EXHIBIT 8

NATIONAL ENERGY FOUNDATION
Cultivating and Promoting an Energy Literate Society

Be *watt*smart, Begin at Home

Final Report
Utah
2012-2013

Prepared for:

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National Energy Foundation

July 5, 2013

Be ***watt***smart, Begin at Home

Program Administration

The National Energy Foundation (NEF) is pleased to report on activities of the Be ***watt***smart, Begin at Home energy efficiency education program conducted during the 2012– 2013 school year. Our mission remains constant, to continue to cultivate and promote an energy literate society. The objective is to provide Utah teachers and students with a quality educational experience and materials to support them in teaching and learning this valuable message. NEF acknowledges that through the support of Rocky Mountain Power, the Foundation has been able to move the mission forward. Thank you for your commitment to this very important task.

The Be ***watt***smart, Begin at Home is administered by the National Energy Foundation, a non-profit organization (established in 1976) dedicated to the development, dissemination, and implementation of supplementary educational materials, programs and services relating primarily to energy, water, the environment, and natural resources.

Sunny Dent, Sr. Vice President – Fundraising oversees contract development. Dari Scott, Sr. Vice President - Operations, oversees contract accounting and program organization. Janet Hatch, Program Director, oversees and is responsible for program reporting and the implementation of the scope of work. Megan Hirschi, Program Manager, is responsible for scheduling presentations, teacher communication, and coordination of the team of well-trained presenters.

Program Summary

The spring 2013 Be ***watt***smart, Begin at Home program provided quality energy education to 130 schools from Iron to Cache and Uintah to Millard Counties. The program consisted of a 60-minute assembly given to groups of fifth grade students and their teachers. Two presenters from the professional team of National Energy Foundation presenters were involved in the implementation of each interactive assembly.

Fifth Grade Be ***watt***smart, Begin at Home Promotions

A school-to-home energy awareness and efficiency program was conducted from February 11th through April 11th of 2013. To promote the program, an email was first sent to fifth grade teachers that had participated in the former assembly program. Then, a list of qualified schools within the Rocky Mountain Power Service Territory was established. It was used to develop a mailing list of principals and teachers. This list was used to send a letter of invitation and a promotional flier inviting teachers and principals to register their fifth grade for the program. Registration was online at wattsmart.com/begin. Each registered school was checked against the qualification list before email and phone communication with teachers determined optimum presentation dates and other pertinent information.

Be ***watt***smart, Begin at Home

Be ***watt***smart, Begin at Home Presentation

The Be ***watt***smart, Begin at Home presentation featured a custom Keynote slideshow addressing the need for energy efficiency. The presentation focused on important concepts, such as electrical generation, the energy mix used by Rocky Mountain Power to generate electricity, and tips for energy efficiency in the home. The program was carefully designed to compliment the Utah State Office of Education curriculum standards. An introductory meeting and follow-up communication with the state office science specialist, ensured a curriculum that Utah fifth grade teachers would find valuable in the classroom. Curriculum correlations were available on the registration website for teachers to download.

The presentation provided interactive activities that involved and engaged the audience. Students participated in making a human electrical circuit, during which they learned key core curriculum concepts such as insulators and conductors of electricity and electrical generation. Student volunteers used props to demonstrate the process of electrical generation for their classmates. All fifth graders reviewed material learned with an "Energy Lingo" game at designated points throughout the presentation. To help students remember energy efficiency tips, participants watched Slim the Lineman energy efficiency video vignettes. At the end of each short video, students completed a rhyme about Slim's wise energy choice.

The assembly ended by communicating the importance of the informative student booklet and the *Home Energy Checklist* survey that students took home to share with their families. Students were told that they would receive a special reward for the return of the checklist, an Energy Star© rated nightlight featuring the Rocky Mountain Power Logo. A class set of nightlights was provided to each teacher at the time of the presentation. A parent letter was also provided to explain the program, and its take home components enabling energy education be shared by family members. Spanish versions of the student booklet and the *Home Energy Checklist* were both available on the registration website to download.

Educators were also given helpful energy educational materials. Each teacher participant was provided with a custom Be ***watt***smart, Begin at Home folder. It contained a custom teacher guide with additional information and activities to supplement and continue energy education in the classroom. Also in the folder were NEF instructional posters, including *Bright Ways to Save Energy* and *Electrical Generation*. A program implementation steps flier assisted teachers in returning the *Home Energy Checklists,* their program evaluation, and the sponsor thank you note in the postage-paid, addressed envelope provided in their folder. The flier also gave information concerning the $50 mini-grant that educators could receive for an 80% return of the student surveys by the May 15, 2013 deadline. Teachers that returned 50 – 79% of their surveys could earn $25. Follow-up communication by

the NEF program manager encouraged the return of the survey and program evaluation.

The Be ***watt***smart, Begin at Home program exceeded its contractual obligations for spring of 2013, by seven presentations that served year round schools needing two presentations. In addition, it exceeded its anticipated student participant numbers (10,400) by 1,981 students.

Program Implementation Accomplishments

Program Implementation Accomplishments 2012 – 2013 School Year

- 137 Be ***watt***smart, Begin at Home presentations completed at 130 schools
- 12,381 students and families reached
- 466 Utah teachers reached
- 63.51% *Home Energy Checklist* return rate
- $50 mini-grants delivered to 295 Utah teachers
- $25 mini-grant delivered to one Utah teacher

Summary and Attachments

National Energy is pleased to be participating with Rocky Mountain Power to bring this informative program to Utah teachers, students and families. We look forward to working together to improve upon program deliverables. Be ***watt***smart, Begin at Home is a resource for bringing energy literacy to the forefront of student's education. Thank you for your continued commitment to Utah Schools.

- Spring 2013 participating schools
- Split class documentation
- Program promotions sampling
- Program documents
  - Keynote Presentation
  - Teacher implementation steps flier
  - Teacher incentive flier
  - Mini-grant letter
  - Student take home booklet
  - Teacher Guide
  - Lingo card
  - Curriculum correlations
  - Parent letter
- Teacher evaluation
- Teacher evaluation compilation
- *Home Energy Checklist*
- Wise Energy Behaviors in Rocky Mountain Power Utah Homes
- Sampling of thank you notes

Report Attachments

Spring 2013 Participating Schools

Be ***watt***smart, Begin at Home
Spring 2013 Participating Schools

School Name	City
Altara Elementary	Sandy
Aspen Elementary	Orem
Bacchus Elementary	Kearns
Beacon Heights Elementary	Salt Lake City
Bluffdale Elementary	Bluffdale
Bluffdale Elementary #2	
Brookwood Elementary	Sandy
Butterfield Canyon Elementary	Herriman
C S Lewis Academy	Santaquin
Cedar Ridge Elementary	Cedar Hills
Centerville Elementary	Centerville
Century Elementary	Bear River City
Columbia Elementary	West Jordan
Cook Elementary	Syracuse
Copper Hills Elementary	Magna
Country View Elementary	West Haven
Crestview Elementary	Layton
Daybreak Elementary	South Jordan
Daybreak Elementary #2	
Deerfield Elementary	Cedar Hills
Diamond Ridge Elementary	West Valley City
Douglas Orchard Elementary	West Valley City
Dual Immersion Academy	Salt Lake City
Eagle Bay Elementary	Farmington
Early Light Academy	South Jordan
East Elementary	Tooele
East Layton Elementary	Layton
East Layton Elementary #2	
Eastlake Elementary	South Jordan
Elk Meadows Elementary	South Jordan
Elk Run Elementary	Magna
Endeavor Hall	West Valley City
Entheos Expeditionary	Kearns
Escalante Elementary	Salt Lake City

Be *watt*smart, Begin at Home

Falcon Ridge Elementary	West Jordan
Falcon Ridge Elementary #2	
Fiddlers Canyon Elementary	Cedar City
Fielding Elementary	Fielding
Forbes Elementary	American Fork
Fountain Green Elem	Fountain Green
Foxboro Elementary	North Salt Lake
Foxboro Elementary #2	
Freedom Elementary	Highland
Geneva Elementary	Orem
Gerald L Wright Elementary	Salt Lake City
Goshen Elementary	Goshen
Grantsville Elementary	Grantsville
Gunnison Valley Elementary	Gunnison
Harvest Elementary	Saratoga Springs
Hawthorne Elementary	Salt Lake City
Hill Field Elementary	Clearfield
Hillside Elementary	West Valley City
Hooper Elementary	Hooper
Hunter Elementary	West Valley City
Iron Springs Elementary	Cedar City
J E Cosgriff Memorial	Salt Lake City
Jim Bridger Elementary	West Jordan
John Hancock Charter	Pleasant Grove
Jordan Hills Elementary	West Jordan
Kanesville Elementary	Ogden
Kearns-St Ann	Salt Lake City
Lakeside Elementary	West Point
Lakeview Academy	Saratoga Springs
Legacy Preparatory Academy	North Salt Lake
Lewiston Elementary	Lewiston
Lincoln Academy	Pleasant Grove
Lincoln Elementary	Layton
Lone Peak Elementary	Sandy
Mapleton Elementary	Mapleton
Midas Creek Elementary	Riverton
Midas Creek Elementary #2	
Midland Elementary School	Roy
Monte Vista Elementary	South Jordan
Morningside Elementary	Salt Lake City

Be *watt*smart, Begin at Home

Mountain Shadows Elementary	West Jordan
Mountain View Elementary	Layton
Mountainville Academy	Alpine
Municipal Elementary	Roy
North Ogden Elementary	Ogden
North Park Elementary	Roy
North Park Elementary	Tremonton
North Star Elementary	Salt Lake City
Oakdale Elementary	Sandy
Oakwood Elementary	Salt Lake City
Odyssey Elementary	Ogden
Oquirrh Elementary	West Jordan
Oquirrh Hills Elem	Kearns
Orchard Elementary	North Salt Lake
Orchard Hills Elementary	Santaquin
Parkview Elementary	Salt Lake City
Plymouth Elementary	Taylorsville
Providence Hall Charter	Herriman
Reading Elementary	Centerville
Redeemer Lutheran	Salt Lake City
Redwood Elementary	West Valley
Reid School	Salt Lake City
River Heights Elementary	River Heights
Riverview Elementary	Saratoga Springs
Rolling Meadows Elem	West Valley
Roosevelt Elementary	Ogden
Rose Creek Elementary	Riverton
Rose Springs Elementary	Stansbury Park
Sandy Elementary	Sandy
Saratoga Shores Elementary	Saratoga Springs
Settlement Canyon Elementary	Tooele
Shadow Valley Elem	Ogden
Silver Crest Elementary	Herriman
South Elementary	Cedar City
South Jordan Elementary	South Jordan
South Jordan Elementary #2	
South Weber Elementary	South Weber
Spectrum Academy	North Salt Lake
St Joseph Catholic	Ogden
Summit Academy	Draper

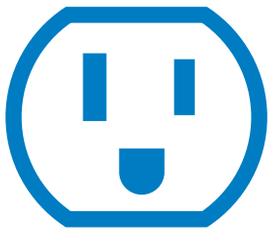
Summit Elementary	Smithfield
Sunrise Elementary	Sandy
Syracuse Arts Academy	Syracuse
Syracuse Elementary	Syracuse
Thomas O. Smith Elem	Ogden
Three Mile Creek Elem	Perry
Upland Terrace Elem	Salt Lake City
Vernon Elementary	Vernon
Wasatch Christian School	South Ogden
Wasatch Elementary	Salt Lake City
Wasatch Elementary	Ogden
Washington Terrace Elementary	Ogden
West Clinton Elementary	Clinton
West Jordan Elementary	West Jordan
West Kearns Elementary	Kearns
West Point Elementary	West Point
Westbrook Elementary	Taylorsville
Westfield Elementary	Alpine
Westland Elementary	West Jordan
William Penn Elementary	Salt Lake City
Windsor Elementary	Orem
Woodrow Wilson	Salt Lake City
Woods Cross Elementary	Woods Cross
Woodstock Elementary	Salt Lake City
Waitlisted Schools	
Farmington Elementary	Farmington
Lincoln Elementary	Ogden
Club Heights Elementary	Ogden
Rowland Hall	Salt Lake City
Copper Canyon Elementary	Tooele
Park School	Richmond
Stansbury Park Elementary	Stansbury Pk
Weilenmann School	Park City
North Davis Prep Academy	Layton
Pioneer Elementary School	Ogden
Antelope Elementary	Clearfield
Enoch Elementary School	Cedar City

Split Class Documentation

School	City	Grades
Forbes Elementary	American Fork	5th, 6th
Wasatch Christian School	South Ogden	4th, 5th, 6th
Deerfield Elementary	Cedar Hills	4th, 5th
East Elementary	Tooele	5th, 6th

Program Promotions Sampling

Be *watt*smart
Begin at home



Be wattsmart, Begin at home is an energy education program sponsored by Rocky Mountain Power that is available to you in the spring of 2013. This program focuses on the Utah State Office of Education Fifth-Grade Electricity Core Curriculum while showing students and teachers how wise energy actions make a difference. Here's what local teachers have to say about the program:

> ***"The students enjoyed this program and it fits perfectly with our electricity unit."***

> ***"The circuit demonstration taught important electricity concepts and engaged students."***

Please join us in this important effort. You may qualify to receive a **mini-grant of up to $50** depending upon participation.

What: A 60-minute assembly with FREE wattsmart energy education posters, activities and student materials.

When: February 4 - April 30, 2013

Where: Your school

Who: Fifth-grade students and their teachers

How: Enroll at **wattsmart.com/begin** at your earliest convenience to ensure a spot! Call Janet Hatch from NEF at 1-800-616-8326 or email **janet@nefl.org**.

NATIONAL ENERGY FOUNDATION™
CULTIVATING AND PROMOTING AN ENERGY LITERATE SOCIETY

ROCKY MOUNTAIN POWER
Let's turn the answers on.

INVITATION TO PARTICIPATE

Be **watt**smart
Begin at home

Dear Utah Principal:

The **Be wattsmart, Begin at home** energy education program will be available February through April to your school through Rocky Mountain Power and the National Energy Foundation.

We are confident this program will support teaching and learning for your students. During a short assembly, participants will learn how electricity is generated as well as easy ways to conserve it. Free teacher and student materials are included and the assembly addresses the Utah State Office of Education Fifth-Grade Electricity Core Curriculum.

Please review the enclosed flier and register online at **wattsmart.com/begin**. Enrollment is limited, so plan ahead for spring. Contact Janet Hatch at **janet@nef1.org** or call 1-800-616-8326 with questions.

Sincerely,

Dari M. Scott
Sr. Vice President, Operations
National Energy Foundation

NATIONAL ENERGY FOUNDATION
CULTIVATING AND PROMOTING AN ENERGY LITERATE SOCIETY

A. Richard Walje
President and CEO
Rocky Mountain Power

ROCKY MOUNTAIN POWER
Let's turn the answers on.

INVITATION TO PARTICIPATE

Be **watt**smart
Begin at home

Dear Utah Fifth-Grade Educator:

The **Be wattsmart, Begin at home** energy education program will be available February through April to your school through Rocky Mountain Power and the National Energy Foundation.

We are confident this program will support teaching and learning for your students. During a short assembly, participants will learn how electricity is generated as well as easy ways to conserve it. Free teacher and student materials are included and the assembly addresses the Utah State Office of Education Fifth-Grade Electricity Core Curriculum.

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ROCKY MOUNTAIN POWER
Let's turn the answers on.

Program Documents

Be ***watt***smart,
Begin at home

ROCKY MOUNTAIN POWER
Let's turn the answers on.

What we will do today?

- Learn about natural resources.
- Learn how we make and use energy.
- Learn how to use energy wisely by being ***watt***smart.
- Play energy LINGO.

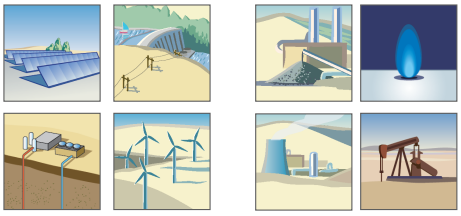
What is **ENERGY**?

ENERGY is the ability to do WORK.

