

Blueprint for School Energy Teams

A tool for schools seeking to lower energy consumption through the adoption of school energy policies and the formation of a student energy team.



Grade Levels:

K-12 K-12

Subject Areas:

 Science



NEED Mission Statement

The mission of The NEED Project is to promote an energy conscious and educated society by creating effective networks of students, educators, business, government and community leaders to design and deliver objective, multi-sided energy education programs.

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Teacher Advisory Board

In support of NEED, the national Teacher Advisory Board (TAB) is dedicated to developing and promoting standards-based energy curriculum and training.

Energy Data Used in NEED Materials

NEED believes in providing teachers and students with the most recently reported, available, and accurate energy data. Most statistics and data contained within this guide are derived from the U.S. Energy Information Administration. Data is compiled and updated annually where available. Where annual updates are not available, the most current, complete data year available at the time of updates is accessed and printed in NEED materials. To further research energy data, visit the EIA website at www.eia.gov.

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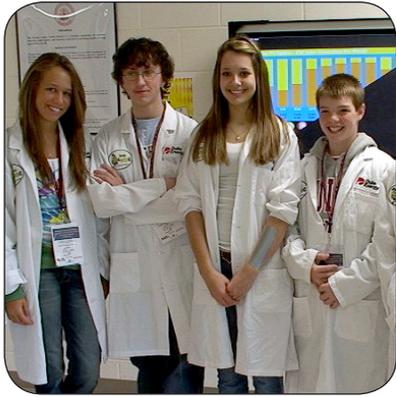
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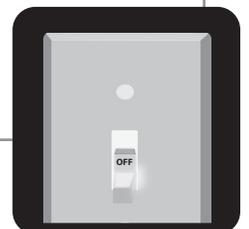


Blueprint for School Energy Teams

NEED gratefully acknowledges Kentucky NEED Project staff and teachers for the creation of this guide. Kentucky has many exemplary schools dedicated to energy efficiency and conservation. Student energy teams in the state of Kentucky have been largely successful in their efforts to save energy in their schools and work together with their communities. Many of the teams in the state start with this guide.

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Standards Correlation Information

www.NEED.org/curriculumcorrelations

Next Generation Science Standards

- This guide effectively supports many Next Generation Science Standards. This material can satisfy performance expectations, science and engineering practices, disciplinary core ideas, and cross cutting concepts within your required curriculum. For more details on these correlations, please visit NEED’s curriculum correlations website.

Common Core State Standards

- This guide has been correlated to the Common Core State Standards in both language arts and mathematics. These correlations are broken down by grade level and guide title, and can be downloaded as a spreadsheet from the NEED curriculum correlations website.

Individual State Science Standards

- This guide has been correlated to each state’s individual science standards. These correlations are broken down by grade level and guide title, and can be downloaded as a spreadsheet from the NEED website.

NEED National Energy Education Development Project

Search this site:

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Home > Educators > Curriculum Correlations

Curriculum Correlations

NEED has correlated their materials to the Disciplinary Core Ideas of the Next Generation Science Standards. NEED has also correlated all of their materials to The Common Core State Standards for English/Language Arts and Mathematics. All materials are also correlated to each state’s individual science standards. Most files are in Excel format. NEED recommends downloading the file to your computer for use. Save resources, don’t print!

- [Navigating the NGSS? We have What You NEED!](#)
- [NEED alignment to the Next Generation Science Standards](#)
- [NGSS and NEED: Fourth Grade Energy](#)
- [NGSS and NEED Guide](#)
- [Common Core State Standards for English and Language Arts](#)

NEED Resource Catalog & Planning Guide 2018 / 2019



Teacher Guide

About This Guide

Energy costs are an increasing burden on school budgets. By implementing energy smart behaviors, districts can manage their energy consumption and redirect savings accrued to other areas and necessities. This guide provides a seven step approach aligned to the ENERGY STAR® Guidelines for Energy Management. It is written to help schools and/or districts develop and implement their own energy management plan. NEED partner organizations also offer additional resources to help schools achieve a complete and comprehensive energy management plan. Contact us for help!

NEED recommends a systems approach to energy management. A systems approach includes educating the building occupants and community members, helping them to understand how their actions contribute to a successful school energy management program.

Teachers and Students Make a Difference

The choices we make about energy have both economic and environmental impacts. This guide is written for schools that want to address energy consumption in their buildings, utilizing teachers and students to design and deliver the energy management program.

▪REDUCING CONSUMPTION

It takes a great deal of energy to operate a school. Energy is typically the second largest expenditure in a school's budget. A student energy team can help manage energy consumption by educating the school community about energy efficiency and conservation. When energy use is reduced, additional energy costs can be avoided.

▪PROTECTING THE ENVIRONMENT

Saving energy also protects the environment. For every kilowatt-hour of electricity saved, approximately 1.6 pounds of carbon dioxide is prevented from entering the atmosphere. Addressing climate change is at the top of the nation's environmental priority list. Energy conservation is often overlooked, but is one of the least expensive and swiftest solutions to this problem.

Whether students want to save energy, protect the environment, or both—forming an energy team is an exciting and rewarding opportunity. On the pages that follow, this guide will explain the approach to creating your team. Our approach follows these seven simple steps:

1. Make a commitment and establish your energy team,
2. Assess current status and performance,
3. Set goals for your team and your building,
4. Create an action plan,
5. Implement your action plan,
6. Evaluate your team's progress and your building's progress; and
7. Recognize achievements.

Additional Resources

For a list of helpful NEED curriculum resources to support a student energy team, please see the list on page 42 of this guide.

NEED's energy efficiency and conservation curriculum will be especially helpful in supporting and maintaining a baseline knowledge in energy consumption and energy auditing in the school setting.

Visit shop.NEED.org and select energy efficiency and conservation to download *School Energy Inspectors*, *School Energy Experts*, and *School Energy Managers*.

Support Organizations

A list of supporting organizations and websites can be found on pages 43-44 of this guide.



Step One:

MAKE A COMMITMENT AND ESTABLISH YOUR TEAM

Background

Saving energy in a school is an opportunity; an opportunity to reduce energy consumption, reduce a school's environmental impact, and reduce energy costs. It takes a committed team to make a difference. Once a district or school makes the decision to reduce energy consumption, they can follow the outline in this guide to develop an energy management plan that will accomplish these goals.

Institute an Energy Policy

A policy establishing an energy management plan is the most effective way to establish an energy management program. It is a statement by the administration that energy conservation and energy efficiency are a priority. If your district does not have an energy management plan or policy in place, it is suggested that one is created. See the sample on page 16 for a template to get started with your district's administration and staff. If your district has a plan and policies in place, you will want to reference these when planning your team's goals.

Create Your Team

Developing an energy team at your school is a coordinated effort. The team should include administrators, building support personnel (custodial, administrative, maintenance staff, etc.), at least one teacher, and a team of students from multiple grade levels to ensure continuity of the program. The team members do not have to be energy experts, they just need to be willing participants. The *Energy Team Checklist* on pages 18-20 provides a list of all the necessary activities.

1. OBTAIN ADMINISTRATIVE SUPPORT

Administration plays an important role by providing continuing support to the team. Having a school administration that believes energy management is important will give the energy team credibility and assist with buy-in from staff and students. Ask if your district has any energy policies in place currently.

2. RECRUIT AN ENERGY TEAM ADVISOR

The majority of the energy program should be student designed and implemented; however, an adult advisor is necessary to facilitate student work. The advisor's duties may include monitoring student meetings, maintaining supplies, and assisting in designing the monitoring schedule. The advisor will assist the student team as they develop awareness projects to educate the entire school population or greater community. A stipend for the energy team advisor is recommended, but may not always be available. The advisor may be a teacher, an administrator, or a building support person who works well with the students.

3. ENGAGE BUILDING SUPPORT STAFF

A successful energy program includes the school's building support personnel as part of the energy team. This group can include maintenance, administrative, cafeteria, custodial, or paraprofessional staff who help to keep buildings working. The staff will guide and work with the students as they explore the energy use and features of the school building, using NEED's School Energy Curriculum at the desired grade level. The team advisor should alert the building support staff and ask them to recruit a representative to serve on the team. It is essential that at least one of these staff members be a member of the custodial or maintenance staff, as they often have knowledge of the building that will prove helpful to the energy team.

4. RECRUIT STUDENTS

The number of student members on an energy team is at the team advisor's discretion. The students should be interested in energy and/or environmental issues. Activities are student-driven, so it is important to select reliable and trustworthy students. Students of all abilities should be considered and welcomed.

An application process for selecting students may be helpful. Students may also submit recommendations from their teachers along with a paragraph from the student stating why he/she would like to be a member of the energy team. A parent or guardian's signature confirming his/her support of the student's involvement on the energy team is strongly suggested. Sample application and teacher recommendation forms are provided on pages 21-22.

The team should decide when and how often to meet. It is suggested that teams meet once per month, at minimum. Many teams find that bi-monthly meetings work best. Sixty to ninety minutes is recommended for each meeting. It is also recommended that meeting attendance be recorded and active involvement rewarded. A sample attendance reporting form can be found on page 23.

5. GATHER SUPPLIES

It may be helpful for the team to keep a binder or shared digital file for documents, checklists, and reporting forms. Teams will also need pens/pencils, a digital camera, and energy management resources and tools. It is suggested that these supplies be kept in a storage bin that is easily accessible to team members.

6. ORDER MATERIALS

Grade-appropriate energy efficiency and conservation materials from The NEED Project may be downloaded from shop.NEED.org. Some recommended titles include:

- *Energy Infobooks* (grades K-12)
- *School Energy Inspectors* (grades 3-5)
- *Managing Home Energy Use* (grades 3-12)
- *Building Science* (grades 6-8)
- *School Energy Experts* (grades 6-8)
- *School Energy Managers* (grades 9-12)
- *School Energy Survey* (grades 9-12)

Several of these titles have kit components including energy management tools. Kits may be purchased by calling eading to shop.NEED.org.



Parental support is essential to the success of the energy team. Parents...

- encourage student attendance at all team meetings.
- provide transportation as needed.



Educate Your Team and Get Started

The first team meeting is an opportunity to build on the enthusiasm of the students who have been selected to be on the team. Discuss opportunities for the team to help reduce energy consumption and teach the building occupants that each person can make a difference by making wise energy decisions. Devote some time to discussing plans for the year and what the team hopes to accomplish.

One of the first items of business for the team should be to review what energy is and how electricity is generated. This will help students understand the science of energy and the benefits of energy efficiency, and will also prepare them to more effectively communicate their message to the school and community. The first lesson, Lesson 1, in NEED's School Energy Curriculum (Inspectors, Experts, and Managers) helps students define or review energy and how it is used through a series of activities, appropriate for each grade level.

