# BECOME A CARBON ZERO HERO

Presented by EYP/energy

In association with IFMA International Facility Management Association

afc Academic Facilities Council of IFMA

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# / Your Moderator

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Senior Marketing Coordinator
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# / Your Presenters

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Project Director for Sustainability
at EYP/Energy

## Katherine Johnson

President of
Johnson Consulting Group

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# / Multiple Roles, Multiple Reports

**President/ Chancellor**

**VP of Business/Administration**

**VP of Finance**

## To Do List

- ✓ Sustainability Coordination
- ✓ Energy Efficiency and Management
- ✓ Recycling and Waste Reduction
- ✓ Maintenance and Operations
- ✓ ACUPCC Compliance
- ✓ Data Collection and Reporting
- ✓ Building Construction and Management
- ✓ Environmentally Preferable Purchasing
- ✓ Environmental Health and Safety

**Faculty**

**Students**

**Staff**

President/ Chancellor

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# / What You Will Learn Today

1. Define Phantom Load
2. Illustrate GHG and cost savings
3. Identify major Phantom Load culprits
4. Describe strategies to reduce GHG emissions and costs
5. Provide real-world examples of how these strategies have reduced emissions and costs
6. Provide resources to manage Phantom Loads on your campus

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# / Let's Define Phantom Load

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# / Pop Quiz

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# / What Are Your Power Vampires?



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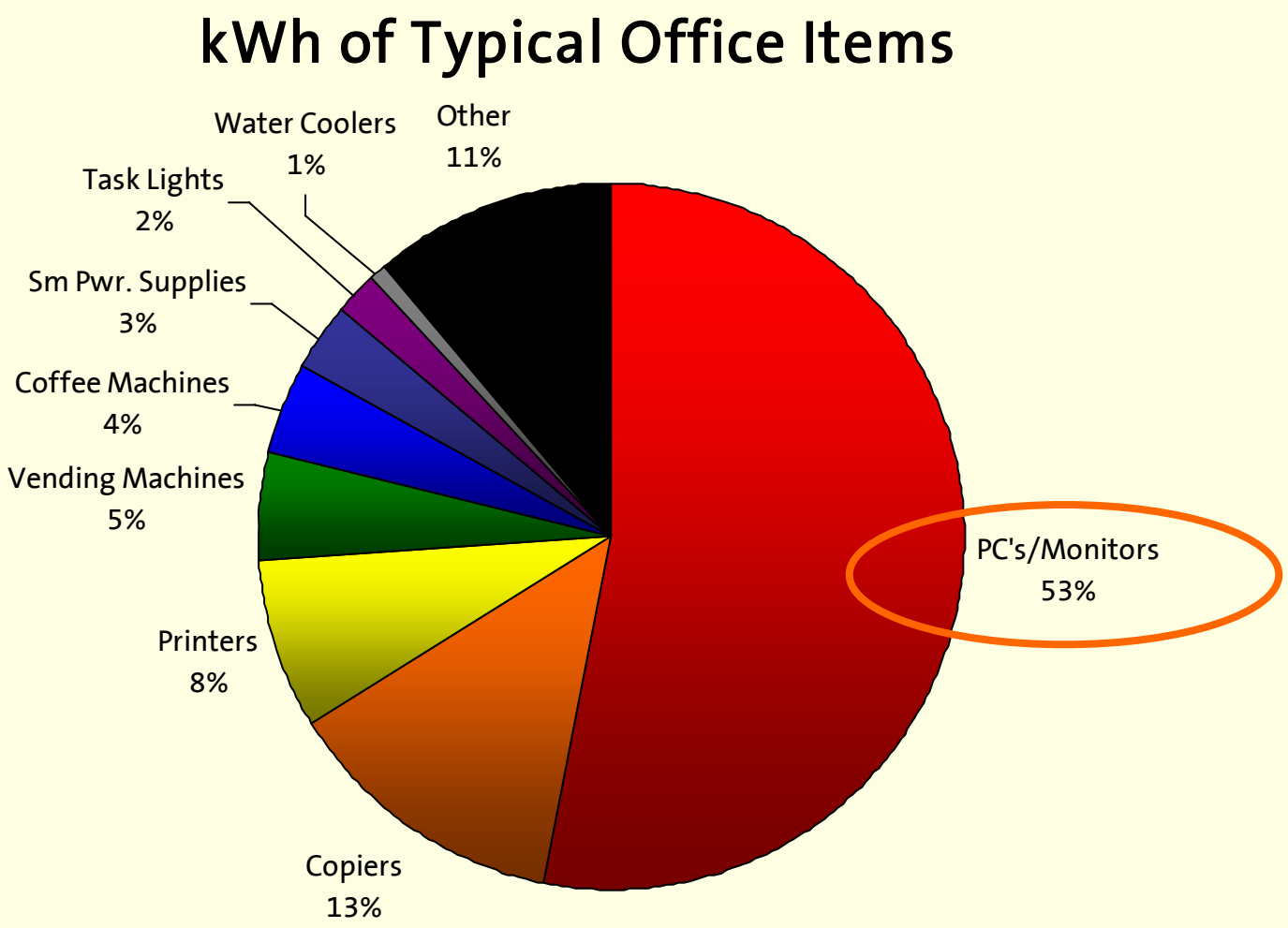
# / What is the Main Phantom Culprit?