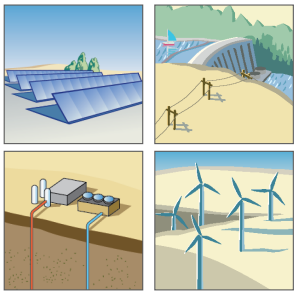
Natural resources

A **natural resource** is anything we use that comes from the earth or the sun.

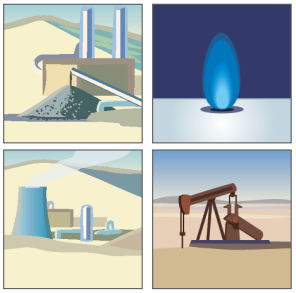
Renewable and nonrenewable resources



Renewable resources



Nonrenewable resources



Electricity

- The electricity we use is not a natural resource.
- It is made from natural resources.
- Since electricity is made from a resource it is called a **secondary energy source**.
- Power lines carry the electricity from where it is generated to where it is used.

Let's LINGO

Find the words on your LINGO board that match these definitions:

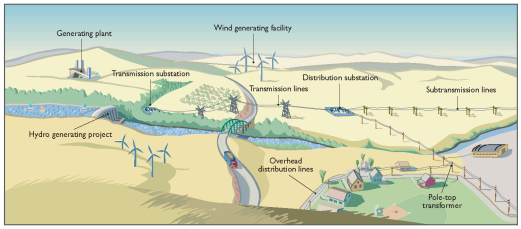
- The ability to do work. **Energy**
- A resource often found with oil. **Natural gas**
- A secondary energy source. **Electricity**
- Something useful from the earth or the sun. **Natural resource**

Rocky Mountain Power

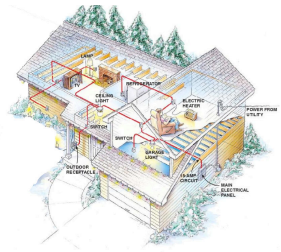
Electric generation by energy source for Utah

- Coal 60.39% 
- **Renewables** 17.39% 
- Natural gas 12.17%
- Other sources 10.05%

Electric generation



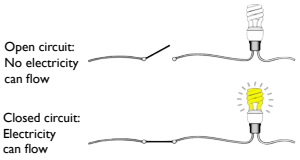
What is a circuit?



Let's make a circuit?

What things do we need to make an electrical circuit?

- An **energy source**, such as a battery.
- A **conductor** to carry electrical energy, such as wire.
- A **load** to use the energy, such as a light bulb.



Energy Efficiency

Energy efficiency

•Using less energy to accomplish the same amount of work.

Technology

•Install energy-efficient products, appliances and devices.

Behavior

•Use less energy through wise behaviors that conserve energy.

Know what you want before you open the fridge.

Use a fan to stay cool.

Turn off the TV when you leave the room.

Turn off the lights when you leave the room.

Let's LINGO

Find the words on your LINGO board that match these definitions:

- Using less energy to accomplish the same amount of work. **Energy efficiency**
- An energy resource that is capable of being renewed or is replaceable. **Renewable**
- Fossil fuels – such as coal, natural gas and oil – are considered **Nonrenewable** resources.
- A resource used to produce gasoline. **Oil**

Home heating and cooling

What can you do to be ***watt***smart?

- Install a programmable thermostat.
- Look for the ENERGY STAR® label.

- Change furnace filters at least every 3 months.
- Insulate your home and seal air leaks.

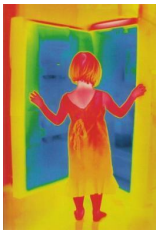
Lighting

What can you do to be ***watt***smart?

- Turn off the lights when you leave a room.
- Replace standard bulbs with **CFLs** (compact fluorescent light bulbs).
- Let daylight shine in.

Refrigerators and freezers

What can you do to be ***watt***smart?



Decide what you want to eat quickly!

Electronics

What can you do to be ***watt***smart?

- Unplug the thug. Beware of **phantom loads**.
- Turn off TVs, computers and game consoles when not in use.

Water heating

What can you do to be ***watt***smart?

- Install a high-efficiency shower head.
- Take shorter showers.
- Turn off the water when brushing teeth.
- Tell your parents that your **water heater** should be set to 120°F.

Dishwashers

What can you do to be ***watt***smart?

- Only run dishwashers when full.
- Use the "air dry" or "no heat dry" settings.

Laundry

What can you do to be ***watt***smart?

- Wash clothes in cold water.
- Clean the lint filter in the dryer with each load.
- Use a clothes line whenever possible.

Cooking

What can you do to be ***watt***smart?

- Use a microwave oven when possible.
- Use lids to shorten **cooking** time.

The 3 R's

What can you do to be ***watt***smart?

- **Reduce** – use less of something.
- **Reuse** – use something again.
- **Recycle** – make something into another new thing.

Let's LINGO

Find the words on your LINGO board that match these definitions:

- A light that lasts up to 10,000 hours. **CFL**
- Electricity consumed by an electronic device while it is turned off or in standby mode. **Phantom load**
- Using a toaster oven or microwave for **Cooking** is more energy-efficient than using the oven.
- Set this to 120°F. **Water heater**
- To use less of something. **Reduce**

- **Learn** why energy is important.
- **Discuss** energy and where it comes from.
- And…

Engage

Review your **Be *watt*smart, Begin at Home** booklet with your parent(s).

Complete the *Home Energy Checklist* and returning it to receive an energy-efficient night light.

Sign the *Thanks A "Watt"* card and your teacher will mail it along with your checklist and the teacher's program evaluation.

***YOU** can make a difference when you are **watt**smart!*

Visit **wattsmart.com** for more energy-saving ideas.

Be **watt**smart
Begin at home

Teacher Program Implementation Steps

1. Verify that you have received each of the following:
    - Teacher Materials Folder
        - Your **Be wattsmart, Begin at home** booklet
        - Your **Be wattsmart, Begin at home** teacher guide
        - Program Evaluation
        - Sponsor *Thanks a "Watt!"* Card
        - Teacher mini-grant announcement
        - Self-addressed postage-paid return envelope
        - Instructional posters
    - *Home Energy Checklists* for you and your students
    - **Be wattsmart, Begin at home** student booklets
    - Set of parent letters
    - wattsmart nightlights (student incentive for returning the *Home Energy Checklist*)

2. Distribute to each student a:
    - **Be wattsmart, Begin at home** booklet
    - *Home Energy Checklist*
    - Parent letter

3. Reward each student who returns a *Home Energy Checklist* with a wattsmart nightlight.

4. Complete the teacher *program evaluation* form.

5. Have each student sign the *Thanks a "Watt!"* card to Rocky Mountain Power.

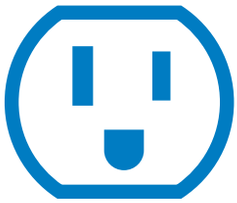
6. Mail in the self-addressed, postage-paid envelope:
    - All completed *Home Energy Checklists*
    - The *Thanks a "Watt!"* card
    - The *program evaluation* form

To thank you for postmarking your envelope by May 15, 2013, you will receive a mini-grant for classroom use.
80% return of registered student's *Home Energy Checklists* = $50
50-79% return of registered student's *Home Energy Checklists* = $25

For questions or additional information, please email Janet Hatch at **janet@nef1.org**.

ATTENTION TEACHERS!

Be **watt**smart
Begin at home



Help us out by mailing your student *Home Energy Checklists* and receive a **$25-50** mini-grant for classroom use, depending upon participation:

80% return of registered student's *Home Energy Checklists* = $50
50-79% return of registered student's *Home Energy Checklists* = $25

Postmark due date:
May 15, 2013

Offer open only to teachers participating in Be wattsmart, Begin at home. Certain restrictions may apply. Good while grant funding is in place. Home Energy Checklists must be completed for eligibility. For more information, contact Janet toll free at 800-616-8326 or janet@nef1.org.

ROCKY MOUNTAIN POWER

wattsmart.com

NATIONAL ENERGY FOUNDATION™
CULTIVATING AND PROMOTING AN ENERGY LITERATE SOCIETY

Be **watt**smart
Begin at home

Date:

To:

From: Janet Hatch – Program Director

Re: THANK YOU!

Dear **Be wattsmart, Begin at home** Teacher:

Thank you for participating in **Be wattsmart, Begin at home**. National Energy Foundation enjoyed working in your school providing a presentation and educational resources to enhance learning in your classroom. A special thank you is also in order to **Rocky Mountain Power**.

In behalf of **Rocky Mountain Power** we are pleased to provide you with the enclosed mini-grant in appreciation of your return of program materials. We thank you for your follow-up.

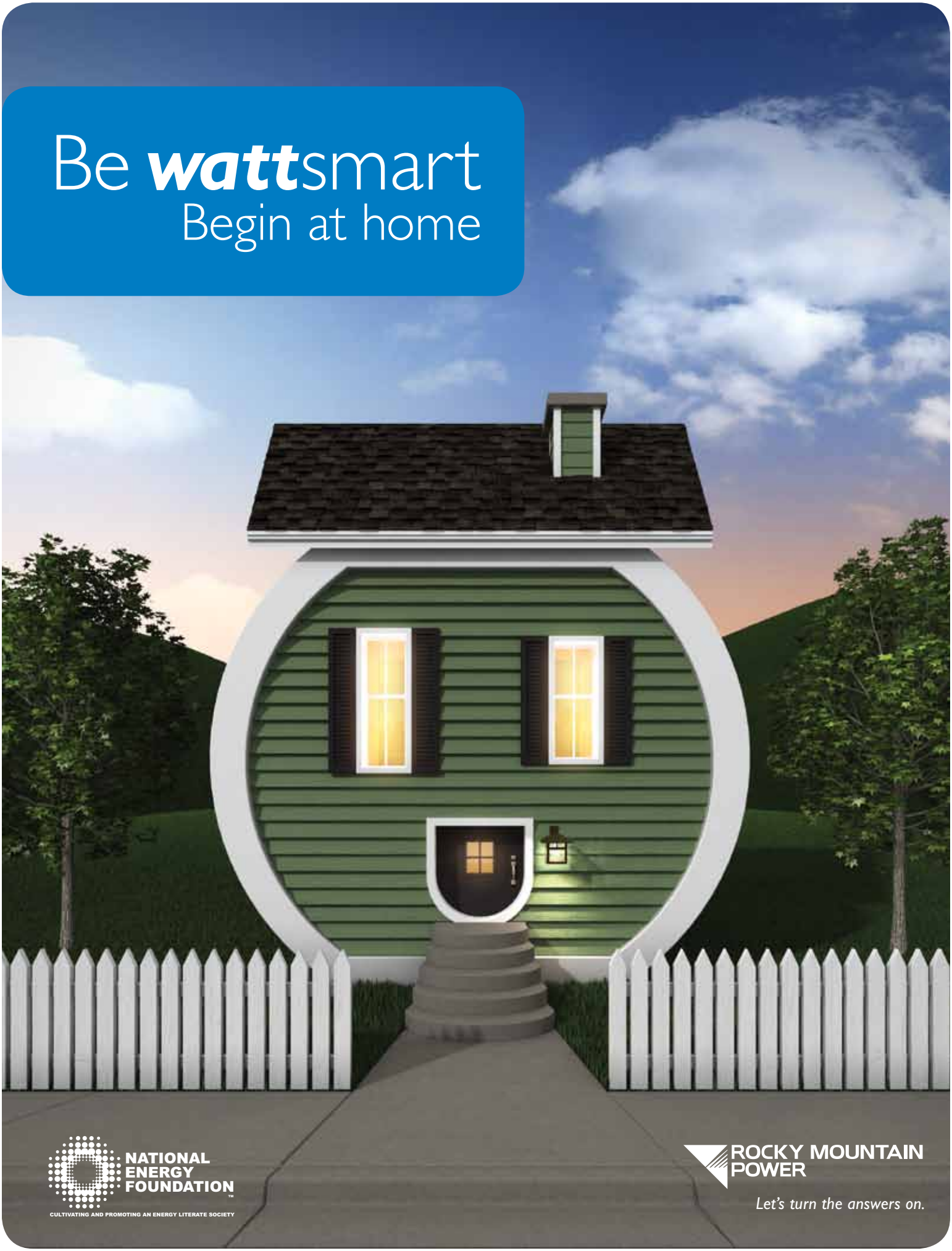
Your students will be pleased to see how their actions made a difference. We look forward to additional opportunities to collaborate with you in future programs.

ROCKY MOUNTAIN POWER

wattsmart.com

NATIONAL ENERGY FOUNDATION™

CULTIVATING AND PROMOTING AN ENERGY LITERATE SOCIETY


Be wattsmart
Begin at home
NATIONAL ENERGY FOUNDATION
CULTIVATING AND PROMOTING AN ENERGY LITERATE SOCIETY
ROCKY MOUNTAIN POWER
Let's turn the answers on.

Dear Parent(s):

The **Be wattsmart, Begin at home** *program assists teachers and students to learn about energy, discuss important energy topics and engage in energy efficiency actions now. Your child has participated in an assembly addressing natural resources, energy basics and energy efficiency. Your participation in this program will help you be wattsmart and enhance energy efficiency in your home and help save money on your utility bills. Here are three simple ways that you can help:*

- *Review the* **Be wattsmart, Begin at home** *booklet with your child.*
- *Assist your child with completing the activities on page seven.*
- *Have your child return the* **Home Energy Checklist** *to their teacher.*

Thank you for being wattsmart and for your participation!

What's inside?

This booklet is divided into three sections that will help you to:

1. Learn about sources of energy, how they get to your home and why they are important in your life.
2. Discuss wattsmart energy efficiency tips that will help you use energy wisely and save money.
3. Engage in energy efficiency by determining how energy can be saved in your home through a simple audit activity and the Home Energy Checklist.

About Rocky Mountain Power

Rocky Mountain Power is a leading electric utility in the western United States. One of the lowest-cost electricity producers in the U.S., Rocky Mountain Power provides one million customers in Utah, Wyoming and Idaho with safe, reliable, efficient energy. In addition, it is the number two utility owner of renewable, wind-generated electricity in the U.S.

About National Energy Foundation

National Energy Foundation is a unique 501 (c) 3 nonprofit educational organization dedicated to the development, dissemination and implementation of supplementary educational materials and programs. These resources for education relate primarily to energy, water, natural resources, science and math, technology, conservation and the environment.

What does it mean to be ***watt***smart?

- Being wattsmart is all about taking steps to save energy – which in turn can help you save money.
- Rocky Mountain Power's wattsmart programs and incentives can help customers become more energy efficient in their homes and businesses, and that's good for their wallets and the environment.

The importance of energy:

Energy is the ability to do work or produce change. Virtually everything we do or use at work and home uses energy.

- Heating and cooling systems
- Computers
- Electronic equipment such as gaming and entertainment systems and TVs
- Charging electronic tablets, music players and cell phones
- Appliances
- Lights
- Manufacturing
- Food storage and preparation
- Security systems

Where does energy come from?

Our energy comes from natural resources. There are two general categories of natural resources – nonrenewable and renewable. A nonrenewable resource is not capable of being renewed, replaced or takes a very long time to replace. A renewable resource is capable of being renewed or replaced.

PRIMARY NATURAL RESOURCES are used to convert energy into electricity. They can be either nonrenewable or renewable.

Nonrenewable examples are:

Coal is the most abundant nonrenewable energy source in the world. There is an estimated 130 year supply remaining.

Oil can be both refined and unrefined. Refined oil is transformed into petroleum products and unrefined oil remains as crude oil.

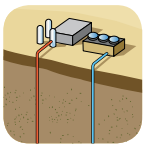
Natural Gas is usually captured alongside oil deposits and is a major source for electrical generation.

Uranium is the fuel most widely used by nuclear plants. Nuclear energy is the energy inside the nucleus (core) of the atom of uranium.

Renewable examples are:

Solar is energy from the sun.

Wind is energy from the wind captured by a group of wind turbines (generators).



Geothermal is energy derived from the heat of the earth.

Hydropower is energy from water that generates electricity.

SECONDARY ENERGY RESOURCES are created by using nonrenewable and renewable resources of energy.

