Energy Conservation Contract

Constellation
An Exelon Company

Students learn about saving energy and encourage their families to conserve in this outreach activity.

Grade Levels:

- Elem Elementary
- Int Intermediate
- Sec Secondary

Subject Areas:

- Science
- Social Studies
- Math
- Language Arts

NEED
National Energy Education Development Project

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NEED Mission Statement

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

Permission to Copy

Teacher Advisory Board

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

Energy Data Used in NEED Materials

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

1.800.875.5029
www.NEED.org

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Table of Contents

Standards Correlation Information

www.NEED.org/educators/curriculum-correlations/

Next Generation Science Standards

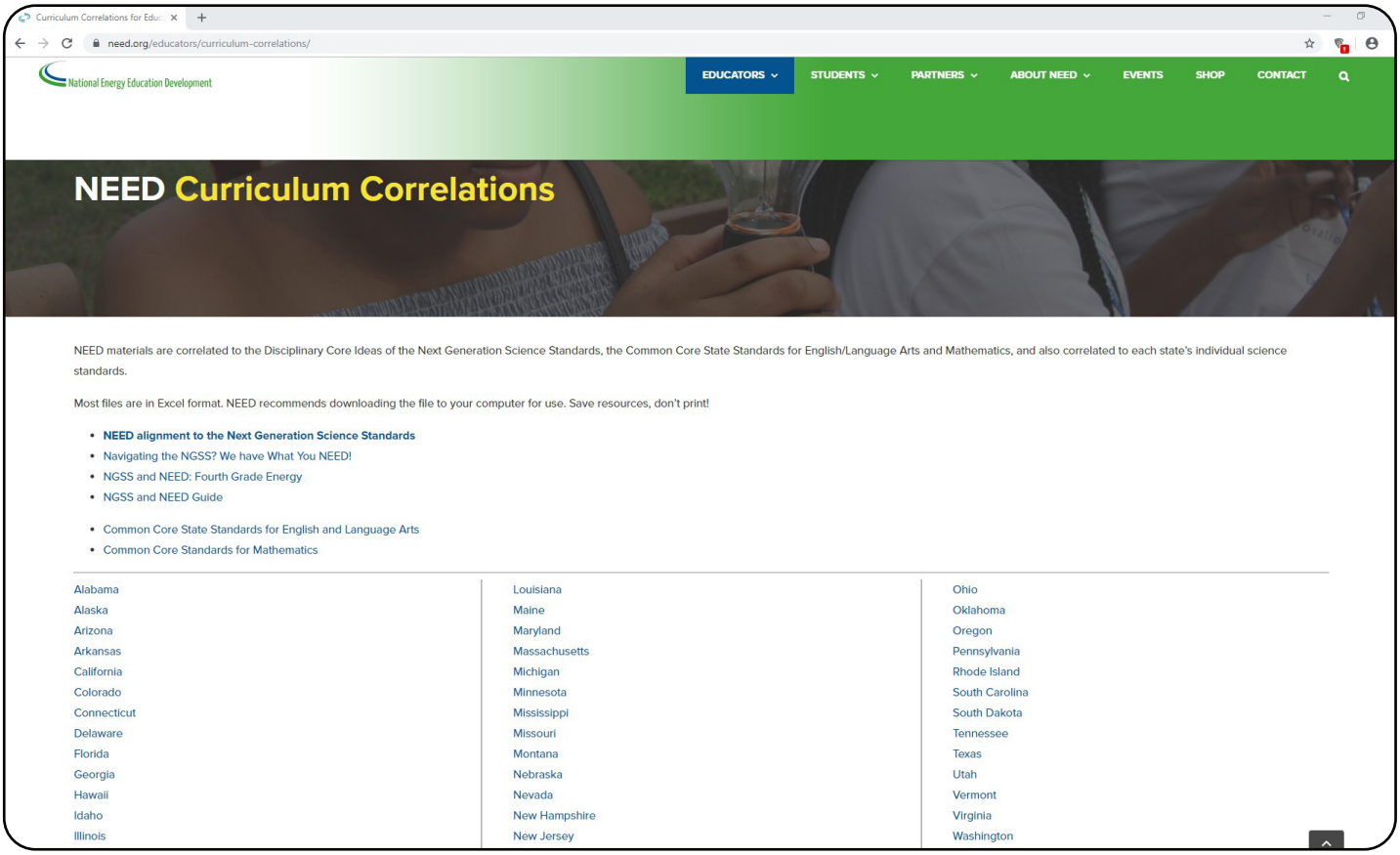
- This guide effectively supports many Next Generation Science Standards. This material can satisfy performance expectations, science and engineering practices, disciplinary core ideas, and cross cutting concepts within your required curriculum. For more details on these correlations, please visit NEED's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

