



A Lot With a Little: Leveraging Outside Resources to Augment Your Energy Management Program

May 8, 2014

Overview and Agenda

- Welcome and Overview
- Shorenstein's Summer Fellowship Program
- Deep Infrastructure Sustainability at Allegheny College
- PowerSave Campus and PowerSave Schools Programs with the Alliance to Save Energy
- Discussion

Today's Presenters



Jaxon Love
Sustainability Program Manager
Shorenstein Realty Services



Kelly Boulton
Sustainability Coordinator
Allegheny College



Merrilee Harrigan
Vice President, Education
Alliance to Save Energy

Jaxon Love
Sustainability Program Manager
Shorenstein Realty Services

A close-up photograph of green grass blades, likely from a reed or similar plant, covered in numerous small, clear water droplets. The blades are vibrant green and have a textured, ribbed appearance. The background is softly blurred, showing more of the same plant. A dark blue rectangular box is overlaid on the center of the image, containing white text.

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

About EDF Climate Corps Program

- Targeted energy efficiency fellowships
- Specially trained MBA and MPA students
- \$1.3 billion in energy savings since 2008
- Apply for 2015 Climate Corps Program
 - Contact Scott Wood: swood@edf.org

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](#)

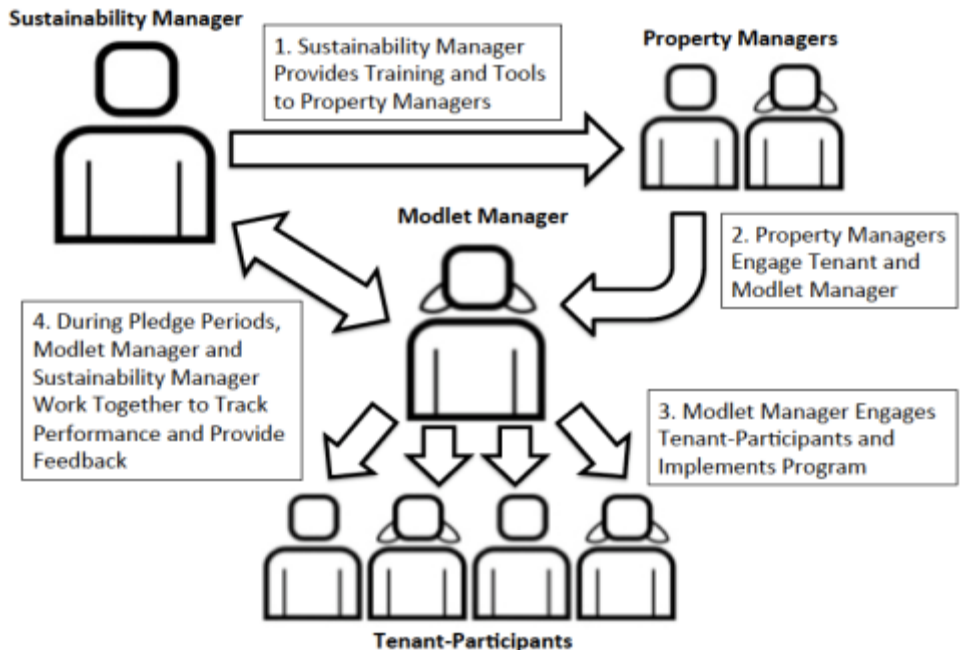


Example: Tenant Engagement

- Tenant Energy Savings Challenge



ThinkEco Modlet



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



2013 Climate Corps Outcomes

Shorenstein Properties - 2013

Jacob Talbot | University of Michigan



Project

- Building Energy Performance Surveys

Result

- 2.5 Million KWh/year
- 1,100 MT CO₂e/year
- *\$625,000 NPV Savings*

2014: Two is Better than One

- San Francisco
 - Corporate Office



- Chicago
 - River North Point Property



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EDF CLIMATE CORPS



Kelly Boulton
Sustainability Coordinator
Allegheny College



Deep Infrastructure Sustainability at Allegheny College



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COLLEGE



Perceived Barriers

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



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A first try: a failure

Lessons Learned

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



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Student – Faculty Research

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



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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