NEED's *Primary, Elementary, Intermediate* and *Secondary Energy Infobooks* also provide basic information on the sources of energy. Activities in the companion *Energy Infobook Activities* make the energy information fun to learn and easy for novice team leaders to deliver. Infobooks can be downloaded as PDFs or in e-reader format from shop.NEED.org.

Teams should also strive to create a timeline as one of their first meeting activities. The timeline can help outline your objectives as a team and can certainly be edited as the team continues to meet. A sample action plan timeline can be found on page 24. Your team can use this as a guide or for inspiration, but teams are advised to develop their own to support their goals.



Step Two:

ASSESS CURRENT STATUS AND PERFORMANCE

Establish Baseline/Benchmark

The goal of the energy team is to reduce the school's energy consumption. In order to calculate the success of the team's efforts, a pre- and post-assessment of the school's energy consumption is necessary.

An assessment of energy consumption before the energy management program begins is called a baseline. The on-going assessment of energy consumption is called a benchmark.

The energy baseline lays the groundwork for assessing the success of the energy program. At the conclusion of the first full year of the program, the school's consumption will again be calculated and compared to the baseline figures collected prior to the program's launch. This will establish the first annual benchmark.

To begin the assessment, the team should document the school's energy consumption for the previous school year and summer (twelve months). Sample baseline and benchmark reporting forms can be found on pages 25-26. This will begin a regular and ongoing practice of reviewing and monitoring utility data. If your team needs more background on this, check out lessons 2-6 in NEED's School Energy Curriculum. Students will practice using energy tools and conduct simple audits.

If your district does not regularly tabulate this information, this should be one of the first tasks of the student team. Students should request copies of the school utility bills for the previous twelve months.

File the baseline data (consumption and cost) in the school energy team binder or shared digital file. Each consecutive year's data will be evaluated against the original baseline. This should be one of the very first tasks the energy team completes each year.

As an optional support piece to measure and track data, you may also choose to have your team sign up for and use the ENERGY STAR® Portfolio Manager® tool. Portfolio Manager® is an interactive energy management tool that lets you track your consumption and compare the energy performance of your school to similar buildings nationwide. By inputting energy and building information, this tool provides a benchmark score on a scale of 1-100. Buildings with a score of 75 or over are eligible for the ENERGY STAR® label. Learn more about Portfolio Manager® and get started by visiting www.energystar.gov/buildings/facility-owners-and-managers/existing-buildings/use-portfolio-manager.

Conduct Building Survey

In addition to tracking utilities, the energy-consuming behaviors of building occupants can also be assessed. This section describes four tools that monitor energy behaviors. The team will complete one or more of these assessments and use the results to establish goals. These assessments should be repeated periodically throughout the school year in order to document the impact of the program.

1. Initial Building Walk-Through Survey
2. NEED's School Energy Survey
3. Plug Load Assessment
4. Green and Healthy Schools Energy Inventory

■ Initial Building Walk-Through Survey

The walk-through survey should take place after the energy team has established the school baseline. The walk-through survey should be completed early in the school year before anyone knows about the program. Students will tour the school recording their findings on the *Initial Building Monitoring Survey* form on page 27. The teams will check rooms to see if lights and computers have been turned off when the room is unoccupied, if the windows and doors are closed, and if the heating, ventilation, and air conditioning (HVAC) units are unobstructed.



Contact your school's utility provider to alert them to your plan and to find out what support and services they may be able to provide.



Remember to take pictures of all activities, including the walk-through audit. These may be used to document the team's activities for a NEED Youth Awards Program for Energy Achievement Project.

This building survey will allow the team to observe the current energy practices in the school and create an energy practices baseline. They will use this data to build the awareness campaign and education program. This information will also be used along with monthly monitoring data to measure the success of the program.

▪ **NEED's School Energy Survey**

To determine additional opportunities for energy savings, the students should conduct the *School Energy Survey* from NEED's library or use Lesson 6 from *School Energy Inspectors, Experts, or Managers*. In these guides, students use assessment tools and observation skills to gather energy-related data in four areas: the building envelope, lighting, HVAC, and electrical appliances. They also record examples of efficient use of energy and note opportunities for savings. This guide provides an opportunity for students to work collaboratively with their building support staff.

To complete this survey, the energy team will need these basic assessment tools:

- Kill A Watt® meter
- Digital light meter
- Digital hygrometer/thermometer
- Digital waterproof thermometer

These tools are available in NEED's kits, and may be purchased as a kit from shop.NEED.org, or individually from NEED by calling 1-800-875-5029.

▪ **Plug Load Assessment**

It is estimated that up to 20 percent of the total electricity consumed by a school is from electrical devices or appliances that draw power through an electric outlet (also known as a plug load). Managing the use of such equipment can greatly reduce a school's electricity consumption.

An activity the student energy team may perform is a plug load study, using the *Plug Load Worksheet* on page 28. This study will allow the team to assess how much energy electrical equipment uses, and evaluate ways to use them more efficiently.

A more extensive assessment can be conducted using NEED's *Plug Loads* guide. This set of activities teaches students how to determine the annual energy consumption and operating costs of machines and appliances found in the school building by using a Microsoft Excel spreadsheet. Using the spreadsheet, students will also be able to calculate the amount of carbon dioxide (CO₂) produced by the generation of electricity to power each appliance. In addition, the activity explores how electricity is consumed even when certain appliances are turned off and how these "phantom loads" affect school energy bills and CO₂ emissions. Download the pre-filled spreadsheets or the *Plug Loads* guide at shop.NEED.org.

▪ **Green and Healthy Schools Energy Inventory**

The Kentucky Environmental Education Council, a valued NEED partner, has developed a set of investigations for students to conduct while studying and practicing sustainability in their schools. These investigations, facilitated through the Kentucky Green and Healthy Schools Program, comprehensively explore nine categories that work together to make a building comfortable for occupants and environmentally friendly. They are great for use in all 50 states. Often, energy use plays a big part in determining both the comfort of the occupants and how "green" the building is. These investigations consider energy consumption but also take into account the school grounds (green spaces), air quality, waste generated, chemicals used, transportation, and health (foods and exercise) of occupants - all important facets of a "green" and comfortable building. Download and use these fantastic investigations with your team by visiting www.greenschools.ky.gov/Pages/Program-Overview.aspx. You may select specific student investigations to use each year, or complete the entire set. While on the site, check out some of the great profiles on schools with student energy teams!





Step Three: *SET GOALS*

Once students have identified how much energy is consumed by the school and its occupants, they can set performance goals and record them. Their goals will help drive energy management activities. Setting clear and measurable goals is critical for developing effective strategies. These goals should address both educating the building occupants and monitoring energy behaviors. The decision of how many goals to set can be determined by the team; however, these core goals should be included:

- To reduce energy consumption in the school and maintain consumption or reduce consumption in subsequent years; and
- To establish energy education and awareness programs for the school community.

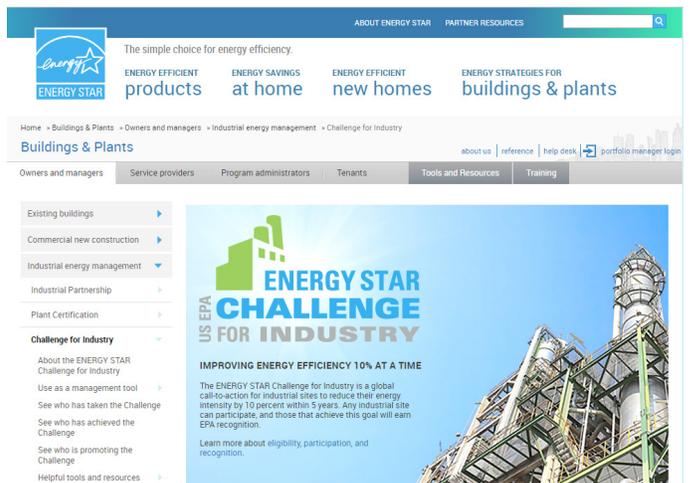
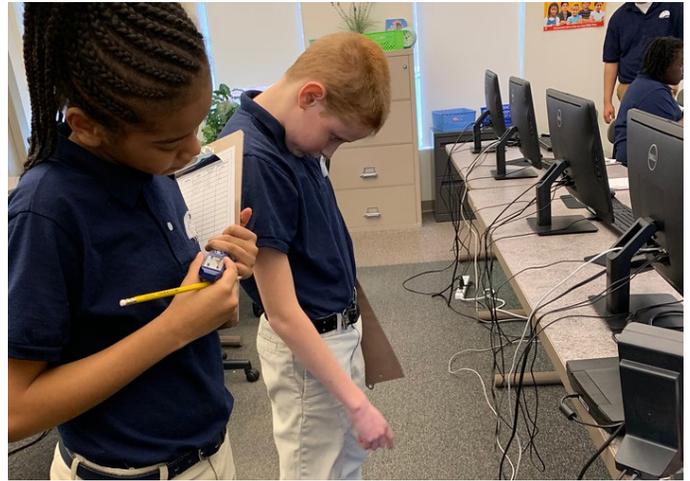
Reduce Energy Consumption in the Building

Reducing energy consumption in the school should be the primary goal of the team. According to the U.S. Department of Energy, schools can cut their energy consumption by 5%-20% simply by efficient management and operation. The activities the team chooses to facilitate will help to achieve this goal. The team may want to attempt the ENERGY STAR® 10% Challenge as its goal. This challenge is a national call-to-action to improve the efficiency of America's commercial and industrial buildings (including schools) by 10 percent or more. To learn more about the 10% Challenge go to http://www.energystar.gov/buildings/facility-owners-and-managers/industrial-plants/earn_recognition/energy_star_challenge_industry2.

Educate the School Community

The ability of the team to reduce energy consumption at school depends on how well the team educates the school community about energy. How is it used at school? What actions will conserve energy? There are four groups within the school that will help make the program a success: teachers, students, building support staff, and community members. Goals should address educating each group about the actions they can take to reduce energy consumption.

Brainstorm ideas the team would like to accomplish. The *Activity Planning and Reporting Form* on page 29 can be used throughout the year, first in goal setting, next in planning your activities, and finally in documenting and evaluating your work at the end of the school year. Step four will address how to use this form to create an action plan. At the start, create one planning form for each goal your team sets.





Step Four:

CREATE AN ACTION PLAN

Once the team has set its goals, action plans should be developed to provide a roadmap for meeting these goals. Using the *Activity Planning and Reporting* form for the goals you have outlined, write a detailed action plan to ensure that the team projects and activities will be implemented in a systematic process. Each goal, such as reducing energy consumption at school or educating the school community, may have multiple action plans.

Steps for Developing an Action Plan

1. Spend time brainstorming activities that will achieve your goals.
2. Complete an action plan for each goal using the planning and reporting form as your outline. Your action plan will describe the objective(s) and activities that will help you to meet each specific goal. The plan should outline each activity and task you will use to meet the goal, an estimate of the time and costs, and provide a description of the number of people and materials needed while describing the steps to accomplish each activity. Action plans should also be sure to list opportunities for fundraising, publicity, and evaluation. A sample action plan can be found on pages 30-31.
3. Students should sign up for tasks.
4. Develop a master plan that includes all of the action plans. The master plan should include a calendar or timeline showing when each task should begin and end, and who is responsible for the task.