Common Core State Standards

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

Individual State Science Standards

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



Teacher Guide

Background

Students discuss their energy use for daily activities with their families and educate them about energy-saving behaviors and methods, using the *Household Rating Guide*. For one month, family members are asked to make a conscious effort to reduce their energy use. When the one-month period is over, students and their families will again use the *Household Rating Guide* to estimate how much energy they saved. Students are encouraged to ask family members to sign another contract for 12 months and display the contract at home as a reminder.

Preparation

- Prepare copies of *Energy Conservation Contract*, *Calculating Your Average Savings*, and *How Much Energy Did We Save?* to project in order to demonstrate how to enter scores and complete required calculations.
- Make copies of the *Student Guide*, *Household Rating Guide*, *Energy Conservation Contract*, *Calculating Your Average Savings*, and *Change a Light Bingo* for each student.

✔ Procedure

1. Introduce the concepts of efficiency and conservation by playing a quick game of *Change a Light Bingo* with your students.
2. Give each student a copy of the *Student Guide*, *Household Rating Guide*, *Energy Conservation Contract*, and *Calculating Your Energy Savings* and explain that they will use this set of worksheets to help determine their energy use and make reductions as a family.
3. Explain to students how to conduct the first discussion with their family members. Practice as a class.
4. Fill in a sample contract with the class, making sure students know how to calculate and enter scores.
5. Give the students a set time frame, perhaps three days, in which to conduct their discussions at home. Students may leave the rating guide with their families, but must return the other forms to class. Emphasize to students that they will need to use the other forms again at the end of the month. Collect the forms after the allotted time.
6. At the end of the one-month contract period, distribute the forms again so that students can lead their families in the post-activity discussion and rating. Review the rating process and tips for holding discussions, if necessary. Again, give the student a time frame in which to complete their interviews and return the completed forms.
7. When all the reporting forms are in, calculate how much energy each participating household saved during the one-month period using the *How Much Energy Did We Save?* form.
8. Ask students to encourage their families to sign the contracts for an additional 12-month period and display the contract prominently at home to encourage energy-saving behaviors.

☑ Assessment

- Play *Change a Light Bingo* as an assessment to close the activity.
- Assess student knowledge gain based on participation in contract activities and reductions.
- Evaluate the activity with your students using the evaluation form on page 19, and return it to NEED.

Grade Levels

- Elementary, grades 4-5
- Intermediate, grades 6-8
- Secondary, grades 9-12

Time

Two to three 45-minute class periods over a one-month period, plus homework.

Additional Resources

This contract activity is a wonderful companion piece to many of NEED's efficiency and conservation titles. These titles contain student informational text and hands-on explorations that provide the necessary background to enhance this contract activity. Download these titles from shop.NEED.org to enhance your conservation activities:

- *School Energy Inspectors*
- *School Energy Experts*
- *School Energy Managers*

Extension Activities

Be sure to let everyone know how much energy your contract projects saved! Make a chart and publicize the results in the local newspaper, your school paper, and/or a PTA bulletin. Figure out how much energy the participating households would save in one year if they continue their energy-saving behaviors. Or figure out how much energy would be saved if two or three times as many households implemented the energy-saving behaviors.

Do you want to do a super project? You can use the activities below to build students' communication, writing, geography, or math skills. Examine the activities given and pick one or more that fit your needs.

- **Press Conference** *(Skills: communication, writing)*
Involve the entire school in your contract project. Consider holding a press conference to let everyone know what the project is all about.