Source: NYSERDA

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# / How Much Does This Cost Your Campus?

25 Watt Device = 225 kWh Annually

Assume 1 kWh = 12¢

25 Watt Device = $27 Annually

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# / What About GHG Emissions?

25 Watt Device = 225 kWh Annually

Assume 1 kWh = 1.34 lbs $CO_2$ (U.S. avg.)

225kWh = 33.5 lbs $CO_2$ annually


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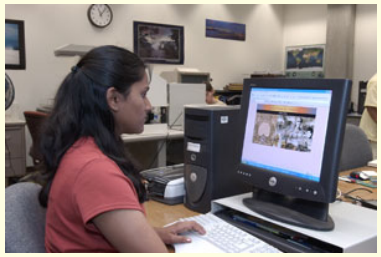
# /Annual Energy Consumption

| | Electricity Used | Energy Costs | GHG Emissions |
|---|---|---|---|
|  Vending Machine | 3318 kWh | $299 | 4446 lbs |
|  Personal Computer | 333 kWh | $30 | 446 lbs |

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# / Annual Energy Consumption

| | 40 Hour Week | 50 Hour Week | 70 Hour Week | 168 Hour Week |
|---|---|---|---|---|
|  High Power/Large LCD Monitor | $50<br>557lbs | $62<br>696lbs | $87<br>975lbs | $209<br>2,340lbs |
|  Laptop Only | $7<br>83lbs | $9<br>104lbs | $13<br>146lbs | $31<br>351lbs |

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# / Here is the Good News

Immediate Greenhouse Gas Reductions

Immediate Paybacks

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# / Here is the Bad News

Reiterative/
Behavioral

Hard To Quantify

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# / What about you?

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# / How Can You Make an Impact?

- Focus on computing
- Then focus on all other forms of Phantom Load
- Adopt behavioral and technical solutions

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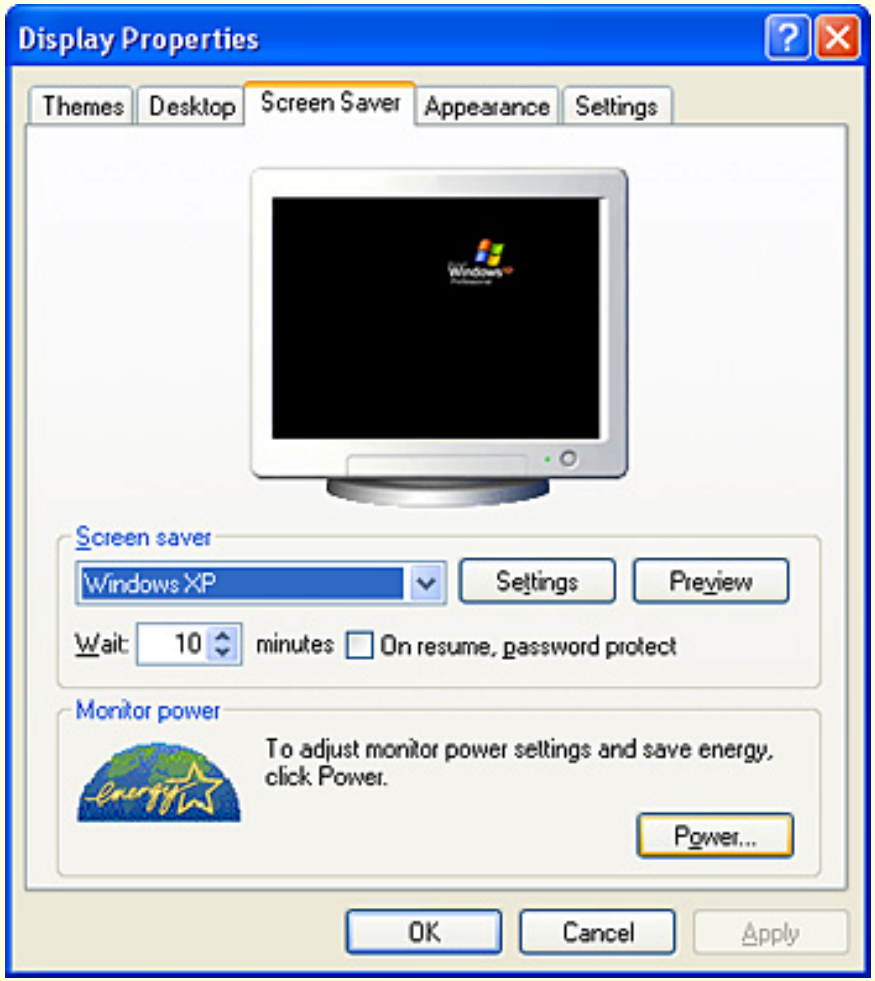
# / Monitor Power Management