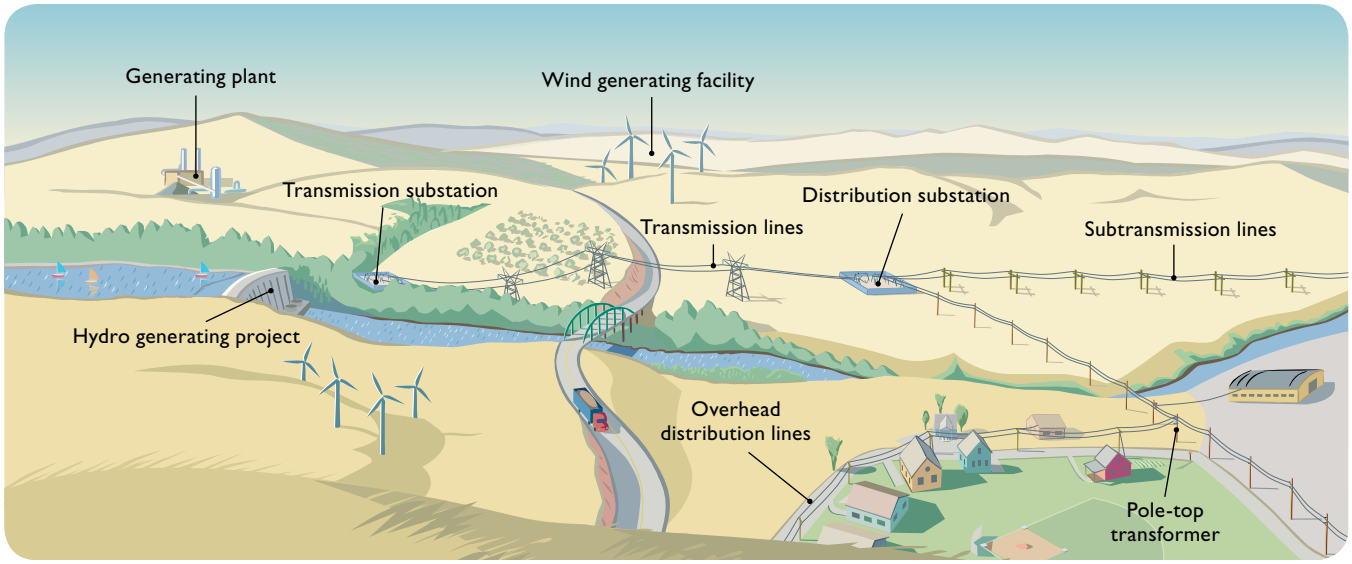
Electricity is the most abundant **secondary energy resource** used. It is the flow of electrical power or charge. It occurs in nature as lightning and static electricity. A generator uses energy resources to create mechanical energy that is then converted into electrical energy.

Energy efficiency

Energy efficiency is using less energy to accomplish the same amount of work – we call it being wattsmart. There are many technologies we can use today that decrease the amount of energy needed to do work. Good examples are ENERGY STAR® products and compact fluorescent lights (CFLs).

You can save even more money if you start thinking about using energy wisely. Try turning off the lights when you leave the room, take shorter showers or turn off your electronics when you are not using them.

Using electricity



For more than 100 years, electricity has made our homes more comfortable and industries more productive. Today electricity is powering a world of electronics.

How is electricity generated? It begins with a fuel that heats water and turns it to steam. The steam drives the turbine that turns the generator motor to produce electricity.

How is electricity transmitted? Once the electricity is produced, the current flows from the generator to the power plant transformer where the voltage is increased to boost the flow of the electric current through the transmission lines. The transmission lines transport the electricity to Rocky Mountain Power's substations where the voltage is decreased. Power lines then carry the electricity from the substations to be used in our homes and businesses.

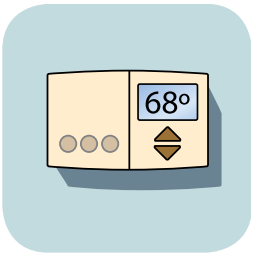
ELECTRICAL GENERATION

Energy resource	Rocky Mountain Power (2011 fuel mix)	United States (U.S. EPA, 2005 data)
Coal	60.39%	49.61%
Natural gas	12.17%	19.37%
Renewables	17.39%	8.61%
Hydroelectric	8.64%	6.50%
Wind and other	7.92%	0.44%
Biomass	0.43%	1.30%
Geothermal	0.40%	0.36%
Solar	0.00%	0.01%
Nuclear	0%	19.28%
Petroleum (oil)	0%	3.03%
Other/misc.	10.05%	0.10%

wattsmart tips to lower your energy use and help save money

Saving energy happens in two ways. First, you can use less energy through wise behaviors that conserve energy. Second, you can install energy-efficient products, appliances and devices that use less energy to accomplish the same task. Let's talk about the following areas of your home that have the largest potential to save energy.

Home heating and cooling



- Install a programmable thermostat. Set your thermostat to 78 degrees or higher in the summer and 68 or lower in the winter.
- Make sure your house is properly insulated. If you have less than six inches of insulation in your attic, you would benefit from adding more.
- You can save 10 percent or more on your energy bill by reducing the air leaks in your home with caulking and weather stripping.

- To help your furnace run more efficiently and cost-effectively, keep your air filters clean.
- For windows with direct sunlight, close your blinds in the summer to keep the heat out. Open them on winter days to let the warmth in.
- Small room fans are an energy-efficient alternative to air conditioning.
- Inspect and replace weather stripping and caulking in your home.
- For information about energy-saving programs and cash incentives, visit **wattsmart.com**.

Water and water heating

- Check your faucets for leaks that can cost you hundreds of dollars each year.
- Install a high-efficient showerhead and save as much as $50 a year.
- Set the water heater at 120°F.
- Install faucet aerators to decrease water use.

Lighting

- Let the sun shine in. Use daylight and turn off lights near windows when possible.
- Replace your most used incandescent bulbs with CFLs (compact fluorescent lights) and save from $5 to $8 per year per bulb. CFLs use 75 percent less energy and last longer. You can use newer efficient technologies, such as LEDs.
- Use lighting controls such as motion detectors and timers.
- Turn off lights when you leave the room.
- Always use the lowest wattage bulb that still gives you the light you need.
- Keep your light bulbs clean. It increases the amount of light from the bulb and reduces the need to turn on more lights.

Safety note: Burned out CFLs, which contain a small amount of mercury, should be disposed of properly. To locate a collection site in your area, or to learn what to do if a CFL breaks, visit **www.getenergysmart.org**.

Electronics

- Turn off your computer and game consoles when not in use.
- Home electronics are made to turn on and off many times. Always turn them off to save energy.
- Electronics with the ENERGY STAR® label use as much as 60 percent less energy while providing the same performance.
- Beware of phantom loads which continue to draw electricity when they are plugged in but not in use. Examples are telephone chargers, electronic games and television sets. Use power strips for household electronics. One button will turn off multiple appliances, which conserves electricity.

Refrigerators and freezers

- When looking to replace your old refrigerator, do so with an ENERGY STAR® model, which requires 40 percent less energy than conventional models and provides energy savings without sacrificing the features you want.
- The coils in the back or bottom of your refrigerator and freezer should be kept as clean as possible.
- Recycle old freezers and refrigerators. Rocky Mountain Power's *See ya later, refrigerator*® program will pick them up and give you $30. Call toll-free 866-899-5539 to schedule a pickup.

Dishwashers

- Only run dishwashers when full and use the "air dry" or "no heat dry" settings.
- ENERGY STAR® dishwashers use at least 41 percent less energy than the federal minimum standard for energy consumption.

Laundry

- Buy a moisture-sensitive dryer that automatically shuts off when clothes are dry.
- Use a clothesline whenever possible.

Cooking

- Use a microwave oven, toaster oven or crock pot instead of a conventional oven.
- Use the right-sized pan for the stove top element.
- Cover pans with lids to keep heat from escaping.

Reduce

- Use less.
- Purchase products with little packaging.

Reuse

- Use something again.
- Reuse a box or a grocery bag.

Recycle

- Make something into another new item.
- Participate in the recycling programs in your community.

Parents, be wattsmart and watch the energy savings add up.

An individual with a combined electric and heating fuel bill of $2,500 per year could save 20 percent or $42/month by using these and other energy efficiency tips. That is like getting a pay raise without having to work harder or longer.

The cost of lighting your home

Discover how much money you will save if all the light bulbs in your home were CFLs. Take a walk around your home with your family to survey the lighting.

1. Count the bulbs in each room and record it in table 1; then total each column.
2. Transfer this information into Column A on Table 2.
3. Multiply the numbers in Column A by Column C. Place answers in Column D.
4. Multiply each answer in Column D by the total number of bulbs (line 3) in your home.

Place the answers in Column E.

Subtract the CFL total cost in Column E from the incandescent total cost in Column E to discover your estimated annual savings.

TABLE 1

Location	Incandescent	CFL
Bedroom 1		
Bedroom 2		
Kitchen		
Dining room		
Living room		
Hallway		
Laundry room		
Family room		
Front porch		
Other		
TOTAL		

TABLE 2

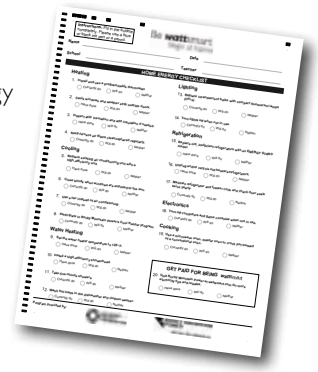
	A	B	C	D	E
	Number of bulbs (from table 1)	Monthly cost of electricity for one bulb	Annual cost of electricity for one bulb	Annual cost of electricity	Annual cost of electricity if all bulbs are the same
1. Incandescent		$0.33	$3.96		
2. CFL		$0.07	$0.84		
3. TOTAL					

Cost figures are for an individual bulb (60 watt incandescent) and the lumens equivalent CFL (13 watts) each used for 2 hours each day for 30 days. Rate report, Winter 2012 (12 months ending 2011).

Be ***watt***smart – it's up to you

Together with your parent(s), complete the separate **Home Energy Checklist**. You may find you are already practicing ways to be energy efficient, but there is always room to do more.

Challenge yourself and your family to commit to practice energy efficiency by making wise energy choices and being wattsmart. You will not only help extend the life of our natural resources, but save money, too!



After you complete the **Home Energy Checklist**, please return it to your classroom teacher and receive your wattsmart nightlight.

For other energy-saving ideas and incentives, visit **wattsmart.com**. Congratulations to you and your family for making a difference.

Be *watt*smart

Begin at home

NATIONAL ENERGY FOUNDATION™

CULTIVATING AND PROMOTING AN ENERGY LITERATE SOCIETY

*watt*smart.com

ROCKY MOUNTAIN POWER

Let's turn the answers on.

Be *watt*smart
Begin at home

TEACHER GUIDE

NATIONAL ENERGY FOUNDATION™
CULTIVATING AND PROMOTING AN ENERGY LITERATE SOCIETY

ROCKY MOUNTAIN POWER
Let's turn the answers on.

Welcome to Be ***watt***smart, Begin at home

This program teaches the importance of energy and assists students and their families in saving energy in their homes. For teachers, **Be wattsmart, Begin at home** *reinforces important electricity concepts from your curriculum.*

This Teacher Guide was designed to supplement program instruction. A variety of tools have been provided to allow you to format **Be wattsmart, Begin at home** *to meet your instructional needs. These tools include:*

- *General guidelines and activity suggestions*
- *Classroom activities to further the impact of lessons*
- *Additional fun and interesting activities for students*
- *Activities containing STEM related curriculum for your classroom*

Table of Contents

About Rocky Mountain Power

Rocky Mountain Power is a leading electric utility in the western United States. One of the lowest-cost electricity producers in the U.S., Rocky Mountain Power provides 1 million customers in Utah, Wyoming and Idaho with safe, reliable, efficient energy. In addition, it is the number two utility owner of renewable wind-generated electricity in the U.S.

About National Energy Foundation

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Section One:
Energy efficiency

Objectives: Identify and explain types of natural resources, conservation and energy efficiency.

Vocabulary:

Natural resource: A material source of wealth, such as timber, fresh water or a mineral deposit that occurs in a natural state and has economic value.

Renewable resource: A natural resource that is capable of being renewed or is replaceable such as energy from the sun or wind.

Nonrenewable resource: A natural resource that is not capable of being renewed, replaced or takes a very long time to replace such as fossil fuels.

Fossil fuel: A combustible material created naturally beneath the earth's surface over a long period of time, from the remains of plants and animals. Examples include coal, natural gas and oil.

Conservation: The protection, preservation, management, or restoration of wildlife and of natural resources such as forests, soil and water.

Energy efficiency: Managing the consumption of energy through the use of technologies and wise behaviors.

Classroom activities:

- Conservation Cookie
- Pass the Sack
- Energy Tickets
- The Search for Energy

Energy challenge

Discussion idea: Embodied energy in a glass of milk

Objective: Trace the energy and resources needed to make a common product.

Review the steps that it takes to produce a glass of milk and bring it to the consumer:

- Feeding and raising a cow
- Milking a cow
- Packaging
- Refrigeration
- Transportation of milk (dairy to warehouses to store to home)

Discuss with your class:

1. What natural resources go into making and transporting a glass of milk?
2. The energy used to make and transport a product is called **embodied energy**.
3. What embodied energy sources are involved in producing and transporting milk?
4. How can understanding embodied energy in our daily lives encourage us to be energy efficient?

Conservation Cookie

Objective:
To demonstrate the results of conservation of a resource.

Pre-activity discussion:
- What is conservation?
- Why is conservation so important?

Materials:
- Two cookies (or other food item) for each person
- One watch or clock with a second hand for timing
- Computer or graph paper to graph results

Procedure:
1. Tell students that this is the first of two rounds. In each round, they will be eating a cookie, which represents our natural resources. They are to stand at their desk and when you say to, eat the cookie as they normally would, then when the cookie has been completely swallowed, sit down. The activity will work better if you ask students NOT to put the entire cookie in their mouth at one time, to take at least two bites!
2. Give each student a cookie, with instructions not to eat it until you say. Start the watch and tell the students to eat the cookie, as they would normally eat it. At thirty second intervals, count the number of students standing and record this data.
3. Individually or as a class, graph this data using a line graph.
4. Tell students they will now practice conservation with a second cookie. To represent conservation, students will only take a bite from their cookie when you say "BITE." Just as before, they will stand, take bites the same size they took last time, and sit after the entire cookie has been swallowed.
5. Pass out a second cookie to each student.
6. Start the watch and have everyone take a "BITE" and then wait 30 seconds. Record the number of students standing and again say "BITE." Repeat this procedure until almost everyone has finished his or her second cookie.
7. On the same graph used for the first cookie, add a second line graph for the conservation cookie.

Discussion:
- Compare the two graphs. If desired, have students calculate the slope of each graph from 0 to 30 seconds and from 30 seconds to one minute. How do the slopes vary over time and between graphs? What does a change in slope represent?
- Discuss the term conservation and its effects on our natural resources. Can we control how rapidly we use water or energy by conserving it? Water and energy are some of the most important things we use in our lives. If they are used up quickly, and all at once, we will not have enough left for the future.

Pass the Sack

Objective:

To demonstrate the difference between renewable and nonrenewable resources and the need for conservation of resources.

Materials:

- Two different kinds of candy or other objects students find desirable
- Sack to hold candy, such as a gallon size plastic bag

Procedure:

1. Count out enough candy so that there is one piece per student (some of each type of candy – perhaps less of one so it will run out faster). Put it in the sack or bag. Save the remaining candy. If you have a very polite class, count enough candy for half of the class. You want the candy to run out before everyone gets some!
2. Tell students you will be demonstrating how resources get used over time by playing "Pass the Sack." Show students the sack and tell them when they get the sack, they should take some energy and pass the sack to the person next to them.
3. Before passing the sack to the first student, review renewable and nonrenewable resources. Have students give examples of each as you hand the sack to a student.
4. While this discussion is taking place, allow students to pass around the bag of candy without any rules about how many pieces students may take. Occasionally, add four or five pieces of one of the types of candy you are using. (This will be your renewable resource.) The sack will be empty before it reaches all the students.
5. Ask students that did not get any candy how they might obtain energy from other students. What if each student represented a country? How do countries obtain resources? Trade? Barter (trade for goods)? Buy (trade for currency)? Invade and take? Go to war? What effect did the availability of candy have on relationships between students? What effect might the availability of natural resources have on the relationship among nations, provinces, states, people, standards of living and quality of life?
6. Explain how our resources are like the candy. Which type was the nonrenewable? How could you tell? (No more was added to the bag once it was being passed around.) Which type was renewable? How could you tell? (It was added to the bag periodically.)
7. Point out that resources have limits just like the candy. Emphasize that many resources, such as fossil fuels, are nonrenewable and are being consumed faster than they are being replaced by nature. Discuss the fact that it would be more difficult for students to eat the candy if they had to search the room to find it instead of just taking it from the sack. Energy companies must seek resource deposits and obtain rights to drill or mine for them, they don't just magically appear. Point out that natural gas, coal and oil companies are looking harder for more resources as supplies dwindle.
8. Now plan to pass out the remaining candy. Should rules be established? Do oil, coal, and natural gas companies have rules (regulations) that they must follow to find resources? Should there be rules and regulations on how much oil, coal and natural gas people use? How would students get resources if they could not leave their desks? How do the class's social decisions influence the availability of candy?

