






Kick-Starting Your Energy Management Program

January 7, 2014
3:00-4:00 PM EDT

Overview and Agenda

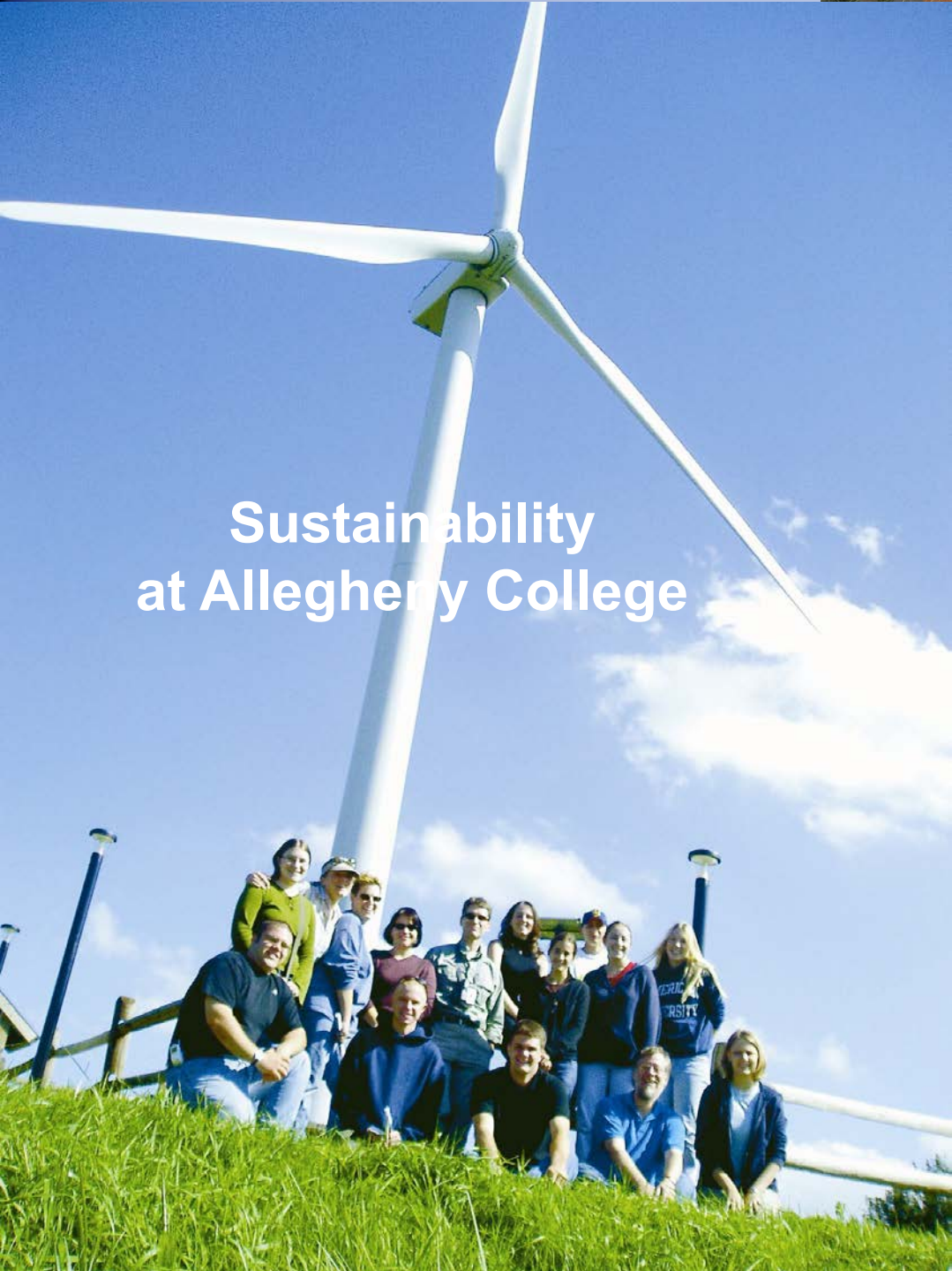
- Welcome and Overview
- Deep Infrastructure Sustainability at Allegheny College
- PowerSave Campus Program: An Overview
- Shorenstein's Summer Fellowship Program
- Additional Resources
- Question & Answer Session

Today's Presenters

Name		Organization
Kelly Boulton		Allegheny College
Renee Lafrenz		Alliance to Save Energy
Jaxon Love		Shorenstein Realty Services