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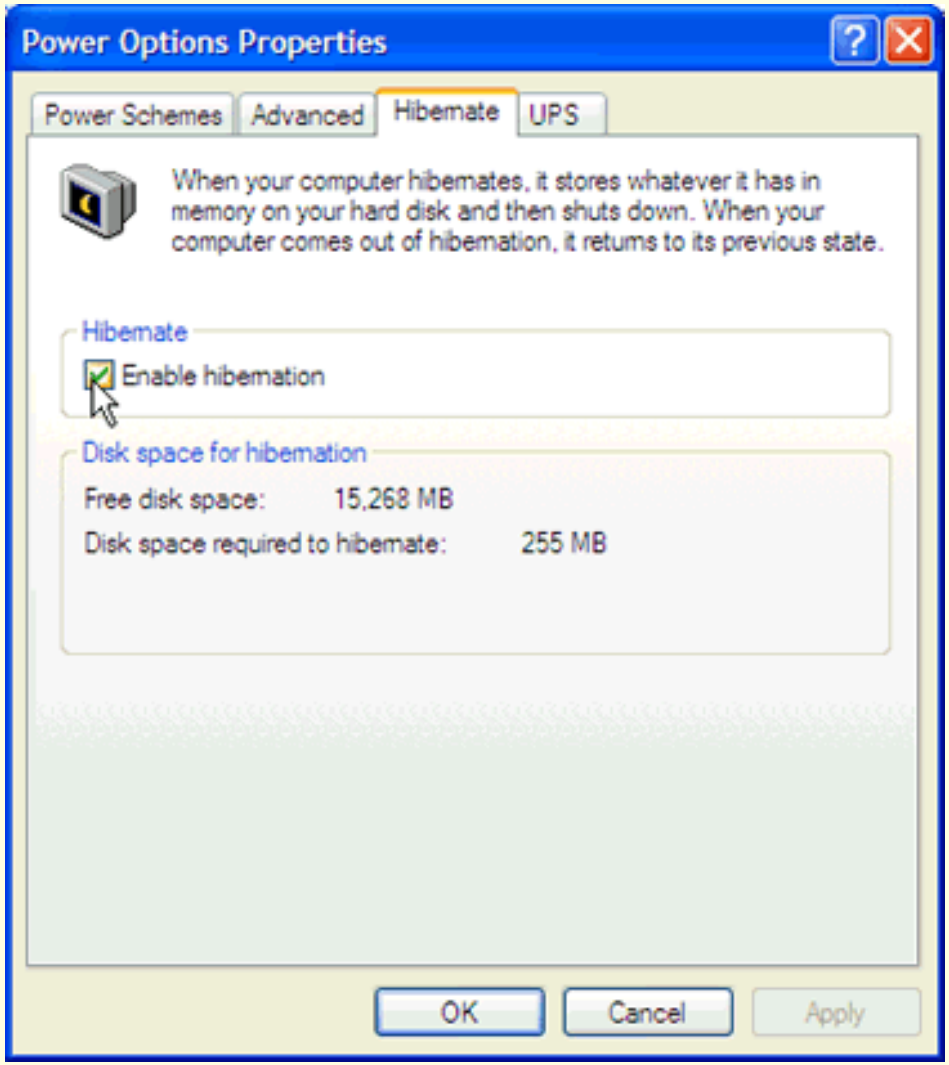
# / Computer Power Management



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# / CPM Activation is Increasing in Use

System standby (S3)

- saves 40+ watts
- wakes up in 5-10 seconds
- does not save work in event of a power loss

Hard disk spin down

- only saves a few watts

Hibernate (S4)

- same energy savings as system standby
- wakes up in 20+ seconds
- saves work in the event of a power loss