Energy Tickets

Objective:

See how energy decisions affect our standard of living and our quality of life. This will help students realize how important it is to use energy efficiently.

Materials needed:

Energy Tickets – 25 per student
Box to collect tickets (toll box)

Procedure:

1. Before class begins, copy a page of tickets from the master on page 7 for each student. Alternatively, you may use preprinted tickets available from retail stores.
2. Introduce the game to the students by listing several places the students use energy in the school, for example, in the classroom: lights, computers and heaters.
3. Provide each student with 25 Energy Tickets, and instruct them to write their name on all of their Energy Tickets.
4. Every time a student uses energy, have them write how the Energy Ticket was used on the back and put the ticket in the toll box. If they use heated water, it will cost two tickets, because they are using both energy and water. It also costs two tickets if they waste energy unnecessarily. For example, leaving lights or a computer on when not in use wastes energy.
5. Keep a record of how many tickets the students have left each day.
6. Optional: look at how the tickets were used, and create a graph of tickets used for different categories (sharpening pencils or using computers, for example) out of the tickets deposited in the box.

Discussion:

- What would happen if there was a real energy shortage in the community and families were issued a certain number of Energy Tickets?
- What if after they used them, all of their electricity and gas was shut off?
- What would they do to adjust their use of energy?
- What are other alternate sources of energy?

Language arts connection:

- Quick write – Describe one thing you could do to reduce your personal energy usage.
- Creative writing – Write a story about life after our nonrenewable energy sources are gone.

ENERGY TICKET
This ticket allows
one energy use

student name

ENERGY TICKET
This ticket allows
one energy use

student name

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The Search for Energy

Objective:

To learn the difference between renewable and nonrenewable resources.

Materials needed:

- About 1/4 cup seed beads (solar energy)
- Colored beads in the following proportions: 84% black beads (about 250 beads) for coal; 16% red (about 50 beads) for uranium; 2% white (about 7 beads) for natural gas; 1% blue (about 4 beads) for oil. These proportions approximately reflect the nonrenewable energy reserves in the U.S.
- Optional: large sheet or tarp to place beads on for easy cleanup

Procedure:

1. Divide the class into five equal groups. Each group will be a company going after a particular resource. The beads represent reserves of the various energy resources. Have students gather in a large circle around the sheet or other area you will place the beads.
2. Scatter the large beads plus a spoonful of "solar" beads on the sheet so they are well spread out. Explain that this exercise shows how the amount of resources available changes over time. You may want to designate certain places as protected areas, where the resources are off limits to protect the environment.
3. Tell students you will do several trials, and look to see how the types of resources that are available change after each trial. Tell each group that they will have 30 seconds to pick up all the beads they can of their color, then you will stop and look at how things are changing. It is NOT a race! After checking for understanding, start timing.
4. After 30 seconds, have the groups stop and count the beads they have gathered. Record the results in a data table. If some groups have collected all of their available resource, point out that the resource is now depleted and they are unemployed. You can allow the students to join another group. Collect the beads students picked up in the first trial.
5. Scatter another spoonful of solar energy, helping students realize that since solar is a renewable resource, there is the same amount of it each time you look, whereas the fossil fuels are being depleted. Repeat the search period so students can get more beads.
6. Stop after 30 seconds and have the group count and record the beads collected again. Note that there are fewer fossil fuels found in the second round. Students have to look harder to find what is left. The solar count is slowly but surely catching up with the fossil fuels. Repeat with additional trials as needed.
7. Create a multi-line graph of the number of beads collected each trial. This can be done by individual students or as a class. Note that the nonrenewable resources decrease until they are depleted but the solar increases steadily.

Discussion:

- Why does the solar line differ from the others? Why does it go up rather than down?
- How do improvements in technology affect the extraction of resources from the earth?
- How do improvements in technology affect our usage of renewable resources?
- In the real world, can we extract ALL of a resource? Why do some deposits go unused?

Section Two:
Resources you can use efficiently

Objectives:
To discuss and identify various resources students use everyday.

Vocabulary:
Electricity: The flow of electric charge used as power.

Green energy: Electricity produced by renewable energy sources that are nonpolluting, or that pollute very little.

Natural gas: A fossil fuel that is a mixture of gases occurring in underground deposits.

Classroom activities:
- Where do Fossil Fuels Come From?
- Energy for Electricity
- Electrical Generation poster

Energy challenge

Discussion idea:
What natural resources can you save by recycling?

Optional activity:
1. Have students keep track of each paper product that they use during one day with tally marks.
2. Compare amounts of paper used by students in the class. Ask students if they were surprised by the amount of paper that they used.
3. Based on their usage of paper in one day, have students estimate how much paper they would use in a week, a month and a year.
4. Discuss the difference between reducing, reusing and recycling
   - Reduce – to use less of something
   - Reuse – using something again
   - Recycle – making something into another new item
5. Brainstorm several ways that paper use can be reduced, that paper can be reused, and how paper can be recycled in your community.
6. Tell students that recycling one ton of paper saves:
   - 17 mature trees
   - 7,000 gallons of water
   - 3 cubic yards of landfill space
   - 2 barrels of oil
   - 4,100 kilowatt hours of electricity – enough energy to power the average American home for 5 months (EPA, 2008)

Where do Fossil Fuels Come From?

Objective:

This activity investigates the production of natural gas and oil from ancient life. This activity models this process.

Materials per student group:

- A clear container to represent the ocean
- Sand or dirt
- Baking soda "plankton"
- Vinegar (20%) and water (80%) "ocean" mixture
- Cup or scoop
- Safety goggles

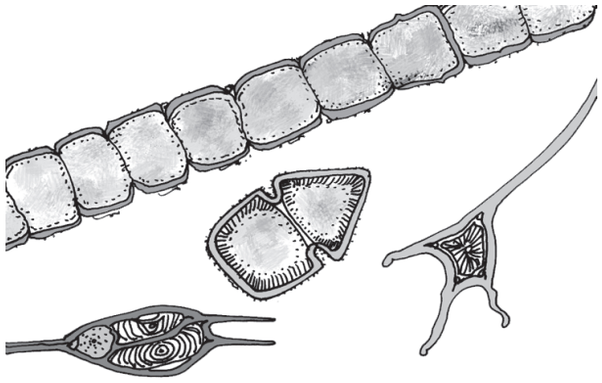
NOTE: You may do this as a demonstration, or have students do it in small groups.

Procedure:

1. Explain to students that you will be showing them a model of how oil and natural gas form in the ocean. A very similar process takes place on land with plants to form coal.
2. Have students wear safety goggles to avoid splashing vinegar water in their eyes. It is harmless, but uncomfortable.
3. Have students sprinkle a small amount of sand to cover the bottom of the container. The ocean floor is covered with sediments, and the sand represents these sediments.
4. Next have students sprinkle "plankton" over the sand, liberally covering the bottom of the container. This represents plankton (microscopic life plant and animal-like creatures called protists) that have died and settled down to the bottom of the ocean.
5. Explain that over time sediments are deposited on the ocean floor. Students should completely cover the plankton with sand. (You can gently push the sand around with your hands to simulate the pressure and weight of the overlaying sediments have on the plankton.)
6. The ocean has water in it, so pour some of the vinegar/water "ocean" mixture into the container. Bubbles and foam begin to appear. You can see the bubbles bursting and can hear the gas being released to the air. Point out that this is a sign of a chemical change.

Discussion:

- Discuss with students that natural gas in the ocean is produced much in the same way as you have modeled, but that the process takes MANY years. In the ocean the plankton is buried under miles and miles of sediments which caused the weight of those sediments to "cook" the plankton under high temperature and pressure. The heat and pressure changes the plankton into oil and natural gas. Natural gas floats on top of the oil produced.
- Discuss how this model is different from real life. The gas produced in the experiment is carbon dioxide rather than natural gas, and since our container is open, the gas escapes into the air. In the ocean, there are usually impermeable layers that keep natural gas and oil trapped beneath the surface until we drill down and release it.



Energy for Electricity

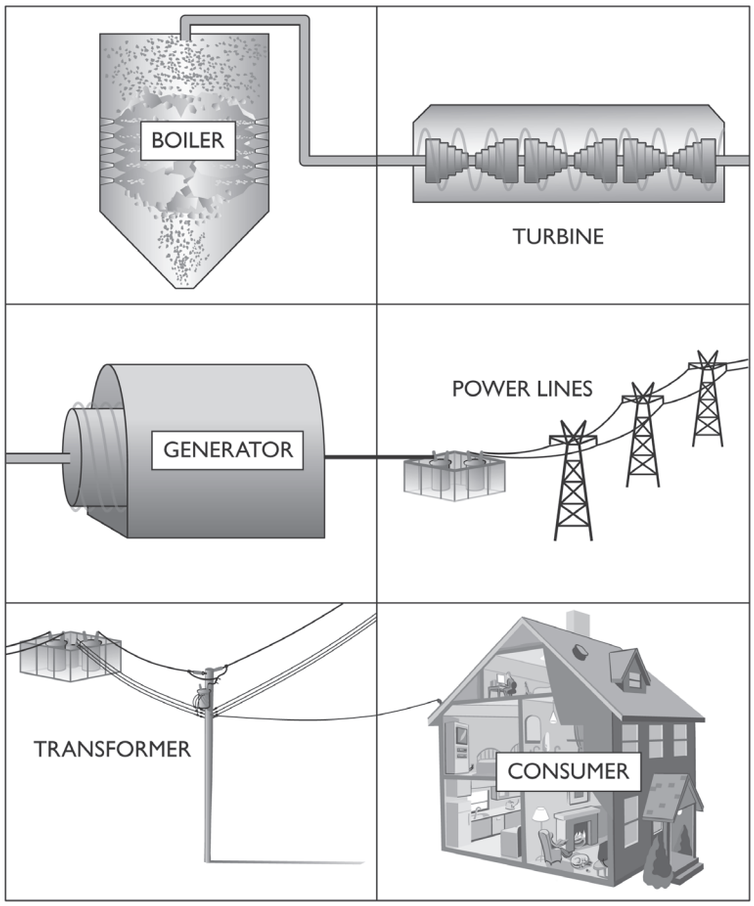
Objective:

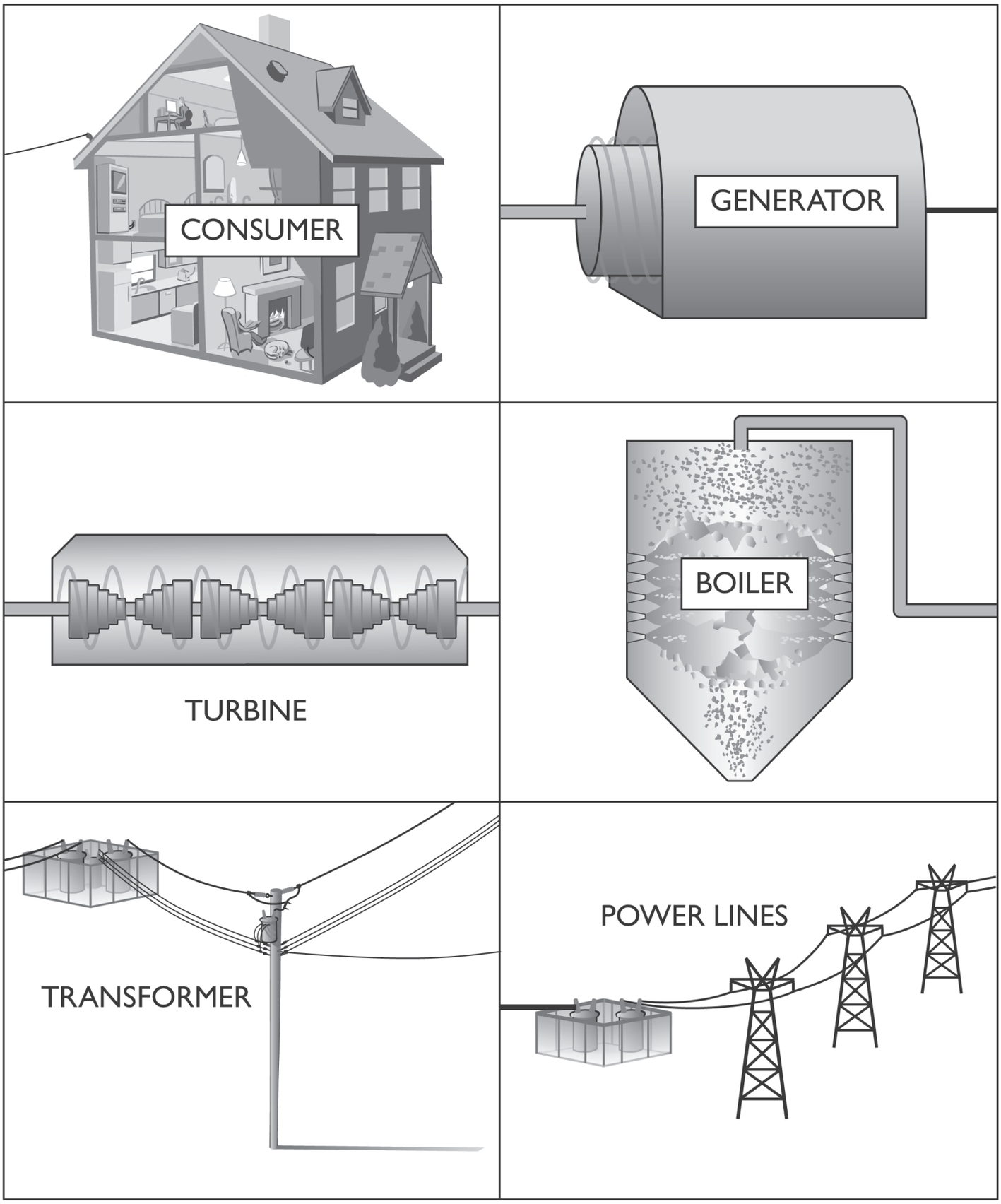
Trace the flow of energy from a natural resource to electricity in our homes.

