student energy saving program

A guide for engaging students in energy efficient behavior.
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This guidebook prepared for Laramie County School District #1 by the Institute for the Built Environment at Colorado State University as part of the American Recovery and Reinvestment Act (ARRA), K-12 Facility Energy Efficiency Retrofit and Renewable Demonstration Grant.
Energy Program

Laramie County School District has a mission to inspire students to become life-long learners and responsible, productive citizens. The district values high expectations, maximizing learning opportunities, and sharing responsibility. Student engagement in saving energy supports these district goals, allowing students to learn both environmental and fiscal stewardship. Students not only learn concepts in science and mathematics, they are also given opportunities to develop skills in leadership and systems thinking.

The program can benefit the district, community, state, and most importantly students, at a variety of levels. From financial savings, to establishing a common culture of conservation, and to student involvement as active and responsible citizens, the program can respond to the needs and values of the school community. And maybe even more importantly, student involvement in an active, successful leadership project can garner national recognition and scholarship awards.

"Great thoughts speak only to the thoughtful mind, but great actions speak to all mankind."
Theodore Roosevelt
Implementation Steps

1. Establish Program Lead
   • Must be enthusiastic and high-energy
   • Needs to be able to work with anyone in the District, from Kindergarten through Superintendent
   • Needs to be flexible and ready to create the next challenge or program driver

*The following can be done in any order:

2. Present Idea to Students
   • Single class, club/team, assembly style, or in science special
   • Present program with enthusiasm, make it fun
   • Get someone at the district level to give the presentation. This shows outside recognition that students are important and are needed to make a difference
   • Tell them the impact they can have at their individual school and collectively across the district
   • Measure interest of students, find the champion team of students to lead the program at their school
   • When possible (for best results) establish a competition within and between schools/grades

3. Recruit Faculty Sponsor
   • Use student interest as justification
   • Tie to standards
   • Define time commitment. Older students require less time than younger students. The first year will take more time than subsequent years
   • Explain the support that will be given by the program lead and from various operations & maintenance personnel.

4. Gain Principal Support
   • Use student interest and faculty sponsor as justification
   • Define their role and the limited time their involvement will require
   • Highlight potential recognition - District, State, Federal/National

5. Start Program with Students
   • Empower students to brand their program. Build a marketing program (create an acronym, title, or tag line for their group). Hold an art competition for marketing materials
   • Facilitate student research. Help them define what is important to them and how they can make a difference
   • Provide activities - audit forms, competition parameters, improvement projects, national competitions
   • Encourage them to publicize their successes through blogs, videos, press releases, etc.
   • Provide an opportunity for older students to mentor younger students or students at other schools, to share their lessons learned and best practices.
**Principal**

1. Verify Program’s Importance to staff and students
2. Model Behavior

**Faculty Sponsor**

1. Facilitate Student Learning
   - Provide resources for research and activities. Inquiry approach works well.
2. Empower Students
   - Help them “design” their program, brand it, and lead it.
   - Once program is established, encourage older students to mentor younger students to sustain activities.

**Students**

1. Model Behavior & Mentor Peers
   - Model behaviors and teach peers why these behaviors are important.
2. Data Gatherer
   - Evaluate the energy consumed at their school through various audits of plug loads, lighting, and habits.
3. Communicator
   - Create a marketing plan, competition, or other means of publicizing program.

**Program Lead**

1. Be a Resource
   - Be available to answer questions of students and faculty sponsors.
   - Be the point person and forward questions to colleagues with the appropriate expertise.
   - Challenge students and faculty sponsors toward higher levels of success.
   - Help students with research projects. Guide them to websites for info. Help them create proposals for feasible school improvement projects.
   - Help facilities team understand the mission of the program. Empower them to be a resource for the kids.
2. Lead by Example
   - Strive to find ways to make operations & maintenance practices more efficient.
3. Monthly Reporting
   - 3 years historical data & current month sent to principal.
   - Compare to other schools
4. Recognition
   - Thank faculty sponsors, custodians, or other staff for their contribution to project successes.
   - Work with communications department to publicize student successes.
   - Recognition is critical to the long-term success of the program.