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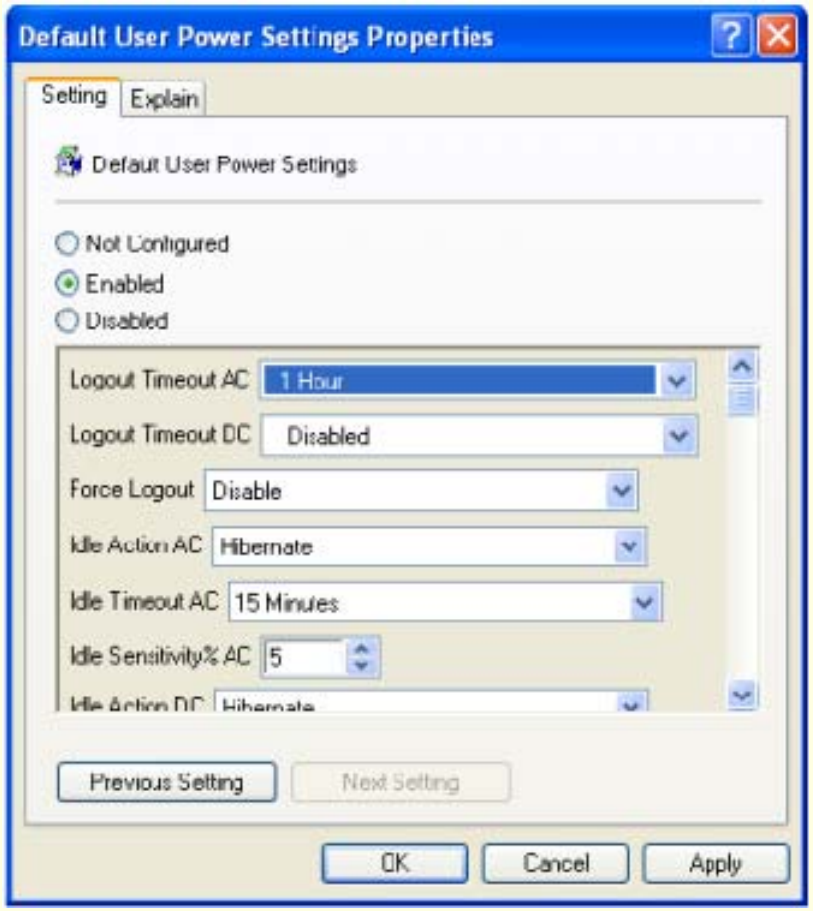
# / Power Management is Easy




EZ GPO

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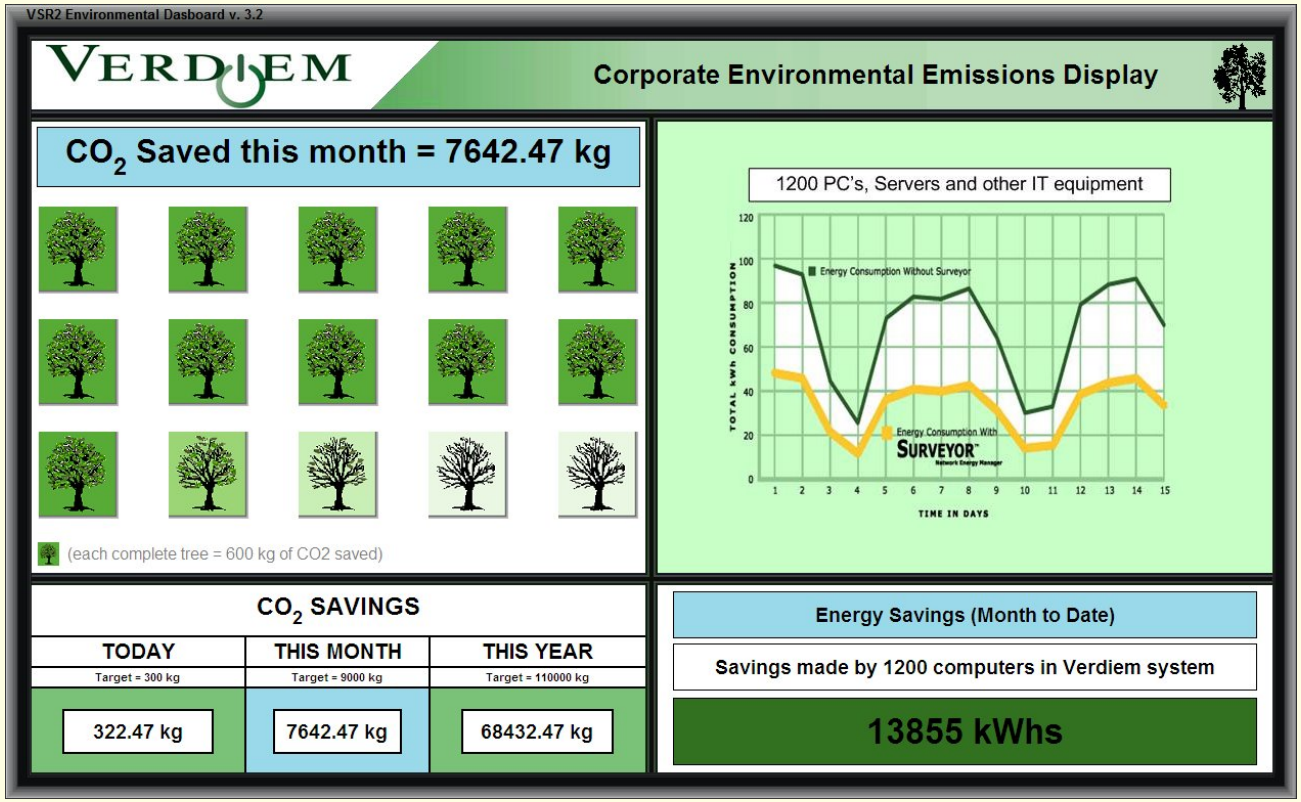
# / Power Management is Easy




