

ALLIANCE
TO SAVE ENERGY

Using less. Doing more.

Behavior Change in Schools

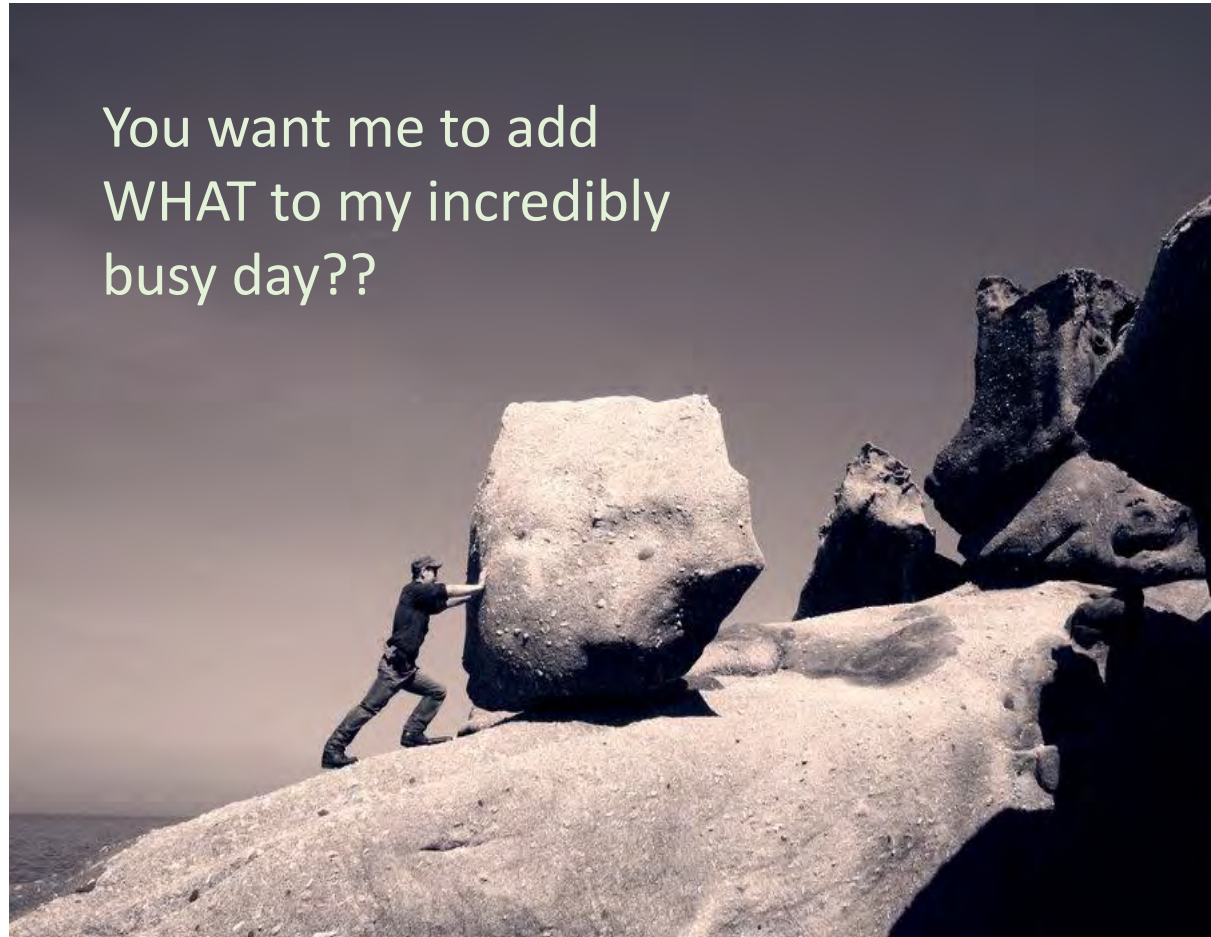
Quantifiable Savings in Commercial Buildings

Merrilee Harrigan
Alliance to Save Energy

Schools Present the Usual Challenges

- Staff often overworked, under-resourced
- Multi-use facilities
- Energy costs are invisible
- Saving energy is NOT my job – it is to raise test scores (etc.)