Kelly Boulton
Sustainability Coordinator
Allegheny College

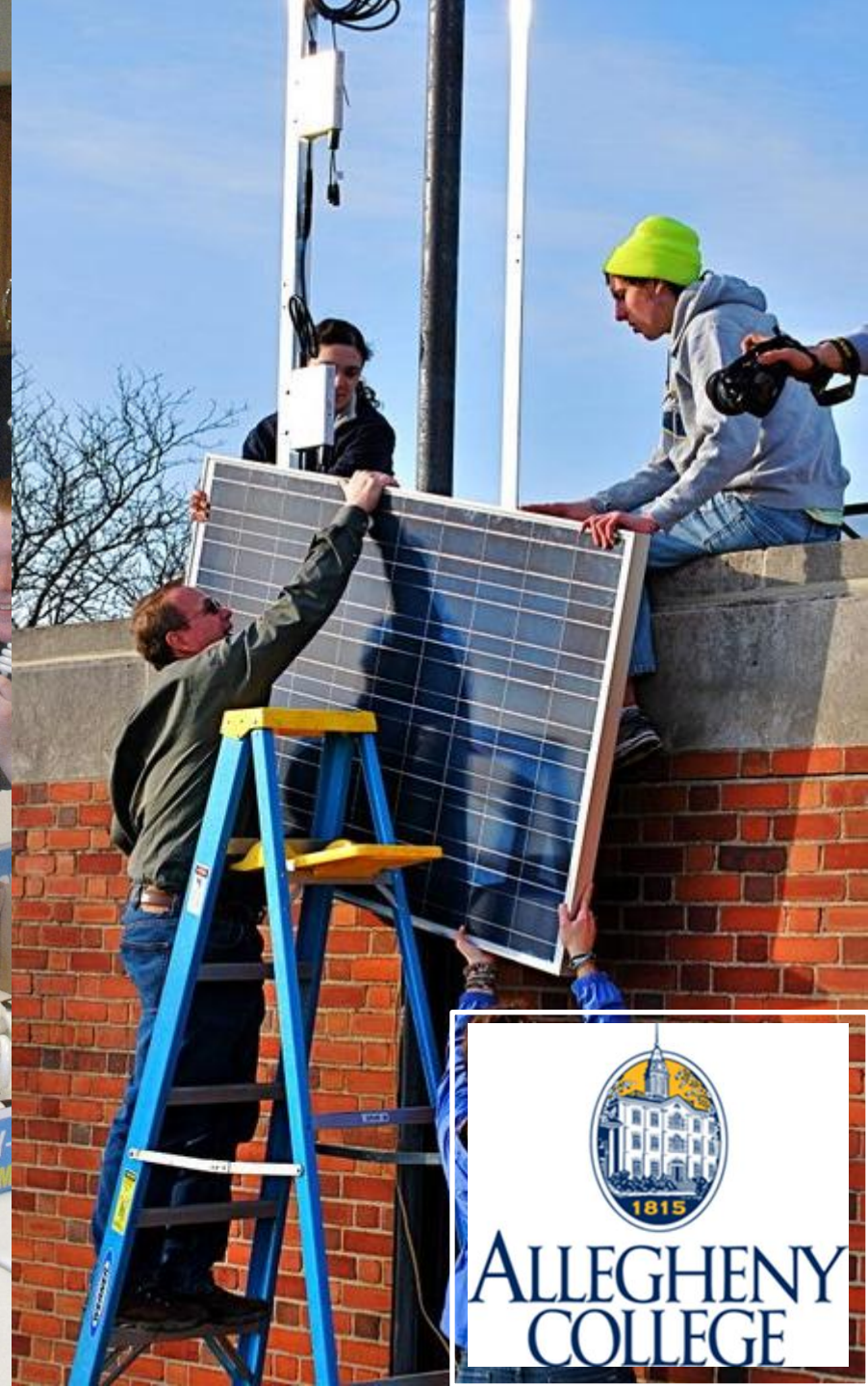
Sustainability at Allegheny College





Perceived Barriers

- Lack of Buy-in
- Lack of Experience and Expertise
- Lack of Time
- Lack of Money



A first try: a failure

Lessons Learned

- Research is a prerequisite
- Cost matters
- Personnel can be impediments



ALLEGHENY
COLLEGE

Student – Faculty Research

- LEED® certification
- Geo-exchange heating and cooling
- Insulation
- Renewable energy
- Student behavior



**ALLEGHENY
COLLEGE**

Physical Plant promotes Sustainability

- College Composter
- Lighting and water fixture retrofits
- Geo-exchange heating and cooling
- New Construction = LEED Silver or better
- Comprehensive Maintenance Plan
- Renovations and Retrofits

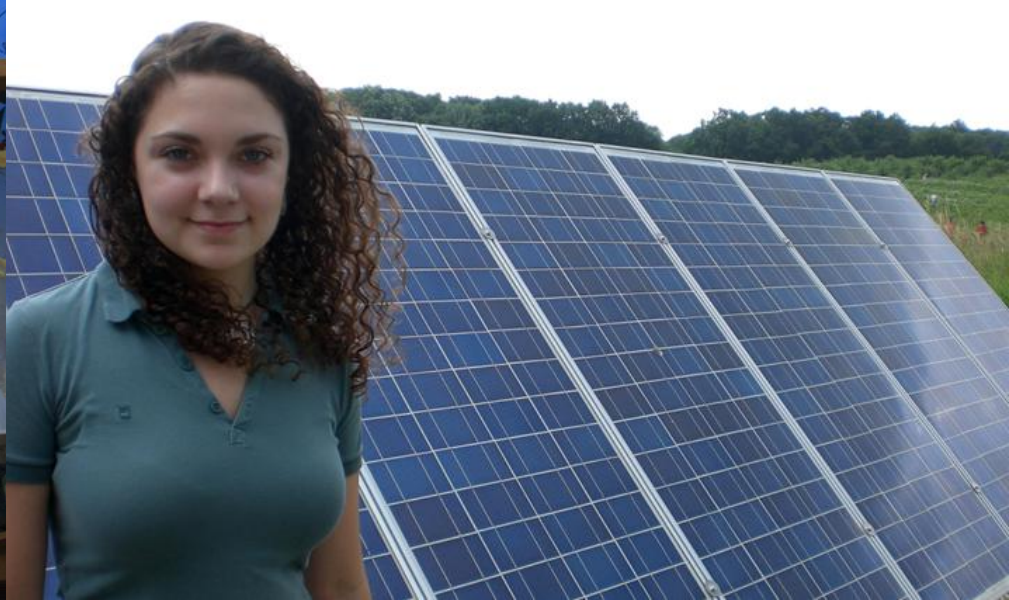


Administrative and Trustee Leadership

- Environmental Guiding Principles
- 100% Wind energy
- American College & University Presidents' Climate Commitment
- Hiring for Sustainability
- Strategic Plan



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COLLEGE**



To build and sustain momentum, efforts should:

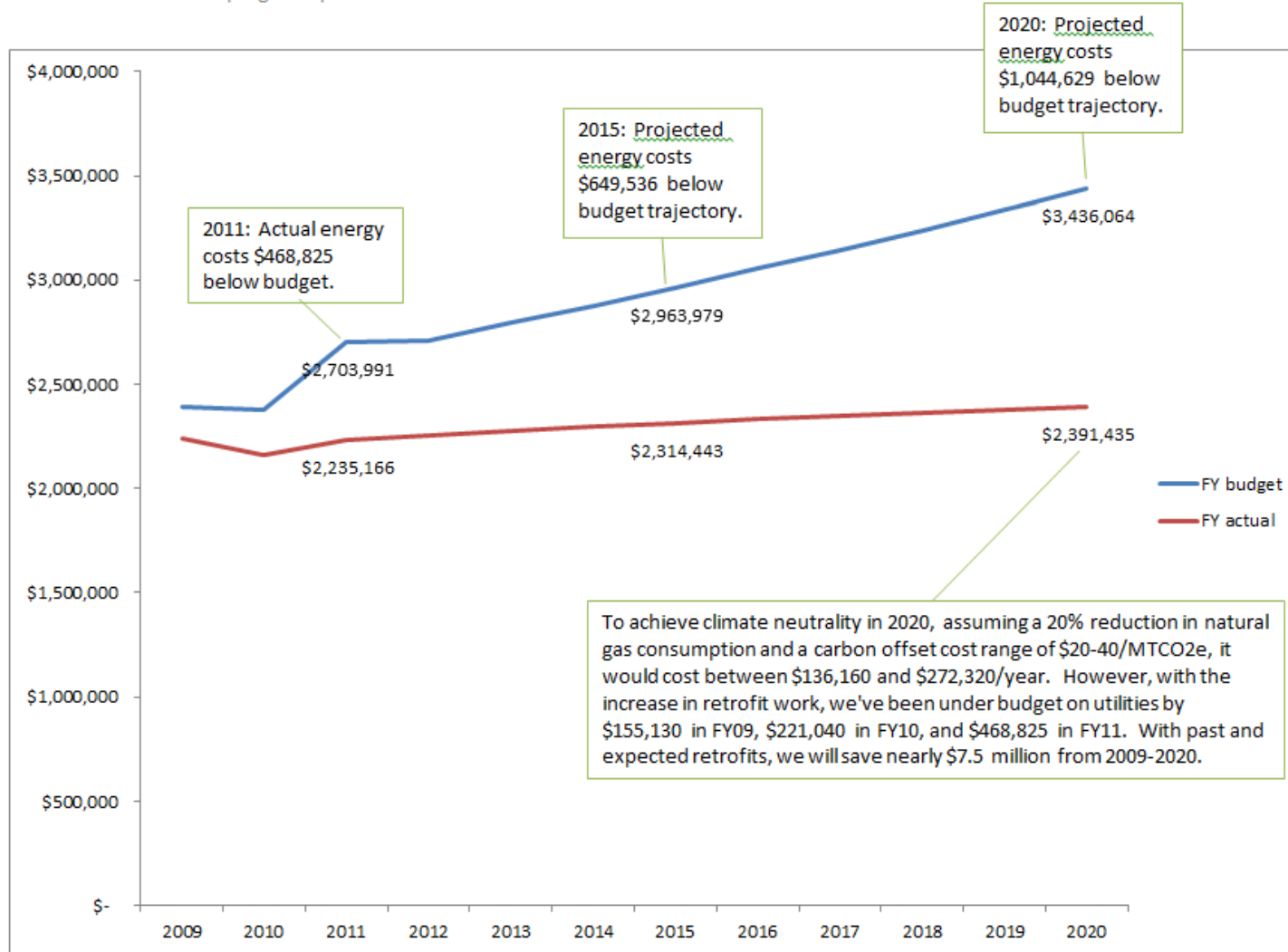
- be grounded in faculty-student research



To build and sustain momentum, efforts should:

- emphasize assessment and dialogue to educate and reinforce the benefits to campus decision-makers

FCC Climate Action Plan progress update 03.14.12





**To build and sustain momentum,
efforts should:**

- merge top-down and bottom-up energy and action



**To build and sustain momentum,
efforts should:**

- explore means of
institutionalizing culture change



**ALLEGHENY
COLLEGE**

**Renee Lafrenz
Program Manager
Alliance to Save Energy**



Using less. Doing more.

PowerSave Campus Program, An Overview

Renee Lafrenz, Senior Program Manager

January 7, 2013

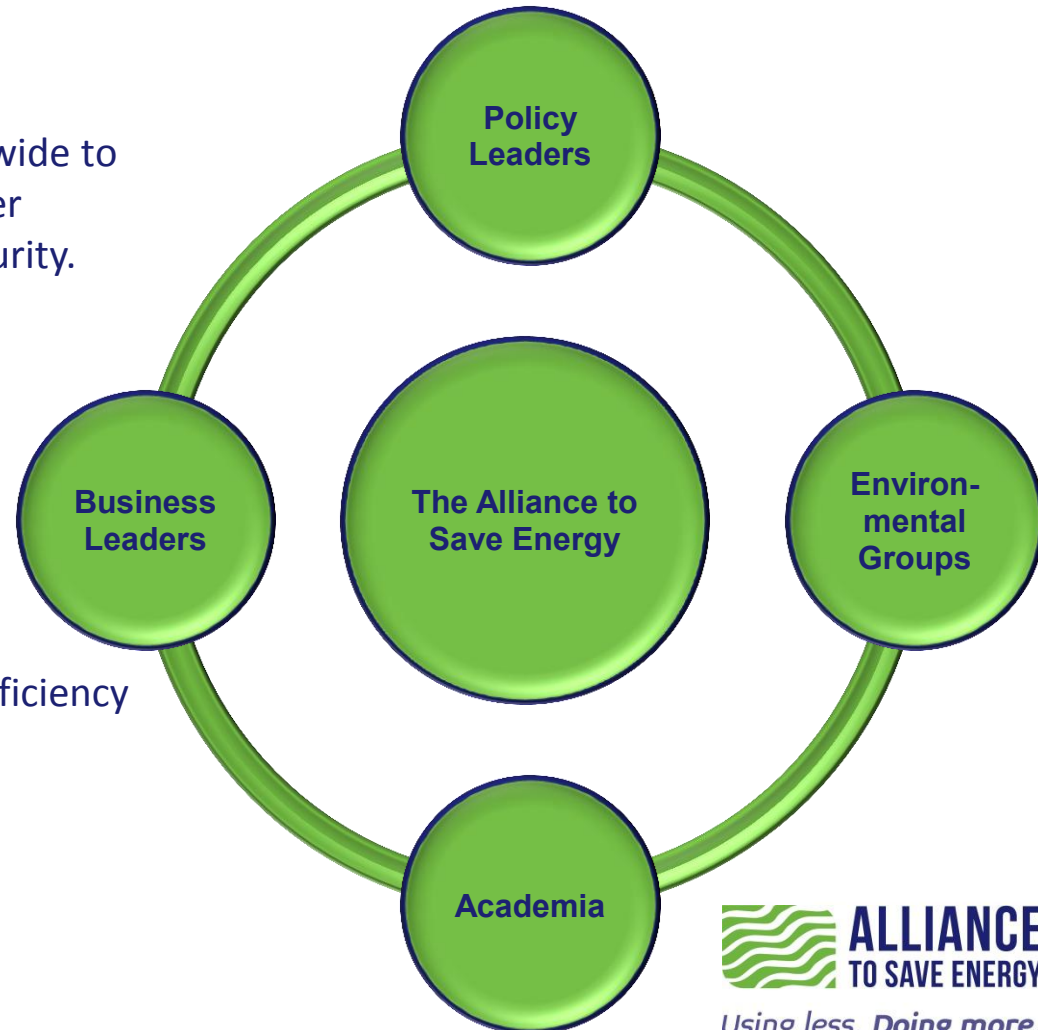
What is the Alliance to Save Energy?

