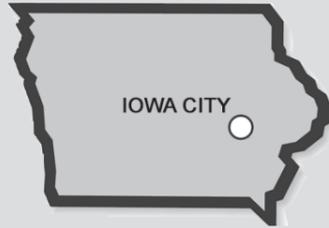


# Facilities Management, University Of Iowa

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The University of Iowa (U of I) is a major national research university located on a 1,900-acre campus in Iowa City. The university is comprised of more than 29,000 students, 1,700 faculty and 120 buildings. The annual operating budget for the university is more than \$2.1 billion.

## Project Background

Engineers for a Sustainable World (ESW) is a campus organization comprised of students from all engineering disciplines who apply their technical abilities to promote environmental improvements throughout the world. The group has organized outreach activities in Mexico and other countries, including the presentation of an environmental education seminar at two universities in Xicotepec, Mexico. The U of I chapter of ESW, in conjunction with the Pollution Prevention Intern Program, received funding from the EPA to introduce an international exchange program entitled, "People, Prosperity and the Planet," or P3X.

Through this program, two international exchange students were selected to work with the University of Iowa's Facilities Management team on energy conservation projects. Training materials from the Pollution Prevention Intern Program were translated into Spanish by member of ESW to serve as a resource for this and future international intern projects.

## Incentives to Change

The goal for this project was to conduct an energy audit of the Bowen Science Building, a facility with an energy budget of approximately \$2 million annually.

The project tasks included:

- Determine how energy is used in the building
- Examine potential energy conservation measures
- Make recommendations for implementation

The recommendations that follow focus on the ventilation, chilled water, steam and lighting systems.

## Results

### Fume Hoods

Several types of fume hoods are installed in the laboratory, some with variable volume controls in which the exhaust air volume depends on the sash height. Excess exhaust causes increased flow of conditioned air and increases fan power as well as chilled water and steam use. Markings on the units can allow proper sash adjustment.

### Outside Air Temperature Sensor

Optimizing the location and operation of the outside air temperature sensor for the air handling unit can ensure that chilled water is used only as needed.

### Heat Recovery

Exhaust from the fume hoods can be captured to pre-heat or pre-cool the outside air supply for the building. The system would be effective at temperatures less than 55 degrees F and above 75 degrees F.

### Chilled Water Set Point

The set point for the chilled water system is critical to reducing the energy demands for this system. Continuous monitoring of the control system can reduce unnecessary operational expenses.

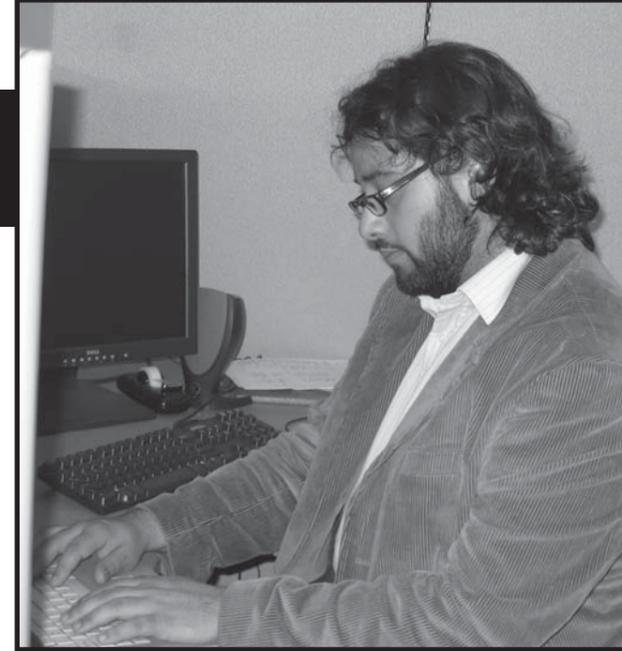
### Air Handling Unit Controls

The majority of the air handling units at the building service laboratory facilities and must be operational 24 hours a day. However, one zone can be programmed to an adjustable schedule to service the room only when occupied.

### Lighting

The results of a lighting survey indicate that natural light is underutilized and many rooms are lit when unoccupied. The installation of occupancy sensors in some laboratories, offices, and corridors will reduce electrical demands.

The intern, a member of the energy efficiency organization, "Grupo de Eficiencia Energetica" in Chile, will take his new skills back to his home country and offer energy audits to small companies.



### Air Pollutants Diverted in Tons

	Total for all sectors
SO2	0.44
CO	0.83
NOX	0.48
VOC	1.02
LEAD	0.0
PM	0.04

### Green House Gases Diverted in Tons (CO2 Equivalent)

	Total for all sectors
CO2	1,383.6
CH4	261.0
N2O	106.7
CFCS	2.0

Project	Annual Cost Savings	Environmental Results	Status
<b>FUME HOODS</b>	\$79,410	41,350 therms 415,194 kWh	Recommended
<b>OUTSIDE AIR TEMPERATURE SENSOR</b>	\$14,609	231,883 kWh	Recommended
<b>HEAT RECOVERY</b>	\$107,121	20,955 therms	More research needed
<b>CHILLED WATER ENABLE TEMPERATURE</b>	\$2,626	1,580 therms 2,085 kWh	Recommended
<b>TURN OFF AHU-8</b>	\$2,855	1,320 therms 20,115 kWh	Recommended
<b>LIGHTING</b>	\$37,600	594,890 kWh	Recommended