Verdiem

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# / How to Conduct a Phantom Load Audit

## 4 Steps

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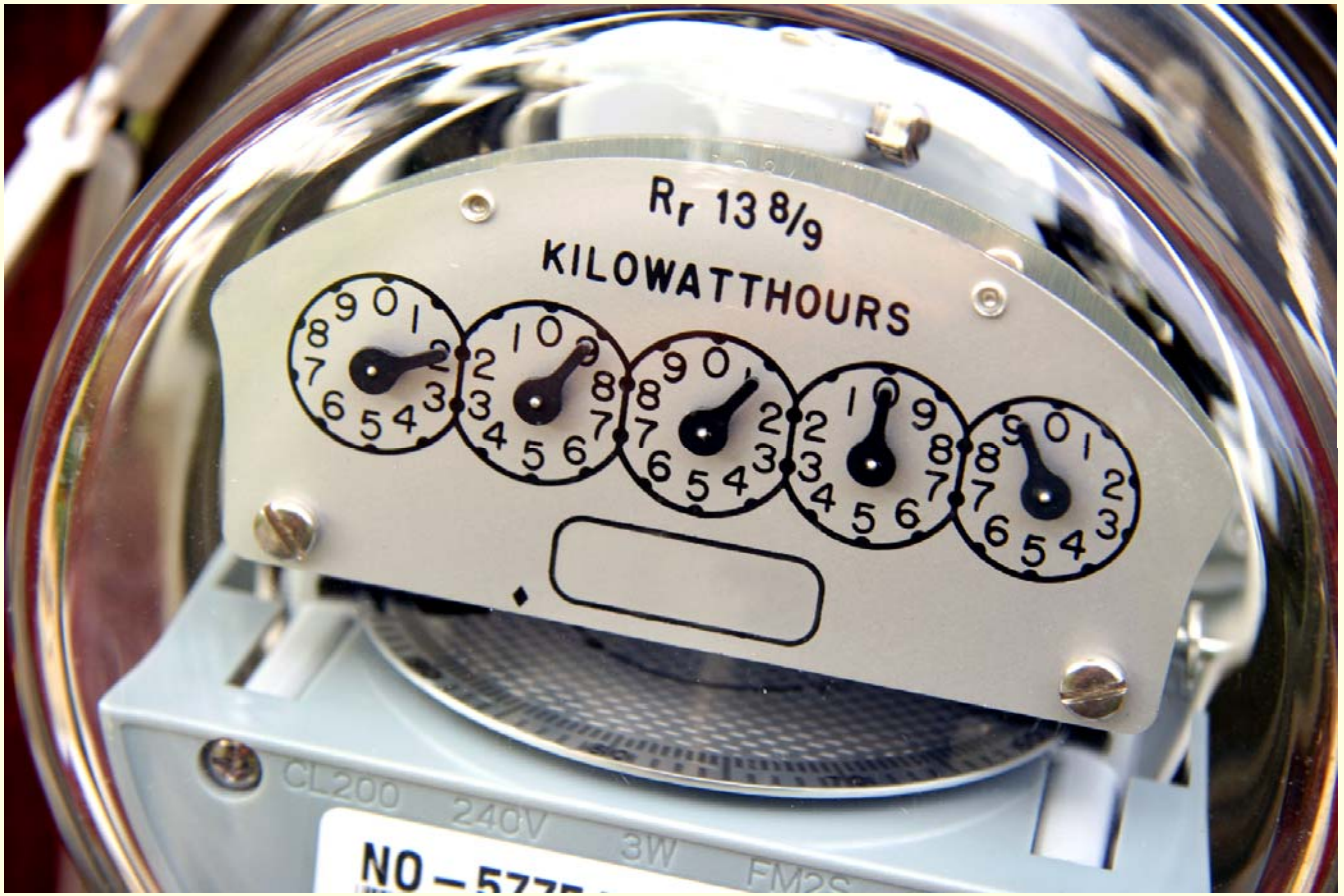
# / Step 1: Obtain building data from facilities staff



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# / Step 2: Work with IT staff

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# / Step 3: Conduct equipment survey

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# / Step 4: Analysis and Facilitation

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# / Mid-Size State College Audit

- **7603** students enrolled
- **2744** students in residence

- **672** computers in labs/student work areas
- **1300** faculty & administration computers

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# / What Did Our Audit Uncover?