**ALLEGHENY
COLLEGE**



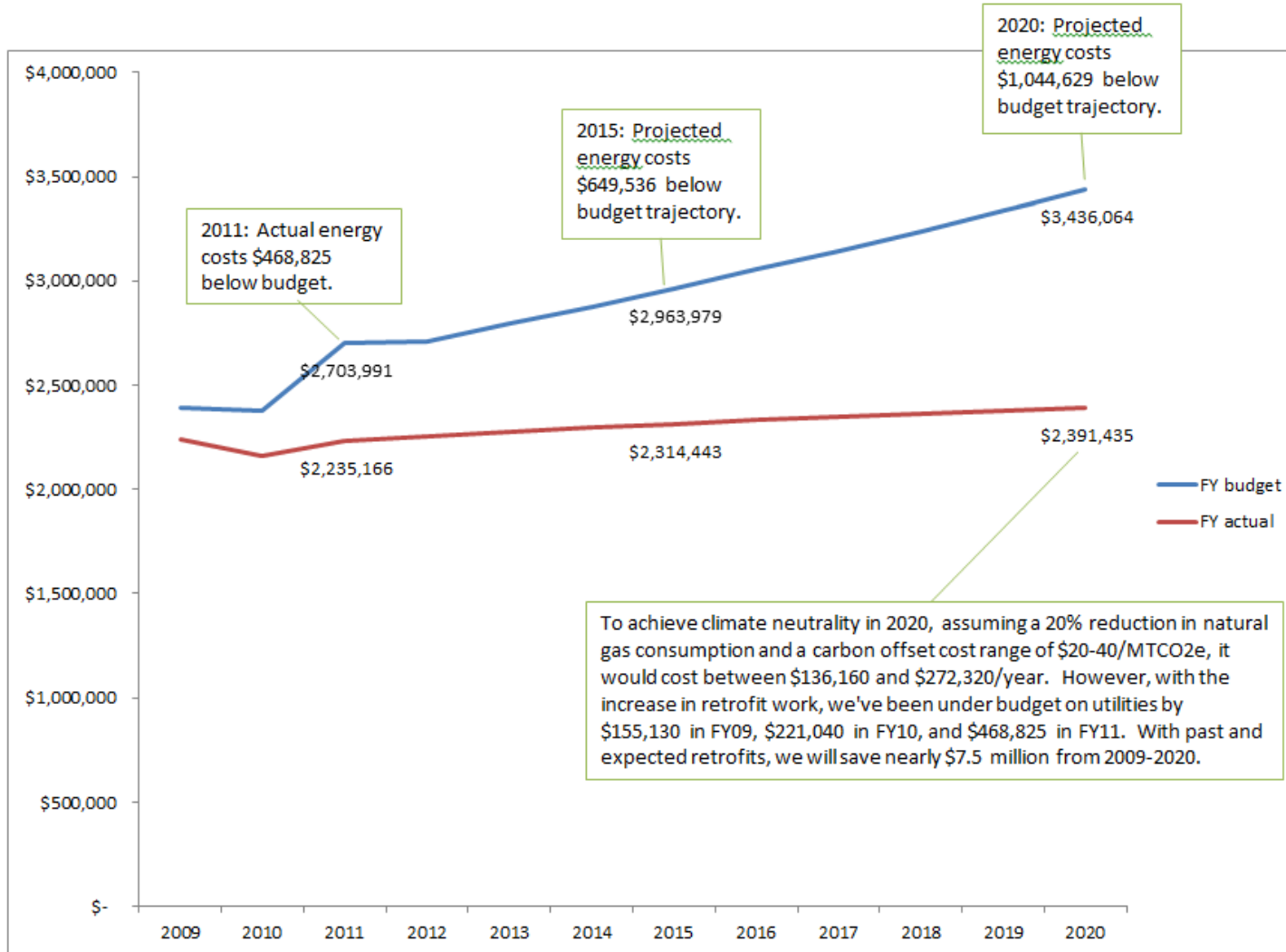
To build and sustain momentum, efforts should:

- 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





**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



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Merrilee Harrigan
Vice President, Education
Alliance to Save Energy



Using less. Doing more.

Doing a Lot with a Little:

PowerSave Campus

and

PowerSave Schools Programs

Better Buildings Conference 2014

Merrilee Harrigan

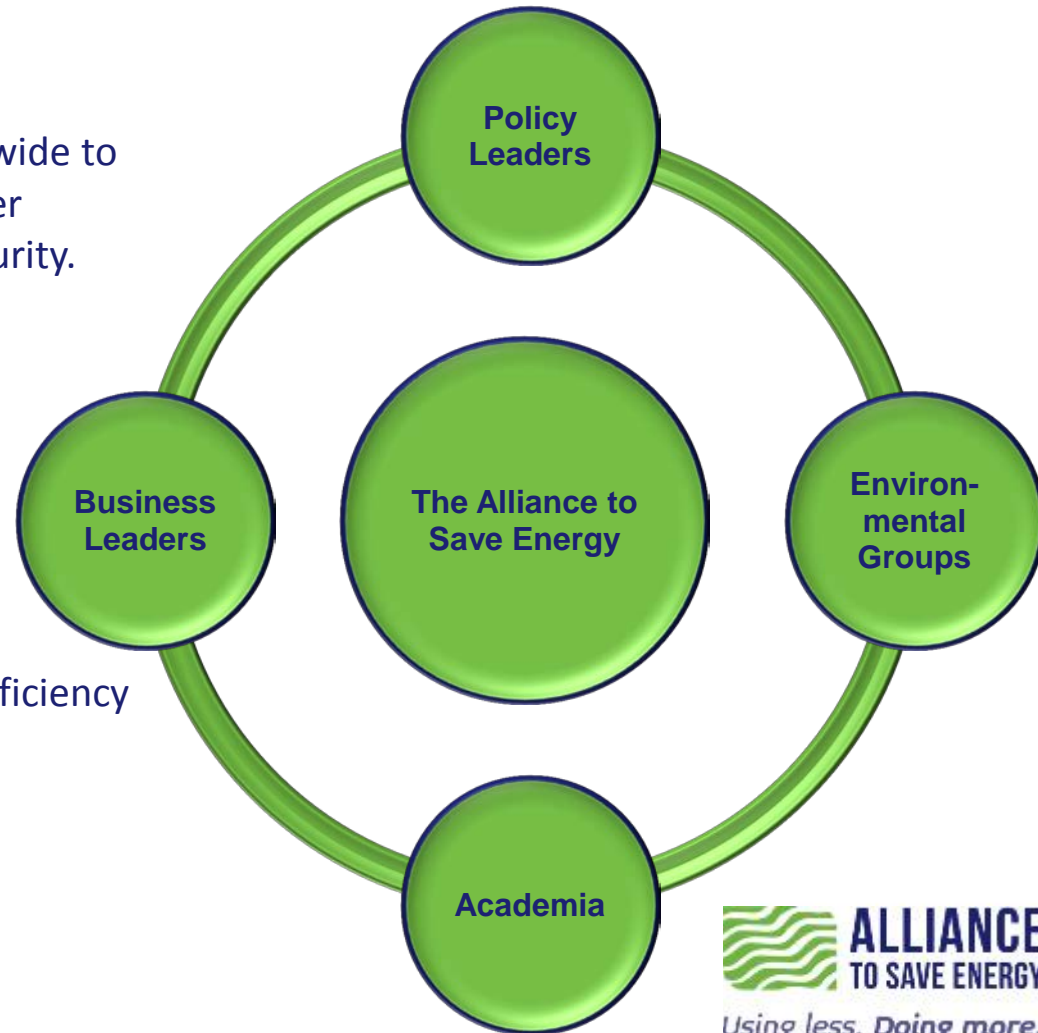
What is the Alliance to Save Energy?

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

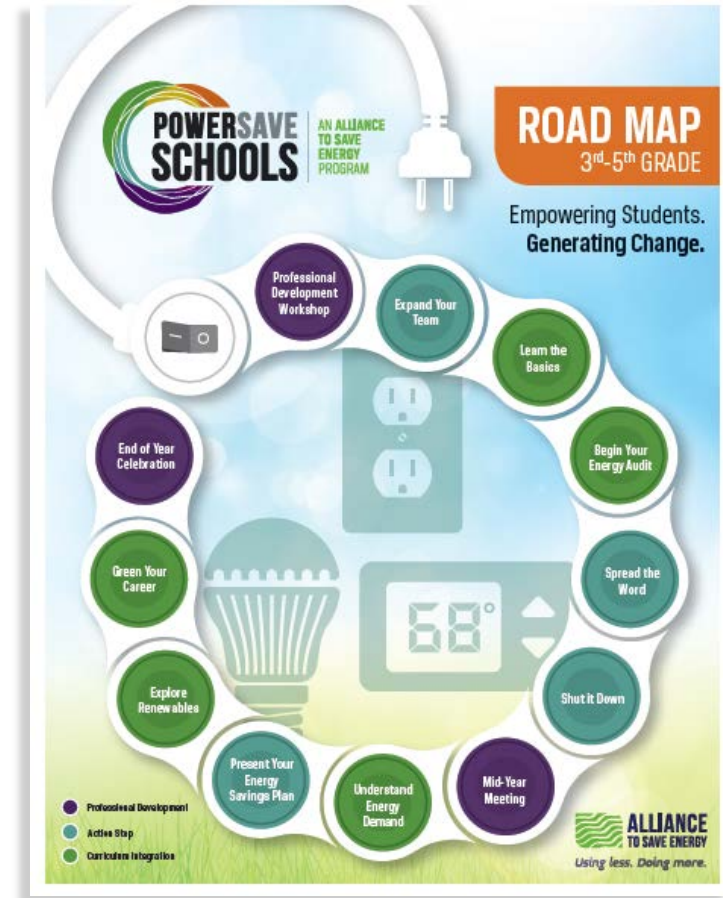
- PowerSave Schools
 - PreK – 12
- PowerSave Campus
 - Higher education