Activities to Promote and Facilitate the Plan

1. PRESENT PLAN AT FACULTY MEETING

To ensure buy-in from building facility and staff, the energy team advisor should explain the energy conservation goals at a faculty meeting. It will help them to understand the purpose and potential benefits of the energy team's mission.

2. PLAN AN ENERGY ASSEMBLY

The energy team needs to get buy-in from all those affected by the energy management plan—students, in particular. To do this, the team will need to communicate its goals and plans to the student body. An energy assembly is a dynamic way to accomplish this. As the team drafts the assembly agenda, consider including these key points:

- Introduce the team to the school;
- Explain why energy conservation is so important;
- Present the results of the team's building assessments; and
- Challenge everyone to help conserve energy.

Suggestions for assembly activities:

- Start with an energy quiz or game. For sample quiz questions see the sample *Energy Quiz* on page 32. Answers can be found on page 33.
- Demonstrate how much electricity classroom machines use by showcasing audit and assessment tools.
- Show how much the school spent on electricity last year.
- Show a graph that compares how much electricity the school used last year in comparison to the use in an average home.

- Play some of NEED's *Energy Carnival Games* or *Energy Jeopardy* as fun ways to introduce the audience to energy efficiency and conservation. Pre-select contestants (student council or faculty members, for example) to be the participants.

3. EDUCATE STUDENTS, TEACHERS, AND STAFF

There are many creative and diverse ways the team may educate students about how energy is consumed in their building and ways to practice energy efficiency. The education might include presentations to other classes, or forming student energy partners where energy team members are assigned to work with students in other grade levels. For ideas on how the team can educate and involve the school in their work, see page 34 for awareness ideas. Delegate tasks to the team members and document activities as you go along. Remember to design a way to evaluate whether or not the activity has been effective.



4. MONITOR SCHOOL ENERGY USE

One of the basic tasks of the student energy team is to regularly monitor the energy habits of the building occupants. The team will use the *Building Monitoring Survey* on pages 35-36 to complete this action. These forms are a vital part of the energy program. The team will use them to monitor progress in changing building occupant habits by comparing their records to the baseline data from the *Initial Building Monitoring Survey* from Step 2. The action plan for monitoring contains several steps:

- **Design monitoring routes:** The team may want to use the school's fire exit plan as a blueprint.
- **Create monitoring schedules:** Schedule monitoring at times when classrooms are usually empty such as before and after school, during lunch and recess.
- **Monitoring identification:** In order to identify energy team members, it is recommended that the team be provided with identification, such as ID badges, vests, or lab coats.
- **Communicate results:** The team should establish methods for rewarding good energy habits and encouraging those who still need to improve, e.g. handwritten notes, bulletin board, or announcements. A sample door hanger template can be found on page 37.
- **Classroom participation:** Post the *Classroom Energy Checklist*, on page 38, as a reminder of positive energy conservation behaviors in each classroom.

NOTE: These are general recommendations. Work with the maintenance staff to clarify the energy and safety policies of the school.

5. IMPLEMENT A PLAN FOR ENERGY SHUT DOWNS AND SETBACKS

Shutting down equipment that consumes energy when school is not in session will reap considerable energy savings. This action will require planning and partnership with the custodians and the administration. Include the following steps in this action plan:

- **Permission:** Gain approval from the principal, IT coordinator, district facilities director, and the school maintenance staff for shut downs for school breaks.
- **Documentation:** Meet with your custodial staff to design your school energy shut down checklist. Sample checklists can be found on pages 39-41.
- **Notification:** Shut downs affect many departments, including food service, IT equipment, school office, classrooms, and staff lounges. Include staff members in the development of this plan.
- **Delegation:** The team will act as assistants on this activity, proceeding under the direction of the building support staff.

6. INCORPORATE ENERGY EDUCATION IN THE CLASSROOM CURRICULUM

Teachers may support the energy management program by incorporating energy into their existing curriculum. The team's energy advisor should present the energy management program at a faculty meeting early in the school year. At the meeting several points may be made:

- A new school energy team has been formed.
- Energy team members are available to make a presentation to their classes.
- Energy can be taught using an interdisciplinary approach. Encourage teachers to plan units together or build units that incorporate energy vocabulary. See the list of additional resources on page 42 for examples of some of the NEED energy curriculum available by subject area. All titles can be downloaded at shop.NEED.org.
- The NEED Project provides curriculum and professional development through training workshops for teachers. For information on how the school can be involved in one of these workshops, contact the NEED office at 1-800-875-5029 or email info@need.org.

7. PLAN FOR AWARDS

There is an awards program designed specifically to recognize student achievement in energy education. It is student-driven and will require appointing one or two students to oversee the applications. Collecting data for these awards is highly encouraged; awards ceremonies provide a rewarding conclusion to the students' year of work.

NEED's Youth Awards Program for Energy Achievement combines academic competition with recognition to acknowledge those who achieve excellence in energy education in their schools and communities. Students and teachers set goals and objectives, and keep a record of their activities. Students submit a digital project showcasing their work no later than April 15. Visit the NEED Youth Awards website, check out example projects, and download the program guide at www.NEED.org/youth-awards.

In addition to NEED awards, ENERGY STAR®, Green Ribbon Schools, the U.S. Department of Education, and the U.S. Department of Energy provide certificate or award opportunities. See the web resources on pages 43-44 for more information and website links.



Step Five:

IMPLEMENT YOUR ACTION PLAN

Now that the team has set its goals and written action plans, it is time to implement the plan. Reaching the goals depends on the support of the entire school community and will require regular communication and monitoring.

Communicate Plans to Entire School

Review your planned activities. Do they reach the entire school community? Everyone is an energy consumer—including students, teachers, staff, and those from the community who also use the building. The entire school needs to know what the program is and why it is important to participate. Remember, buildings don't use energy, people do.

Raise Awareness

Awareness will build support for your energy management program. Do your activities raise awareness of the team goal to reduce energy consumption? Refer back to the list of awareness ideas on page 34, as needed.

Implement Activities

Using the *Energy Team Checklist* from pages 18-20, begin implementing the team's activities for the year. While not all activities may be completed in one year, there are several initiatives that should be done in the first year. This includes benchmarking the school's energy consumption and regular monitoring of the school's energy consumption.

Use Positive Reinforcement and Incentives

Another implementation strategy to include is positive reinforcement. Do your activities motivate people to participate? Create ways to reward and recognize success when building occupants join in conserving energy. From public announcements to post-it notes and other incentives, think of ways to give people a pat on the back.



Keep it fun! Try different techniques to keep interest in the program. For example, make morning announcements, such as "Are you energy efficient?" or "Energy tip of the day...!" Announce the results of your monitoring. Post the results on a bulletin board.



Step Six: EVALUATE PROGRESS

Evaluation of the school's energy performance should be done by the student energy team at regular intervals with a culminating report at the end of the year. The team should provide brief monthly reports to the principal or school board. Evaluation results and information gathered during the year-end review may be used by next year's team to create new action plans, identify best practices and set new performance goals.

Measure Results

In Step Two the team conducted a pre-assessment of the school's energy consumption. Toward the end of the school year, the student energy team will do a post-assessment or evaluation to determine the success of the program.

The evaluation will be a comparison of data collected at the beginning of the year and the data collected during the year. Evaluation should include a tabulation of the following forms:

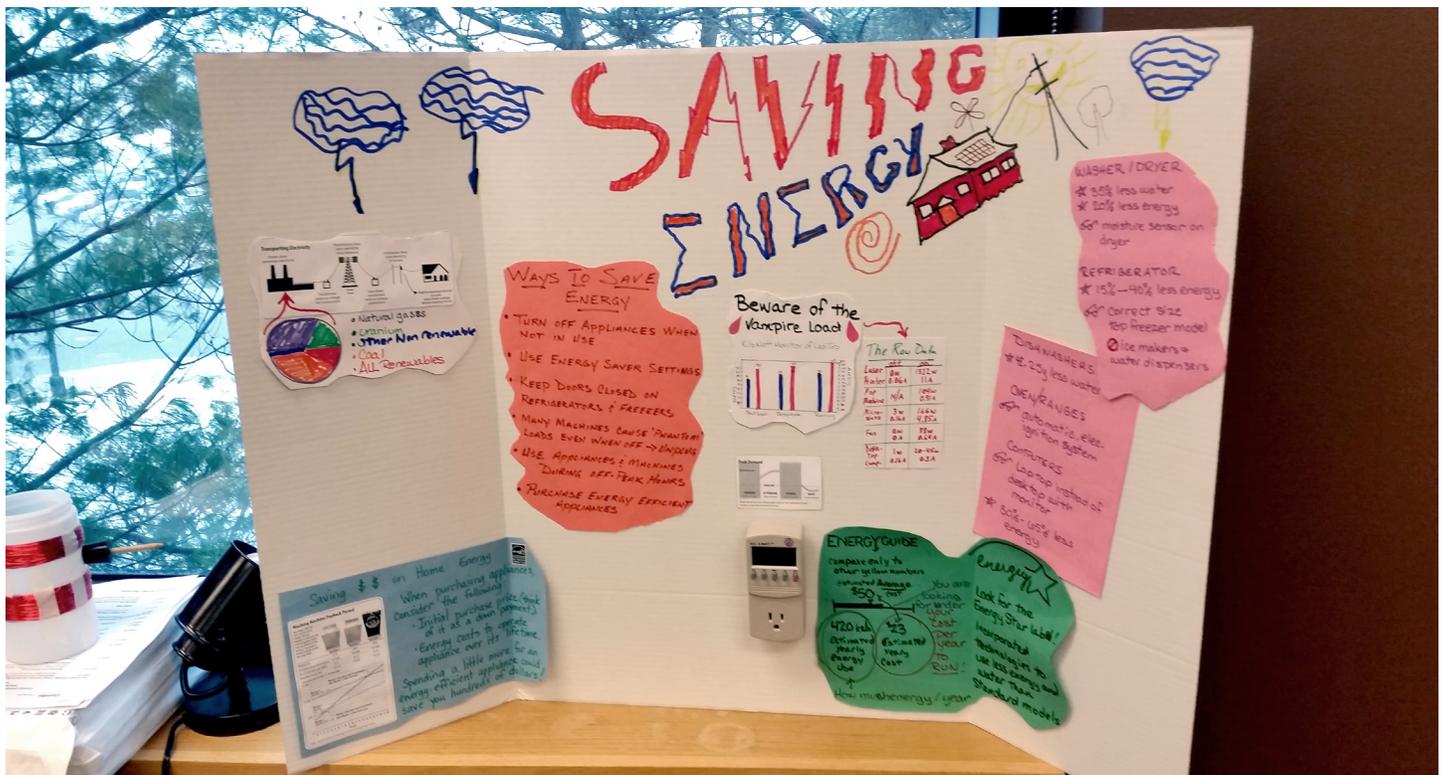
- *Building Monitoring Survey*, page 36
- *Building Monitoring Survey Summary*, page 45
- *Activity Planning and Reporting Forms* (evaluation section), page 29
- *Baseline and Benchmarking Data and Initial Building Monitoring Survey*, pages 26-27
- *Plug Load Worksheet*, page 28

In addition, teachers and staff may be surveyed for feedback on the program and offer recommendations for the following year. Create a digital survey or interview those interested in sharing feedback.