Mission:

■ To promote energy efficiency worldwide to achieve a healthier economy, a cleaner environment, and greater energy security.

The Alliance is...

- Over thirty-five years in the making
- Staffed by 60+ professionals
- Recognized as the premier energy efficiency organization in the world



Alliance Education Programs

- PowerSave Campus (main focus of this presentation)
 - Higher education
- PowerSave Schools
 - PreK - 12
- Energy Hog
 - educational campaign
 - www.energyhog.org



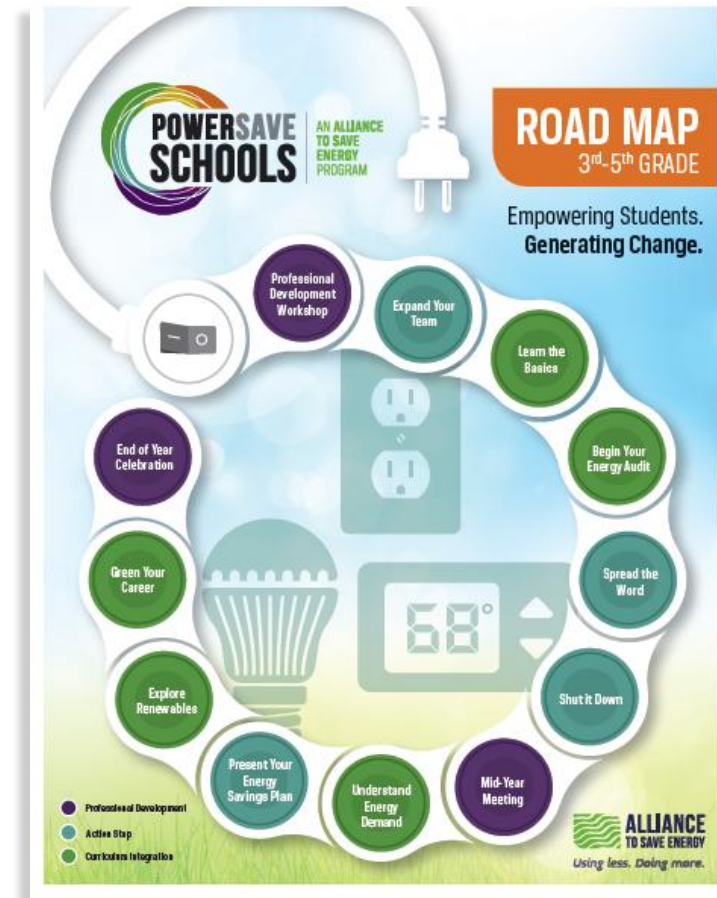


Goals:

- Educating students about energy
- Saving energy in schools through no-cost behavior changes

Program Offerings:

- Resources
 - A comprehensive Road Map for full-year program
 - A PowerSave Energy Audit Toolkit and dynamic STEM Lesson Plans correlated to Common Core and Next Generation Science Standards
 - Electricity tracking
- Support
 - Professional Development for Teachers
 - Dedicated Local Project Leaders
 - 3 District-wide Workshops per year



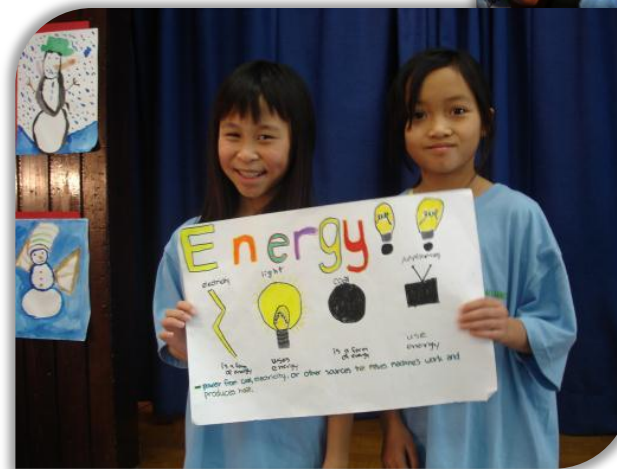


Program Results:

- Extensive student engagement & leadership
- Hands-on, experiential STEM learning
- Focus on IDSM
- Whole-school culture change
- Measurable energy savings (typically 5-15%)

Since 1996:

- 425,000 students educated
- 50,000 MWh saved
- \$6M saved





For more information:

Visit www.ase.org/projects/powersave-schools

Email us at powersave@ase.org



Using less. Doing more.



Greening the Campus,
Building the Workforce

AN ALLIANCE TO SAVE ENERGY PROGRAM

- Student driven energy efficiency workforce education and training program
- Generates actual savings
- Paid student internships



Using less. Doing more.

