



Increasing energy efficiency without compromising processing power



Photo Credit: NYSERDA

As a top-tier research institution, the University of Rochester requires exceptional computing power. The Center for Integrated Research Computing (CIRC) provides technology, software, expertise, training, and support to research teams working across academic disciplines. Since its inception in 2008, the CIRC has provided the University of Rochester with more than 100 million CPU hours utilizing three high-performance computing clusters located in the University's main data center.

In early 2010, the CIRC investigated ways to expand computing capacity from 24 to 35 teraFLOPS. Recognizing that the data center was a major source of energy consumption on campus, the CIRC decided to add capacity by implementing Graphic Processing Units (GPU) card technology, a far more energy efficient emerging technology. To help cover the additional capital cost, the CIRC worked with NYSERDA's outreach contractor, Willdan Energy Solutions, to apply for financial incentives through the Industrial and Process Efficiency (IPE) program.

Recommendations

In order to add 11 teraFLOPS of computing power to their data center, the CIRC had two options: either buy 90 new standard servers, or buy only 10 new servers and retrofit them with GPU cards. Instead of adding processing power through additional servers, GPU cards are able to execute the same volume of instructions on fewer servers, consuming significantly less energy. The Willdan team worked with CIRC staff members to estimate energy savings and submit their application.

Get started

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Results

By installing fewer servers and adding GPU cards, computing capacity was increased by 11 teraFLOPS and 495,044 kWh is saved annually.

“NYSERDA support was invaluable as the University sought to reduce its energy footprint without compromising its ability to support world-class computational research.”

— David E. Lewis, Vice President for IT
and Chief Information Officer,
University of Rochester