



Automatic Lighting Controls

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I. Detailed Project Description:

Classroom lighting is frequently left on after classes and cleaning activities. To encourage the community to reduce lighting consumption we will install sensors in public classrooms, restrooms, offices, and other appropriate areas that will turn off lights automatically if no action is detected in the room for thirty minutes or less, depending on the room usage. The enclosed product brochure describes how these sensors work. A complete brochure can be found at

<http://www.wattstopper.com/getdoc/1984/WallSwitchPSG.pdf>

- We will reduce lighting consumption in affected areas by 30% by reducing the number of hours that classrooms are lit.
- The sensors should last ten years, depending on frequency of use. They are a proven, lasting, permanent, public statement.
- The sensors will be located within about nine heavily used buildings: Armory, Foreign Languages, Loomis Laboratory, Mechanical Engineering Building, Huff Hall, Wohlers Hall, Henry Administration Building, and the Psychology Building, with additional buildings as budget allows.
- Although classrooms will be the primary target for sensors, we will install sensors restrooms, offices, and other areas deemed appropriate.
- Most other public institutions have installed these sensors in similar areas. The Urbana campus is seemingly behind in this arena.

II. Budget & Fundraising:

1. Detailed budget

- We request a total amount of \$50,000 or \$200 per sensor. This includes sensor and labor. The funding will be used to cover the costs to specify, purchase, install, and commission sensors for up to 250 locations in these three buildings. We expect that this will reduce lighting costs in these areas by 30%, with an annual savings of \$1,250 per year or a simple payback of 4.0 years.

- The sensors should have a life expectancy of ten years, with a present value replacement cost of \$37,500, assuming 4.0% inflation and the standard life cycle definition of 50% failure.
- This is an adjunct to a project which will replace magnetic ballasts with electronic units. This request will cover the total cost of the sensors.
- While the replacement project will move forward without the sensors, much greater savings will be realized if they are added at the same time. It will cost an additional \$50 per sensor to add this feature on an individual basis.

2. Fundraising

- ICEF Funding has been awarded for a lighting upgrade project which will replace tubes and other components of the lighting systems in these rooms regardless of whether the sensors are installed. Great project efficiencies can be realized if the sensors are installed at the same time.
- We will be pursuing grants from the Department of Commerce and Economic Opportunity for the occupancy sensors. Rebates received from DCEO will be applied to additional occupancy sensor projects. Grants are provided based on \$0.10/Controlled Watt. Although we do not know the total controlled watts for the project, we anticipate DCEO will cover 30-50% of the project costs.

III. Timeline

- To take advantage of these project efficiencies, this work must be concurrent with the upgrade project. Since would prefer to complete this work during the summer of 2009 to minimize the impact on class schedules, funding should be in place by January 30, 2009. The work must be completed by March 1, 2010.

IV. Energy, Environmental, Social and Economic Impact

- **Energy and cost savings.**
The project should save \$12,500 the first year or \$172,500 over its ten year life based on an inflation rate of 4.0%. If the project is completed concurrent with the lighting upgrade, the additional energy to complete the project will be negligible. The sensor life is about the same as other components and should be replaced at the same time. This project should save 178,750 kWh/yr.
- **Environmental Impact**
This project will result in an annual reduction of greenhouse gasses in the following amounts:
 - 92,500 lbs CO₂ emissions reduction
 - 340 lbs NO_x emissions reduction
 - 1,135 lbs SO_x emissions reduction
- **Social Impact**
Lighting controls send a strong message to the community that the campus is serious about saving energy through lighting reduction. Community members should turn their lights out more frequently in their offices and other private areas where the sensors are not installed.
- **Economic Impact**
The cost savings from this project could be applied to generate more savings elsewhere.

V. Outreach and Education

- **The majority of these sensors will be installed in some of the most highly visible classrooms on campus with a diversified population. The rooms combine for more than 115,000 student hours per year and will be seen by over 50% of the freshman and sophomore classes.**
- **The sensors will be installed with a plaque or sticker, mentioning the Student Sustainability Committee, which tells of the impact of reducing lighting usage.**



Typical Wall Switch to be replaced by



Automatic Occupancy Sensor