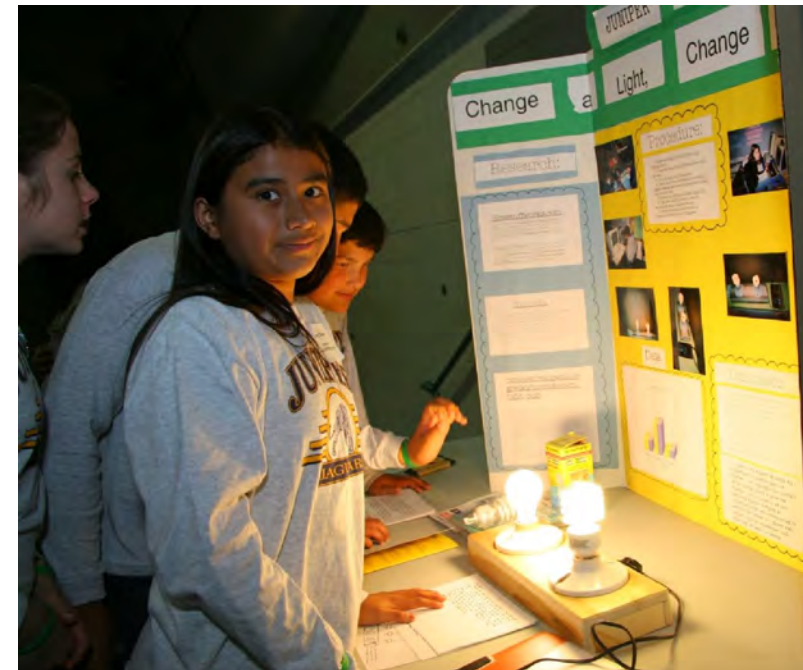
You want me to add
WHAT to my incredibly
busy day??



They Also Represent Valuable Opportunities

- 110,000 K-12 schools nationally
- Lots of low hanging fruit
- Good community relations
- Opportunity to reach families, community

.....and possibly most importantly, they educate our future consumers and citizens

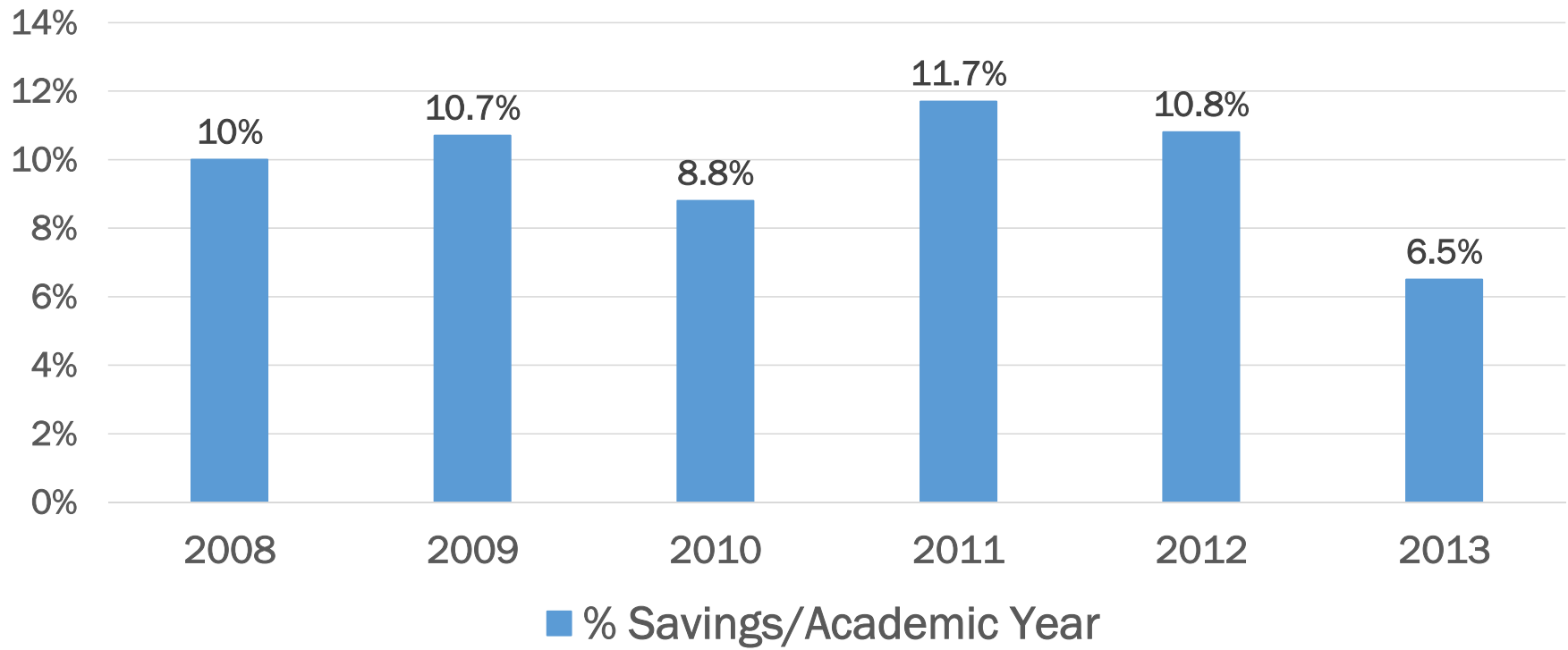


Behavior Change in k-12 Schools



**What can school
programs achieve?**

Measurable Energy Savings from no-cost, student-led behavior change



The Power of Students

- Their job is to learn
- They tend to be passionate about the environment
- They love to use tools, collect data and tell their elders what to do
- No one can resist a passionate student with moral authority and research data



Customizing Energy Conservation to the School Environment



Curriculum Integration

Student Training (energy audits)

Student Leadership

Social Science Research
or...