Procedure:

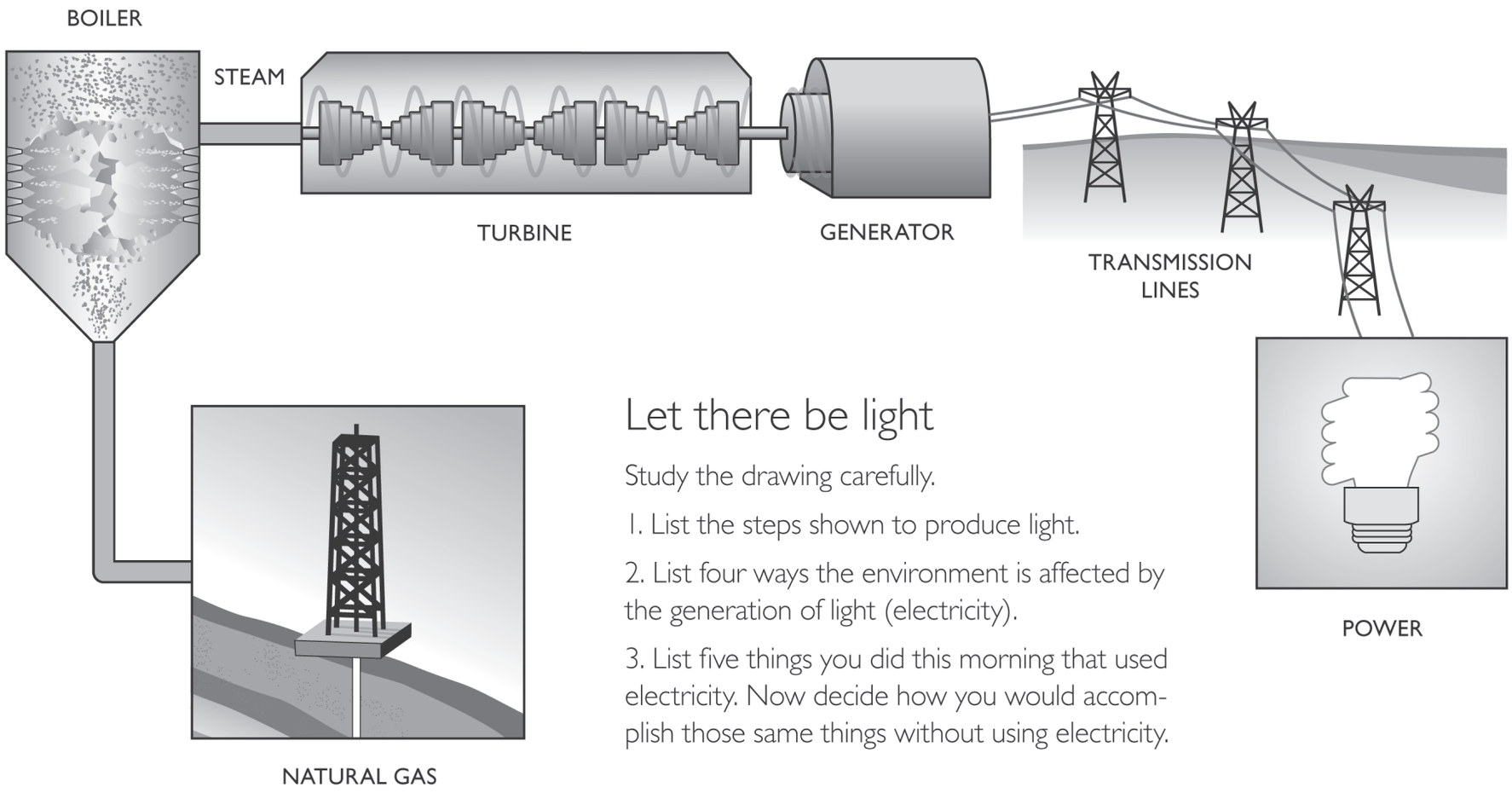
1. Ask students how their lives would be different without electricity. Where does electricity come from?
2. Pass out a copy of the Electrical Generation Puzzle found on the following page. Have students cut each part of the puzzle (transformer, turbine, generator, boiler, power lines and consumer) into separate pieces. Then, have them take a few minutes to put the puzzle pieces in order from the first to the last step of the process of electrical generation.
3. Go through each puzzle piece, explaining the process of each step:
   - Boiler – converts chemical energy from fuel (fossil fuels, biomass, hydrogen) to thermal energy, changing water to steam
   - Turbine – turned by steam, converting thermal energy to mechanical energy
   - Generator – turned by turbine, rotating coil of wire in a magnetic field, converts mechanical energy to electrical energy
   - Power lines – transmit electrical energy at several thousand volts
   - Transformer – step-up transformers along the power lines increase voltage periodically; step-down transformers on poles or in yards reduce the voltage to a safe level for use
   - Consumer – converts electrical energy into many forms to run lighting and appliances

Completed puzzle for teacher reference




CONSUMER
GENERATOR
TURBINE
BOILER
TRANSFORMER
POWER LINES

Electrical Generation



Let there be light

Study the drawing carefully.

1. List the steps shown to produce light.

2. List four ways the environment is affected by the generation of light (electricity).

3. List five things you did this morning that used electricity. Now decide how you would accomplish those same things without using electricity.

Section Three:
Be ***watt***smart, Begin at home

Objective:
To apply the principles of energy efficiency at home by changing habits.

Vocabulary:
Shell: The floors, windows, doors, walls and roof of a building that form a barrier between the indoor and outdoor environment.

Convection: Heat transfer in a gas or liquid by currents that circulate from one region to another. Convection works because heated fluids or gases expand, and since they are less dense, rise through the cooler materials around them.

Conduction: Heat transfer in a solid or liquid without any motion or flow of matter in the material. Heat is transferred by the motion of molecules and electrons. Higher speed particles from the warmer areas collide with slower ones from the cooler areas, causing a transfer of energy to the slower particles.

Radiation: Heat transfer between objects via electromagnetic waves. Photons traveling at the speed of light transfer the heat energy, so the objects do not have to be in contact with each other for heat to be transferred. Radiation can travel through space.

Insulation: A barrier that minimizes the transfer of heat energy from one material to another by reducing the effects of conduction, convection and/or radiation.

Classroom activities:
- Insulation Tests
- How Bright is Your Light?
- Energy in Math
- Be wattsmart, Begin at home poster

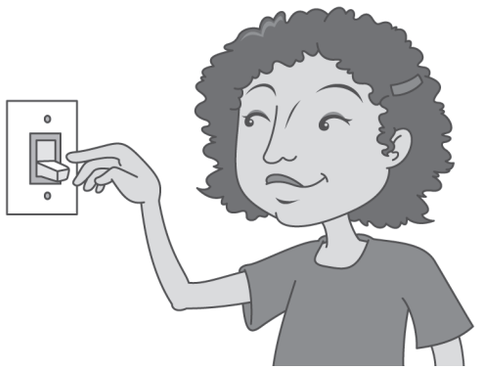
Energy challenge

Discussion:
- What changes does your school need to make to be energy efficient?

Optional activity:
- Have students tour the school building to fill out the following checklist:

	Yes	No
1. Are outside doors weather stripped?	____	____
2. Are windows caulked to prevent air leaks?	____	____
3. Are lights turned off when no one needs them?	____	____
4. Is electrical equipment turned off when not in use?	____	____
5. Are faucets in lavatories and kitchen areas free of leaks?	____	____

Discussion idea:
- In which of the five areas does your school need the most improvement? How could students assist in making a change?



Insulation Tests

Objective:
To demonstrate the different types of materials that can be used for insulation.

Materials:
- Thermometer
- Graduated cylinder or measuring cup
- Large jug of water
- Large board or tray
- Baby food jars with lids (one for each material being tested)
- Insulation materials to test: gloves, socks of different materials, other types of clothing, plastic foam, paper, aluminum foil, leaves, etc.

Procedure:
1. On a piece of paper, list all of the materials being tested.
2. Using the jug of water, fill each jar with 120 mL (1/2 cup) of water.
3. Measure the temperature of the water in each jar to make sure they are the same, then put on the lids.
4. Wrap all but one of the jars with the materials being tested. Label the unwrapped jar "control".
5. Place each jar on the large board or tray.
6. Carry the board or tray outside and leave it there.
7. Create a data table to record the beginning and ending temperature of the water in each jar.
8. After a pre-determined amount of time has passed measure the new temperature of each jar and record the ending temperatures in the data table.
9. Calculate the change in temperature for each jar and add it to the data table. Graph the temperature change for each jar in a bar graph.

Discussion:
- What materials made the best/worst insulators?
- Could you use these to keep your home warm in the winter or cool in the summer?
- What materials are used in homes for insulation? (Fiberglass, blown-in insulation, polyurethane foam, etc.)
- What do good insulating materials have in common? How does insulation work? (They have large pore spaces that block conduction of heat through surfaces.)

Language arts connection:
Quick write – Based on the information in your data table, give recommendations for insulating a tree house.

How Bright is Your Light?

Objective:

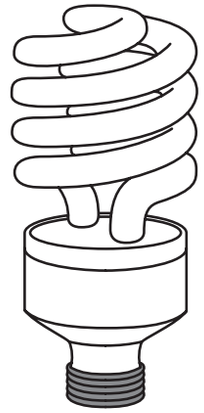
To demonstrate which lighting sources are the most energy-efficient.

Materials:

- Various light bulbs (incandescent, Compact Fluorescent Light and LED)
- Lamp or light socket
- Thermometer

Procedure:

1. Ask students what electrical item is used most often in any building and can also account for a lot of wasted energy (Lights).
2. Put each light bulb in the lamp and leave it on for five minutes. Hold a thermometer at a distance from, not touching, the bulbs. Record the temperatures. Which bulb produces the most heat?
3. Not all light sources are created equal. Some are much more energy efficient than others. The least efficient light bulbs are incandescents. These bulbs were invented by Thomas Edison and have changed very little in the last 100 years. Incandescent bulbs get very hot when they are turned on because about 90 percent of the energy that goes into an incandescent bulb is given off as heat instead of light.



By contrast, the Compact Fluorescent Light, or CFL, uses 75 percent less energy because it gives off less heat. A CFL can last up to 10 times longer. LED bulbs are even more efficient, using 75 – 85 percent less energy than traditional incandescent bulbs and can last 20 years longer.

Discussion:

- Does your family use energy-efficient CFLs or LEDs? How can heat from an incandescent bulb cause further energy waste during the summer?

Energy in Math

1. Jessie saved more energy than Michael. Michael saved more energy than Maggie. Maggie saved less energy than Jessie. Karen saved more energy than Jessie. List the kids' names in order of how much energy they saved, least to most:

   ☐ Jessie, Karen, Maggie, Michael
   ☐ Maggie, Michael, Jessie, Karen
   ☐ Michael, Jessie, Maggie, Karen
   ☐ Maggie, Karen, Michael, Jessie

2. The Maher family used 57,000 gallons of water a year, costing them $525 to heat. Estimate how much money they would save in a year if they cut their hot water use by 30,820 gallons.

   ☐ $100
   ☐ $240
   ☐ $284
   ☐ $525

3. If each person in a house uses a 60-watt bulb in their bedroom 4 hours a day, and there are 3 people living there, how many watts will be used a day to light their room?

   ☐ 20 Watts
   ☐ 240 Watts
   ☐ 650 Watts
   ☐ 720 Watts

4. For every 10 degrees the water heater setting is turned down, you can save 6% of the energy used. If Charles turns his water heater down by 15 degrees, about what percent savings in energy will he save?

   ☐ 6%
   ☐ 9%
   ☐ 12%
   ☐ 15%

Energy in Math - Answer key

1. Jessie saved more energy than Michael. Michael saved more energy than Maggie. Maggie saved less energy than Jessie. Karen saved more energy than Jessie. List the kids' names in order of how much energy they saved, least to most:

   ☐ Jessie, Karen, Maggie, Michael
   ■ Maggie, Michael, Jessie, Karen
   ☐ Michael, Jessie, Maggie, Karen
   ☐ Maggie, Karen, Michael, Jessie

2. The Maher family used 57,000 gallons of water a year, costing them $525 to heat. Estimate how much money they would save in a year if they cut their hot water use by 30,820 gallons.

   ☐ $100
   ☐ $240
   ■ $284
   ☐ $525

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   ■ 9%
   ☐ 12%
   ☐ 15%

Be ***watt***smart, Begin at home poster

Materials:

1. House poster found on the following page
2. Colored markers or pens

Instructions:

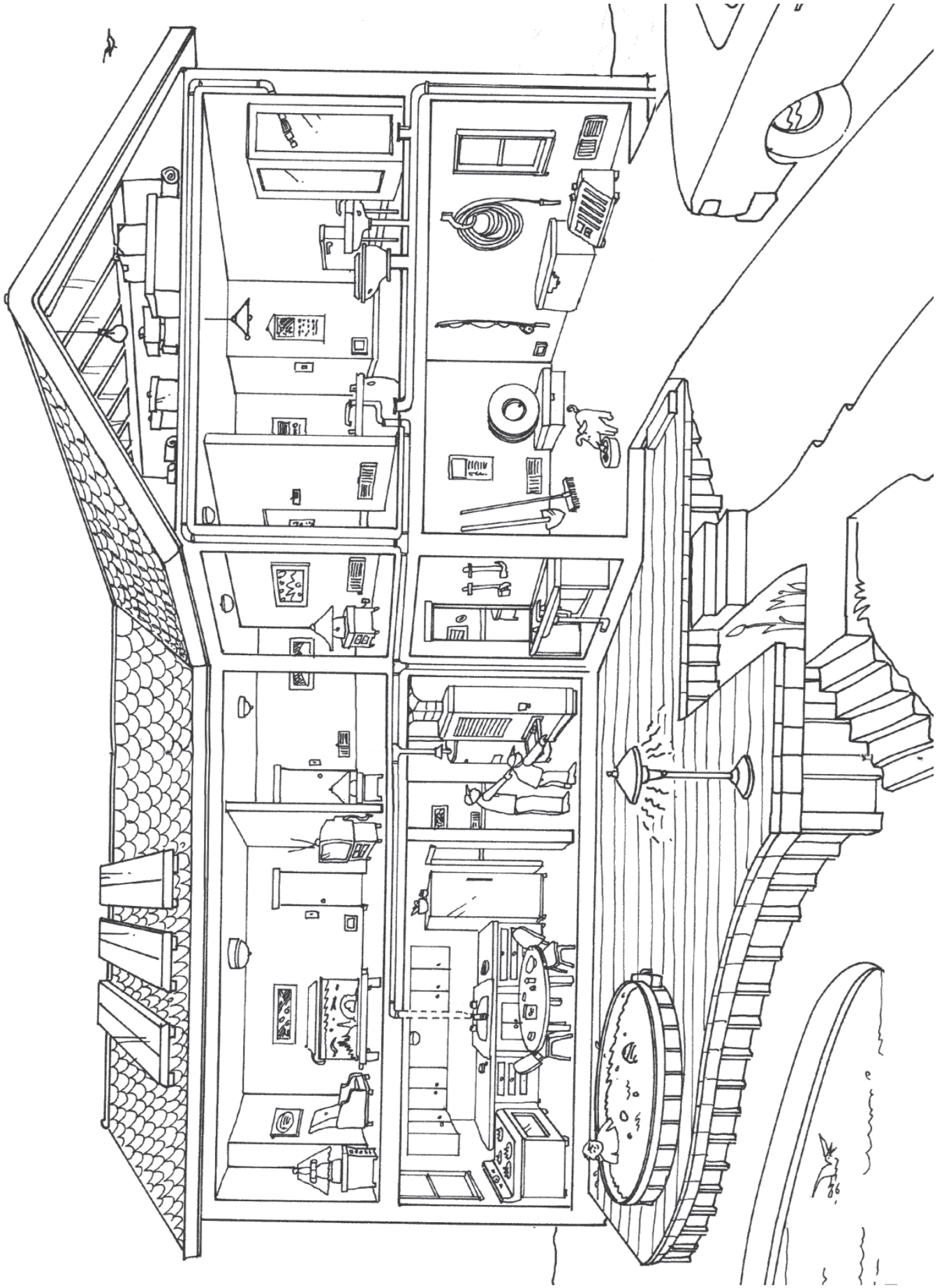
- Add or color the items below. You may want to do different items each day as you cover different topics: electricity, natural gas, water, etc.
- Add a bicycle.
- Add some recycling bins in the garage.
- Add some trees to shade the house.
- Add a ceiling or floor fan to the home for cooling.
- Put a blue star (for ENERGY STAR® products) on the refrigerator, television and furnace.
- Color the energy-efficient shower head.
- Color all items that use electricity yellow.
- Color the thermostat brown.
- Color the furnace filter that is being changed orange.
- Draw a purple water drop next to all items in the house that use water.

Language arts connection:

Quick write – Write a brief description of the things your family has done to improve the energy efficiency of your home. Add to items that you will encourage your family to do in the future.

Social studies connection:

- Choose one natural resource used for energy and create a T-chart or Venn diagram comparing the positive and negative effects of the use of this resource on the physical environment.
- The more efficient your home is, the smaller your carbon footprint. Your carbon footprint is the total amount of carbon dioxide (CO_2) and other greenhouse gases you generate annually. The lower your footprint, the better!



Be *watt*smart

Begin at home

NATIONAL ENERGY FOUNDATION™

CULTIVATING AND PROMOTING AN ENERGY LITERATE SOCIETY

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Let's turn the answers on.

