



Project Learning Tree



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What is Project Learning Tree?

A Comprehensive EE Program

High quality, PreK-12 EE curriculum materials

Diverse, international network of partners

Implementation via a successful delivery system of professional development



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PLT's Mission

PLT uses the forest as a "window on the world" to:

- Increase students' understanding of our complex environment
- Stimulate critical and creative thinking
- Develop the ability to make informed decisions on environmental issues
- Instill the confidence and commitment to take responsible action

"Teaching students how to think, not what to think about complex environmental issues."

~Rudy Schafer, Founder PLT

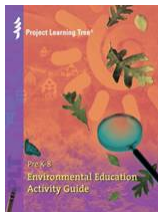


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What is it?

The *GreenSchools!* program encourages teachers and students to incorporate PLT into curriculum, conduct environmental investigations, and take action to create sustainable school environments.



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How did we get here?

1. **“PLT Schools” and “Whole Schools” Programs**
 - Success in LA, FL, SC, NH, WI and other states
2. **Growing the Program: *GreenSchools!***
 - Inventory *GreenSchools!* Programs
 - Connect to Service Learning
 - Creating a National *GreenSchools!* Model
3. **Secured Funding**
 - US Forest Service
 - Corporation for National and Community Service
 - PLT Implementation Funds



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4. *GreenSchools!* Development Teams

- Education Operating Committee
- *GreenSchools!* Advisory Committee
 - Teachers
 - Principals/Curriculum Specialists
 - State Coordinators and State Green School Specialists
 - Organizations: EPA, U.S. Green Building Council, U.S. Forest Service, Universities, Tree Foundations, Service Learning Groups
 - Specialists: Energy, Wastes, Water, Habitat
 - Students



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Program Components

- 1) Professional Development
- 2) *GreenSchools!* Investigations
- 3) Environmental Service Learning Action Projects



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1) Professional Development

- Educators, students, and staff
- Introduction to Service Learning, PLT, and *GreenSchools!* Investigations



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2) *GreenSchools!* Investigations

- Available online at www.pltgreenschools.org
- 5 Targeted Topics
- Pilot-tested in 80 Schools Nationwide.



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GreenSchools! Investigations

- Designed for Elementary and Middle/ High School
- Energy
- School Site
- Waste and Recycling
- Water
- Environmental Quality



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3) Environmental Service Learning Action Projects

- Projects Identified in *GreenSchools!* Investigations
- Student Leadership and Implementation
- Sustainable Change



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GreenSchools! Sample Investigations

- Energy
- Classroom Energy Survey
 - B. Daylighting
 - School-Wide Energy Survey
 - A. General Information
 - D. Temperature



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Middle and High School Energy Investigation: Classroom Survey

Reducing energy use saves natural resources and can save your school money. This investigation will help you find out what uses the most energy at your school and ways that energy is wasted. It will help you find ways to save energy to make your school more environmentally friendly and sustainable. Sustainable practices are those which meet the needs of the present without compromising the ability of future generations to meet their needs.

Complete this energy survey for school classrooms and use the results to complete the school-wide assessment. Make a copy of this Classroom Energy Survey for each classroom being surveyed.

School Name: Miner H.S. Date: 11/29/09

School Population

Students: 850
Staff: 50

Survey Lead: Joanna Sawyer
(The classroom teacher or a member of the GreenSchools! team visiting the classroom that's being surveyed)

Conducted By:
(Indicate which class is completing the survey)

Classroom No. 612 Teacher Joanna Sawyer
Grade 10 Date 11/29/09
Average number of people using the room each day: 30

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4. Are lights turned off when the room is not in use?
 Yes No Sometimes

5. Are classroom lights controlled by motion and/or photo sensors?
 Yes No
If yes, what type? _____

(Photo sensors automatically turn lights on/off depending on the amount of natural light in the room. Motion sensors automatically turn lights on/off based on movement in the room.)

6. Are all light bulbs on when class is in use or can lighting be adjusted to take advantage of natural light when available? Lighting can be adjusted

B. Daylighting: (Optional)

A light meter measures the amount of light falling on a surface. Measurements are typically made in units called a foot-candle (fc), which is a unit for measuring illumination. You may be able to borrow a light meter from a photographer. See the Resources section for information on where to purchase one.

If you have access to a light meter, take the following measurements.

