

# Physical Plant & Service Building #198



**Building Gross Sq.Ft.:** 162,881      **Expected Simple Payback:** 2.1 YRS  
**Retrocommissioning Team Visit Period:** FY 2011 Sep—Dec      **Expected Annual Utility Avoidance:** 19% OR ▼  
**Principal Building Use:** Offices and Fabrication Shop Areas      **Campus Energy Rank FY10:** 53      3,909 MMBTU  
**Facility Contacts:** Elizabeth Eades & Greg Landes

## Building & Occupant Overview

The [Physical Plant](#) is the base for all maintenance and construction services for the Champaign-Urbana campus. The building was originally built in 1961 and since then multiple remodels and HVAC upgrades have taken place. 60+ shops or departments are housed or directed from this facility. Various locations are open 24/7 to maintain campus services at all times of the year. The air handling units are plentiful, as each shop is conditioned independently. Cooling is provided to the office areas by means of two independent electric chillers totaling 120 tons. The heat in the building is provided by a combination steam and hydronic system. Building controls are Invensys Microzones.

Facility total metered energy during FY10 was 20,576 MMBTU.



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

E.U.I.	E.C.I. #1	E.C.I. #2*
102.3 kBTU / Sq.Ft.	\$2.17 / Sq.Ft.	\$2,018.45 / person

\* ~ 175 PEOPLE OCCUPY BUILDING AT ONE TIME.

## Retrocommissioning Specifics & Results

The air handling units (AHUs) providing air conditioning were maintaining space conditions 24/7/365. The primary energy conservation method was scheduling the AHUs serving the office areas to shut down for 12 hours a day. This was possible due to steam radiation on the perimeter offices, which is controlled independently of the VAV units.

To maintain comfort conditions, reheat coil control valves were checked for leakage rates. Approximately 40 VAV boxes were reviewed, calibrated and balanced. Various VAV controllers were found non-operational and were replaced, restoring thermal comfort and improving minimum air flow control.

As directed by Shop Foreman, various heating only AHUs in the shop areas were repaired and serviced after many years of neglect. The field techs assisted in sharing knowledge with the foremen about how the AHUs operate to help improve comfort year-round.

## Project Highlights

- The steam condensate meter was found to be “double counting” the steam energy used in the facility. A new meter was installed
- Economizer sequences were restored on the DDC controlled AHUs, improving winter cooling needs (chillers shut down during winter)
- AHUs serving the office spaces were scheduled to maintain conditions only when occupied
- DDC controls were installed on seven AHUs for improved sequences of operation, scheduling, and comfort control
- Restored thermostat control of reheat coils that was abandoned three years ago

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PPSB was NOT connected to the campus chilled water loop at the time of being retro-commissioned and therefore does not have any "Chilled Water Usage" data for that time period, but cooling energy will form part of the Electricity Usage.