L	I	N	G	O
Water Heater	Natural Gas	Natural Resource	Incandescent	Reduce
Reuse	Phantom Load	Oil	Coal	ENERGY STAR®
Renewable	Energy	Be ***watt***smart Begin at home	Turn It Off!	Uranium
Energy Efficiency	CFL	Recycle	68 Degrees	Embodied Energy
Cooking	78 Degrees	Solar	Thermostat	Electricity

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L	I	N	G	O
Reuse	Natural Gas	Phantom Load	CFL	78 Degrees
Cooking	Electricity	Renewable	Recycle	68 Degrees
Natural Resource	Water Heater	Be ***watt***smart Begin at home	ENERGY STAR®	Nonrenewable
Embodied Energy	Coal	Energy Efficiency	Heating	Incandescent
Thermostat	Reduce	Oil	Solar	Uranium

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L	I	N	G	O
Coal	Natural Gas	Solar	Turn It Off!	Renewable
Water Heater	Nonrenewable	Phantom Load	Electricity	Reuse
Energy	Oil	Be ***watt***smart Begin at home	68 Degrees	Cooking
Thermostat	Incandescent	Recycle	Uranium	Natural Resource
Reduce	78 Degrees	Embodied Energy	CFL	Energy Efficiency

http://print-bingo.com

L	I	N	G	O
Natural Resource	Water Heater	Natural Gas	Thermostat	78 Degrees
Turn It Off!	Reduce	Oil	Embodied Energy	Cooking
Phantom Load	ENERGY STAR®	Be ***watt***smart Begin at home	Uranium	Recycle
Energy	CFL	68 Degrees	Energy Efficiency	Heating
Electricity	Renewable	Incandescent	Reuse	Solar

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Utah Be ***watt***smart, Begin at home Fifth Grade Correlations		Be ***watt***smart, Begin at home					
Standards	**Topic**	Presentation Information	Be ***watt***smart, Begin at home Student Booklet	*Bright Ways to Save Energy* poster	*Electrical Generation* Poster	Be ***watt***smart, Begin at home Teacher Guide	
Science							
Intended Learning Outcomes (ILO): 1- 6	Scientific Process, experimentation, measurements, observations, conclusions, communitcation, how science affects life	1a,d,f,h; 2a,e; 3a,b; 4b; 5a	1a,b,d,f,h,i; 2a,c,e; 3a,b; 4a-c,e; 5a	1a,b,d; 2a,e; 3a,b; 4a-e; 5a	1a,b,d,f,h,i; 2a,c,e; 3a,b; 4a-c,e; 5a		
Standard 4: Electricity	**Objective 2:** Behavior of current elelctricity	2a,c,d,e			2a,c,d,e		
Earth Day Every day	Classroom and community projects improve local environment	X	X	X			
Social Studies							
Standard V: U.S.- Role as a world power	**Objective 3:** Current World Issue and how US can be part of the solution	3b	3b	3b			
Math (new common core)							
Number & Operations in Base Ten	**Perform operations with multi-digit whole number and with decimals to hundredths**		5.NBT.5 & 7				
English Language Arts (new common core)							
Craft & Structure	meaning of general academic words revelvant to a topic		RI.5.4				

Be wattsmart
Begin at home

Dear Parent(s),

Today your child participated in the **Be wattsmart, Begin at home**. program sponsored by Rocky Mountain Power. In this engaging assembly, your student learned key concepts of his or her science curriculum as well as important ways to be more efficient with energy use at home.

As part of the **Be wattsmart, Begin at home** program, your child received a:

- **Be wattsmart, Begin at home** booklet
- *Home Energy Checklist*

Please take a moment to read through this informative booklet with your student. Then, fill out the *Home Energy Checklist* and return it to your child's teacher. To thank you, Rocky Mountain Power will provide your student with a wattsmart nightlight.

We appreciate your efforts to reinforce important **Be wattsmart, Begin at home** energy knowledge and efficiency actions in your home!

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Teacher Evaluation

Program evaluation

In an effort to improve our program, we would like your assessment of **Be *watt***smart**, Begin at home**. Please take a few moments to fill out this evaluation form. Upon completion, please return the form in the self-addressed return envelope along with the student *Home Energy Checklists* you collected and the sponsor *Thanks a "Watt"!* card.

School: _____

Teacher: _____

Sponsor: Rocky Mountain Power

Please completely fill in the circle that best describes your opinion. Please use a blue or black ink pen or a pencil.

	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
The materials were attractive and easy to use.	◯	◯	◯	◯
The materials and activities were well received by students.	◯	◯	◯	◯
The materials were clearly written and well organized.	◯	◯	◯	◯
Students indicated that their parents supported the program.	◯	◯	◯	◯
Presenters were able to keep students engaged and attentive.	◯	◯	◯	◯

If you had the opportunity would you conduct this program again? ◯ **Yes** ◯ **No**

Would you recommend this program to other colleagues? ◯ **Yes** ◯ **No**

In my opinion the thing the students liked best about the materials/program was:

_____

_____

In the future one thing I would change would be:

_____

_____

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ROCKY MOUNTAIN POWER
Let's turn the answers on.

Teacher Evaluation Compilation

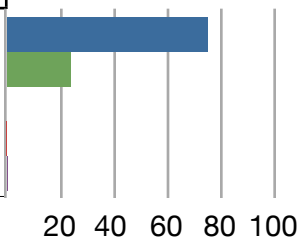
ROCKY MOUNTAIN POWER

*Watt*smart Rocky Mountain program
Program Evaluation Summary Report

wattsmart.com

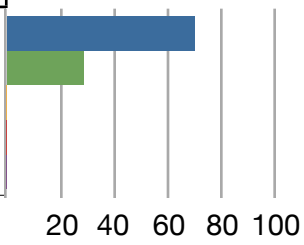
Materials were attractive and easy to use.

Response	Frequency	Percent
Strongly agree	212	74.9%
Agree	68	24.0%
Disagree	0	0.0%
Strongly disagree	1	0.4%
No response	2	0.7%



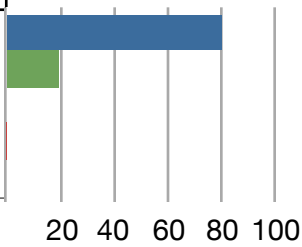
Materials and activities were well received by students.

Response	Frequency	Percent
Strongly agree	198	70.0%
Agree	82	29.0%
Disagree	1	0.4%
Strongly disagree	1	0.4%
No response	1	0.4%



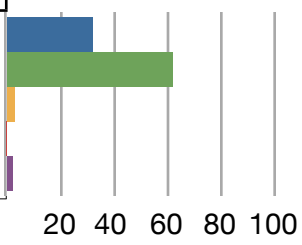
Materials were clearly written and well organized.

Response	Frequency	Percent
Strongly agree	227	80.2%
Agree	55	19.4%
Disagree	0	0.0%
Strongly disagree	1	0.4%
No response	0	0.0%



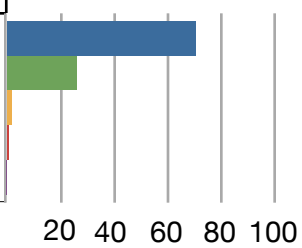
Students indicated that their parents supported the program.

Response	Frequency	Percent
Strongly agree	91	32.2%
Agree	175	61.8%
Disagree	9	3.2%
Strongly disagree	1	0.4%
No response	7	2.5%



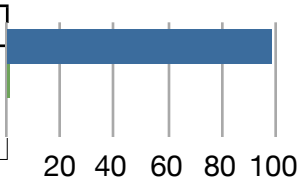
Presenters were able to keep students engaged and attentive.

Response	Frequency	Percent
Strongly agree	199	70.3%
Agree	74	26.1%
Disagree	6	2.1%
Strongly disagree	3	1.1%
No response	1	0.4%



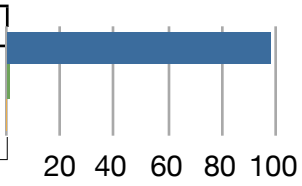
If you had the opportunity, would you conduct this program again?

Response	Frequency	Percent
Yes	279	98.6%
No	4	1.4%
No response	0	0.0%



Would you recommend this program to other colleagues?

Response	Frequency	Percent
Yes	278	98.2%
No	4	1.4%
No response	1	0.4%



In my opinion, the thing the students liked best about the materials/ program was:

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A really great time and educational.

All of it.

Any activities that involved the students such as making a circuit.

Attention getting

Being able to answer questions with information that they already knew.

Being able to be involved.

Being interactive with them.

Being involved in the presentation. Seeing the "circuit" work

Bingo

Bingo game

Bingo game

Bingo game.

Closed circuit demonstration.

Communicating the ideas to their families after the presentation and the fun prize!

Complete circuit activity.

Completing the home survey.

conductors vs. insulators circuit. Bingo game with vocabulary.

Covered a lot of information in our curriculum. It was a good review.

Demonstration

In my opinion, the thing the students liked best about the materials/ program was:

Demonstrations and night light.

During the presentation, the presenter involved individual students in an engaging activity.

Electrical circuit experiment

Enjoyed the arm motions and the LINGO.

Example of the conductor. LINGO.

Filling out the surveys and getting the night light in return.

Fun videos, LINGO cards, and night lights were a huge hit!

Games, online and interactive

Getting the light.

Getting their night lights

Great visuals and interaction.

Hands on activities. They loved them.

Hands-on

Hands-on

Hands-on activities during program and bingo game.

Hands-on demonstration.

Having the game that went along with the program. Encouraged listening.

Having the LINGO game played at intervals.

How interactive and engaging it was. It was not in lecture format which was very nice.

In my opinion, the thing the students liked best about the materials/ program was:

How interactive it was and it really engaged the students.

How you kept the students involved. Thank you. Great for the science curriculum.

Human circuit.

I like how it went with our curriculum and especially the complete/incomplete circuits.

I liked doing this in the spring semester, but it seemed more difficult to get the student evaluations back.

I was not here that day.

Interaction.

Interactive

Interactive LINGO and examples that students could be a part of.

Interesting subject and materials.

Inviting engagement of presenters. Well organized instructions.

It fit right into our core curriculum.

It fits with our science core and helped them see it in an easy fun way.

It gave them a real understanding regarding energy, and helped them evaluate their own lives.

It is something that they can affect in their own homes. They felt empowered by it.

It tied in with what we are learning.

It was a change from the classroom. They were pretty excited about the night light and the LINGO game was fun.

It was clear, easy to understand its importance. They also loved the night lights.

It was engaging. LINGO!

In my opinion, the thing the students liked best about the materials/ program was:

It was informative and the students liked the game.

It was interactive with good examples. Excellent program!

Learning about different types of energy and the way each type is produced.

Learning about energy.

Learning different ways to save energy and great presenters.

Learning facts about conservation.

Learning how to conserve and how much we all waste.

Learning how to save electricity.

Learning where electricity comes from and how it gets into their homes.

Liked the pamphlet info. Loved the plug in light.

LINGO

LINGO

LINGO

LINGO activity and the talking with parents about program.

LINGO and PowerPoint

LINGO and Slim

LINGO and the conducting electricity activity.

LINGO and the current demo.

LINGO and the night lights.

In my opinion, the thing the students liked best about the materials/ program was:

LINGO game

LINGO game and night lights

LINGO game and night lights

LINGO game was fun but they thought the prizes were lame. Commercials were great and the demonstrations were fun.

LINGO game.

LINGO game.

LINGO game.

LINGO game. Experiment where the kids linked hands and carried the electric charge.

LINGO game. Human circuit.

LINGO! As well as the hands on experiments.

LINGO! Demonstrations.

LINGO.

LINGO.

LINGO.

Looking into their families use of electricity.

Loved the complete circuit made with the energy stick. Great way to "show" difference between complete and incomplete, conductors and insulators.

Making a closed human circuit. They also liked playing the game.

My class enjoyed participating in the presentation. They especially enjoyed the presentation of a complete circuit.

My class liked the electricity chain of students demonstration in the presentation and the night lights.

In my opinion, the thing the students liked best about the materials/ program was:

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My students benefited most from the visual actions, as well as the repetition of the vocabulary through LINGO.

My students liked the hands-on part.

My students loved the bingo game during the presentation and were pointing out things in our classroom that were wasting electricity.

My students thoroughly enjoyed the electrical current demonstration.

My students were able to participate in the game and demonstrations with ease. Ninety-nine percent of my class has a learning or other disability. It was great to have a demonstration that they could understand. Thanks!

Night light

Night light and the human circuit activity.

Night light handout.

Night light.

Night lights

Night lights and student interaction throughout presentation.

Night Lights.

Night lights.

Night lights. They also love the opportunity to earn money.

Of course, they loved the night lights.

Playing LINGO

Playing LINGO and getting high fives for getting the correct answers.

Playing LINGO and the night lights.

Playing LINGO to review vocabulary words.

In my opinion, the thing the students liked best about the materials/ program was:

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Playing the game and getting a night light.

Powerpoint was interesting.

Practical application - "what can you do?"

Presentation and night lights.

Presentation was improved from last year. Visual aides were helpful.

Presenters, night light, posters

Receiving the night light.

Showing that electricity can flow through our bodies. (Conductors/insulators of electricity.) The LINGO card was lots of fun and held students' attention.

Student circle demonstration complete and incomplete circuit.

Students loved the night lights.

Thank you!

The ability to be active participants. (presenters kept students engaged)

The activities and the demonstrations.

The activity with the lights was very effective. Good idea to use the LINGO.

The amazing chemical reaction.

The audience participation activities.

The Bingo card kept them engaged.

The bingo game used throughout the presentation kept the kids engaged and listening.

The challenge to reduce their energy usage.

In my opinion, the thing the students liked best about the materials/ program was:

The circuit creating.

The circuit light bulb was something that they have continued to talk about.

The circuit, generator and LINGO game.

The complete presentation.

The conductivity exercise with the light.

The demo of the complete circuit with students touching hands to make or break the circuit.

The demonstration of current electricity using students as conductors.

The demonstrations and bingo!

The demonstrations and LINGO was a very fun game.

The demonstrations and LINGO.

The demonstrations.

The electricity circuit rod and bingo.

The electricity demonstrations.

The energy stick, free night light and LINGO

The experiment that the students did to test conductors vs insulators.

The experiment using the power stick showing a closed or open circuit.

The experiments. Showing how a circuit works.

The fact that they could get a night light, of course. They were excited about doing the Home Energy Checklist with their parents.

The friendly presenters and the free night light.

In my opinion, the thing the students liked best about the materials/ program was:

The game following the information helped solidify the learning.

The game format.

The game LINGO. They liked the video clips.

The games and human conductor experience.

The hands on electricity demonstration and the night light for returning forms.

The hands-on activities and playing LINGO.

The hands-on activities.

The hands-on demonstrations and the night lights.

The hands-on demonstrations.

The hands-on demonstrations.

The hands-on experiments.

The human circuit was fun for them.

The human circuit!

The interactive coal to electricity and human circuit activities were awesome!

The interactive lesson that was delivered by the presenters. They were involved.

The interactive portion. Lighting the stick with their fingers and the Rocky Mountain guy doing energy efficient things.

The interactive portions were enjoyable. Lecturing was dull, juvenile.

The interesting energy information. Thank you for doing this program.

The liked getting the night lights.

In my opinion, the thing the students liked best about the materials/ program was:

The liked learning the materials.

The LINGO

The LINGO and the human circuit.

The LINGO game and circuit activity.

The LINGO game and the demonstrations of the circuit. This presentation did support our science unit on electricity. The school also has a recycling program now.

The LINGO game and the night light.

The LINGO game.

The LINGO game. I loved the "rewards" and the students did, too!

The living circuit and games were top notch.

The loved the light sticks.

The mascot guy! The demonstrations. The night lights are a great incentive!

The night light

The night light

The night light and LINGO

The night lights

The night lights and the demonstration with students touching arms to make a complete circuit.

The night lights and the LINGO except they wanted a prize for winning.

The night lights.

The night lights. Pretty and smart instructor!

In my opinion, the thing the students liked best about the materials/ program was:

The open and closed circuit with kids' bodies and the colorful lights.

The PowerPoint presentations and instructors were entertaining.

The PowerPoint.

The presentation and LINGO game.

The presentation was awesome. My students get it after the presentation.

The presentation was very good and went right along with the state core in science for fifth grade. Thanks!