Review Action Plan

The energy team will use its findings to:

- Prepare a summary report for the principal and school board;
- Creatively present the successes to the student body; and
- Identify best practices and make suggestions for next year's team.





Step Seven:

RECOGNIZE ACHIEVEMENTS

Recognizing the accomplishments of the team and the school community is key to sustaining support and momentum for the energy management program. Recognition can also increase the participation of everyone involved.

Something as simple as a note of congratulations to a formal acknowledgment of efforts is a valuable tool to ensure continued participation in the program. Rewarding particular efforts sets the example for what constitutes success and helps motivate participants.

At the end of the school year, the team may consider a culminating celebration recognizing the efforts of the teachers, students, support staff, and community members who have helped to make the program a success.

Good work also deserves to be acknowledged externally. Third party recognition can provide validation for the energy management program. Not only does it provide satisfaction to those involved in earning the recognition, but it can also enhance the program's public image and encourage others to take action, too. A solid reputation attracts sponsors and business partners and makes the community proud of the program.

Here are some opportunities for recognition the team and/or school may pursue:

Announce Success of Program to School and Entire District

- Post achievements on the district's website
- Recognize successes at an end of the year school board meeting
- Host an awards luncheon for the school energy team
- Conduct a school assembly
- Host an energy fair and feature table-top displays of the energy team projects

Announce Success of Program to Community

- Contact local utilities
- Produce a documentary for the local cable access channel, podcasts, YouTube™ and/or the district TV network
- Create a website
- Create a Social Media campaign
- Hold a press conference
- Notify civic teams (Chamber of Commerce, Rotary, etc.)
- Send press releases announcing the success of the program. An example press release can be found on page 46. Examples of outlets to send press information include:
 - Local media—newspapers, radio and television stations
 - State energy office
 - Local EPA office
 - City mayors
 - County Judge, executives, and commissioners

Share Your Success—Apply for Recognition

There are many organizations that reward and/or recognize student achievements in the area of energy efficiency and conservation. A web search will provide links to these opportunities. NEED's Youth Awards Program For Energy Achievement is only one example. Check out the web resources on pages 43-44 for other opportunities.





Sample Energy Management Plan

Purpose

The purpose of this plan is to implement the [name of district] board energy policy to reduce energy consumption in the district's schools, and to improve the learning and teaching environment for our students and teachers. Implementation of this plan will guide the district in achieving higher standards in energy and water use, environmental and economic performance.

Goals

1. Reduce energy consumption in each school facility by at least (____) % at the end of [number of years—minimum of five recommended] and maintain the achieved level of consumption for five consecutive years. Baseline to be established at the beginning of ____ [date of year plan is implemented].
2. Establish an on-going energy awareness training program for all district employees.
3. Obtain and make available energy education materials for all teachers for incorporation into their subject matter.

Objectives to Achieve Energy Reduction

1. Achieve at least a (____)% reduction in energy consumption from the established baseline in at least (____)% of the schools by the end of ____ [date of year one].
2. Achieve at least a (____)% reduction in energy consumption from the established baseline in at least (____)% of the schools by the end of ____ [date of year two].
3. Achieve at least a (____)% reduction in energy consumption from the established baseline in at least (____)% of the schools by the end of ____ [date of year three].
4. Achieve at least a (____)% reduction in energy consumption from the established baseline in at least (____)% of the schools by the end of ____ [date of year four].
5. Achieve at least a (____)% reduction in energy consumption from the established baseline in at least (____)% of the schools by the end of ____ [date of year five].

Objectives to Achieve Energy Awareness Training for Personnel

1. Develop, implement, and evaluate an energy awareness training program during baseline year.
2. Continue implementation each year.

Objectives to Achieve Classroom Energy Education Integration

1. Identify and evaluate existing energy education materials.
2. Establish a committee to review available energy education materials at all grade levels.
3. Devise a district-wide energy education plan and integrate with curriculum map.
4. Achieve 50% usage in classrooms by [year].

Implementation

1. Establish and fund an energy manager position.
2. Establish an energy management team that includes representatives from all sectors of the school community.
3. Gather baseline-year energy utility data for all schools and enter into ENERGY STAR's® Portfolio Manager®.
4. Determine building occupancy profiles for each school.
5. Determine building and system characteristics for each school.
6. Conduct an energy audit in at least 10% of the buildings in baseline year; at least 50% by following year; at least 100% by third year.
7. Adopt a set of high performance/green design guidelines for use in the design and construction of new and renovation of existing school facilities.

Checklists

1. Develop checklists for all sectors of the school community for use on daily energy conservation actions in:
 - a. Classrooms; and
 - b. Non-classroom spaces.
2. Develop checklists for special circumstances to control energy usage during:
 - a. Holidays;
 - b. Summer;
 - c. Weather closings; and
 - d. Extracurricular activities.

Energy Awareness Training and Education

1. Develop energy awareness training programs to support stated objectives with the following audiences:
 - a. Administrators;
 - b. Instructional staff;
 - c. Support personnel; and
 - d. Community.
2. Obtain and survey existing energy education programs and select materials to achieve the stated objectives using National Energy Education Development Project (NEED) curricula or other educational materials.

Energy Conservation Measures

As a result of energy audits and facility/systems inspections, develop an energy conservation measures project list in conjunction with the capital projects.

Evaluation of Plan and Measurement of Success

Develop a rubric to provide annual evaluation of the overall program and to measure the success of the energy management plan.

Recognition

1. Develop a program for recognition of success in the program both internally and externally.
2. The community should be informed on a continual basis of the energy management program and what has been accomplished.



Energy Team Checklist

	NECESSARY PAPERWORK	PEOPLE RESPONSIBLE	DATE COMPLETED
STEP ONE: MAKE A COMMITMENT AND ESTABLISH YOUR ENERGY TEAM			
1. Institute a district energy policy			
2. Create your team			
3. Obtain administrative support			
4. Recruit an energy team advisor			
5. Engage building support staff			
6. Recruit students			
7. Set guidelines and schedule for team meetings			
8. Gather supplies and order materials			
9. Educate team			
STEP TWO: ASSESS CURRENT STATUS AND PERFORMANCE			
1. Establish baseline/benchmark			
2. Conduct INITIAL Building Walk-Through Survey			
3. Conduct NEED School Energy Survey or Audit			
4. Conduct NEED Plug Load Assessment			
5. Conduct Green and Healthy Schools Energy Inventory			

	NECESSARY PAPERWORK	PEOPLE RESPONSIBLE	DATE COMPLETED
STEP THREE: SET GOALS			
1. Reduce energy consumption in school building			
2. Educate teachers, students, and staff about energy conservation			
STEP FOUR: CREATE AN ACTION PLAN			
1. Brainstorm activities			
2. Create action plans			
▪Present plan at faculty meeting			
▪Hold an energy assembly			
▪Design energy education activities to educate students, teachers, and staff			
▪Monitor school energy use regularly			
▪Implement energy shut downs during school breaks			
▪Incorporate energy into classroom curriculum			
▪Plan for awards and recognitions submissions			

	NECESSARY PAPERWORK	PEOPLE RESPONSIBLE	DATE COMPLETED
STEP FIVE: IMPLEMENT ACTION PLANS			
1. Communicate plans to entire school			
2. Raise awareness			
3. Implement activities			
4. Use positive reinforcement and incentives			
STEP SIX: EVALUATE PROGRESS			
1. Measure results: Tabulate Building Monitoring Surveys and Baseline and Benchmarking Data			
2. Review goals on energy team Activity Planning and Reporting Forms			
STEP SEVEN: RECOGNIZE ACHIEVEMENTS			
1. Announce success of program to school and entire district			
2. Announce success of program to community			
3. Apply for recognition			



Energy Team Application

Due Date: _____ **Return to room #** _____

School: _____

Student's Name: _____

Grade: _____ **Homeroom Teacher:** _____

Address: _____

Phone Number: _____

E-mail: _____

Being selected to be a member of the energy team is an honor and should be taken seriously. You will be expected to attend regular team meetings and to participate in activities planned by the energy team. Transportation to/from team meetings and activities may be required. You must make arrangements to be picked up after meetings and for team activities where necessary. You will need the signature of a parent or guardian stating that they support your participation on the energy team.

- With this application, attach a half to full page statement explaining why you would like to be a member of the energy team.
- Recommendations from two teachers are required. Please use the form provided.

If selected to be a member of the team, I understand that I will be expected to attend all team meetings and activities.

(Student's Signature)

(Date)

As part of this program, video tapes, photographs, and websites are often produced by the energy team, school personnel, and outside media. By signing below I am giving permission to include my child's photo or class work in video tapes, photographs, newspaper articles, and websites. I also agree to provide transportation to/from meetings when necessary.

(Parent/Guardian's Signature)

(Date)



Energy Team Teacher Recommendation

Please return this form in a sealed envelope to:

_____ by _____
ENERGY TEAM ADVISOR

School: _____

Student's Name: _____

Grade: _____ Homeroom Teacher: _____

 The above named student is applying to be a member of our school's energy team. Team members will be responsible for planning and facilitating an energy management plan for our school. The team will meet regularly and will be involved in leadership and outreach activities. Recommendations from two teachers are required. Based on your classroom experience with this student, please comment on the student's work ethic and leadership abilities. 

Thank you!

Teacher Comments: _____

Teacher Submitting Recommendation: _____

Teacher's Signature: _____



Energy Team Attendance Reporting Form

School: _____ Year: _____

TEAM MEMBERS	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE
★ 1											
★ 2											
★ 3											
★ 4											
★ 5											
★ 6											
★ 7											
★ 8											
★ 9											
★ 10											
★ 11											
★ 12											
★ 13											
★ 14											
★ 15											
★ 16											
★ 17											
★ 18											
★ 19											
★ 20											



Sample Action Plan Timeline

NOTE: *This is a sample only. Your team should develop a calendar that supports their goals.*

August – September

- Order and/or download NEED energy education materials
- Hold an orientation meeting for teachers and staff who will sponsor the student energy team
- Form student energy teams
- Hold a training session for energy team members
- Study the forms and sources of energy
- Establish baseline
- Conduct initial building walk-through
- Set goals and create an action plan

October

- Present program at faculty meeting
- Hold an energy assembly
- Begin regular school energy monitoring

November – March

- Design and conduct an energy education project
- Conduct a building energy survey using NEED's *School Energy Survey* or *School Energy Managers, Experts, or Inspectors* guides
- Complete Green and Healthy Schools energy inventory
- Conduct plug load assessment
- Conduct and continue school energy patrols
- Assist in building shut down for school breaks

April

- Evaluate progress and summarize results
- Submit NEED Youth Awards Project (April 15 deadline)
- Submit report to school board and district administration

May

- Plan school-wide celebration
- Plan for next school year

June

- NEED Youth Awards Program for Energy Achievement in Washington, D.C.