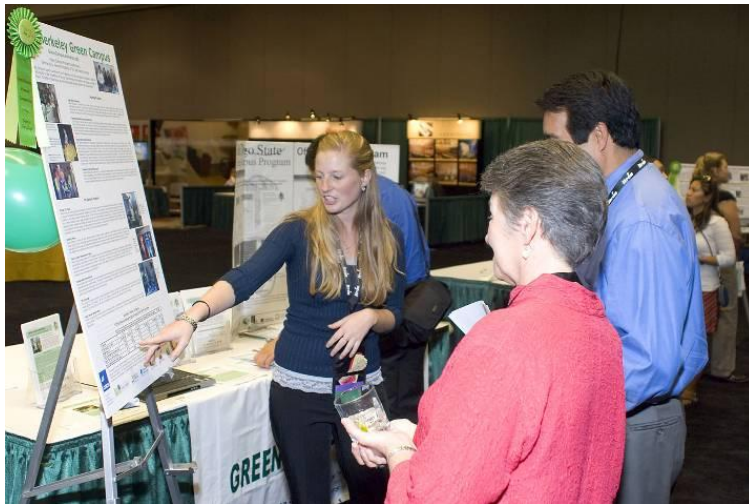
PowerSave Campus Partners

- Support from the following IOUs:
 - PG&E
 - SCE
 - SDG&E
 - SoCal Gas



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Structure & Network

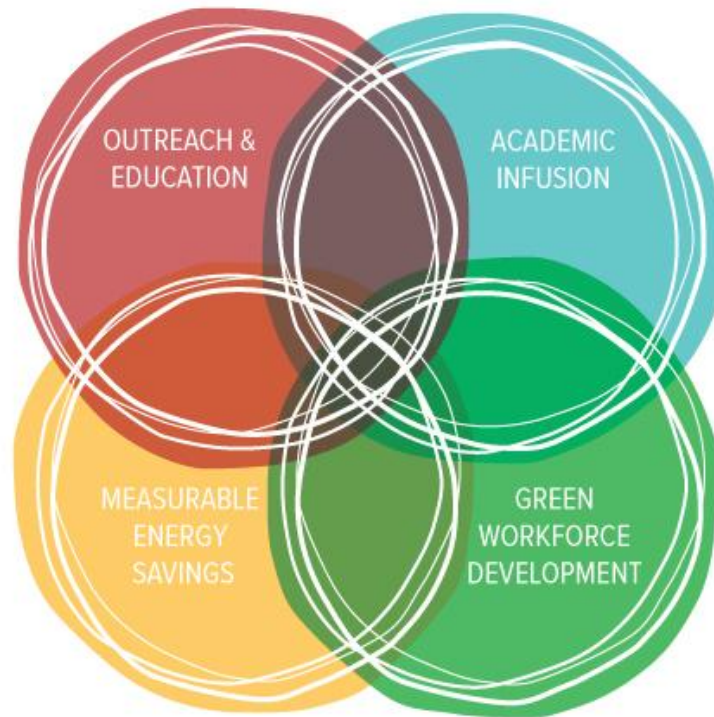


- Intra-campus
 - Individual & team projects
 - Monthly newsletters
 - Quarterly/semesterly stakeholder meetings
- Inter-campus
 - Shared database
 - Regional trainings
 - Biannual convergences

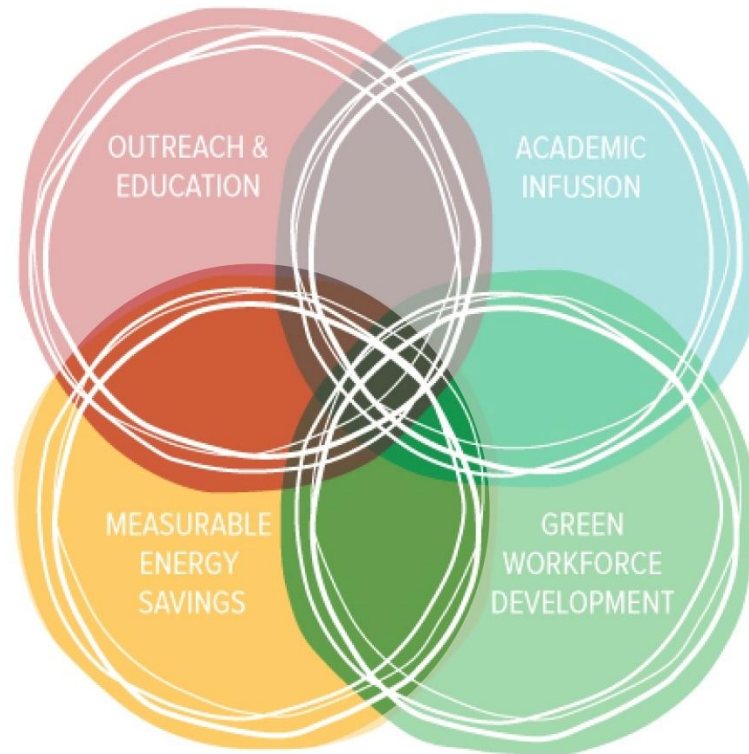
I consider our [PowerSave Campus] interns to be an extension of my position as campus energy manager.

*- Dennis K. Elliot, Manager of Engineering and Utilities, Facility Services-
Cal Poly SLO*

PowerSave Campus Goals



Project Case Studies



Fumehood
campaigns
HOBO data
loggers
Parking lot
lighting
retrofit

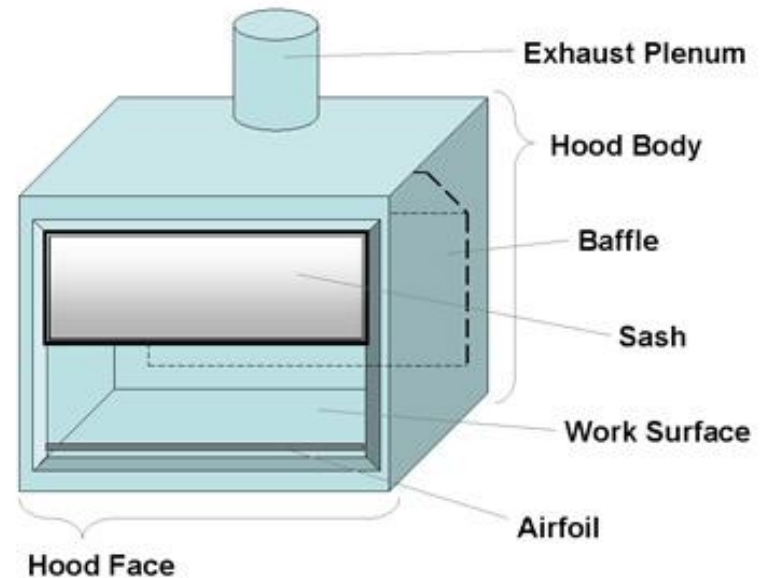
1. Fumehood Campaign

- Alliance to Save Energy
- Lawrence Berkeley National Lab
- Western Cooling Efficiency Center



Using less. Doing more.