The presentation was very well done.

The presentation with a few of the hands-on things. Example: the light-human light.

The presentation.

The presenters - they were wonderful. The material was fun to learn.

The presenters were interesting and used fun props. they did a great job explaining generating electricity, and my students talked a lot about that part after it was over. They loved the night light too.

The presenters were really good.

The presenters were very engaging and kept the students attention. Presenters were knowledgable. They loved getting chosen to participate!

The presenters were very fun and informative.

The program reinforced many things they knew about already.

The program was very well received and all of the students loved participating.

The review PowerPoint game. Excellent program. Fit right into our curriculum.

The saying or songs that helped them to remember what to do. very interactive!

The science aspect and the night lights.

In my opinion, the thing the students liked best about the materials/ program was:

The short circuit lab.

The student involvement the presenters encouraged throughout the hour.

The students are aware of conservation issues and they want concrete steps that they can take.

The students commented that they liked discussing energy at home with their parents. They liked getting the night light for returning their survey. I also liked the teachers guide for use in my classroom.

The students enjoyed the presentation demonstrations. The clips also held their attention.

The students love the night lights. They also enjoy playing bingo during the PowerPoint.

The students loved to get involved with the game!

The students really enjoyed the physical demonstrations that they were able to take part in.

The tie to our science curriculum.

The times that the presenters had the kids come up to the front and help with demonstrations.

The video clips (slide show), LINGO, and night lights.

The visual activity part where kids demonstrated electricity.

The whole group and small group interactive activities.

The whole program.

Their participation in experiments, especially making a complete circuit and the LINGO game.

They are engaged and it is a cause they can be a part of.

They could relate to the content from our units. It was fun!

They could understand it. It kept moving and kept them learning. They were talking about it all day.

They enjoyed the bingo game. The PowerPoint slides were interesting.

In my opinion, the thing the students liked best about the materials/ program was:

They enjoyed the presentation - very relevant to our science curriculum. They loved the night lights.

They felt empowered to teach their families about energy use.

They liked the demonstrations and LINGO.

They liked the night light.

They liked the way it was interactive. They enjoyed playing the game and to be able to participate.

They LINGO card kept them engaged. They also liked the circuit demo.

They love anything new and different from the everyday routine.

They love the circuit that is created by the students.

They love the LINGO game!

They loved getting up to be part of the demonstrations.

They loved having the opportunity to get the night light for doing a "fun" homework assignment.

They loved playing bingo!

They loved the energy tube. They learned info that is included in our core during the LINGO game.

They loved the game and were very attentive.

They loved the hands-on electricity "wand!" So cool.

They loved the human circuit and the cute video clips.

They loved the LINGO activity and the night lights.

They loved the LINGO and the night lights.

They loved the night lights.

In my opinion, the thing the students liked best about the materials/ program was:

They loved the surveys and the night lights.

They really like connecting a circuit as a group.

They really liked the demonstration the presenters did on circuits and switching if off.

They were engaged and had a lot of fun while learning to be energy conscious.

This is the 3rd time we have had this presentation and the presenters were the best we have had. They did an excellent job of keeping the kids engaged.

Time away from other curriculum.

Useful information that was presented in an interesting way.

Videos (Mr. Slim), LINGO game, answering questions they're familiar with.

Videos, hands-on example and game

Visuals and night light

Visuals were well designed and interesting.

When students were involved in forming circuits and testing conductors and insulators.

When the students held hands and were able to light up the bulb and LINGO.

When they got to participate.

Works great with our science core.

In the future, one thing I would change would be:

A little bit more about nuclear power. My students were a little confused when this was mentioned.

A little shorter program.

A prize for the LINGO winners.

A shorter presentation to keep the attention of the students.

A small prize for a couple of the students who win LINGO.

Add about ten minutes onto presentation time fore questions and answers. Thanks for adjusting the material presented this year to more science concepts (circuits)

Add another hands-on experiment.

Aluminum foil - is NOT a conductor.

Be aware of your audience. My students felt like they were treated like 1st graders. Presenters were too animated for this age group.

Brighter night lights.

Can't think of anything.

Can't think of anything. I really appreciate the organization of materials.

Cut off about five minutes for 5th graders.

Discuss circuits in more detail. One presenter was excellent. The other wasn't familiar with how to run the slide show and had little enthusiasm or volume.

Do presentations with a smaller group.

Don't change. Great job!

Don't have kids call out the LINGO answer. Some kids hear a wrong answer and get confused at the real answer.

Don't know.

Everything is great, but maybe one more experiment.

In the future, one thing I would change would be:

Everything was great.

Everything was great. Thanks again!

Explain how info is used to parents. Many were concerned with giving out the info on the survey. Also, there were not enough surveys for all of the students, so that would be helpful in the future. Thanks.

Explain the game a little more clearly. Some students didn't know to wait to start playing.

Fewer students. Two classes at a time instead of four.

Go over the survey with the students before you send them home.

Have it earlier in the year.

Have students more engaged by having them be more active during the presentation.

Have the requirements list be what is really needed. For example, we teachers made sure to have enough clip boards the presenters didn't even want.

I believe a smaller group setting would be more effective.

I can't think of anything.

I can't think of anything. It was well presented.

I don't know if I would change anything.

I don't know. It was a great length and kept their attention.

I enjoyed the model power lines that you use to bring around to schools. Need more learning type activities. This program seemed to be geared for the younger students.

I feel like your program has improved and is much more engaging. Presenters are great and no suggested changes.

I liked how it was presented.

I liked the changes made for this year. It was more interactive.

I might do it with just my class rather than our whole grade level.

In the future, one thing I would change would be:

I miss the jazz bear videos.

I think having the presentation in the library was a little crowded, and next time we should have it in the gym.

I think it went well.

I think it went well. No change necessary.

I think it worked well.

I thought it all went well.

I wish it was more about electricity, the dangers, how to be safe around it. Not just conserving.

I won't be leaving my phone and iPad charger in the wall all day.

I would focus more on how electricity is generated and gets to their homes.

I would give the presenters more time. We were in a time crunch and I felt bad.

I would have a presentation per class instead if the whole grade.

I would have more materials related to our science core curriculum.

I would have the survey online as an alternative option for parents and for teachers to link to the class website.

I would like it to be a smaller group instead of the shoe grade, but I understand the time and money issues.

I would like to use the provided materials to prepare them more.

I would love the booklet to have student activities in it.

I would offer an even bigger incentive to my students for returning the Wattsmart "Begin at Home" survey.

I would schedule program earlier in the day.

I would set more clear expectations for the students so they were attentive for more time.

In the future, one thing I would change would be:

I would try to add a little more science based information for 5th grade specific curriculum.

I'm pleased with the whole program.

If students get talking, the presenter should wait for their attention instead of talking over them.

In the presentation, the demonstrations need to always be visible to all students.

Include an activity for after the presentation.

It all was great!

It is great! Thanks.

It was a great program and the students enjoyed it the way it was.

It was great!

Just fine.

Just great!

Kids enjoy coming up in front to demonstrate. More demonstrations and evenly spaced.

Kids thought they would get a prize besides a high five for winning the game. (Don't tell them there are prizes if there aren't and they would still play).

Larger pictures and font on the PowerPoint presentation.

Length of program

Length was a little long. Forty-five minutes would be best.

Less lecture - more visual and experiment or inquiry driven.

Less kids together for the presentation so more could participate.

Let all the students stand in the circle during the "current" demonstrations.

In the future, one thing I would change would be:

LINGO was great but they sometimes want to play with their cards during the presentation.

Little less talk and more demonstration or activities.

Location (a school issue, not the program)

Loved to have an energy stick for the teacher. Great presentation. Thanks, come again!

Make the prizes for winning the game a bit more real rather than just a high-five, etc. The students felt a little tricked.

Maybe a completed LINGO card earns a nightlight instead of returning a survey.

Maybe bring in hands-on natural resources to pass around. That's all I can think of, other than that, this program and presenters were fabulous!

maybe do two sessions for bigger groups.

Maybe have more ways to "show" using hand-on experience.

Maybe letting them get up to stretch or rotate their turbines (arms/legs) for a few seconds. Since an hour is a long time for kids to sit. It was great!

Maybe try to include more children in the demonstrations.

More about circuits.

More energy saving possibilities that are practical. We tried turning our classroom lights out during class and that was not very practical.

More engagement

More engaging presentation. Show some enthusiasm. High-five is not a huge prize. Student's felt like materials was for 1st or 2nd graders.

More hands-on learning.

More interaction and hands-on activities.

More interactive activities.

More scientific information.

In the future, one thing I would change would be:

More student involvement (less lecture), manipulative , work stations.

More student participation.

More students get to participate.

More visual aids besides the slides.

More visual/video material. The presenters were great.

No changes. This is a good pre-electricity learning activity, or a good review. Thanks.

None

None

None

None

None.

None.

None.

None.

Not a thing.

Not do it assembly style for 100 students. They were not engaged!

Not sure. I think it was great.

Not to do the program first thing on Monday morning. Kids aren't quite collected in their thoughts.

Nothing

In the future, one thing I would change would be:

Nothing

Nothing

Nothing

Nothing

Nothing

Nothing

Nothing

Nothing

Nothing

Nothing

Nothing needs changing but a suggestion could be placing students in rotating groups for a series of smaller presentations.

Nothing really!

Nothing, great job.

Nothing, I hope they can come back next year!

Nothing, I loved the presentation. Thank you for coming!

Nothing, I think it was very well done. Thank you!

Nothing, I think this is the great program.

Nothing, it really was all wonderful.

Nothing, it was great!

In the future, one thing I would change would be:

Nothing, it was great! Thank you.

Nothing, it was great.

Nothing, please keep coming.

Nothing, PowerPoint was good.

Nothing, the presenters were fantastic so good even with the "blurt out" kids! Loved it. Thanks.

Nothing, they do an amazing job each year!

Nothing, unless you can lower our classroom sizes so there would be less students that you had to deal with at one time. Really, thanks so much - it was great!

Nothing, we appreciate and love the program. It is a great addition to our science instruction.

Nothing!

Nothing.

Nothing.

Nothing.

Nothing. It was Awesome!

Nothing. It was great.

Ok, great as is.

On the questionnaire, put a place for if the family is in an apartment. I would do more to be Wattsmart but I can't.

Personally, I'll check my water heater and visit wattsmart.com.

Please give a few extra materials for the students. We ran out.

Practical application!

In the future, one thing I would change would be:

Prizes for winner of the bingo game.

Program is good the way it is.

Seating arrangement so students aren't so disruptive. (Sorry).

Set up the presentation for a smaller group (not all 125 of our grade.)

Shorten the length from one hour to 45 minutes.

Shorten the program. We were 50 minutes. I think program could be streamlined a bit to keep student attention, say 40 min max.

Smaller group sizes.

Smaller groups.

Some students act as if they should get a prize for LINGO. More stress and everyone will win.

Sow more about how electricity works along with conserving energy.

Students wanted more colorful slides. They wanted to get up and move. They want the LINGO game to happen more.

Talk more about electricity and how it works. Less about conserving energy - though it is important. Talk more on their level.

Thanks for doing a great job!

The kids really didn't like the LINGO game. It was too childish. They also didn't like that they said the winners of the LINGO would win a great prize and then the prize was dumb (high-five, etc.) The program was great but not geared to fifth grade.

The one presenter was talking down to them, like they were kindergarteners, and that lost a few students' attention and respect. It could also go a little faster. An hour is an awfully long time to pay attention without a break - even for the teachers.

The presenter treated the students a little younger than they were. The students were a little insulted. (Although, I do understand it is hard to go to a new school and different grades all the time.)

Things were great.

Thirty minute presentation is better than 45 minutes.

Very good

In the future, one thing I would change would be:

We had already taught this unit the students already knew a lot of the things. I would recommend making it more of a review or come earlier in the year.

We, as the teachers, will probably write a little note about the assembly and indicate that they don't have to put the students names, etc., but rather it's an extension of what they are learning in science. I'm sorry we had some parents who over reacted about the forms.

When class is chatty, don't talk over them. Even when I was asking them to be quiet the presenters kept talking.

When demonstrating conductors and insulators, a wider variety of materials could be used.

Would prefer late fall scheduling to correlate with our curriculum.

Your return papers need to be more clearly identified.

Home Energy Checklist

Instructions: Fill in the bubble completely. Please use a blue or black ink pen or a pencil.

Be *watt*smart
Begin at home

Name _____ **Date** _____

School _____ **Teacher** _____

HOME ENERGY CHECKLIST

Heating

1. **Install and use a programmable thermostat.**
   ◯ Currently do ◯ Will do ◯ Neither

2. **Caulk windows and weather strip outside doors.**
   ◯ Have done ◯ Will do ◯ Neither

3. **Inspect attic insulation and add insulation if needed.**
   ◯ Have done ◯ Will do ◯ Neither

4. **Keep furnace air filters clean/replaced regularly.**
   ◯ Currently do ◯ Will do ◯ Neither

Cooling

5. **Replace existing air conditioning unit with a high-efficiency unit.**
   ◯ Have done ◯ Will do ◯ Neither

6. **Close blinds when windows are exposed to the sun.**
   ◯ Currently do ◯ Will do ◯ Neither

7. **Use a fan instead of air conditioning.**
   ◯ Currently do ◯ Will do ◯ Neither

8. **Participate in Rocky Mountain Power's Cool Keeper program.**
   ◯ Currently do ◯ Will do ◯ Neither

Water heating

9. **Set the water heater temperature to 120° F.**
   ◯ Have done ◯ Will do ◯ Neither

10. **Install a high-efficiency showerhead.**
    ◯ Have done ◯ Will do ◯ Neither

11. **Take five-minute showers.**
    ◯ Currently do ◯ Will do ◯ Neither

12. **Wash full loads in the dishwasher and clothes washer.**
    ◯ Currently do ◯ Will do ◯ Neither

Lighting

13. **Replace incandescent bulbs with CFL bulbs.**
    ◯ Currently do ◯ Will do ◯ Neither

14. **Turn lights off when not in use.**
    ◯ Currently do ◯ Will do ◯ Neither

Refrigeration

15. **Replace old, inefficient refrigerators with an ENERGY STAR® model.**
    ◯ Have done ◯ Will do ◯ Neither

16. **Unplug and/or recycle old freezers/refrigerators.**
    ◯ Have done ◯ Will do ◯ Neither

17. **Maintain refrigerator and freezer coils and check door seals twice yearly.**
    ◯ Currently do ◯ Will do ◯ Neither

Electronics

18. **Turn off computers and game consoles when not in use.**
    ◯ Currently do ◯ Will do ◯ Neither

Cooking

19. **Use a microwave oven, toaster oven or crock pot instead of a conventional oven.**
    ◯ Currently do ◯ Will do ◯ Neither

Get paid for being *watt*smart

20. **Visit Rocky Mountain Power at wattsmart.com for more electricity tips and rebates.**
    ◯ Have done ◯ Will do ◯ Neither

Program provided by:

NATIONAL ENERGY FOUNDATION

ROCKY MOUNTAIN POWER
Let's turn the answers on.