Goals:

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



Program Resources and Support

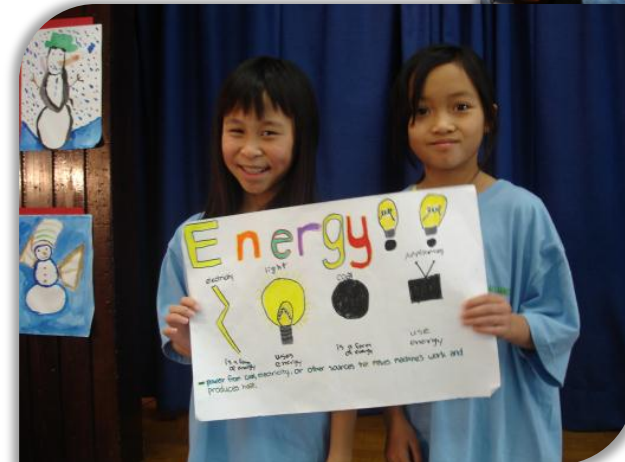
- Resources
 - A full-year Road Map
 - Diagnostic tools
 - STEM Lesson Plans correlated to Common Core and Next Generation Science Standards
 - Electricity tracking
- Support
 - Professional Development for Teachers
 - Dedicated Local Project Leaders
 - 3 District-wide Workshops per year

**Secret Sauce: Student
Leadership**

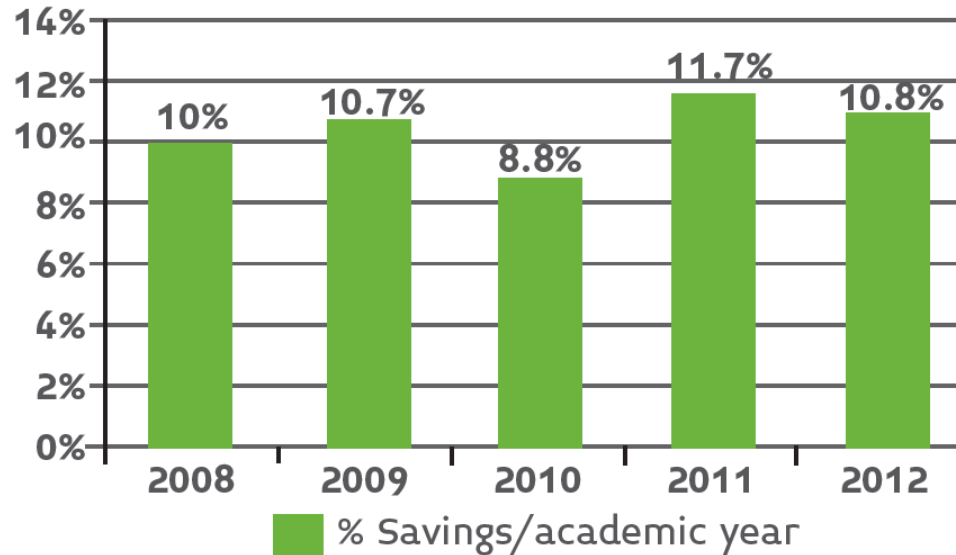


Program Results

- Deep student engagement & leadership
- Hands-on, real-world STEM learning
- Whole-school culture change
- Measurable energy savings (typically 5-15%)



PowerSave as a Utility “Energy Resource”



YEARS	NUMBER OF SCHOOLS*	kWh SAVINGS	AVG % ENERGY SAVINGS	\$ ENERGY SAVINGS
2012-13	83	5,194,956	12.03%	\$987,071
2011-12	148	12,667,439	11.73%	\$1,556,178
2010-11	146	9,959,931	8.80%	\$1,296,176
2009-10	74	6,626,691	10.72%	\$997,791
2008-09	60	3,806,480	9.98%	\$633,718
TOTAL	511	38,255,497	10.50%	\$5,470,934

*13 schools participated in the program but not in energy tracking.



