

# Engaging Students in Energy Efficiency

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How can you engage students and generate interest in energy and resource conservation?



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## Typical Attributes of Middle School Students

- Expanding awareness of environmental issues
- Preference for hands-on activities
- A desire for self-expression and self-determination
- A sense of HUMOR!

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## The Green Police



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What kinds of specific activities can be used for students to understand how schools use energy and water?

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## Lessons and Activities

Sustainability  
Career Exploration  
Measuring Energy Usage  
Lighting Survey

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Lot's of free curriculum available online to download or request

- [PG&E Energenius Program](#)
- [NPR - "It's All About Carbon"](#)
- [The NEED Project](#)

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### El Dorado County Career Technical Partnership

Energy Audit Activities for Middle School Students

[Building Energy Audit Project Lessons](#)

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### Career Exploration Energy Auditors

- Reading passage and questions  
Video: *Clean Energy Career Profiles*  
Guest speakers from local utilities
- EID – El Dorado Irrigation District
  - PG&E

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## EID Water Audit



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## EID Water Audit



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## Measuring Energy Usage "Finding the Vampires"

Students use  
**P3 Kill-A-Watt** meters  
to measure and document  
Phantom Loads

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## P3 Kill-A-Watt Meter

- Instantaneous watts and amps  
- Phantom Loads
- Total kilowatt hours
- Line voltage



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## Measuring Energy Usage Refrigerator Study

Students use  
**P3 Kill-A-Watt** meters  
to measure and document energy used  
by campus refrigerators

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### Measuring Lighting Levels Activity



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### Mini-Quality Environmental Meter

- Light measurement in lux or ft-candles
- Air velocity in knot, km/hr, m/s, mph, FpM
- Relative humidity
- Temperature

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How can these activities be tied into the regular curriculum?

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California Science and Technology Standards  
Heat – Thermal Energy  
States of Matter – Phase Changes  
Nature of Light  
Physical and chemical properties  
Natural Resources  
Renewable/nonrenewable sources of energy  
Investigation and experimentation

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What can students do with information on energy consumption that will allow them to actively participate in making their schools more energy efficient?

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## Student Projects

- Students “Making A Difference” ideas
- Podcasts or posters with energy saving tips
- Presentation to administration/school board with specific recommendations
- Join school or district Sustainability Team

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## Marina Village Energy Audit Action Team

- S - Specific
- M - Measurable
- A - Attainable
- R - Relevant
- T - Time-based



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## Goal #1

### Survey lighting on campus

Interior lighting accounts for almost 30% of all electricity used in California schools



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**Goal #2**

**Identify and measure  
Phantom Loads**

*Office equipment  
accounts for  
over 7% of electricity  
used in California  
schools*



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**Goal #3**

- Schedule and participate in a *Water Wise Business Call* with EID to identify and correct inefficient use of water



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How will students and staff  
access and evaluate the  
effectiveness of their efforts?

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## Energy Star Portfolio Manager

- Interactive energy management tool
- Tracks energy and water consumption
- Identifies opportunities for energy efficiency improvements
- Tracks progress over time

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- Feedback from district through email updates to staff
- Savings used to reduce effects of budget cuts
- District Sustainability Team outreach

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How can energy and water consumption feedback be presented to students, staff and community?

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