Sample Baseline and Benchmarking Data

School Name: _____

ENERGY METER ID	ENERGY TYPE	ENERGY UNIT	START DATE	END DATE	ENERGY CONSUMPTION	ENERGY COST (OPTIONAL)
E223-455	Electricity	kWh	9/18/2018	10/16/18	17,520	
E223-455	Electricity	kWh	10/17/2018	11/15/18	13,200	
E223-455	Electricity	kWh	11/16/2018	12/14/18	13,440	
E223-455	Electricity	kWh	1/21/2019	02/18/19	15,600	
E223-455	Electricity	kWh	2/19/2019	03/19/19	16,560	
E223-455	Electricity	kWh	3/20/2019	04/17/19	18,480	
E223-455	Electricity	kWh	4/18/2019	05/19/19	21,120	
E223-455	Electricity	kWh	5/20/2019	06/18/19	15,120	
E223-455	Electricity	kWh	6/19/2019	07/18/19	16,320	
E223-455	Electricity	kWh	7/19/2019	08/18/19	22,560	
E223-455	Electricity	kWh	8/19/2019	09/17/19	30,960	
G239-4565	Natural Gas	ccf	9/18/2018	10/16/18	9	
G239-4565	Natural Gas	ccf	10/17/2018	11/15/18	734	
G239-4565	Natural Gas	ccf	11/16/2018	12/14/18	2,520	
G239-4565	Natural Gas	ccf	12/15/2018	01/20/19	3,194	
G239-4565	Natural Gas	ccf	1/21/2019	02/18/19	4,408	
G239-4565	Natural Gas	ccf	2/19/2019	03/19/19	2,833	
G239-4565	Natural Gas	ccf	3/20/2019	04/17/19	331	
G239-4565	Natural Gas	ccf	4/18/2019	05/19/19	134	
G239-4565	Natural Gas	ccf	5/20/2019	06/18/19	54	
G239-4565	Natural Gas	ccf	6/19/2019	07/18/19	36	
G239-4565	Natural Gas	ccf	7/19/2019	08/18/19	48	
G239-4565	Natural Gas	ccf	8/19/2019	09/17/19	179	
Oil Delivery	Fuel Oil	gal	10/1/2019		4,000	



Activity Planning and Reporting Form

USE ONE COPY FOR EACH GOAL/ACTIVITY

SCHOOL: _____	FORM _____ OF _____
---------------	---------------------

GOAL # _____

ACTIVITIES AND TASKS

ENERGY CONTENT AND RESOURCES

STUDENT LEADERSHIP

EVALUATION



Sample Action Plan

NOTE: This is only a sample. Teams are encouraged to develop their own.

Goal

- To increase energy awareness in local elementary schools.

Objectives/Activities

- Provide fourth and fifth grade teachers with one-week energy units and materials.
- Conduct Energy Carnivals for the students at the end of the energy units for fun and reinforcement.

Action Plan

Step One: Gain Necessary Permissions; Schedule Dates for Energy Units & Carnivals

1. Get permission for the project from team sponsor, school principal, and teachers.

Time: 1 hour

Deadline: October 1

Students Needed: 1

2. Contact elementary school principals and teachers to gain their cooperation and set dates for programs. Visit teachers to introduce energy unit agendas.

Time: 20 hours

Deadline: October 31

Students Needed: 5

Step Two: Develop and Deliver Energy Unit Guides & Materials

1. Decide on activities for energy unit guides. Budget 45 minutes per day for five days. Begin with introductory activities and build on those. Make sure all energy sources are presented.

Time: 2 hours

Deadline: October 7

Students Needed: All

2. Prepare a detailed agenda for the energy unit to present to the teachers. Make copies for each teacher.

Time: 4 hours

Deadline: October 14

Students Needed: 2

3. Prepare a class set of materials for each teacher conducting the program. Mail with a cover letter offering assistance, if desired.

Time: 12 hours

Deadline: November 1

Students Needed: 6

4. Make follow-up calls to make sure teachers received materials, to answer any questions, and to confirm dates of programs.

Time: 2 hours

Deadline: November 15

Students Needed: 2

Step Three: Fundraising

1. Visit local businesses and organizations to solicit donations of money and/or merchandise for carnival prizes. Make sure to let them know that a list of sponsors will be included on the carnival fliers and posted at every carnival.

Time: 12 hours

Deadline: January 1

*Students Needed: 12
(Six teams of two)*

2. Write letters to local utilities and energy-related businesses explaining project and requesting donations for prizes. Make follow-up phone calls.

Time: 6 hours

Deadline: December 1

Students Needed: 2

3. Other fundraising projects—raffles, car washes, bake sales, etc., as needed.

Time: TBD

Deadline: TBD

Students Needed: TBD

Step Four: Publicity

1. Make fliers to promote each school carnival. Include sponsors' names. Send to schools to post and to local newspapers, TV and radio stations, the members of the Board of Education, and City Council.
Time: 6 hours *Deadline: January 1* *Students Needed: 3*
2. Call newspapers and TV stations one to two days before each carnival to ask them to attend.
Time: 1 hour *Deadline: 1 day before* *Students Needed: 1*

Step Five: Prepare and Conduct Energy Carnivals

1. Purchase supplies and construct two sets of carnival games. (Cost: \$20)
Time: 8 hours *Deadline: December 1* *Students Needed: 4*
2. Make a master calendar of carnivals to be conducted and secure ten students for each carnival. Record student volunteers on calendar.
Time: 2 hours *Deadline: December 15* *Students Needed: 1*
3. Purchase merchandise for prizes, if necessary. (Cost: \$50)
Time: 2 hours *Deadline: December 31* *Students Needed: 1*
4. Conduct practice carnival sessions to familiarize everyone with roles.
Time: 2 hours *Deadline: December 31* *Students Needed: 10 per carnival*
5. Confirm dates and times of carnivals with schools. Explain room set up for carnivals.
Time: 1 hour *Deadline: December 31* *Students Needed: 1*
6. Arrange transportation for carnival students.
Time: 2 hours *Deadline: 2 days before* *Students Needed: 1*
7. Procure or borrow digital camera(s) and secure a student photographer for each carnival. Also contact district photographer for attendance. (Cost: \$0-100)
Time: 1 hour *Deadline: 2 days before* *Students Needed: 1*
8. Meet to go over game plan for each carnival.
Time: 1 hour *Deadline: 1 day before* *Students Needed: All*
9. Conduct carnival—have fun!!!
Time: 4 hours

Step Six: Evaluation and Follow-up

1. Prepare and make copies of an evaluation form for participating teachers and students. (Cost: \$25)
Time: 4 hours *Deadline: December 31* *Students Needed: 2*
2. Conduct a student evaluation meeting.
Time: 1 hour *Deadline: 1 week after* *Students Needed: All*
3. Upload photos to computer and share with involved schools and teachers.
Time: 2 hours *Deadline: February 1* *Students Needed: 1*
4. Summarize evaluation forms from teachers and students.
Time: 2 hours *Deadline: February 1* *Students Needed: 2*
5. Conduct a project evaluation meeting.
Time: 2 hours *Deadline: March 1* *Students Needed: All*
6. Prepare a project report using evaluation summaries and photos and submit to NEED.
Time: 4 hours *Deadline: April 15* *Students Needed: 4*



Energy Quiz

1. What energy source is used to generate most of the electricity in the United States?
 - a. Natural Gas
 - b. Uranium
 - c. Coal
 - d. Hydropower
2. Which of the following uses the most energy in the average school?
 - a. Lighting rooms
 - b. Powering ventilation fans
 - c. Heating/Cooling rooms
 - d. Powering electronics
3. Scientists say the fastest and most cost-effective way to address our energy needs is to...
 - a. Develop all possible domestic sources of oil & gas
 - b. Build nuclear power plants
 - c. Develop more hydroelectric power plants
 - d. Promote more energy conservation
4. Leaving the lights on in an empty classroom for one hour wastes approximately how much electricity?
 - a. 100 watts
 - b. 500 watts
 - c. 1,000 watts
 - d. 1,500 watts
5. Global climate change focuses on an increase in which atmospheric gas?
 - a. Ozone
 - b. Sulfur dioxide
 - c. Carbon dioxide
 - d. Nitrous oxide
6. When an electrical device consumes energy in the "off" mode" this is called ...
 - a. Phantom load
 - b. Standby power
 - c. Vampire electricity
 - d. All of the above
7. Recycling aluminum to make new aluminum cans uses what percent less energy than making new cans?
 - a. 25%
 - b. 55%
 - c. 75%
 - d. 95%
8. How is electric power consumption measured?
 - a. Gallons
 - b. Pounds
 - c. Watts
 - d. Calories
9. What are the sources of greenhouse gases in the United States?
 - a. Combustion of petroleum
 - b. Combustion of coal
 - c. Combustion of natural gas
 - d. All of the above
10. What percent of U.S. energy comes from renewable sources?
 - a. 0 - 5 %
 - b. 5 - 15%
 - c. 15 - 30%
 - d. 30 - 40%



Energy Quiz Answers

1. What energy source is used to generate most of the electricity in the United States?
 - a. Natural Gas
 - b. Uranium
 - c. Coal
 - d. Hydropower
2. Which of the following uses the most energy in the average school?
 - a. Lighting rooms
 - b. Powering ventilation fans
 - c. Heating/Cooling rooms
 - d. Powering electronics
3. Scientists say the fastest and most cost-effective way to address our energy needs is to...
 - a. Develop all possible domestic sources of oil & gas
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 - c. Develop more hydroelectric power plants
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4. Leaving the lights on in an empty classroom for one hour wastes approximately how much electricity?
 - a. 100 watts
 - b. 500 watts
 - c. 1000 watts
 - d. 1500 watts
5. Global climate change focuses on an increase in which atmospheric gas?
 - a. Ozone
 - b. Sulfur dioxide
 - c. Carbon dioxide
 - d. Nitrous oxide
6. When an electrical device consumes energy in the "off" mode" this is called ...
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7. Recycling aluminum to make new aluminum cans uses what percent less energy than making new cans?
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 - b. 55%
 - c. 75%
 - d. 95%
8. How is electric power consumption measured?
 - a. Gallons
 - b. Pounds
 - c. Watts
 - d. Calories
9. What are the sources of greenhouse gases in the United States?
 - a. Combustion of petroleum
 - b. Combustion of coal
 - c. Combustion of natural gas
 - d. All of the above
10. What percent of U.S. energy comes from renewable sources?
 - a. 0 - 5 %
 - b. 5 - 15%
 - c. 15 - 30%
 - d. 30 - 40%



Awareness Ideas

Once teachers, students, and staff begin thinking about how they use energy, they will quickly see how easy it is to do a few simple things to save energy!