- First, what is a fume hood?
- Each hood can use as much energy as 3.5 households!!
- As an example, UCLA has 1,500 hoods



Step 1: Site Survey

- Leverage expertise of partners
- Measure size of labs and building
- Determine HVAC characteristics



Step 2: Baseline Measurements

- 5-10 morning walk throughs AND 5-10 mid-day walk throughs during the span of 1 week
- Do this 2-3 times
 - Baseline beforehand
 - Mid-competition (optional)
 - After campaign

Step 3: Education Campaign



ALLIANCE TO
SAVE ENERGY
Creating an Energy-Efficient World



AN ALLIANCE TO
SAVE ENERGY PROGRAM
**green
campus**
EMPOWERING TOMORROW'S
ENERGY EFFICIENCY LEADERS

**I WANT YOU...
TO SHUT YOUR SASH!**

**IF LEFT OPEN, A FUME HOOD COULD USE AS MUCH
ENERGY AS 3.5 HOUSES! SHUT YOUR SASH AND
REDUCE CONSUMPTION UP TO 60%.**

TAKE OUR SURVEY AT WWW.SASHSURVEY.GREENCAMPUSBRUIINS.ORE

FOR A CHANCE TO WIN A \$25
AMAZON.COM GIFT CERTIFICATE

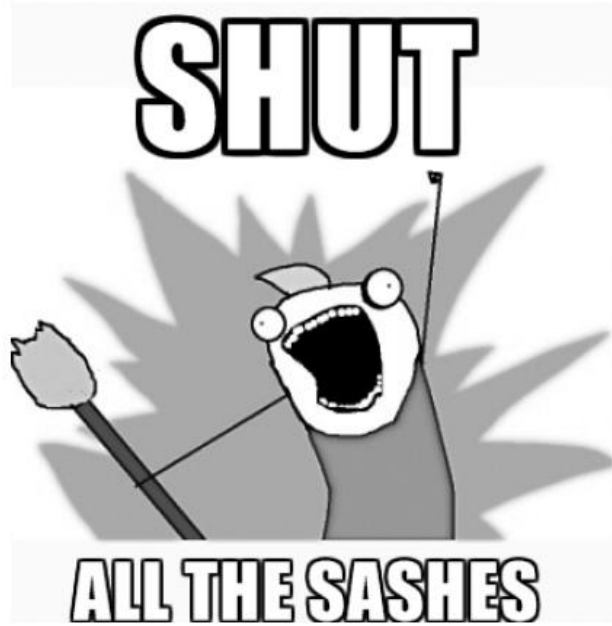


- Flyers
- Stickers
- Events
- The sky is the limit!

 **ALLIANCE
TO SAVE ENERGY**

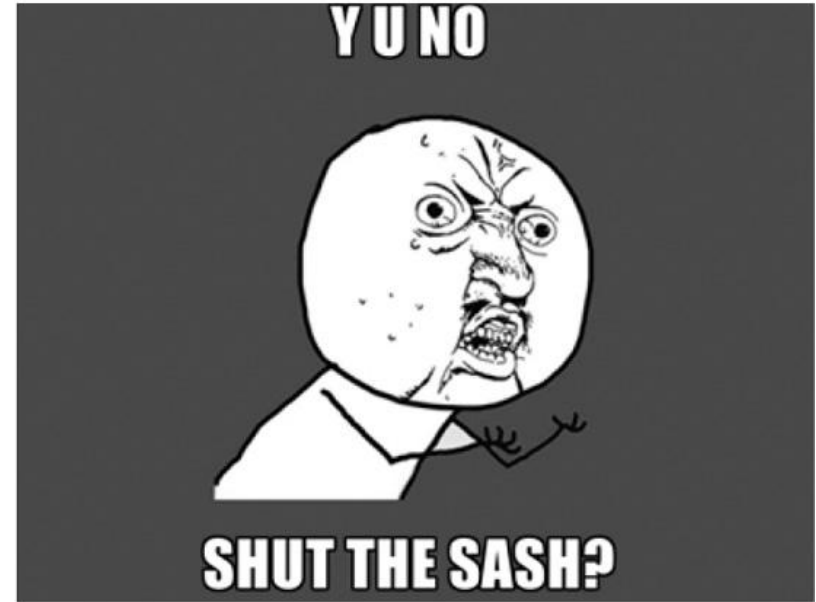
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UC Berkeley Meme Competition



**Shut the Sash Energy Saving Competition
Running October 29-November 16, 2012**

Presented by



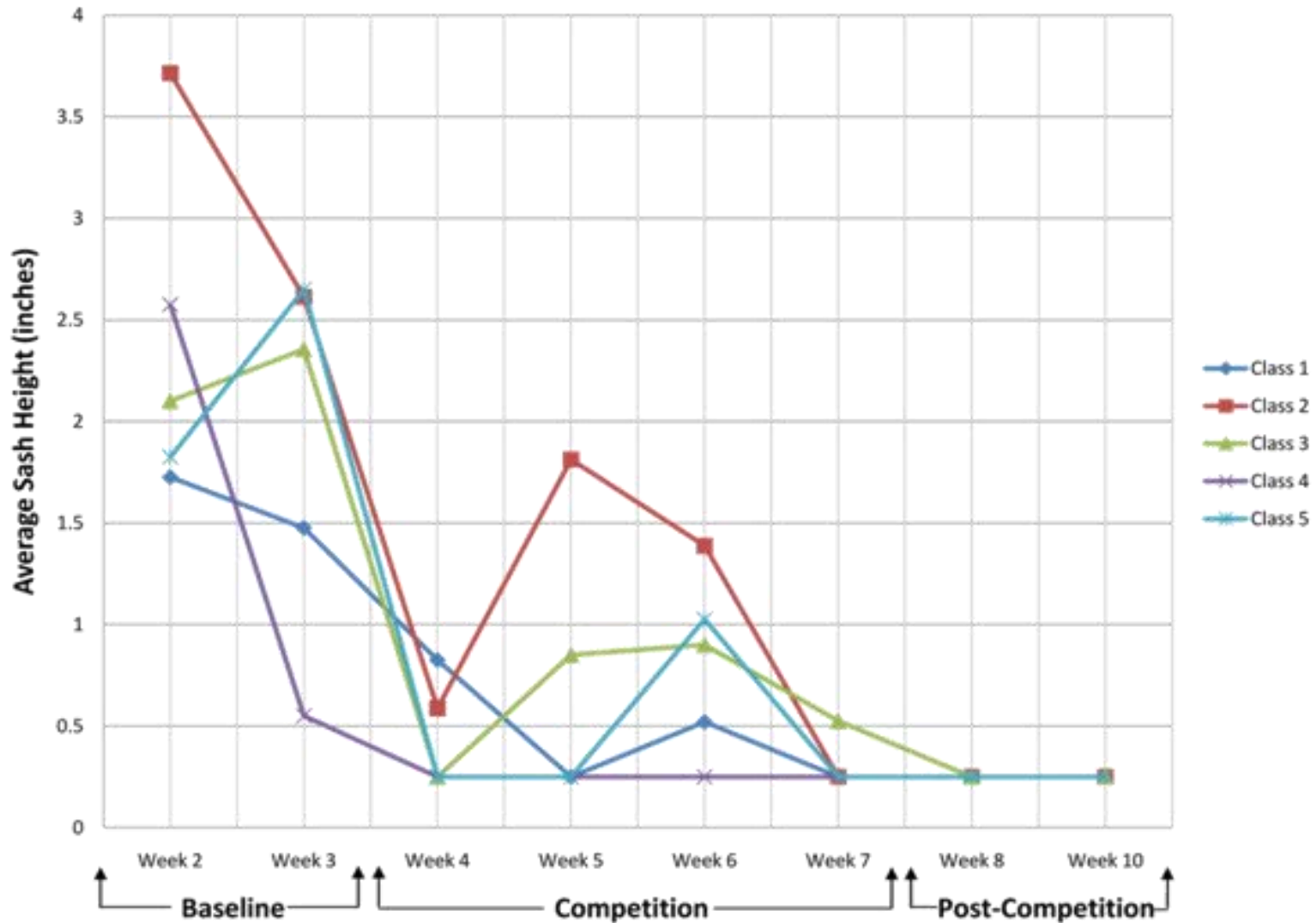
**Shut the Sash Energy Saving Competition
Running October 29-November 16, 2012**