Instrucciones: LLene la burbuja completamente.
Por favor, use bolígrafo de tinta azul ó negra ó
lápiz

Ser ***watt***smart
Empieza en casa

Nombre _____ Fecha _____

Escuela _____ Maestro (a) _____

LISTA DE VERIFICACIÓN DE ENERGÍA DEL HOGAR

Calefacción

1. Instalar y usar un termostato programable.
   □ Lo hago □Lo haré □Ninguno

2. Calafatear ventanas e instalar burletes en el exterior de puertas.
   □Lo he hecho □Lo haré □Ninguno

3. Inspeccionar el aislamiento del ático y agregar aislamiento si es necesario.
   □ Lo he hecho •Lo haré •Ninguno

4. Mantener los filtros de aire de la calefacción limpios/reemplezados regularmente.
   •Lo hago •Lo haré •Ninguno

Enfriamiento

5. Reemplazar la unidad de aire acondicionado existente por una unidad de alta eficiencia.
   •Lo he hecho • Lo haré •Ninguno

6. Cerrar las persianas cuando las ventanas están expuestas al sol.
   •Lo hago • Lo haré •Ninguno

7. Usar un ventilador en lugar del aire acondicionado.
   •Lo hago •Lo haré •Ninguno

8. Participar en el programa “Cool Keeper” de Rocky Mountain Power.
   •Lo hago •Lo haré • Ninguno

Calentadores de agua

9. Programar el calentador de agua a 120 grados F.
   •Lo he hecho •Lo haré •Ninguno

10. Instalar una regadera de ducha de alta eficiencia.
    •Lo he hecho •Lo haré •Ninguno

11. Tomar duchas de 5 minutos.
    •Lo hago •Lo haré •Ninguno

12. Lavar cargas llenas en los lavaplatos y las lavadoras de ropa.
    •Lo hago •Lo haré •Ninguno

Iluminación

13. Reemplazar los focos incandescentes con focos CFL.
    •Lo hago •Lo haré •Ninguno

14. Apagar las luces cuando no estén en uso.
    •Lo hago •Lo haré •Ninguno

Refrigeración

15. Reemplazar refrigeradores antiguos e ineficientes con un modelo de ENERGY STAR ®.
    •Lo he hecho •Lo haré •Ninguno

16. Desenchufar y/o reciclar congeladores/refrigeradores antiguos.
    • Lo he hecho •Lo haré •Ninguno

17. Mantener las bobinas del refrigerador y del congelador y chequear el sello de las puertas dos veces al año.
    •Lo hago •Lo haré •Ninguno

Aparatos Electrónicos

18. Apagar computadoras y consolas de juegos cuando no estén en uso.
    •Lo hago •Lo haré •Ninguno

Cocinar

19. Usar horno microondas, horno eléctrico u olla de cocimiento lento en lugar del horno convencional.
    •Lo hago •Lo haré •Ninguno

Reciba paga siendo ***watt***smart

20. Visite Rocky Mountain Power ingresando en wattsmart.com para más consejos de electricidad y descuentos.

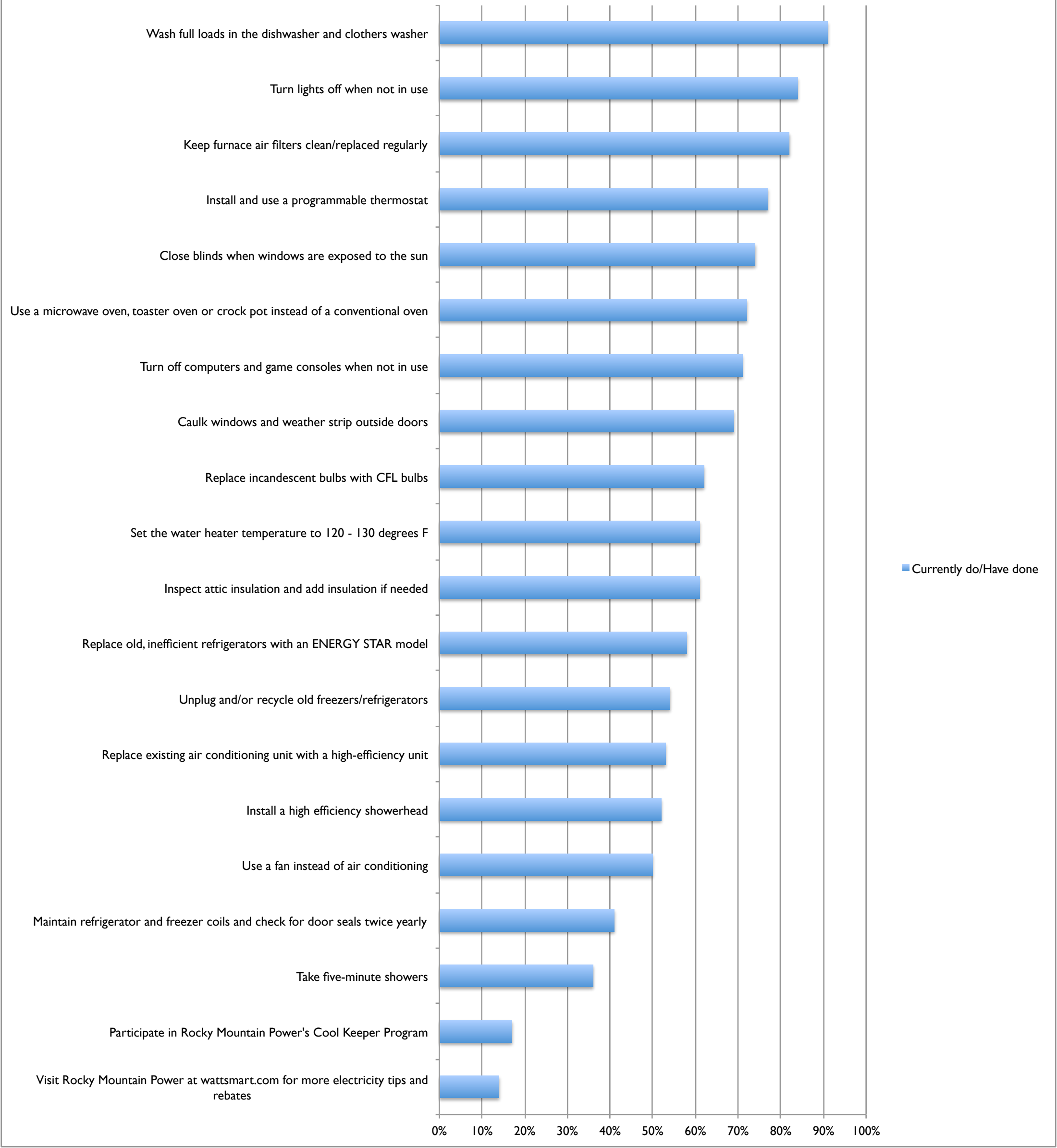
•Lo he hecho •Lo haré •Niguno

Programa proporcionado por: NATIONAL ENERGY FOUNDATION

ROCKY MOUNTAIN POWER

Wise Energy Behaviors in Rocky Mountain Power Utah Homes

Wise Energy Behaviors in Rocky Mountain Power Utah Homes



WattSmart Education Program

Home Energy Worksheet Summary - Rocky Mountain Power

Energy Efficient Activity	Currently do /Have done	Will do	Neither
Wash full loads in the dishwasher and clothers washer	91%	6%	3%
Turn lights off when not in use	84%	15%	2%
Keep furnace air filters clean/replaced regularly	82%	14%	4%
Install and use a programmable thermostat	77%	12%	10%
Close blinds when windows are exposed to the sun	74%	15%	10%
Use a microwave oven, toaster oven or crock pot instead of a conventional oven	72%	15%	13%
Turn off computers and game consoles when not in use	71%	21%	7%
Caulk windows and weather strip outside doors	69%	20%	12%
Replace incandescent bulbs with CFL bulbs	62%	25%	14%
Set the water heater temperature to 120 - 130 degrees F	61%	24%	14%
Inspect attic insulation and add insulation if needed	61%	20%	19%
Replace old, inefficient refrigerators with an ENERGY STAR model	58%	21%	21%
Unplug and/or recycle old freezers/refrigerators	54%	21%	25%
Replace existing air conditioning unit with a high-efficiency unit	53%	20%	28%
Install a high efficiency showerhead	52%	23%	25%
Use a fan instead of air conditioning	50%	23%	26%
Maintain refrigerator and freezer coils and check for door seals twice yearly	41%	43%	16%
Take five-minute showers	36%	34%	31%
Participate in Rocky Mountain Power's Cool Keeper Program	17%	27%	56%
Visit Rocky Mountain Power at wattsmart.com for more electricity tips and rebates	14%	65%	21%

Sampling of Thank You Notes

Thanks Alot -Sarah Soulier

Thank you so much we enjoyed your assembly -Paisley Brockman

Thanks a million -Austin Healey

-abe Thomas

thanks so much! Sadie Lehnhof

Eli Hill -Thank you

Thank you so much -From: Chloe Harris

Thanks! -Kevin Gao

Be **watt**smart
Begin at home

Thank you -Jate Healey

Thank you -Valentina vanleeuwen

thank you! -grace Bridge

Thanks -Solomon Ivins

Joree Proctor

Thank you for providing the **Be wattsmart, Begin at home** program to our school. The student booklet taught us how to use energy wisely. We gained new knowledge and had fun. We can make a difference!

thank you! James-

Jonah Thank You

Sam Burnham thank you

Monthon

Hannah -thank you

Thanks a "WATT!"

alex thank you

Thank you Katherine

Jackson thanks for the awesome presentation

thanks -Sarah Glauser

thanks, I hope my family can be more energy efficant! Mia

Thank you so much, I learned alot! -Sam Jensen

J.J. Garff

Thank you

ROCKY MOUNTAIN POWER

wattsmart.com

NATIONAL ENERGY FOUNDATION
CULTIVATING AND PROMOTING AN ENERGY LITERATE SOCIETY

Serra M. — Thanks!

Abby - Thank you

Brooklyn - Thank you so much it was fun ♡

Seth

Kat - Thank you so much!!

Ethan Fox. Thank you for teaching me those things. It really helped.

Amber

Jami Alexander
Thank you! :)

Kevin Pina #10

Be **watt**smart
Begin at home

Azean thanks you're awesome

Desiree R - love the night light I got!! :)

Anthony Justice

Thank you for providing the **Be wattsmart, Begin at home** program to our school. The student booklet taught us how to use energy wisely. We gained new knowledge and had fun. We can make a difference!

Thank you Nahomi

Colton B - Thanks so much!! P.S. Cool night light

Thank You for helping us be "Watt Smart" ~ Tabitha

Thanks a "WATT!"

Sydnee S. - Thank you very much. ♡

Joseph. K

anthony Z. - Thank you?

Tiffany B. - Thank You so much!

Emily - Thank you for the Watt smart packets

Mrs. Dawes

ROCKY MOUNTAIN POWER

wattsmart.com

NATIONAL ENERGY FOUNDATION
CULTIVATING AND PROMOTING AN ENERGY LITERATE SOCIETY

aaron

Tim

March 12, 2013

Dear Rocky Mountain;

We wanted to let you know that we enjoyed you coming, and presenting your "Be Wattsmart" presentation. We learned a lot about how to conserve energy in our homes. WE can save our parents money when we teach them about being "Wattsmart".

We hope that you can come again next year and remind us to always be "Wattsmart".

Sincerely,

Ms. Durkee's Fifth Grade Class

At Roosevelt Elementary.

Dejia Abukar

Gage

Dante

Callin

Tristan

andre

Robert

angel

CeSar

Alex

Hector

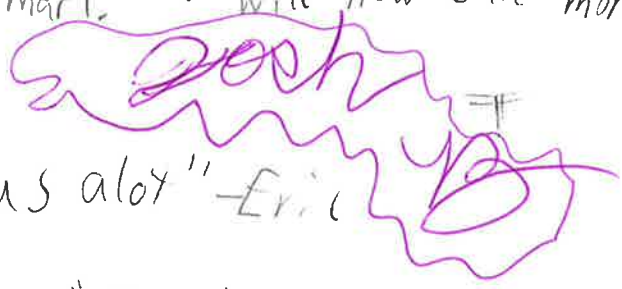
Bailey W.

I like the lights that only use 2 cents a year.
- Steven Mills

Thanks for teaching me so much about electricity, now I can be more "watt smart!"
- Steven Ko

I loved everything that you showed. It helps be safe and understand a "watt" more!"
- Alex Qian

I learned many ways to be watts mart! I will now safe more power,
- Patrick Beal



thanks for telling us alot" -Eric

Charles W.

Thanks!
-Cammy Foster

"I enjoyed the fun activities."
John J

Thank you - Jenny

Thank you - Catherine

Thank you - Nikki

Thank you Spencer Atwood

Thank You!!! -Coles, Charlie, m

Thank you!
-Madeline E.

Thanks for the great lesson.
-Abby Terry

Thanks! -Madison O.

Thanks for the light!!!

Thank you for teaching us so much!
-Amy McDaniel

Whenever I turn off the Light. I think happy thoughts!
-Julia

Thanks, you are awesome! I learned a lot!
-Ella Wagoner

I LIKED that a lot it was fun. Thanks for teaching us— Cami Erickson

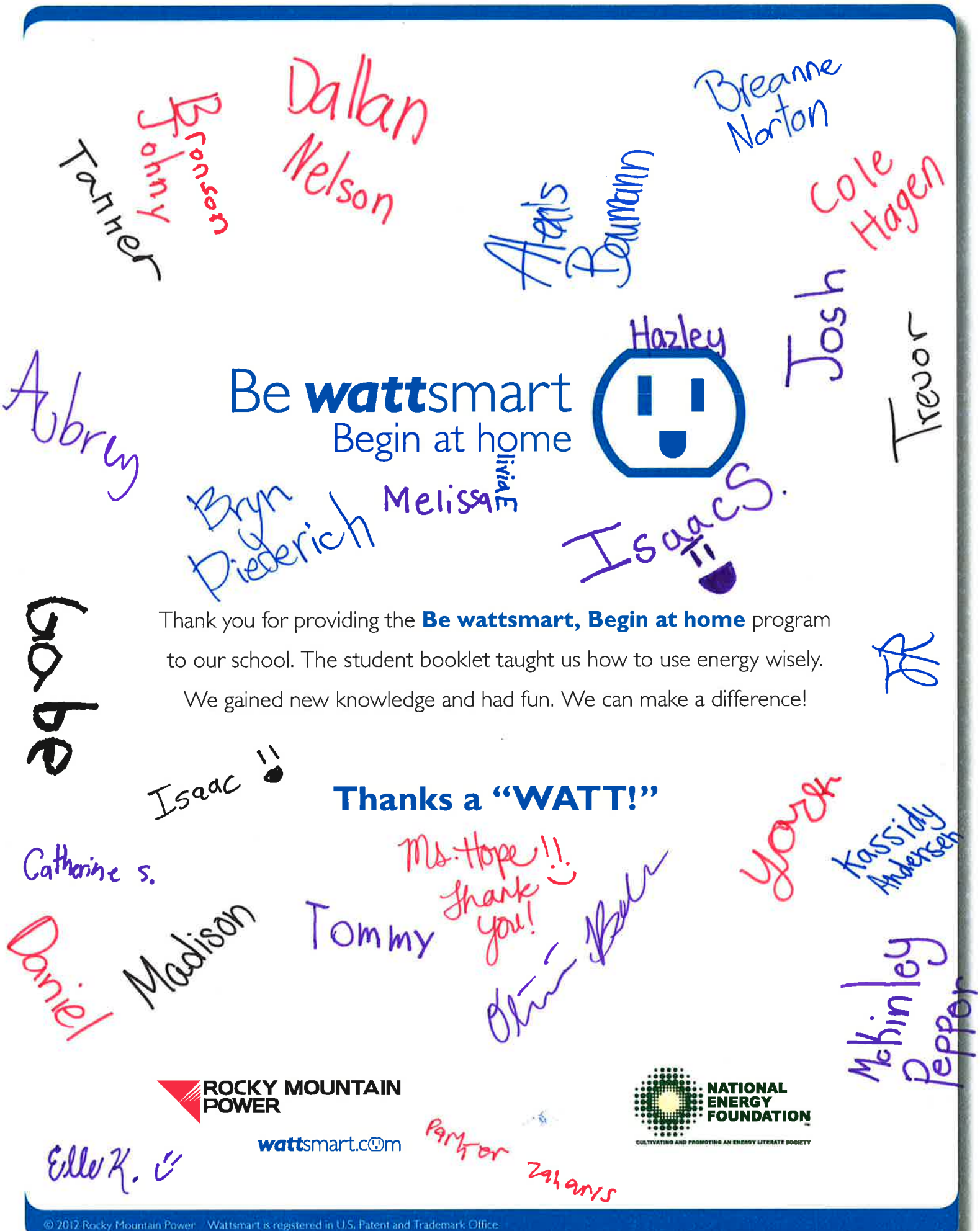
Thanks for the information!-
Ashlyn R.

Thanks for teaching us about being "watt smart!"
-Ella Chamberlain

Thanks
Abigail J.

Thanks for helping us be watts mart!
-Claire

Thanks
- Makenzee Stettman


Be wattsmart
Begin at home
Thank you for providing the **Be wattsmart, Begin at home** program to our school. The student booklet taught us how to use energy wisely. We gained new knowledge and had fun. We can make a difference!
Thanks a "WATT!"
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