- Visit younger students and teach them about energy.
- Host an energy fair, carnival, or expo.
- Have students design posters about energy efficiency and conservation.
- Post a graph of the school's energy usage and update it monthly.
- Have a door decorating contest with an energy efficiency and conservation theme.
- Create reminder stickers for light switch plate covers that promote energy efficiency. Use an ordinary switch plate as a template.
- Have students write newsletter articles, e-news blasts, or design brochures about energy saving tips.
- Devise a social media campaign for Instagram, Facebook, or Snapchat.
- Create ribbons, certificates, or buttons for recognition of excellence in energy saving practices.
- Give energy-saving tips during morning or afternoon announcements.
- Give presentations to the School Board and PTA.
- Produce public service announcements for the local cable access channels.
- Dedicate a bulletin board in a main area, highlighting program activities, progress, outstanding participants, and important dates.
- Challenge each class to use the *Plug Load Worksheet* to do a plug load assessment of their classroom. Have them compare the results of their classroom plug load to the baseline plug load assessment completed by the energy team.
- Host a "Green Energy Week."
- Send press releases about team activities to local papers, media outlets, and school informational publications. A sample press release can be found on page 46.



Building Monitoring Survey Instructions

Start the monitoring process by gathering the monitoring materials and tools. Using the *Building Monitoring Survey* on page 36, the task is to document efficient energy behaviors as well as any wasted energy in the rooms assigned to monitor. Start by creating monitoring teams of a few students.

When the team enters a room, fill in the date and time at the top of the survey. Then fill in the columns from left to right, beginning with the classroom number. Moving from column to column, use a check mark to record a positive energy behavior and an "X" to denote areas that need improvement.

For electrical appliances and equipment: if they are off, assign a check. If they are on and being used, you would also assign a check. If equipment/lights are on and the room is unoccupied, record this as an "X", for a negative use.

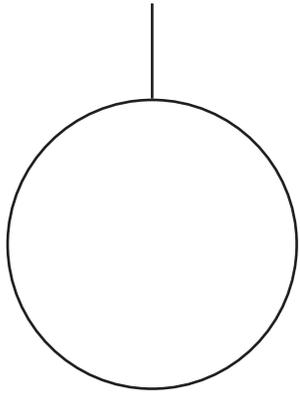
If your school has heating, ventilation, and air conditioning (HVAC) units inside the classroom, make certain they are clear from any obstruction. If there is an obstruction, such as books, boxes, anything sitting on or in front of the unit, place an "X" in the HVAC column of the form. If the units are unobstructed, place a check mark on the form.

Windows and doors should be closed at all times. Put a check if they are closed or an "X" if they are open.

After the form is completed, it is time to leave the room with either a "Congratulations" or "You're getting there" message. If the room had mostly check marks then leave a "Congratulations" note. If the room had mostly "X's" then leave a "You're getting there" message.

After each month gather your records from the classrooms and record data on the summary sheet on page 45. This sheet will help you keep a qualitative record of behavior changes.



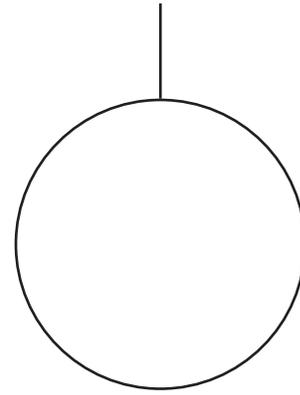


Thank You for Saving Energy!



*The Energy Team stopped by.
Here's what they found.*

- | YES | NO | |
|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | Classroom lights turned off. |
| <input type="checkbox"/> | <input type="checkbox"/> | Lights in closets turned off. |
| <input type="checkbox"/> | <input type="checkbox"/> | Computer monitors turned off. |
| <input type="checkbox"/> | <input type="checkbox"/> | Printers turned off. |
| <input type="checkbox"/> | <input type="checkbox"/> | Ventilation units free of obstructions. |
| <input type="checkbox"/> | <input type="checkbox"/> | Personal appliances turned off. |
| <input type="checkbox"/> | <input type="checkbox"/> | Doors closed. |
| <input type="checkbox"/> | <input type="checkbox"/> | Windows closed when heating or cooling is on. |



Thank You for Saving Energy!

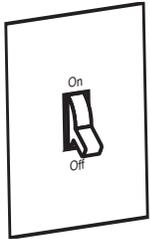


*The Energy Team stopped by.
Here's what they found.*

- | YES | NO | |
|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | Classroom lights turned off. |
| <input type="checkbox"/> | <input type="checkbox"/> | Lights in closets turned off. |
| <input type="checkbox"/> | <input type="checkbox"/> | Computer monitors turned off. |
| <input type="checkbox"/> | <input type="checkbox"/> | Printers turned off. |
| <input type="checkbox"/> | <input type="checkbox"/> | Ventilation units free of obstructions. |
| <input type="checkbox"/> | <input type="checkbox"/> | Personal appliances turned off. |
| <input type="checkbox"/> | <input type="checkbox"/> | Doors closed. |
| <input type="checkbox"/> | <input type="checkbox"/> | Windows closed when heating or cooling is on. |

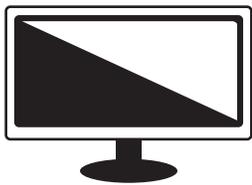


Classroom Energy Checklist



LIGHTS OUT

- Before school
- After school
- Lunch
- During breaks/recess



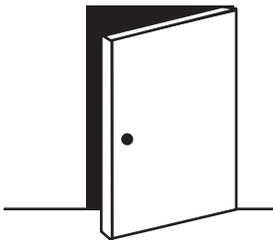
COMPUTER MONITORS & PRINTERS OFF

- When not in use



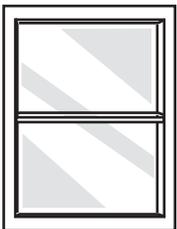
PERSONAL APPLIANCES OFF

- When not in use



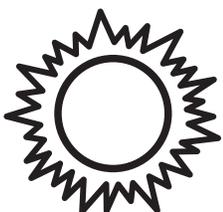
DOORS CLOSED

- During class
- When room is unoccupied



WINDOWS CLOSED

- When heating or cooling systems are operating



ENERGY SMART IDEAS

- Lights off when sun provides enough light
- Blinds closed to reduce heat from sun on warmer days
- Blinds open to admit heat on cooler days
- Vents unobstructed so heating, cooling, and clean air can freely enter
- Room arranged for best energy usage
- Thermostat should have no electronic equipment within five feet



Energy Shutdown Checklist

LONG WEEKENDS

Person completing form:		School:	
Date:		Time:	
STATUS			DATE COMPLETED
Blinds Closed			
Office and classroom computer monitors, printers, scanners, DVDs, TVs, etc. TURNED OFF (no green or orange lights). Exception: This does not apply to LAN servers and cafeteria computers.			
All interior lights TURNED OFF in unoccupied areas.			
All kitchen exhaust and ceiling fans TURNED OFF.			
All appliances TURNED OFF except refrigerators.			
All exterior lights timed to turn off during daylight hours.			
Check and report any water fixtures that leak, drip, or run water constantly.			
Notes/Observations:			

PLEASE COMPLETE FORM IN YOUR ENERGY TEAM NOTEBOOK!



Energy Shutdown Checklist

FALL/WINTER/SPRING BREAK

Person completing form:		School:	
Date:		Time:	
STATUS			DATE COMPLETED
All refrigerators (personal and shared) should be cleaned out, unplugged, and door propped open. This includes teacher lounges. Exception: Food service refrigerators.			
Carefully verify the accuracy of the school and community use schedule over the break. Some teams and community groups may not meet over the scheduled break. If there will be no actual activities over break, please notify energy management to schedule the building as "unoccupied" during this time.			
All kitchen exhaust and ceiling fans TURNED OFF.			
Check thermostat set point. Minimum cooling level, 75 degrees. Maximum heating level, 68 degrees.			
All interior lights TURNED OFF in unoccupied areas.			
Blinds Closed.			
Office and classroom computer monitors, printers, scanners, DVDs, TVs, etc. TURNED OFF (no green or orange lights). Exception: This does not apply to LAN servers and cafeteria computers.			
Check and report any water fixtures that leak, drip, or run water constantly.			
All water fountains unplugged except one.			
All other unnecessary equipment TURNED OFF.			
All appliances TURNED OFF including refrigerators (see above)			
Notes/Observations:			

PLEASE COMPLETE FORM IN YOUR ENERGY TEAM NOTEBOOK!



Energy Shutdown Checklist

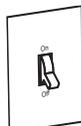
SUMMER BREAK

Person Completing Form:		School:	
Date:		Time:	
STATUS			DATE COMPLETED
All refrigerators (personal and shared) should be cleaned out, unplugged and door propped open. This includes teacher lounges. Exception: Food service refrigerators.			
Carefully verify the accuracy of the school and community use schedule over the break. Some teams and community groups may not meet over the scheduled break. If there will be no actual activities over break and no staff will be on-site, please notify energy management to schedule the building as "unoccupied" during this time.			
All kitchen exhaust and ceiling fans TURNED OFF.			
Check thermostat set point: minimum cooling level, 75 degrees.			
All interior lights TURNED OFF in unoccupied areas.			
Blinds Closed.			
Office and classroom computer monitors, printers, scanners, DVDs, TVs, etc. TURNED OFF (no green or orange lights). Exception: This does not apply to LAN servers and cafeteria computers.			
Check and report any water fixtures that leak, drip, or run water constantly.			
All water fountains unplugged except one.			
All other unnecessary equipment TURNED OFF.			
All home economic appliances TURNED OFF including refrigerators (see above).			
Check (and reset) all time clocks for security and parking lot lighting.			
All animals and plants taken home/out of classroom including fish aquariums.			
Notes/Observations:			

PLEASE COMPLETE FORM IN YOUR ENERGY TEAM NOTEBOOK!



