

Illini Union Bookstore #106



Building Gross Sq.Ft.: 96,407 **Expected Simple Payback:** 4.6 YRS
Retrocommissioning FY 2010 **Expected Annual Utility Avoidance:** 28% OR ▼
Team Visit Period: Apr-Jun **Campus Energy Rank FY09:** 55 5,094 MMBTU
Principal Building Use: Bookstore & Offices
Facility Contact: Dave Guth



Building & Occupant Overview

The Bookstore is one of the largest independent college bookstores in the country. Many services are offered to the student population as well as space is utilized by the University Administration including the university chancellor, Dr. Robert Easter. Located on the lower three floors are textbooks, school supplies, school apparel and ID services. The building was originally built in 1993 and since then a few HVAC remodels have taken place. There are five (5) air handling units conditioning the building. Cooling is provided to the building by means of two air-cooled chillers totaling 300 tons. The heat in the building is provided by a combination campus steam and hydronic system. Building controls are Alpha Controls LCMs.

Facility total metered energy during FY09 was 18,194 MMBTU.

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

E.U.I.	E.C.I. #1	E.C.I. #2*
135.9 kBTU / Sq.Ft.	\$3.04 / Sq.Ft.	\$1,127.22 / person

* ~ 260 PEOPLE OCCUPY BUILDING AT ONE TIME (less patrons purchasing in store)

Retrocommissioning Specifics & Results

The air handling units (AHUs) providing air conditioning were maintaining space conditions 24/7/365. One of the primary energy conservation method was scheduling the AHUs serving the office areas to shut down for 10 to 12 hours a day.

Another measure was addressing the issues with the two 150 ton electric air cooled chillers. Both were found running 24/7 at 50%. By expanding the economizer period using enthalpy conditions, filling the water system and raising the temperature for chillers to operate to 53.5°F, the second chiller can be shut down the majority of the year.

To improve comfort conditions, the entire third and fourth floors were re-balanced to deliver proper quantities of air conditioning to the spaces. One predicament that was overcome was the lack of available static pressure on an AHU, and thus VAVs were not able to control. Three VAVs serving non-office spaces were isolated allowing the static to climb enough for VAVs to function. Outside air and economizer control was also improved for one AHU of the building by replacing the outdoor air dampers.

Project Highlights

- This project was the first for RCx in which the Student Sustainability Committee loaned the funds required for the energy conservation efforts for an auxiliary department, or one that is not cared for by facilities personnel under campus rules. The loan will be repaid from the energy costs avoided
- Implemented occupancy schedules for the HVAC systems, reducing conditioning when unoccupied
- Replaced inlet vanes on eight fans with VFDs
- Installed CO2 sensors in common spaces to reduce outside air quantities

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Illini Union Bookstore is NOT connected to the campus chilled water loop and therefore does not have any "Chilled Water Usage", but cooling energy will form part of the Electricity Usage.

