

# Madigan Laboratory Building #336



**Building Gross Sq.Ft.:** 171,007

**Simple Payback:** 1.1 YRS

**Retrocommissioned:** Feb-May 2009

**Annual Energy Avoidance:** 28%

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

**Principal Building Use:** Laboratories and Offices

**Facility Contacts:** Ralf Moller & Darren Gentzler

## Building & Occupant Overview

Madigan Laboratory is a three story brick building serving as home for the Departments of Agronomy, Animal Sciences, Forestry, Horticulture and Plant Pathology in the Colleges of Agriculture and Veterinary Medicine and School of Life Sciences. The building was originally built in 1988-89. There are three VAV air handling units, each requiring 100% outside air, that condition the building. The building's cooling needs are satisfied by the campus chilled water loop, while the heat for the building is provided by four combination steam and hydronic systems. Building DDC controls are prevalent and are of the Barber Colman Network 8000 series.

The facility's total metered energy for the previous year was 95,171 MMBTU.

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

E.U.I.	E.C.I. #1	E.C.I. #2*
398.9 kBTU / Sq.Ft.	\$6.35 / Sq.Ft.	N/A

\* QUANTITY OF PEOPLE THAT OCCUPY THE BUILDING ON A GIVEN DAY IS NOT KNOWN.

## Retrocommissioning Specifics & Results

One of the largest issues in the building was the duct liner insulation falling apart inside the duct and collecting in dampers, coils, and diffusers downstream throughout the building. This insulation was cleaned out of the system for improved IAQ.

Laboratory room pressurization controllers were found to be non-functional, allowing the laboratory to become positively pressurized at times. Many labs share ceiling space. Lack of control of pressurization contributed to drafty spaces, lifting of ceiling tiles, and other pressurization similar pressurization issues. RCx constructed a custom solution and replaced each lab's controller in order to allow for proper air tracking and negative pressurization in the laboratories. RCx re-balanced the labs and adjacent spaces to fix the pressurization and lower the unoccupied room air changes, avoiding large energy costs.

Finally, there were many other maintenance issues resolved such as leaking coils, clogged humidifier nozzles, and damaged damper systems that were all detrimental to the performance of the building.



## Project Highlights

- Duct liner was cleaned out of coils, dampers, and diffusers.
- Occupancy schedules were implemented to lower energy consumption during unoccupied hours.
- Laboratory room pressurization controllers were replaced in the rooms with fume hoods.
- Personnel were encouraged to close fume hood sashes on their VAV (variable air volume) fume hood systems.
- A large number of maintenance issues were addressed to improve system performance.
- Comfort and air quality were improved throughout the building.