**Operations & Maintenance Team**

1. Collaborate with Program Lead
   - Help identify ways to save energy through changes in operations & maintenance practices
2. Be a Resource
   - Provide guidance to students related to your discipline.
   - Be a guest speaker for the faculty sponsor.
Activities

Students

1. Marketing & Publicity Campaign
   • Allow students to “brand” their program
   • Create door reminders, to remind classes to reduce energy use before leaving the room.
     • Hold an art contest for the design of the door reminders
     • Top 3 will be printed and put up all over the school.
     • Give free rewards to winners like an extra hour of recess. Fun

2. Lighting Analysis & De-Lamping Project
   • Use light meter to measure light levels in classrooms, corridors, and common areas. Compare light levels to IESNA standards.
   • Compare the efficiency and light output of T12, T8, and T5 lamps
   • Collaborate with Program Lead and O&M team to determine if de-lamping is necessary
     • De-lamping at Ponderosa HS in Douglas County School District not only saved quite a bit of energy and money, but also decreased vandalism by 90% based on cost of maintenance and repairs. Research has shown that high light levels are over stimulating, intensifying disruptive behavior.

3. Daily Habits Audit
   • Student group will use IPAD audit form to “grade” teacher’s classrooms every week.
     • Lights turned off
     • Computer in sleep mode
     • Projector turned off
     • ELMO turned off
   • Each class will have a “HERO” (Helpful Energy Resource Officer) who will be in charge of turning off lights, projector, etc. when their class leaves the room.
     • Teacher identifies one student to be the HERO for the week. HEROs should be identified by a special bracelet or badge.
   • Student group will report results on public poster to encourage competition between classes. Only positive scores are reported, which provides a challenge or “race to the top”.

4. Plug Load Audit
   • Student group will use IPAD audit form to count the number of items in a classroom that could be plugged in.
   • Student will tally up energy use of each plug load item and rank classrooms.
   • Guided by faculty sponsor and program lead, students will brainstorm ways to reduce their schools plug load.
1. Monthly Reporting
   - Send reports to principals with 3 years historical energy use by month, highlighting most recent month.
   - Include use of other schools for comparison
   - Determine best reporting structure for usage and demand
   - Communicate clearly and regularly
     - For instance to explain usage & demand, compare to a car – odometer is your usage, speedometer is demand. The fastest you go during the month is your demand.
     - Define how schools can make the most impact to their energy use - how much is saved by turning off the lights (1 kw saved for every ____), turning off the projector (1 kw saved for every ____), average energy used by common plug loads, average phantom energy used by common plug loads,

2. O&M Enhancement
   - Work with students and O&M staff to evaluate lighting and determine if de-lamping is appropriate.
   - Evaluate after-hours cleaning practices with O&M staff. Determine if the lights are all turned on, or if they could be turned on only for the area that is being cleaned.
   - Empower custodian to be a part of the school’s program. If students know the custodian they feel connected to them and then take better care of their classroom – the custodian is no longer invisible.
   - Evaluate HVAC schedule with O&M staff to determine if scheduling could be enhanced.
     - When does it turn on? How long before it gets to a comfortable temp? How long is this before students get there? How can we schedule the building system to be more efficient?

3. Competitions
   - Hold a contest for an energy student group to do an improvement project at their school in collaboration with facilities staff.
   - Create a competition between schools of the same level. Establish their baseline, then allow them one month to reduce their energy use. The school who reduces the most from their baseline wins.
     - Publicity is very important. Post progress of each school on a website, announce it during Monday morning announcements, and work with student groups to design posters.
Attached Forms

Lighting Analysis & De-Lamping Project - Audit Form
- iPad Form: http://ibe.colostate.edu/LCSD/Lighting_Audit.numbers
- Excel Form: http://ibe.colostate.edu/LCSD/Lighting_Audit.xls

Daily Habits Audit Form
- iPad Form: http://ibe.colostate.edu/LCSD/Habits_Audit.numbers
- Excel Form: http://ibe.colostate.edu/LCSD/Habits_Audit.xls

Plug Load Audit Form
- iPad Form: http://ibe.colostate.edu/LCSD/plug_load_audit.numbers
- Excel Form: http://ibe.colostate.edu/LCSD/plug_load_audit.xls

Monthly Reporting Example Form
- iPad Form: http://ibe.colostate.edu/LCSD/Energy_Reports_PHS.xls