- **Have a VIP (principal, mayor, or congressman) sign an Energy Conservation Contract**
Brainstorm VIPs the class might be able to enlist in your efforts by signing a contract.

- **Letters to VIPs** *(Skills: writing)*
Write a letter to your congressman, the President, or someone locally. Explain what your class is doing to raise energy awareness in your community. Enclose the results of your efforts.

- **50 States Campaign** *(Skills: writing, geography)*
An interesting twist to this activity is getting contracts signed in all 50 states. Begin a long-distance learning campaign with students and teachers from across the country. Ask students to start with those they know in other states like family, friends, summer camp buddies, and pen pals.

Change a Light BINGO Instructions

Get Ready

Duplicate as many *Change a Light Bingo* sheets (found on page 17) as needed for each person in your group. In addition, decide now if you want to give the winner of your game a prize and what the prize will be.

Get Set

Pass out one *Change a Light Bingo* sheet to each member of the group.

Go

PART ONE: FILLING IN THE BINGO SHEETS

Give the group the following instructions to create bingo cards:

- This bingo activity is very similar to regular bingo. However, there are a few things you'll need to know to play this game. First, please take a minute to look at your bingo sheet and read the 16 statements at the top of the page. Shortly, you'll be going around the room trying to find 16 people about whom the statements are true so you can write their names in one of the 16 boxes.
- When I give you the signal, you'll get up and ask a person if a statement at the top of your bingo sheet is true for them. If the person gives what you believe is a correct response, write the person's name in the corresponding box on the lower part of the page. For example, if you ask a person question "D" and he or she gives you what you think is a correct response, then go ahead and write the person's name in box D. A correct response is important because later on, if you get bingo, that person will be asked to answer the question correctly in front of the group. If he or she can't answer the question correctly, then you lose bingo. So, if someone gives you an incorrect answer, ask someone else! Don't use your name for one of the boxes or use the same person's name twice.
- Try to fill all 16 boxes in the next 20 minutes. This will increase your chances of winning. After the 20 minutes are up, please sit down and I will begin asking players to stand up and give their names. Are there any questions? You'll now have 20 minutes. Go!
- During the next 20 minutes, move around the room to assist the players. Every five minutes or so tell the players how many minutes are remaining in the game. Give the players a warning when just a minute or two remains. When the 20 minutes are up, stop the players and ask them to be seated.

PART TWO: PLAYING BINGO

Give the class the following instructions to play the game:

- When I point to you, please stand up and in a LOUD and CLEAR voice give us your name. Now, if anyone has the name of the person I call on, put a big "X" in the box with that person's name. When you get four names in a row—across, down, or diagonally—shout "Bingo!" Then I'll ask you to come up front to verify your results.
- Let's start off with you (point to a player in the group). Please stand and give us your name. (Player gives name. Let's say the player's name was "Joe.") Okay, players, if any of you have Joe's name in one of your boxes, go ahead and put an "X" through that box.
- When the first player shouts "Bingo," ask him (or her) to come to the front of the room. Ask him to give his name. Then ask him to tell the group how his bingo run was made, e.g., down from A to M, across from E to H, and so on.

***Change a Light Bingo* is a great icebreaker for a NEED workshop or conference. As a classroom activity, it also makes a great introduction to an energy unit.**

Preparation

- 5 minutes

Time

- 45 minutes

Bingos are available on several different topics. Check out these resources for more bingo options!

- Biomass Bingo—*Energy Stories and More*
- *Coal Bingo*—Coal guides
- Energy Bingo—*Energy Games and Icebreakers*
- Energy Efficiency Bingo—Efficiency & Conservation Guides
- Hydrogen Bingo—*H_2 Educate*
- Hydropower Bingo—Hydropower guides
- Nuclear Energy Bingo—Nuclear guides
- Offshore Oil and Natural Gas Bingo—*Exploring Ocean Energy and Resources*
- Oil and Natural Gas Bingo—Oil and Natural Gas guides
- Science of Energy Bingo—*Science of Energy* guides
- Solar Bingo—Solar guides
- Transportation Bingo—Transportation guides
- Wind Energy Bingo—Wind guides

▪Now you need to verify the bingo winner's results. Ask the bingo winner to call out the first person's name on his bingo run. That player then stands and the bingo winner asks him the question which he previously answered during the 20-minute session. For example, if the statement was "can name two renewable sources of energy," the player must now name two sources. If he can answer the question correctly, the bingo winner calls out the next person's name on his bingo run. However, if he does not answer the question correctly, the bingo winner does not have bingo after all and must sit down with the rest of the players. You should continue to point to players until another person yells "Bingo."