For more information:
Visit powersaveschools.org
Email us at powersave@ase.org





Greening the Campus,
Building the Workforce

AN ALLIANCE TO SAVE ENERGY PROGRAM

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

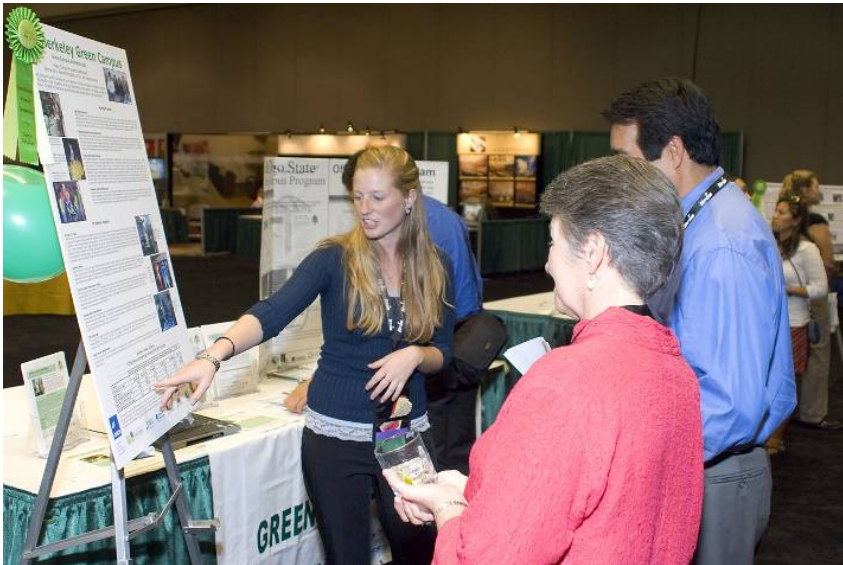


Using less. Doing more.

- Empowers students to be tomorrow's energy efficiency leaders
- Generally funded by utilities as energy efficiency and workforce development programs



Structure & Network

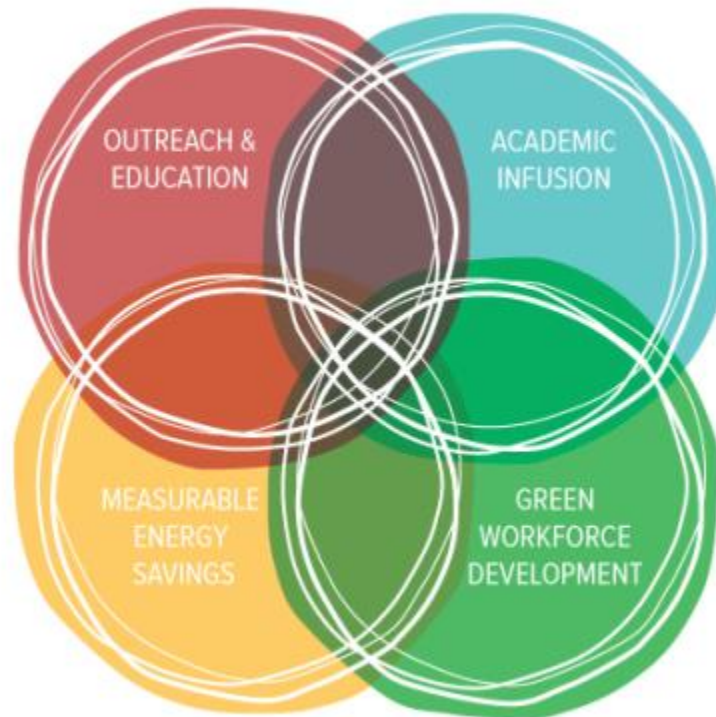


- 3-6 paid interns on each campus
 - Accountability
 - Individual & team projects
 - Monthly newsletters
 - Work closely with stakeholders
- Collaboration between campuses
 - Shared database
 - Regional trainings
 - Biannual convergences
- Complements other sustainability initiatives on campus

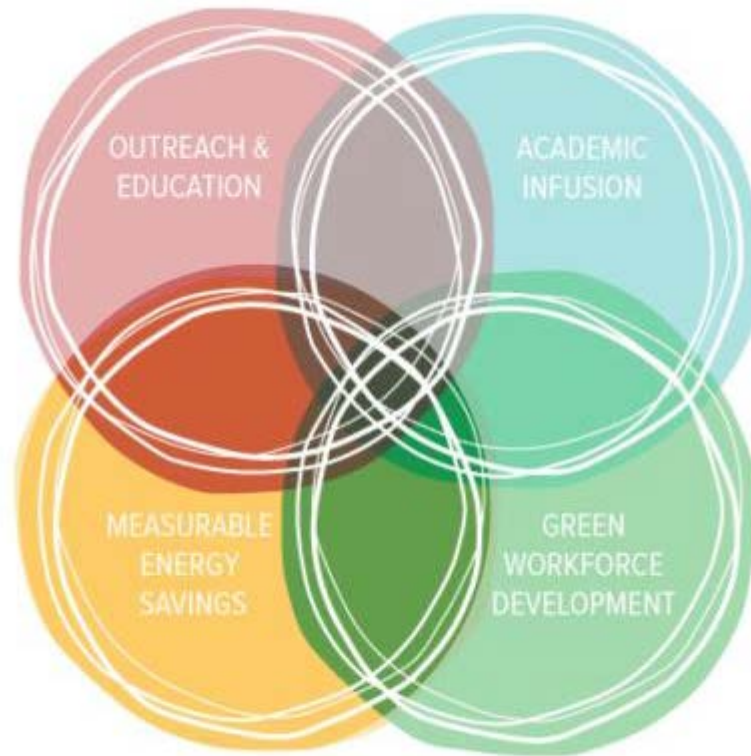
I consider our [PowerSave Campus] interns to be an extension of my position as campus energy manager.

