National Center for Supercomputing Applications #564

Building Gross Sq.Ft.: 141,708

Retrocommissioned: May-Jun 2010

Simple Payback: 1.4 YR

Annual Energy Avoidance: 30%

(Based on one year's non-normalized data)

Principal Building Use: Offices and Classrooms

Facility Contacts: Tedra Tuttle & Trish Barker

Building & Occupant Overview

The National Center for Supercomputing Applications unites researchers with supercomputing needs or experiments on the Champaign-Urbana campus. The building was built in 2005 and is home to multiple super-computers that are capable of teraflop calculations. Various clubs and school events encouraging mathematical and technical advancement are welcomed at the facility. There are two VAV air handling units that condition the entire four story building along with dedicated computer room units (CRUs). The building's cooling needs are met by the campus chilled water loop, while the heat in the building is provided by a combination campus steam and hydronic system. Building controls are Siemens MECs.

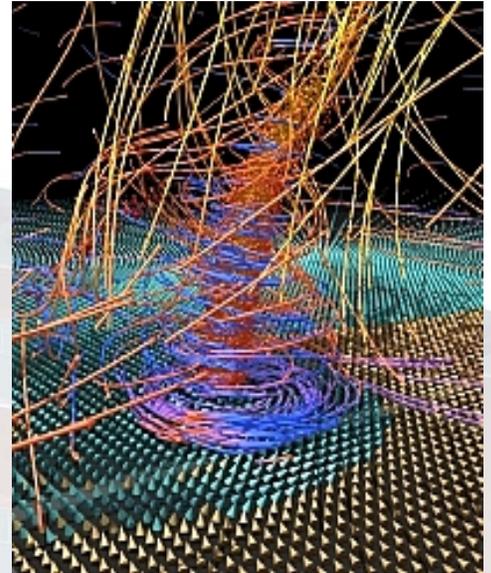The facility's total metered energy during the previous year was 34,262 MMBTU.

Image .by evl.uic.edu

Post RCx Energy Use Intensity (EUI) & Cost Index (ECI)

E.U.I.	E.C.I. #1	E.C.I. #2*
170.3 kBTU / Sq.Ft.	$2.70 / Sq.Ft.	$1,762 / person

* 220 PEOPLE OCCUPY BUILDING AT ONE TIME.

Retrocommissioning Specifics & Results

The air handling units (AHUs) providing air conditioning were maintaining space conditions 24/7/365, with a setback sequence in place. The primary energy conservation method was connecting the existing occupancy sensors to the VAV box to condition the space only when occupied. Since 90% or better have a 8am to 5pm schedule, large quantities of energy use was avoided. Independent CRUs were monitored to guarantee satisfactory data cluster temperatures.

To maintain comfort conditions, the VAV / perimeter heat sequence was reviewed. The radiation was not operating unless the reheat could not satisfy the space. This led to drafty offices. The sequence was re-written to allow the perimeter radiation to operate independently of the reheat valve, thereby allowing the space to warm even if the VAV box was closed. Unoccupied setbacks were limited to a 10 degree deadband centered on the room setpoint.

Project Highlights

- 300+ existing occupancy sensors were connected to the HVAC system to control 239 rooms only when occupied

- Extensive PPCL code was written to allow for night setback of space conditioning

- Exhaust fan serving the building restrooms was repaired and scheduled to maintain conditions when occupied

- Existing chilled water meter found accurate at maximum flow but not so at lower flows. Meter was replaced for optimum results.

- A bypass around the chilled water meter was installed to allow for uninterrupted cooling to the supercomputer rooms

Facilities & Services

Utilities & Energy Services | Retrocommissioning