Additional Resources for Teachers

CONTENT AREA Correlations can be found at www.NEED.org	NEED CURRICULUM Descriptions can be found at shop.NEED.org
 SOCIAL STUDIES	<i>Energy Around the World</i> <i>Global Trading Game</i> <i>Mystery World Tour</i> <i>U.S. Energy and Geography</i>
 ENERGY EFFICIENCY & CONSERVATION	<i>Building Science</i> <i>School Energy Inspectors</i> <i>School Energy Experts</i> <i>School Energy Managers</i> <i>Managing Home Energy Use</i>
 SCIENCE	<i>Coal Curriculum</i> <i>ElectroWorks</i> <i>Energy Fair</i> <i>Energy Infobooks</i> <i>Energy Infobook Activities</i> <i>EnergyWorks</i> <i>H₂ Educate</i> <i>Hydropower Curriculum</i> <i>Nuclear Curriculum</i> <i>Oil and Gas Curriculum</i> <i>Primary Science of Energy</i> <i>Science of Energy</i> <i>Solar Curriculum</i> <i>Wind Curriculum</i> <i>Wonders of Magnets</i>
 MATH	<i>Energy Math Challenge</i> <i>Energy in the Balance</i> <i>Energy Analysis</i>
 LANGUAGE ARTS	<i>Digital Energy</i> <i>Energy Live!</i> <i>Energy Stories and More</i> <i>Great Energy Debate</i> <i>Yesterday in Energy</i>
 CREATIVE ARTS	<i>Energy on Stage</i> <i>Energy Live!</i> <i>NEED Song Book</i>
INTERDISCIPLINARY	<i>Current Energy Affair</i> <i>Energy Carnival</i> <i>Primary Energy Carnival</i> <i>Energy Conservation Contract</i> <i>Energy Enigma</i> <i>Energy House</i> <i>Energy Expo</i> <i>Energy Games and Icebreakers</i> <i>Mission Possible</i> <i>Museum of Solid Waste</i> <i>Today in Energy</i>



Supporting Organizations and Web Resources

Alliance To Save Energy — www.ase.org — Promotes energy efficiency worldwide for economy, environment, and security. Offers K-12 lesson plans, energy saving tips, and a green schools program to assist districts in lowering energy consumption.

American Council for an Energy-Efficient Economy — www.aceee.org — A nonprofit organization dedicated to advancing energy efficiency as a means of promoting economic prosperity, energy security, and environmental protection.

Collaborative for High Performance Schools — www.chps.net — CHPS has developed best practices manuals to help schools, districts, and practitioners achieve high performance design, construction, and operation.

Earth 911 — www.earth911.com/ — Check out their Recycling Guide! Enter your zip code and receive information on sites for recycling and product disposal resources; the site has information for over 100,000 programs and locations.

Energy Efficiency and Renewable Energy, an office of the U.S. Department of Energy — <http://www.energy.gov/eere/office-energy-efficiency-renewable-energy>

- **Energy Savers** — <http://www.energy.gov/energysaver/energy-saver> — The Energy Savers page helps outline ways to save energy and money in the home. Their Energy Savers Guide is a handbook for quick and easy ways to save money quickly. Download the guide at <http://energy.gov/energysaver/downloads/energy-saver-guide>.

- **Guide to Operating and Maintaining EnergySmart Schools** — <http://energy.gov/eere/downloads/guide-operating-and-maintaining-energysmart-schools> — A primary resource for implementing a district or school-wide operations and maintenance (O&M) program that focuses on energy efficiency. Accompanying the Guide are Action Plan Templates that provide a snapshot of customizable checklists used for planning and implementing energy-focused operations and maintenance.

Energy Hog — www.energyhog.org — Students will love this site. It is an interactive video game full of sound effects, cartoon characters, and activities that teach about energy efficiency.

Energy Information Administration, an office of the U.S. Department of Energy — www.eia.gov

- **EIA Kids Page** — www.eia.gov/kids — This kid-friendly site contains energy facts, classroom activities, a complete energy glossary, and handy energy conversion calculators.

- **Energy Education Resources: Kindergarten Through 12th Grade** — <http://www.eia.gov/kids/energy.php?page=6> — A list of generally available free and low-cost energy-related educational materials.

- **Energy Explained** — www.eia.gov/energyexplained — Energy Explained clearly conveys the facts and latest data about energy. The site is full of graphs, data, and scientific information that can add depth to school curricula in science, math, or social studies. The site explains where gasoline comes from, what determines the price of electricity, how much renewable energy the United States uses, and hundreds of other energy topics.

ENERGY STAR® — <http://www.energystar.gov/> — a joint program of the U.S. Department of Energy and the U.S. Environmental Protection Agency.

- **Change the World, Start with ENERGY STAR**® — http://www.energystar.gov/index.cfm?c=change_light.changealight_index — A national campaign encouraging all Americans to take small individual steps that make a big difference in the fight against global warming. Students and or schools may register to participate. The ENERGY STAR® website will post the number of pledges you collect and calculate how many tons of greenhouse emissions you have avoided.

- **ENERGY STAR® Building Upgrade Manual for K-12 School Districts** — <http://www.energystar.gov/buildings/tools-and-resources/energy-star-building-upgrade-manual-chapter-10-k-12-schools> — This guide describes profitable energy efficiency upgrades and concerns for working in the K-12 environment.

▪**ENERGY STAR® at Home** — <http://www.energystar.gov/index.cfm?fuseaction=popuptool.atHome> — This interactive cartoon room lets you point and click on items that save energy in each room of a house.

▪**ENERGY STAR® Home Energy Yardstick** — http://www.energystar.gov/index.cfm?fuseaction=home_energy_yardstick.showgetstarted — Compare your household's energy use to others across the country and get recommendations for improvement.

▪**ENERGY STAR® Kids!** — http://www.energystar.gov/index.cfm?c=kids.kids_index — This fun site contains facts, a glossary, actions students can take to save energy, and a parent/teacher area that contains lesson plans, games, and activities.

▪**ENERGY STAR® Low Carbon IT Tricks** — <http://www.energystar.gov/products/reduceitenergycosts> — Describes simple ways to reduce the energy consumed by computers and monitors.

▪**ENERGY STAR® Portfolio Manager** — <http://www.energystar.gov/buildings/facility-owners-and-managers/existing-buildings/use-portfolio-manager> — An interactive energy management tool that allows buildings to track their consumption and compare it to similar buildings nationwide.

Home Energy Saver™ — <http://homeenergysaver.lbl.gov> — Based on the zip code entered, this website will provide a comparison of the energy costs of an average home and an energy efficient home in your area.

Green Ribbon Schools, United States Department of Education — www2.ed.gov/programs/green-ribbon-schools/index.html — The Green Ribbon Schools program aims to inspire schools to strive for 21st century excellence by reading impacts, improving the health of buildings and occupants, and providing environmental education. Schools apply for recognition to their state education authority and are recognized on a national and/or state level.

Green Schools National Network — <https://greenschoolsnationalnetwork.org> — This nonprofit, founded by teachers and school administrators, works to promote student achievement through sustainable practices. GSNN offers professional development, a comprehensive listing of resources, and opportunities for schools and programs to collaborate and network.

KEEPS — www.kppc.org/KEEPS — The Kentucky Energy Efficiency Program for Schools offers a package of tools, training, coaching, and expertise to assist participants in developing a systems approach to energy management. It provides resources specific to Kentucky schools to help analyze and understand their energy consumption, which includes everything from light usage and heating/air conditioning issues to natural gas usage and best environmental management practices.

The NEED Project — www.NEED.org — The NEED Project provides K-12 energy curriculum materials that are designed to be hands-on as well as science and energy management kits.

Northeast Energy Efficiency Partnership — <https://neep.org/initiatives/energy-efficient-buildings/high-performance-schools> — Learn more about high performance schools and how they should operate and be constructed or renovated. Download their criteria and handouts to share with energy managers.

Standby Power Summary Table — <http://www.standby.lbl.gov/> — Information from the Lawrence Berkeley National Laboratory explaining standby power, including a chart showing minimum, average, and maximum standby power use of residential appliances.



Building Monitoring Survey Summary

MONTHLY TOTALS	SEPT.		OCT.		NOV.		DEC.		JAN.		FEB.		MAR.		APRIL		MAY	
	✓	X	✓	X	✓	X	✓	X	✓	X	✓	X	✓	X	✓	X	✓	X
CLASSROOMS																		
Before School = BS																		
Lunch/Recess = LR																		
After School = AS																		
NON-CLASSROOMS																		
Before School = BS																		
Lunch/Recess = LR																		
After School = AS																		
MONTHLY TOTALS																		

✓ = off/positive energy use

X = on with no people/negative energy use

How to complete this form

1. Gather all of your monthly *Building Monitoring Surveys*.
2. Beginning with September, count how many total classrooms patrolled before school (BS) have a "✓". Write that number in the BS "✓" column for September. Count how many total classrooms patrolled before school (BS) have an "X". Write that number in the BS "X" column for September.
3. Count how many total classrooms patrolled during lunch or recess (LR) have a "✓". Write that number in the LR "✓" column for September. Count how many total classrooms patrolled during lunch or recess (LR) have an "X". Write that number in the LR "X" column for September.
4. Count how many classrooms patrolled after school (AS) have a "✓". Write that number in the AS "✓" column for September. Count how many total classrooms patrolled after school (AS) have an "X". Write that number in the AS "X" column for September.
5. Now do the same for all the non-classrooms.
6. Repeat the steps above for each month.



Sample Press Release

STUDENTS LOWER SCHOOL ENERGY BILLS

FOR IMMEDIATE RELEASE: [Date]

CONTACT: [Name, Phone Number, E-mail Address]

SCHOOL OR DISTRICT LOGO

[Organization] Launches School Energy Diet

Students commit to lowering energy consumption and saving district money

[City, State] – [Name of School or Energy Team] announced today [it is/they are] launching a campaign to reduce their school's energy consumption. The goal of their energy management plan is to reduce energy consumption at [name of school] in order to save the district money while benefitting the environment.

According to the Environmental Protection Agency, one kWh of electricity produces 1.23 lbs. of carbon dioxide. Energy experts also report that eight to twenty percent of lighting costs can be reduced by simply turning off lighting when rooms are vacant.

Facts such as these sent the students tracking down ways to reduce energy consumption in their school. "We have learned that there are simple ways for all of us to save energy," said student energy team member [first and last name]. "We decided to share this information with our classmates and see if our school could make a difference."

It has changed the attitude of the entire student body. Through energy assemblies, student monitoring, and partnering with the district's facilities team, energy at [school] is no longer wasted. [If you benchmarked, provide numbers of kWh you saved.]

"Every week we walk through the halls, monitoring energy usage," says [student leader's name]. "When we started, we found many empty classrooms with lights left on. But in just a few months, everyone has learned the importance of saving energy."

Sponsor teacher [first and last name] began the program by using energy curriculum provided by a non-profit organization, The NEED Project. The lessons and activities teach the students what energy is—where it comes from and how it is used in the school. "This project provided a perfect opportunity for us to combine science with real-life applications" said [last name of teacher].

Turning off lights and shutting down computer monitors when not in use has become a way of life at [name of school], thanks to the school's student energy team. Not only are they lowering operating costs, they are also learning how to be wise energy users in the process.