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

PowerSave Campus Goals



Project Case Studies



1. Fumehood campaigns
2. HOBO data loggers
3. Parking lot lighting retrofit

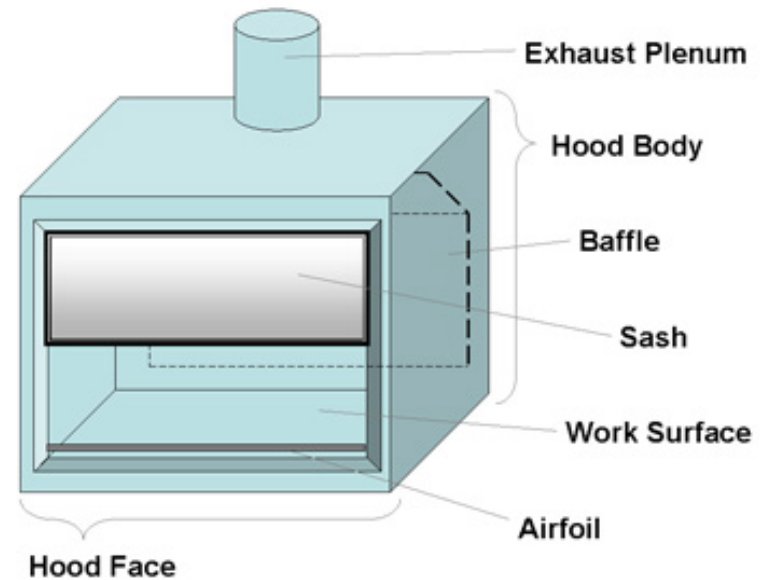
1. Fumehood Campaign

- 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



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!



Using less. Doing more.

