REI achieves 93% reduction in data center cooling energy use

Efficiency opportunities, tailored solutions

CLEAResult collaborated with REI to identify long-term efficiency opportunities at its headquarters' data center. CLEAResult's Design Build Solutions team first examined energy usage patterns and then designed a cutting-edge upgrade plan specific to REI's facility that was then implemented in two phases. Overseeing every aspect of the efficiency upgrade process, Design Build Solutions managed installations, trained REI's IT staff, and carefully commissioned the new data center equipment. These efficiency enhancements helped REI reduce annual energy use by over 2.2 million kWh.

Technology Improvements

- A custom water-side economizer design leverages the Pacific Northwest's climate to provide free cooling for 99 percent of the year

- Variable flow pumps replaced constant flow condenser water pumps, conserving energy by enabling low-speed operation when appropriate

- An in-row cooling unit provides cooling directly to the hottest rack area, allowing the overall temperature setpoint to be raised

- High-flow air tiles, blanking panels and hot/cold server aisle containment measures lower overall energy consumption through improved airflow

- Consolidation of equipment from four UPS to two UPS improved efficiencies from 88 to 99 percent

- Eliminated all PDUs and 750 of the 800 circuits in the data center

- Removal of congestion in the raised floor improved air flow

- Reuse and sale of existing equipment minimized environmental impact

Our Results

Our major project achievements included:

- The elimination of annual greenhouse emissions equivalent to **326 standard passenger cars** and electricity savings sufficient to power **six REI stores** for a year

- Recognized as **2013 Project of the Year** by the Association of Energy Engineers

Project by the numbers

93%
reduction of cooling energy

>2.2M kWh
project annual energy savings

49%
electrical demand reduction

14 Months
total project time

50%
power usage effectiveness (PUE) improvement

<1.5 years
simple payback

"It's thrilling to see the results and leadership demonstrated by REI using Puget Sound Energy's Data Center program. With partners like CLEAResult, we believe that business across the country can realize the same fantastic financial and energy saving benefits."

- David Landers
Puget Sound Energy, Manager Business Energy Management