Presented by



Using less. Doing more.

Fall Quarter Fume Hood Competition Sash Heights



Lessons Learned

- Importance of student advocacy
- Lots of bang for your buck
- San Diego State saved \$10,000 in one month!
- Can lead to other projects in labs



2. HOBO Lighting Project

A light turned off will always consume less energy than the most efficient light left on

Lighting retrofit project

- Yields high energy savings
- High implementation cost

HOBO lighting project

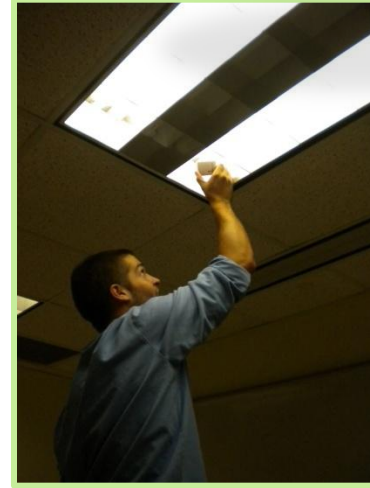
- Yields energy savings
- Low implementation cost (\$79 for each logger and \$99 one-time fee for software)

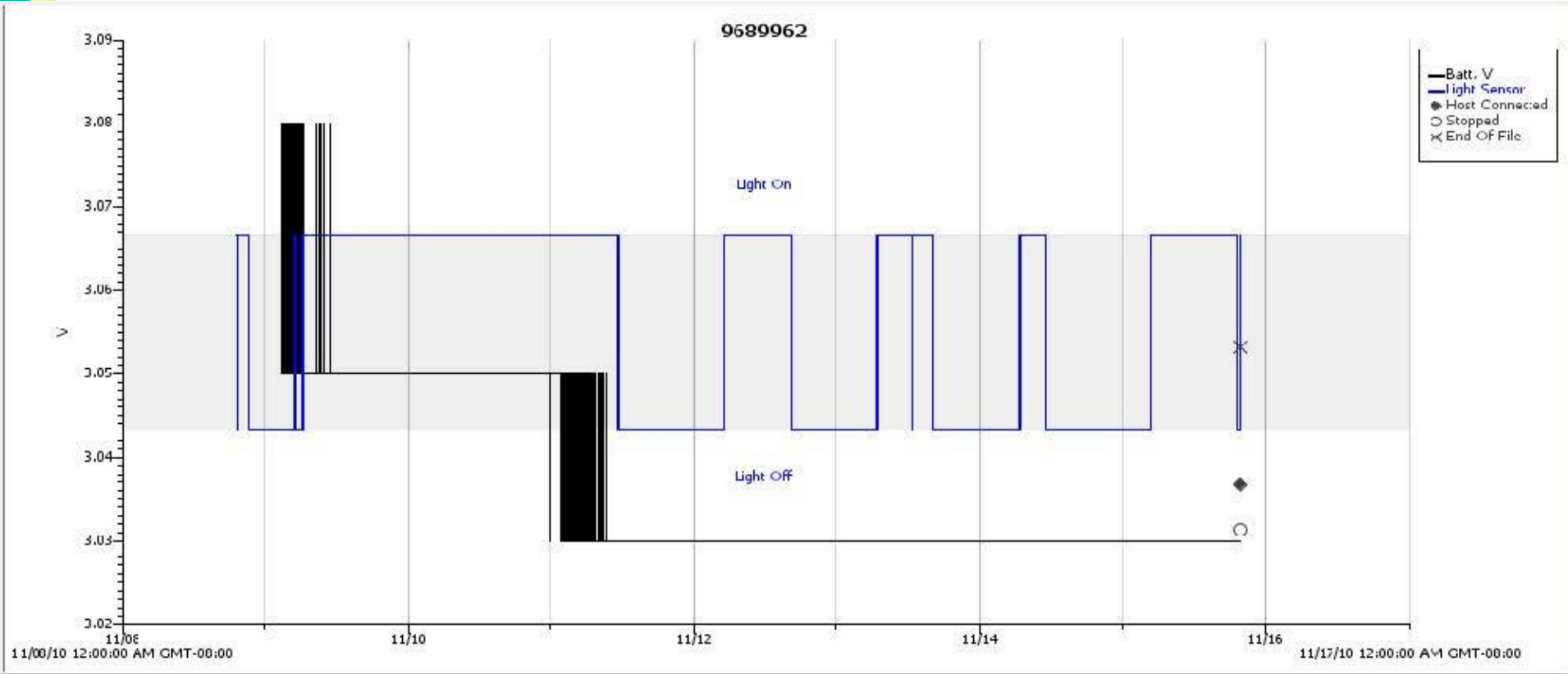


**1. Install
Data
Loggers**

**2. Analyze
Data**

**3. Report
malfunctioning
sensors**





Findings

43 out 167 classrooms or 25% of classrooms had defective sensors!

Estimated Savings:

61,391 kWh/year

\$8,000 a year

42,000 pounds of CO₂

3. Parking Lot Lighting Retrofit

- High energy savings
- Straight forward process
- Easily replicable on other campuses

Well then what's stopping you?