UC Berkeley Meme Competition



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

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

Presented by

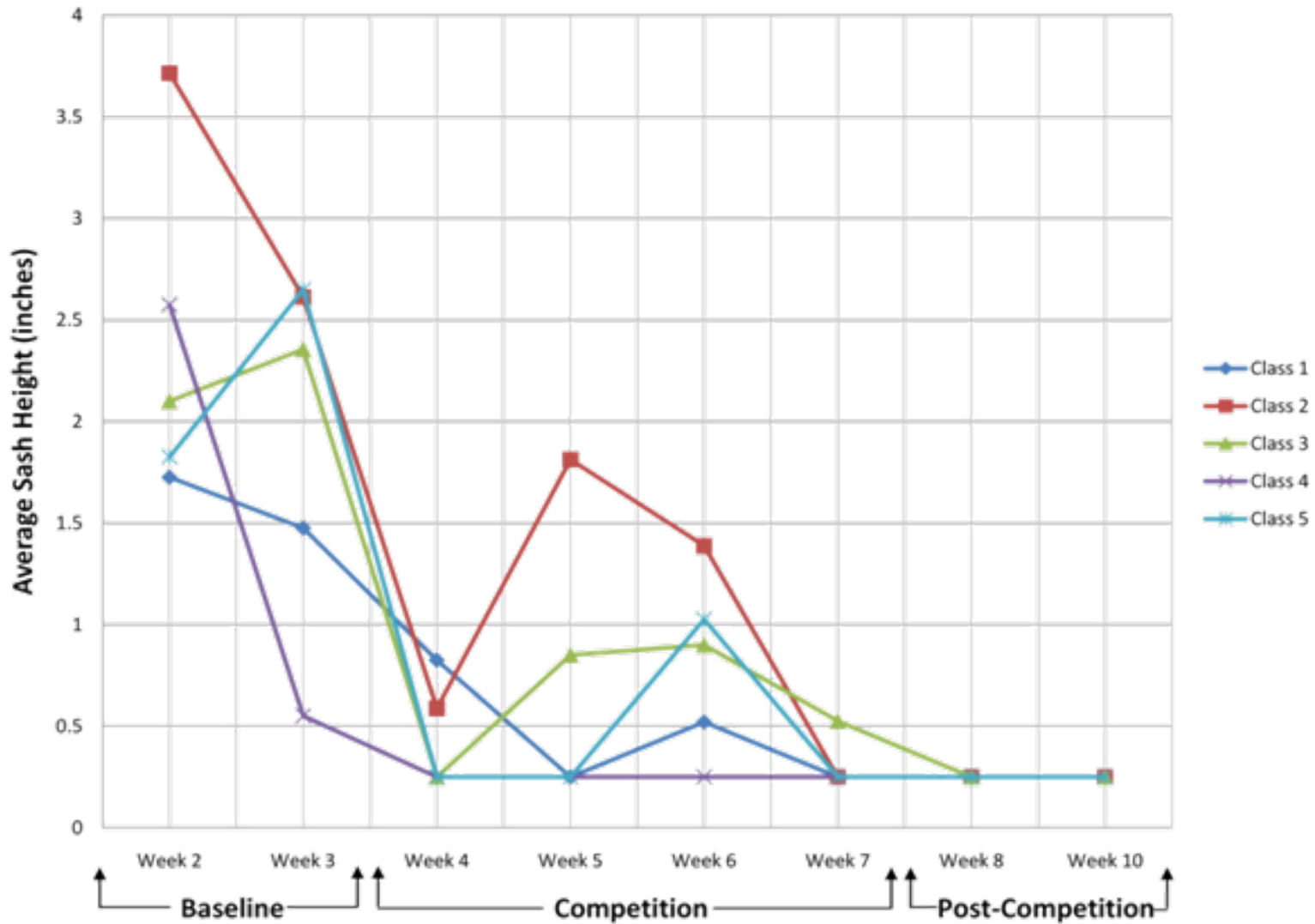


Presented by



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

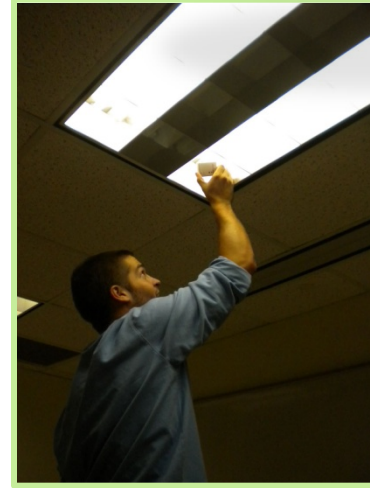
- Yields energy savings
- Low implementation cost (\$79 for each logger and \$99 one-time fee for software)

