

Result

ATS implemented the updated economizer sequences in the fall of 2017. Now that the sequences are in place the data center has seen impressive savings over the first two months of operation. Over December 2017 and January 2018, the data center saw \$22,500 in avoided cost for their data halls. Utilizing a baseline for comparison, the data center is expected to see a 24% reduction or 5.2 million kWh usage drop. The facility is also expected to save \$137,000 in avoided utility cost over the first year of operations.

Pre & Post Economizer Programming kWh Model



“I use facilityCARE & SkySpark every day, I’m able to discover issues I can address and resolve myself. If it requires code changes or other modifications I’m able to rely on ATS for assistance.”

- Onsite Facility Engineer

About ATS

ATS, established in 1986, specializes in custom engineered and installed Building Automation Systems control solutions for buildings’ mechanical and electrical systems, allowing owners to reduce energy consumption and maximize effectiveness of facilities management personnel. ATS has offices and provides services in Washington, Idaho, Montana, Colorado, Wyoming and Alaska. Contact your local ATS representative to find out how you can start running your building more efficiently and economically. Visit www.atsinc.org to find the location near you.

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