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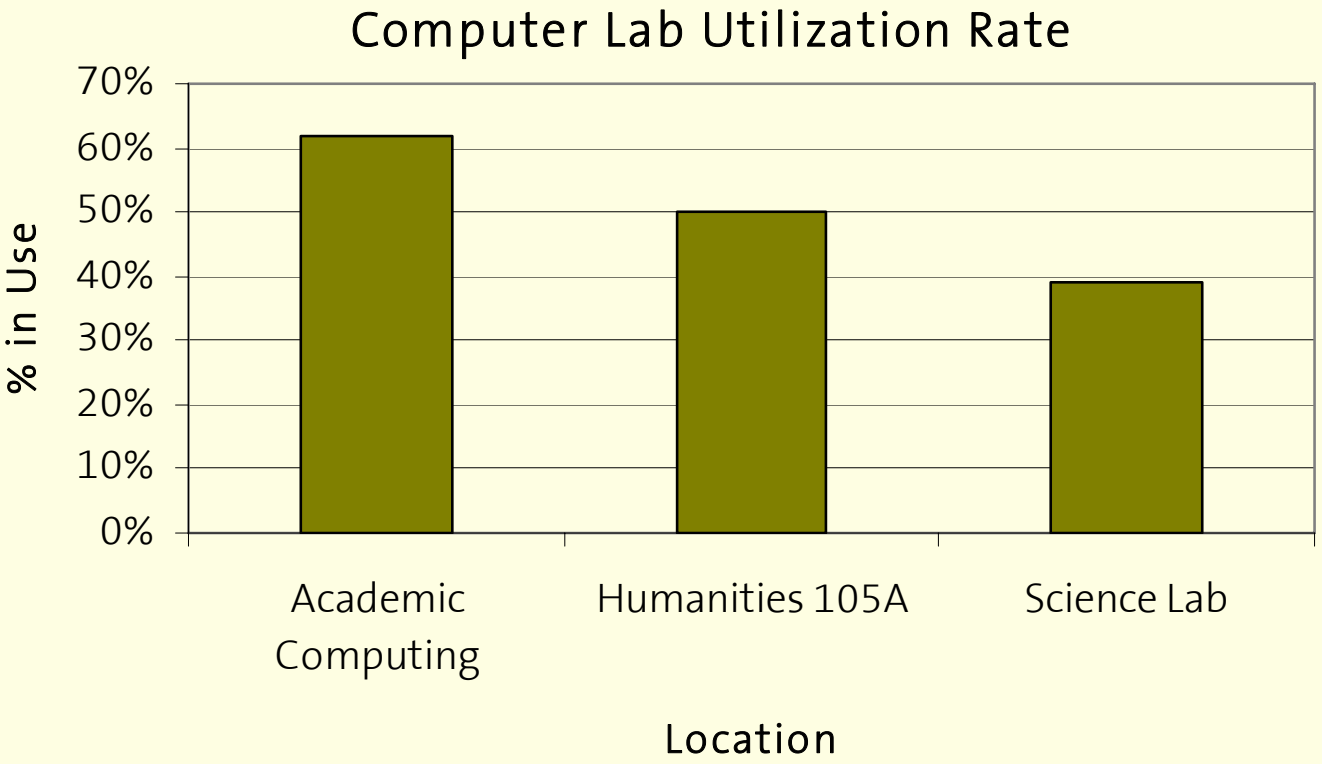
# What is the Use of Computer Labs?



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# / What About Residence Halls?

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# / Staff and Faculty Computers

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# / How Many Other Power Vampires Are On Campus?

50
Cold Beverage Machines

250+
Individual Printers

50
Copy Machines

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# / Key Inputs to Calculations

- Total number of computers:
- Average wattages of computers and monitors:
- Percent power managed:
- Percent powered off after hours:
- Percent of time computer not actively used

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# / Other Key Inputs

- Average Electric Cost is $0.13 per kWh
- Average Hours of Operation:
  - Administration – 8:30 a.m. - 5:00 p.m.
  - Faculty – Varies 8:30 a.m. to 9:30 p.m.
  - Computer Labs – weighted average was 11 hrs/day; 7 days/week
  - Residence Halls – assume computers are On 16 hrs./day

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# / Key Findings – Cost Savings

| Annual Dollar Savings Estimates | "Conservative Case" (MPM + Shutdown) | "Best Case" (Add CPM) |
|---|---|---|
| Administrative Staff | $57,721 | $62,123 |
| Faculty | $11,707 | $13,001 |
| Computer Labs | $43,515 | $49,546 |
| Residence Halls | $19,342 | $38,684 |
| TOTAL | $132,285 | $163,354 |
| $CO_2$ Emissions Reductions | 660 tons | 841 tons |

*MPM only

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# / Annual cost savings

$5 - $30

$20 - $35

$35 - $60

$20 - $50

$5 - $27

$50-$240

$116 - $220

$5 - $15

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# / Residence Hall Laundries

Save $4 per student!