- Too expensive?
- Lack of bandwidth?
- Lack of equipment?
 - Vests, Radios, Cones, Overlays, Clipboard, Light meter (\$33)



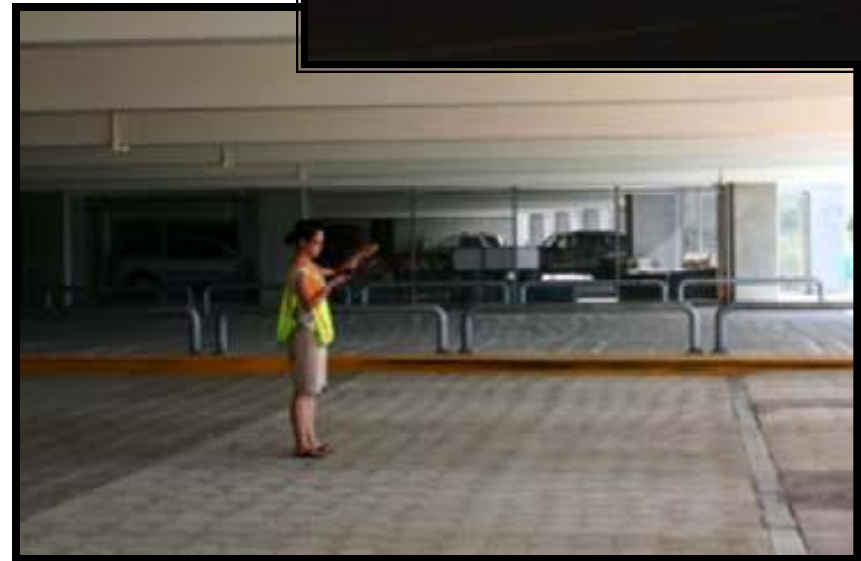
**1. Identify
Energy
Consumption**

**2. Obtain
Permission**

**3. Conduct
Audit**

**4. Report
Findings and
Suggestions**

- At Cal Poly Pomona, measured lighting levels at various times of day on each level of garage
 - Compared to standards from Illumination Engineering Society of North America (IESNA)
- Took inventory of lamps
- Found many opportunities for efficiency gains!





- Followed-up with Parking and Transportation Services (PTS)

- Lighting audit results
- Recommendation Report with two options:
 - **Option I:** 6-hour power down (12am - 6am)
 - **Option II:** de-lamp strategy

- PTS Implementation:

- Option I implemented immediately (6-month duration)
- Later, Option II implemented

- Savings:

- 437,000 kWh per year
- \$61,000 (\$0.14 per kWh)



Thanks!

Questions?

rlafrenz@ase.org



Jaxon Love
Sustainability Program Manager
Shorenstein Realty Services



Shorenstein – EDF Corporate Partnership

***Climate Corps Summer Fellowship
Program***



About Shorenstein



Shorenstein Realty Services is a national real estate investment company

- Owns/manages 25.9 msf of office and mixed-use properties
- A fully integrated investment and operating company with 270 professionals
- Climate Corps host since 2009

Shorenstein Summer Fellowship

NEED

- Support for energy and sustainability objectives

SOLUTION

- Student fellowship program



EDF CLIMATE CORPS

The Fellowship at Work



Shorenstein Success Stories

- Driving key sustainability objectives forward

Examples

**Tenant
Engagement**

**Identifying
Energy
Savings**

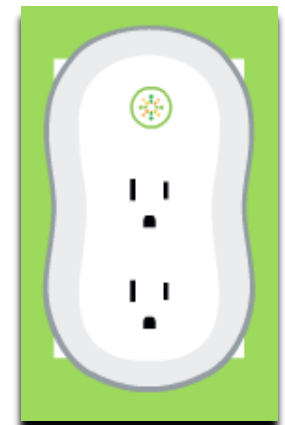
**Verifying
Energy
Savings**

Example: Tenant Engagement

- Tenant [Sustainability Resources Website](#)



- Tenant Energy Savings Challenge



Example: Identifying Energy Savings

- Building Sustainability Profiles
 - Identified Measures
 - Low-wattage T8 retrofits
 - LED retrofits for parking lighting



- Over \$250,000 annual energy savings

Example: Verifying Energy Savings

- “Energy Savings Tour” Program Evaluation



Shorenstein Cuts Energy Costs Throughout its Portfolio

Nov. 14, 2011

Case Study: 2010 Energy Savings Tour

Metric	Result
Energy Results	
Annual Energy Savings	12.3 million KWh
Percent Energy Savings	5.1%
Average Demand Savings	1,400 KW
Environmental Results	
Annual CO ₂ Emissions Reduction	4,800 metric tons
Financial Results	
Annual Cost Savings	\$1.7 million
Total Program and Retrofit Cost	\$800,000
Payback Period	6 months
3-Year Savings NPV	\$3.4 million

Outcomes

- Robust corporate energy management and sustainability program
- Sustainability Program Manager hired in 2012



About EDF Climate Corps Program

- Targeted energy efficiency fellowships
- Specially trained MBA and MPA students
- \$1.3 billion in energy savings since 2008
- Host organizations apply by February

EDF CLIMATE CORPS



Additional Resources

For More Information

- Allegheny College
 - [Implementation Model](#)
 - [White Paper: The Economic Advantages of Research and Dialogue](#)
- Alliance to Save Energy
 - [PowerSave Campus Program](#)
 - [PowerSave Schools Program](#)
 - [Energy Hog](#)
- Shorenstein Realty Services
 - [Implementation Model](#)
 - [EDF Climate Corps Program](#)

Question & Answer Session

Join Us for the Next Better Buildings Webinar

Real-time Energy Management: Improving Energy Efficiency Every 15 Minutes

Tuesday, February 4, 2014
3:00-4:00 PM EST

David Borchardt, Eugenia Gregorio (The Tower Companies)
Stevie Freeman-Montes, Cindy Dolezel (City of Beaverton OR)

Organizations have traditionally relied on monthly utility bills to track whole-building energy use, and to benchmark against previous year's usage or other buildings. Tracking energy use at a more granular level within buildings – by system or piece of equipment, with reporting every 15 minutes in some cases – can help building staff isolate usage issues and correct them much more quickly. This session features Better Buildings Challenge partners who are employing real-time energy management to achieve their energy reduction goals. The Tower Companies will describe their efforts working with a third party vendor who installed sensors throughout their commercial and residential buildings and acts as an “energy guardian angel,” alerting Tower of energy anomalies and proposed corrections. The City of Beaverton, Oregon will present their pilot real-time energy monitoring program for city buildings, which shows great promise.

[Register](#)

Additional Questions? Feel Free to Contact Us

betterbuildingswebinars@ee.doe.gov

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