Behavior Intervention
Strategies that make
Efficiency Stick



Commitment

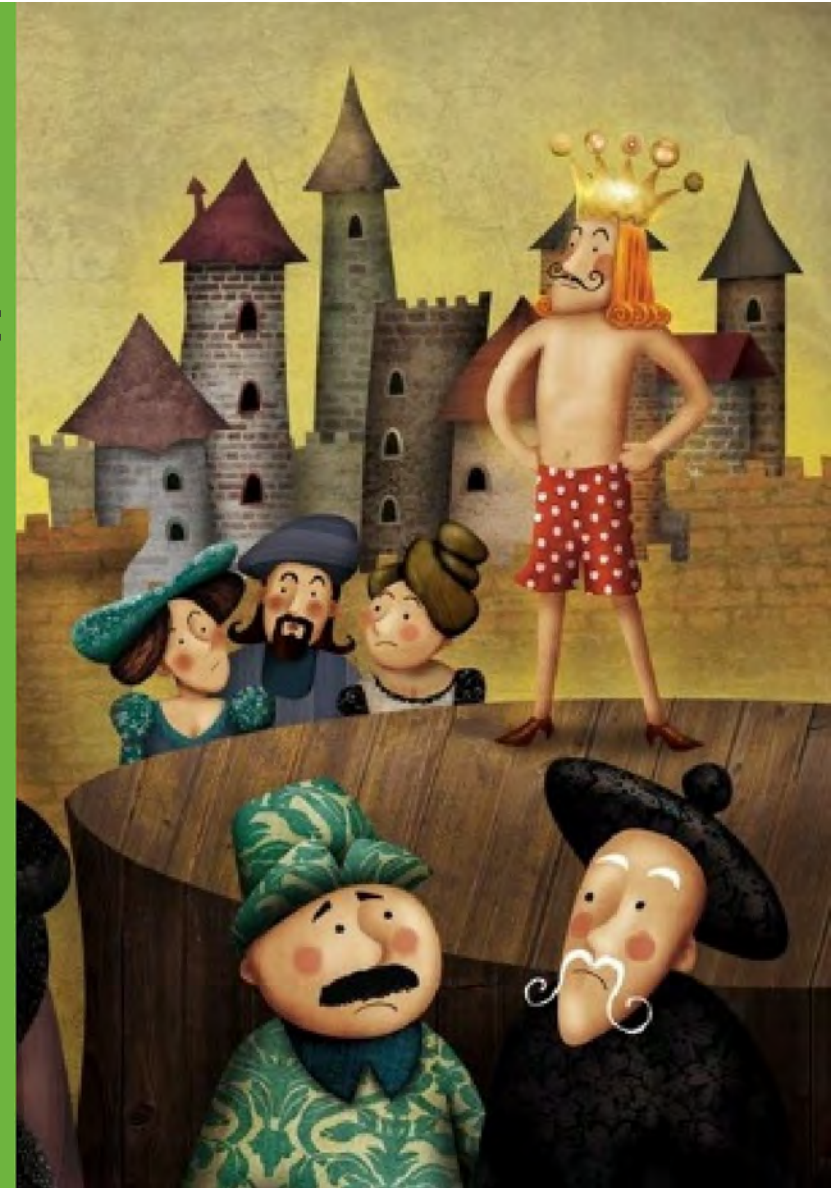
- Students commit to participate in team
- Students present at staff meeting to ask teachers to make a pledge



Feedback

- Provide frequent energy use information on:
 - Energy consumption
 - Energy costs
 - Social benchmarking

Example: Monthly Energy Savings Reports



Follow-through

- Remind individuals to make good on their stated intention or commitment
- Ask individuals to create their own energy reduction plan

Example: Holiday Shut-down Checklist



Credible, Trusted Sources

- Students conduct research and provide data
- Face-to-face connections with peers and teachers