Board Energy Policy Resolution

I. PURPOSE

The *[name of district]* is responsible for the efficient use of its natural resources and shall provide leadership in developing a realistic energy ethic in the operation of its facilities to improve the learning and teaching environment and reduce energy consumption.

II. GENERAL STATEMENT OF POLICY

The success of this policy is the joint responsibility of the board members, administrators, teachers, students, and support personnel and is based on their cooperation. Everyone in the district is expected to contribute to energy efficiency and be an “energy saver” as well as an “energy consumer.”

The district shall provide information to the local media on the progress of the energy management program and its goals.

The school principal shall be accountable for energy efficiency efforts in his/her facility.

The superintendent is directed to develop the necessary administrative guidelines.



Glossary

baseline	an initial set of data used for comparison
benchmark	a follow-up set of data from which measurements may be made, usually comparing them to the baseline data
British thermal unit (Btu)	the amount of heat required to raise the temperature of one pound of water one degree Fahrenheit; equal to 252 calories; abbreviated as Btu
carbon footprint	the amount of carbon dioxide emissions produced by the energy consumed by an individual, organizations or product
cost avoidance	amount of money not spent because of advanced planning or preparation
emissions	releases of gases into the atmosphere from some type of human activity (cooking, driving a car, etc). In the context of global climate change, they consist of greenhouse gases (e.g., the release of carbon dioxide during fuel combustion)
energy efficiency	refers to activities that are aimed at reducing the energy used by substituting technologically more advanced equipment, typically without affecting the services provided
Energy Information Administration (EIA)	a statistical agency of the U.S. Department of Energy that provides policy-neutral data, forecasts, and analyses to promote sound policy making, efficient markets, and public understanding regarding energy and its interaction with the economy and the environment
ENERGY STAR®	a government-backed program helping businesses and individuals protect the environment through superior energy efficiency
Environmental Protection Agency (EPA)	an independent federal agency established to coordinate programs aimed at reducing pollution and protecting the environment
greenhouse gases	gases that trap the heat of the sun in the Earth's atmosphere, producing the greenhouse effect; the two major greenhouse gases are water vapor and carbon dioxide; lesser greenhouse gases include methane, ozone, chlorofluorocarbons, and nitrogen oxides
HVAC	the abbreviation for heating, ventilating, and air conditioning systems
kilowatt-hour (kWh)	a measure of electricity defined as a unit of work or energy, measured as 1 kilowatt (1,000 watts) of power expended for 1 hour; one kWh is equivalent to 3,412 Btu or 3.6 million joules
load	any device that draws power from the electrical system and requires electricity to do work
phantom load	the amount of electricity drawn from electrical appliances when they appear to be off, but are actually in stand-by mode (often signified by a small colored light); usually, cords with small black boxes attached, such as a cell phone charger, continue to draw electricity, even when the phone is not connected to that cord
plug load	the amount of electricity drawn from electric outlets by appliances and electrical devices



YOUTH ENERGY CONFERENCE AND AWARDS

The NEED Youth Energy Conference and Awards gives students more opportunities to learn about energy and to explore energy in STEM (science, technology, engineering, and math). The annual June conference has students from across the country working in groups on an Energy Challenge designed to stretch their minds and energy knowledge. The conference culminates with the Youth Awards Ceremony recognizing student work throughout the year and during the conference.

For More Info: www.youthenergyconference.org

YOUTH AWARDS PROGRAM FOR ENERGY ACHIEVEMENT

All NEED schools have outstanding classroom-based programs in which students learn about energy. Does your school have student leaders who extend these activities into their communities? To recognize outstanding achievement and reward student leadership, The NEED Project conducts the National Youth Awards Program for Energy Achievement.

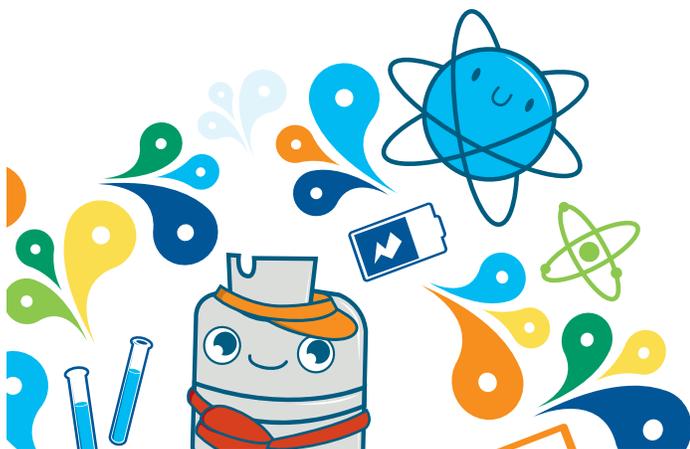
Share Your Energy Outreach with The NEED Network!

This program combines academic competition with recognition to acknowledge everyone involved in NEED during the year—and to recognize those who achieve excellence in energy education in their schools and communities.

What's involved?

Students and teachers set goals and objectives and keep a record of their activities. Students create a digital project to submit for judging. In April, digital projects are uploaded to the online submission site.

Want more info? Check out www.NEED.org/Youth-Awards for more application and program information, previous winners, and photos of past events.





NEED's Online Resources

NEED'S SMUGMUG GALLERY

<http://need-media.smugmug.com/>

On NEED's SmugMug page, you'll find pictures of NEED students learning and teaching about energy. Would you like to submit images or videos to NEED's gallery? E-mail info@NEED.org for more information.

Also use SmugMug to find these visual resources:

Videos

Need a refresher on how to use Science of Energy with your students? Watch the Science of Energy videos. Also check out our Energy Chants videos! Find videos produced by NEED students teaching their peers and community members about energy.

Online Graphics Library

Would you like to use NEED's graphics in your own classroom presentations, or allow students to use them in their presentations? Download graphics for easy use in your classroom.

SUPPLEMENTAL MATERIALS

Looking for more resources? Our supplemental materials page contains PowerPoints, animations, and other great resources to compliment what you are teaching in your classroom! This page is available under the Educators tab at www.NEED.org.

THE BLOG

We feature new curriculum, teacher news, upcoming programs, and exciting resources regularly. To read the latest from the NEED network, visit www.NEED.org/blog_home.asp.

EVALUATIONS AND ASSESSMENT

Building an assessment? Searching for standards? Check out our Evaluations page for a question bank, NEED's Energy Polls, sample rubrics, links to standards alignment, and more at www.NEED.org/evaluation.

E-PUBLICATIONS

The NEED Project offers e-publication versions of various guides for in-classroom use. Guides that are currently available as an e-publication will have a link next to the relevant guide title on NEED's curriculum resources page, www.NEED.org/curriculum.

SOCIAL MEDIA



Stay up-to-date with NEED. "Like" us on Facebook! Search for The NEED Project, and check out all we've got going on!



Follow us on Twitter. We share the latest energy news from around the country, @NEED_Project.



Follow us on Instagram and check out the photos taken at NEED events, [instagram.com/theneedproject](https://www.instagram.com/theneedproject).



Follow us on Pinterest and pin ideas to use in your classroom, [Pinterest.com/NeedProject](https://www.pinterest.com/NeedProject).

NEED ENERGY BOOKLIST

Looking for cross-curricular connections, or extra background reading for your students? NEED's booklist provides an extensive list of fiction and nonfiction titles for all grade levels to support energy units in the science, social studies, or language arts setting. Check it out at www.NEED.org/booklist.asp.

U.S. ENERGY GEOGRAPHY

Maps are a great way for students to visualize the energy picture in the United States. This set of maps will support your energy discussion and multi-disciplinary energy activities. Go to www.NEED.org/maps to see energy production, consumption, and reserves all over the country!





Blueprint for School Energy Teams Evaluation Form

State: _____ Grade Level: _____ Number of Students: _____

- 1. Did you conduct the entire activity? Yes No

- 2. Were the instructions clear and easy to follow? Yes No

- 3. Did the activities meet your academic objectives? Yes No

- 4. Was the activity age appropriate? Yes No

- 5. Were the allotted times sufficient to conduct the activity? Yes No

- 6. Was the activity easy to use? Yes No

- 7. Was the preparation required acceptable for the activity? Yes No

- 8. Were the students interested and motivated? Yes No

- 9. Was the energy knowledge content age appropriate? Yes No

- 10. Would you teach this activity again? Yes No

Please explain any 'no' statement below.

How would you rate the activity overall? excellent good fair poor

How would your students rate the activity overall? excellent good fair poor

What would make the activity more useful to you?

Other Comments:

Please fax or mail to: The NEED Project
8408 Kao Circle
Manassas, VA 20110
FAX: 1-800-847-1820



National Sponsors and Partners

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Arizona Science Center
Armstrong Energy Corporation
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Harvard Petroleum
Hawaii Energy

Houston Museum of Natural Science
Idaho Power
Idaho National Laboratory
Illinois Clean Energy Community Foundation
Independent Petroleum Association of America
Independent Petroleum Association of New Mexico
Indiana Michigan Power – An AEP Company
Interstate Renewable Energy Council
James Madison University
Kentucky Clean Fuels Coalition
Kentucky Department of Education
Kentucky Department of Energy Development and Independence
Kentucky Power – An AEP Company
Kentucky River Properties LLC
Kentucky Utilities Company
Kinder Morgan
Leidos
Linn County Rural Electric Cooperative
Llano Land and Exploration
Louisiana State University Cooperative Extension
Louisville Gas and Electric Company
Maine Energy Education Project
Massachusetts Division of Energy Resources
Michigan Oil and Gas Producers Education Foundation
Miller Energy
Mississippi Development Authority–Energy Division
Mojave Environmental Education Consortium
Mojave Unified School District
Montana Energy Education Council
NASA
National Association of State Energy Officials
National Fuel
National Grid
National Hydropower Association
National Ocean Industries Association
National Renewable Energy Laboratory
Nebraska Public Power District
New Mexico Oil Corporation
New Mexico Landman’s Association
Nicor Gas – An AGL Resources Company
Northern Rivers Family Services
North Shore Gas
NRG Energy, Inc.
Offshore Energy Center
Offshore Technology Conference
Ohio Energy Project
Opterra Energy
Oxnard School District
Pacific Gas and Electric Company

Paxton Resources
PECO
Pecos Valley Energy Committee
Peoples Gas
Petroleum Equipment and Services Association
Phillips 66
PNM
Providence Public Schools
Read & Stevens, Inc.
Renewable Energy Alaska Project
Rhode Island Office of Energy Resources
River Parishes Community College
RiverQuest
Robert Armstrong
Roswell Geological Society
Salt River Project
Sandia National Laboratory
Saudi Aramco
Science Museum of Virginia
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Society of Petroleum Engineers – Middle East, North Africa and South Asia
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Space Sciences Laboratory of the University of California Berkeley
Tennessee Department of Economic and Community Development–Energy Division
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