Location	Lights all on	Lights half off	Lights all off
On a desk near the windows	129.3 fc	110.8 fc	109.3 fc
On a desk in the middle of the room	87.2 fc	34.5 fc	8.1 fc
On a desk away from the windows	59.5 fc	6.1 fc	3.7 fc

Type of weather on the day measurements were taken: circle one
Sunny Partly Cloudy Cloudy

If the weather was cloudy, try repeating the measurements on a brighter day. Do the readings change? Yes No Explain: Readings went up in the bright sunlight

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www.epa.gov/cleanenergy/energy-and-you/how-clean.html

Clean Energy

U.S. ENVIRONMENTAL PROTECTION AGENCY

Search: All EPA This Area Go

You are here: EPA Home > Climate Change > Clean Energy > Energy and You > How clean is the electricity I use? - Power Profiler

How clean is the electricity I use? - Power Profiler

UPDATE: (February 19, 2009): EPA corrected the year 2005 carbon dioxide (CO₂) emission rates used in Power Profiler with the most current values from eGRID. The year 2005 CO₂ emission rates remained unchanged in the following eGRID subregions: ASCC Miscellaneous (AMIS), ERCOT All (ERCT), SPP North (SPNO), and WECC Southwest (AZNM). The CO₂ emission rates increased by less than one percent in the following eGRID subregions: MRO West (MROW), RFG West (RFGW), SERC Midwest (SRMW), SERC Mississippi Valley (SRMV), SERC South (SRSO), SERC Tennessee Valley (SRTV), SPP South (SPSO), WECC Northwest (NWPP), WECC Rockies (RNPA), The CO₂ emission rates increased between one and seven percent in the following eGRID subregions: ASCC Alaska and (AKGD), FRCC All (FRCC), HICC Miscellaneous (HIMS), HICC Oahu (HIOA), MRO East (MROE), NPCC NYC/Westchester (NYCW), NPCC Upstate NY (NYUR), RFG East (RFE), RFG Michigan (RFGM), SERC Virginia/Carolina (SRVC), WECC California (CAMX). The CO₂ emission rates increased by 11.8 percent in NPCC New England (NEWE) and by 13.5 percent in NPCC Long Island (NYLI).

In the United States, electricity is generated in many different ways, with a wide variation in environmental impact. Electricity generation from the combustion of fossil fuels contributes toward unhealthy air quality, acid rain, and global climate change.

Many electricity customers can choose their provider of electricity or can purchase green power from their utility. In fact, you might now have the option of choosing cleaner, more environmentally friendly sources of energy.

Power Profiler will:

- Determine your power grid region based on your ZIP code and electric utility
- Compare the fuel mix and air emissions rates of the electricity in your region to the national average
- Determine the air emissions impacts of electricity use in your home or business

Power Profiler is very easy to use and takes about 5 minutes. To start, all you need is your ZIP code.

Enter Your 5-Digit ZIP code:

Power Profiler currently uses year 2005 data from EPA's Emissions & Generation Resource Integrated Database (eGRID).

What are the main sources of energy?

How Does the Electricity I Use Compare to the National Average?

The table below contains two charts:

- The first chart compares the fuel mix used to generate electricity in [your region of the power grid](#) to the national fuel mix.
- The second chart compares the average air emissions rates in [your region of the power grid](#) to the national average emissions rates.

eGRID Subregion: **WECC Southwest** (which includes the ZIP code: 85004)

FUEL MIX COMPARISON

1

What Is My Fuel Mix?

This chart compares fuel mix (%) of sources used to generate electricity in your region to the fuel mix (%) for the entire United States.

Energy Source	Your Region's Fuel Mix (%)	National Fuel Mix (%)
Non-Hydro Renewables	2.6	2.1
Hydro	3.5	5.5
Nuclear	16.4	19.3
Oil	0.1	3.0
Gas	31.6	18.8
Coal	45.7	49.6



How can schools participate?

The screenshot shows the PLT GreenSchools! website. At the top left is the 'PROJECT LEARNING TREE' logo. Below it is a navigation menu with categories: About PLT, Join PLT, Curriculum, Greenworks!, GreenSchools!, and Calendar of Events. The 'GreenSchools!' category is expanded, showing sub-links: About PLT GreenSchools!, Become a PLT Green School, PLT GreenSchools! Teams, PLT GreenSchools! Investigations, Take Action, Celebrate Success, Model PLT GreenSchools!, and Partners and Acknowledgments. In the center is the PLT GreenSchools! logo, which includes a stylized tree and a schoolhouse. Below the logo is the text: 'Imagine a classroom where school work improves the planet!' and 'Register to Get Started!'.

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Certification Requirements

1. Register at www.pltgreenschools.org
2. At least two teachers must be trained in PLT
3. Establish a *GreenSchools!* Team
4. Complete all 5 Investigations
5. Complete action projects
6. Share Results with Community



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Formative Evaluation – Year 1

Educators

- 95% agree that PLT instructional methods would help them guide students in service-learning projects
- 80% agree service-learning projects help students make connections to everyday life, develop critical thinking skills, and build skills essential to environmental problem-solving

Students

- 95% enjoyed participating in workshops and look forward to conducting *GreenSchools!* Investigations
- Mean test scores increased significantly after learning about energy, waste and recycling, water, and environmental quality



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Thank You!

Kay Antunez

Kay.Antunez@fire.ca.gov

Kathy McGlaulin

kmcglaulin@forestfoundation.org

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