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# / Belkin Conserve Surge Protector

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# Student Strategies

Dorm Competitions

College Research Projects

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# / Successful Student Campaigns


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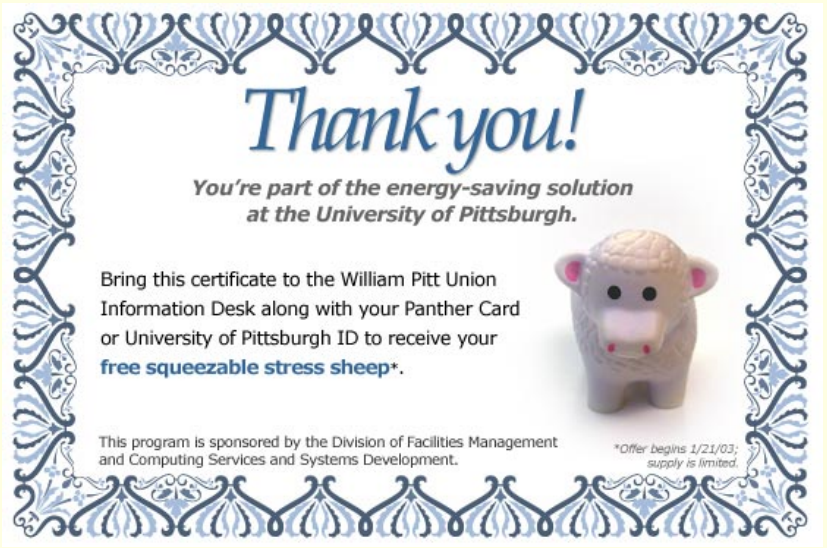
# / University of Pittsburgh- Counting Sheep




http://www.pitt.edu/sleepnow/whysleep.html

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# University of Buffalo- Do It In The Dark


http://www.ubgreenoffice.com/?p=10

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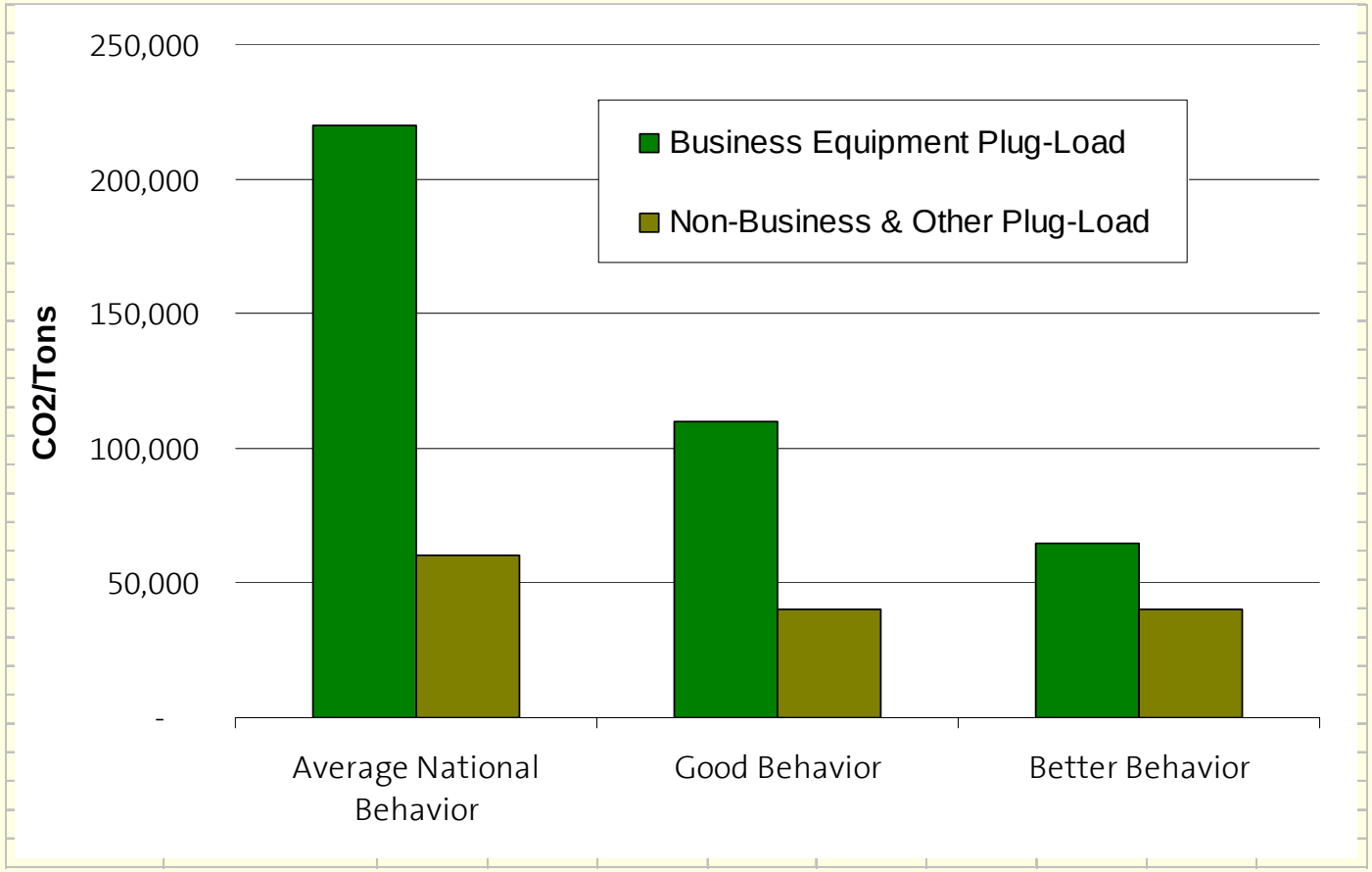
# / How Will It Make A Difference?