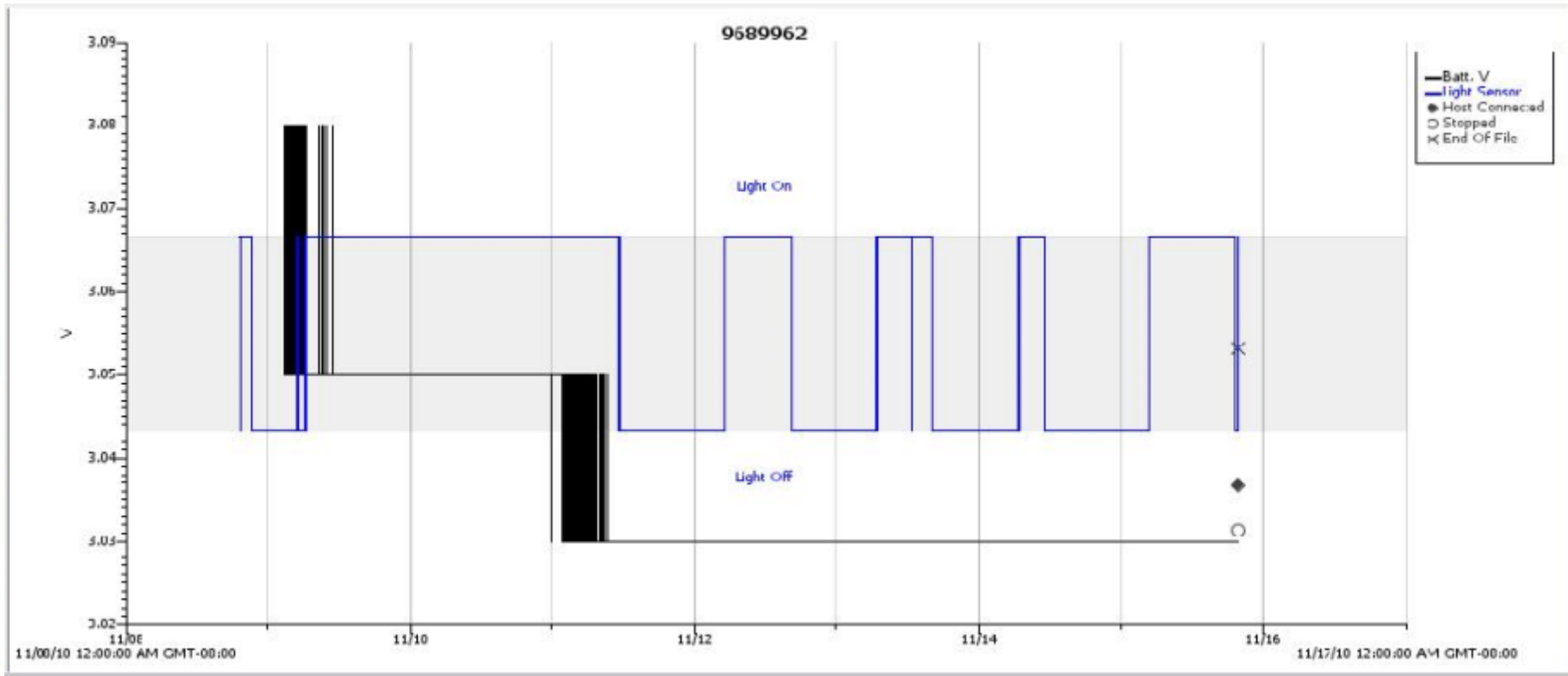


**1. Install
Data
Loggers**

**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 – Overlooked Opportunity

- 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)



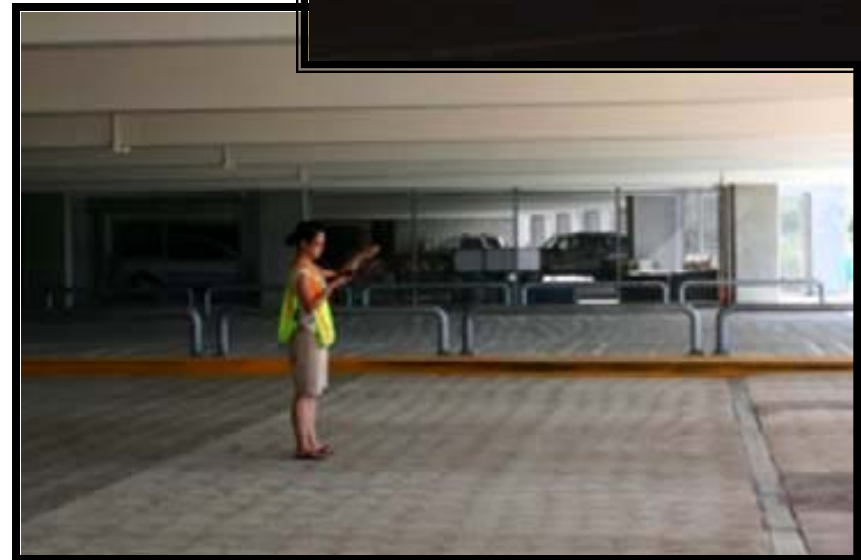
**1. Identify
Energy
Consumption**

**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!

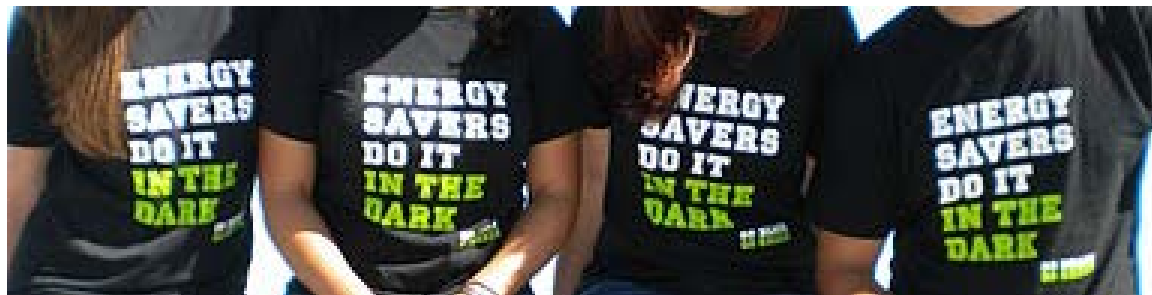
Questions?

Merrilee Harrigan

mharrigan@ase.org

Renee Lafrenz

rlafrenz@ase.org



Additional Resources

For More Information

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

Discussion