Example: Student present recommendations to teachers and staff

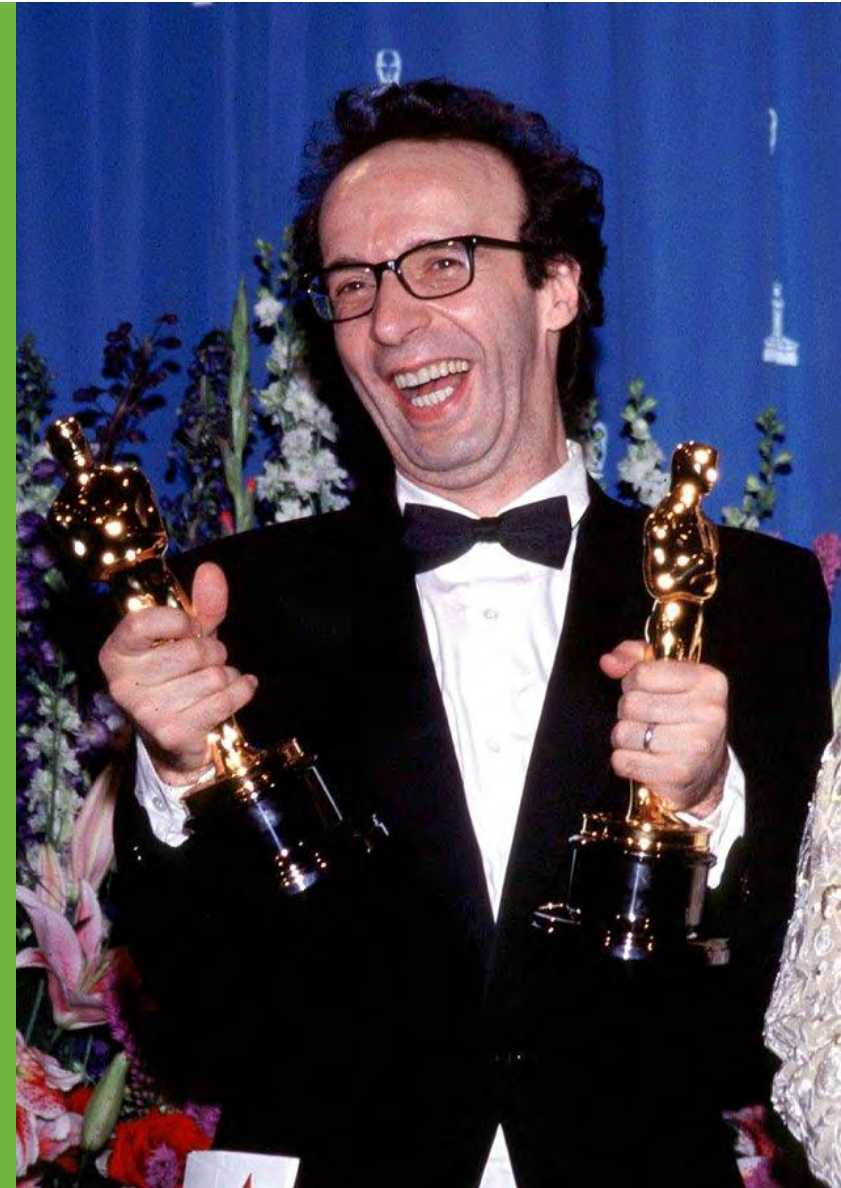


Rewards

- Reward achievement
- Use escalating incentives and competition

Examples:

- Classroom Energy Patrols,
- district returning % of savings back to schools that saved



Social Norms

- Leverage the power of “normal”
- Present EE behaviors as commonly accepted and widely adopted

Example: Energy Savings Leaderboard



Multi-pronged Strategies

- Combine frequent feedback with rewards and social comparison
- Activate cognitive dissonance via a commitment (pledge)
- Feedback on savings vs. baseline

Example: PowerDown Challenge



Energy Savings Summary

Student-led behavior change only

- 565 schools enrolled since 2008
- 40,324,370 kWh saved
- \$5,793,437 in avoided costs
- \$10,253 average savings per school*

**varies widely by size of schools and kWh cost*

If behavior programs lower energy use,
why aren't they counted as a
resource?

SAVINGS CALCULATION METHODOLOGY

- Utility Manager Pro software
- 12 month baseline
- Single variable linear regression
- Floating balance point regression with daily average temperatures
- Requires R-square $\geq .70$ for either HDD or CDD considered valid regression
- Negative slopes or negative Y-intercepts not allowed for valid regression
- Adjustments made for changes in site square footage and load changes outside of PSS program (

Is baseline comparison
good enough?

Perception:

Savings from behavior
programs are unreliable
and hard to quantify.



For more on EM&V for Schools

Check out the lightning session tomorrow
(Tuesday) at 10:30 by Scott Thach
Room 5

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