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# / 6 Steps to Implementing Power Management

1. Build Support For Your Program
2. Develop Preliminary Estimate of Potential Savings
3. Gather Detailed Data on Office Equipment
4. Calculate Savings Using Equipment Data
5. Implement Measures
6. Sustain Momentum


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# Questions?

We've Got Answers!

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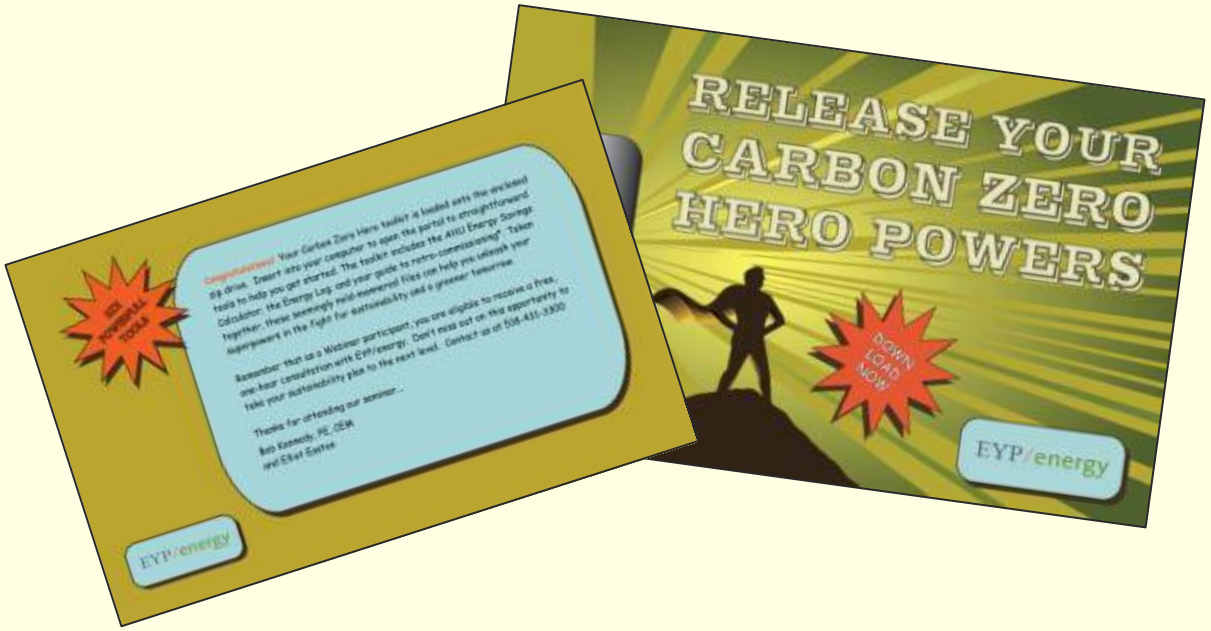
# / Get Your Carbon Zero Hero Toolkit

- Complimentary flash drive
- Case Studies
- PowerPoint presentation



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