



**Possible Energy Saving Light Changes**

- 1) Switching to energy saving lights: compact fluorescent (CFL) light bulbs use up to 75% less energy and last up to 10 years longer than incandescent bulbs<sup>1</sup>
- 2) Turning lights off when not in use: occupancy-sensing light switches automatically turn lights off when room is not in use; daylight-sensing light switches turn lights off when ambient lighting is sufficient; timers turn lights off at same time each day

**Potential Benefits of Energy Saving Lighting**

- 1) Reduced energy use
- 2) Reduced energy costs
- 3) Reduced environmental footprint (particularly reduced CO<sub>2</sub> emissions)
- 4) Enhanced image as an environmentally aware institution

**Potential Projects**

**3<sup>rd</sup> and 4<sup>th</sup> Floors of Pendleton Hall**

- 1) Atrium: daylight override and timer  
*costs: \$140 savings: \$517.19 per year payback time: 3 or 4 months*
- 2) Hallways: Change 48 incandescent lights to CFLs  
*costs: \$52 savings: \$206.49 per year payback time: 4 or 5 months*
- 3) Classrooms:
  - a. install occupancy sensors  
*costs: \$280 savings \$85.84 per year payback time: 3 years*
  - b. turn off 1/2 of lights  
*costs: \$0.00 savings: \$110.38 per year payback time: instant!*
- 4) Small Rooms: install occupancy sensors  
*costs: \$350 savings: \$117.42 per year payback time: 3 years*
- 5) Bathrooms: install occupancy sensors  
*costs: \$350 savings: \$137.59 per year payback time: 3 years*
- 6) Offices: no potential changes  
*payback time for occupancy sensors is too long*

**At a Glance...**

**Description:** Evaluation of replacing inefficient incandescent lights with compact fluorescents, and installing occupancy or daylight override sensors to reduce energy use, energy cost, and environmental footprint

**Buildings:** Pendleton is already relatively environmentally efficient, so changes would be simple and minimal; other buildings on campus are less efficient, so the same changes that are possible in Pendleton would result in greater savings elsewhere.

**\$ Costs and Savings in Pendleton:**

If Projects with payback time less than 3 years were implemented...

Total costs= \$1,172  
 Net savings in first year= \$2.91  
 Net savings in following years = \$1,174.91

**Environmental Impact:**

Reduction in CO<sub>2</sub> emissions=  
 30 tons per year  
 (equivalent to the CO<sub>2</sub> absorbed annually by 4,615 healthy trees!)

**Campus-Wide Implementation of Pendleton Projects**

Pendleton is already lit relatively efficiently; this is not true for all buildings on campus. The potential projects outlined for Pendleton can be applied campus-wide, with even greater results. For instance, installing occupancy sensors in just one set of stacks in Clapp Library would cost \$450 initially, and would save \$3195.65 per year

**Calculation Process**

- Number and types of lights were determined through direct observation and from Wellesley College lighting plans
- Average number of hours lit was estimated by direct observation at various times of day
- Price of energy was assumed to be \$0.08
- CO<sub>2</sub> emissions per KWH was assumed to be 2.0438 x 10<sup>-3</sup> of CO<sub>2</sub><sup>2</sup>

<sup>1</sup> [www.gelighting.com](http://www.gelighting.com)

<sup>2</sup> Audit of Wellesley College's Greenhouse Gas Emissions