Green Laboratory Practices

DEQ Green Labs Initiative Workshop
July 31, 2013
Average Summer Academic Electrical Use per Square Foot

Source: Kayla Coleman, 2011
### Highest Electrical Energy Users

<table>
<thead>
<tr>
<th>Building</th>
<th>MWHRS</th>
<th>Rooms</th>
<th>Sq. Ft.</th>
</tr>
</thead>
<tbody>
<tr>
<td>T.B. SIMON POWER PLANT COMPLEX</td>
<td>73563.16</td>
<td>266</td>
<td>321751.9</td>
</tr>
<tr>
<td>CYCLOTRON</td>
<td>27656.11</td>
<td>419</td>
<td>192100.1</td>
</tr>
<tr>
<td>BIOMEDICAL PHYSICAL SCIENCES BUILDING</td>
<td>12438</td>
<td>731</td>
<td>377208.3</td>
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<tr>
<td>PLANT BIOLOGY LABORATORIES</td>
<td>10818</td>
<td>455</td>
<td>189550.5</td>
</tr>
<tr>
<td>DIAGNOSTIC CENTER FOR POPULATION AND ANIMAL HEALTH COMPLEX</td>
<td>10272.24</td>
<td>359</td>
<td>192007.8</td>
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<tr>
<td>PLANT &amp; SOIL SCIENCES BUILDING</td>
<td>9807</td>
<td>809</td>
<td>364111.3</td>
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<tr>
<td>CHEMISTRY</td>
<td>8845.5</td>
<td>565</td>
<td>321901.2</td>
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<td>VETERINARY MEDICAL CENTER COMPLEX</td>
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<td>1021</td>
<td>426564.7</td>
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<tr>
<td>ENGINEERING BUILDING</td>
<td>8289</td>
<td>897</td>
<td>425404.2</td>
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<tr>
<td>ANTHONY HALL</td>
<td>8240</td>
<td>599</td>
<td>319176.4</td>
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</tbody>
</table>

Source: [www.gis.msu.edu/begreen](http://www.gis.msu.edu/begreen) 2012
Study from May 2007 to April 2008, lead by Prof. David Skole.
Cost example - Chemistry

• Shutting the sash whenever possible will increase safety and energy savings
• Maximum cost: $1,608,246.64
• Minimum cost: $746,392.15
• Potential savings: $861,854.49
  – $0.0095 per Kcfm
  – 1/3 Max use, 2/3 minimum use

Source:
Infrastructure and Facilities Planning, Sue Atchinson, John Phillipich, Lynda Boomer 2009
Fully Closed Sash

• 350 cfm

• 1 year: $1,743.04

• 5 years: $8,715.20
Sash open halfway

- 900 cfm
- 1 year: $4,406.70
- 5 years: $22,033.50
Sash bypass

- 1800 cfm

- 1 year: $8,813.48

- 5 years: $44,067.40
always
close sash
when not
working in
hood.

bespartangreen.
msu.edu
Total References for Receptivity to Change

- **Cannot change**: due to the nature of science, current technology, lack of energy efficient alternatives

- **Do not need to change**: the respondent’s perceived impact indicates that their particular lab and/or science labs in general are not to blame for inefficiencies

- **Open to change**: positive reflection towards potential laboratory changes for energy efficiency

Source: Kayla Coleman, 2011
Green Certification

A program to create the best practices, incentivize, and recognize units who are implementing sustainable practices.

<table>
<thead>
<tr>
<th>Application Period</th>
<th>Number of approved applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009-2010</td>
<td>14</td>
</tr>
<tr>
<td>2010-2011</td>
<td>1</td>
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<tr>
<td>2011-2012</td>
<td>18</td>
</tr>
<tr>
<td>2012-2013</td>
<td>3</td>
</tr>
</tbody>
</table>
Purchasing

- Combining purchases to order in bulk, save shipping costs
- Recycling styrofoam containers
- Reuse of cold packs
- Automated controls on refrigerators to ensure savings
Sustainability @ MSU

www.bespartangreen.msu.edu