CHANGE A LIGHT BINGO ANSWERS

A. Knows the average cost per kilowatt-hour of electricity for residential customers

B. Can name two renewable energy sources

C. Has an ENERGY STAR® appliance at home

D. Knows which energy source generates the most electricity in the U.S.

E. Can name two ways to save energy at home

F. Has taken the ENERGY STAR® change a light pledge

G. Knows the perfector/patent holder of the incandescent light bulb

H. Knows how electricity is generated

I. Can explain the concept of energy efficiency

J. Has CFL or LED bulbs at home

K. Can name two reasons to use an ENERGY STAR® CFL or LED

L. Knows the significance of the ENERGY STAR® rating on appliances

M. Knows what a lumen is

N. Knows how much energy an incandescent bulb converts to wasted heat

O. Knows a greenhouse gas produced by the burning of fossil fuels

P. Knows what LED stands for

A $0.13 national average for residential customers	**B** biomass geothermal hydropower solar wind	**C** ask for description	**D** natural gas
E use a programmable thermostat, use CFLs or LEDs, adjust water temperature, winterization measures, etc.	**F** ask for when/results	**G** Thomas Edison	**H** Steam, water, or wind spins a turbine, spinning a generator, producing electricity, or through PV cells
I Energy efficiency reduces overall electricity consumption by using more efficient devices	**J** ask for location in home	**K** Reduce electricity consumption (save money), lasts longer, produces less heat	**L** Shows that the appliance meets energy efficiency guidelines
M indicates the amount of light emitted by a lamp	**N** 90%	**O** carbon dioxide	**P** Light emitting diode

Student Guide

Your task is to help your family learn how to save energy at home. You will discuss how families use energy at home, and teach them about energy conservation and efficiency technologies, techniques, and behaviors. Using the *Household Rating Guide*, you will survey your family's current energy use. You will discuss the ratings in each category, commending them on scores of 4 or 5. Scores of 3 or below indicate areas where improvements can easily be made. Ask them to make a conscious effort to save energy for the next month by signing the *Energy Conservation Contract*.

When the one-month contract period is over, you will meet with your family and conduct a second survey to determine their new Energy Conservation Rating and calculate the amount of energy saved during the contract period. Encourage family members to continue energy-saving behaviors after the project is finished.

Your class will then tally the energy saved by all participating families during the period.

Discussion #1

1. Gather your family members together and explain the goal of the project. Explain to them the importance of conserving energy and how most energy-saving changes are simple, easy to do, and save money.

2. Show your family the *Household Rating Guide* and explain the rating levels of 0 to 5 on the first five sections. Ask them to rate their household energy use honestly as you go through each section. Explain that most households have low ratings (0, 1, or 2), so there is no need to be embarrassed. If different family members have different answers, agree on an average figure for each activity. Underline or circle the family's ratings.

3. After you have finished the first five sections, explain that the last section (Living Efficiently) is a little different. It contains one-time or long-term actions that save energy and are rated with simple yes or no answers. The energy saved by each of these measures is significant.

4. At the end of the discussion, thank your family for participating and ask them to sign the Energy Conservation Pledge in the box on the bottom of the contract. Leave the *Household Rating Guide* in a convenient place so that family members can review it.

5. Calculate the average score for each section on the *Calculating Your Average Savings* worksheet and enter it in the "Rating Before" column on the *Energy Conservation Contract*.

Discussion #2 *(ONE MONTH LATER)*

1. Once again, go through the *Household Rating Guide* with your family to determine the new ratings in each section. Underline or circle the family's ratings in a different color.

NOTE: Since your family may not remember the rating from the first interview, they may give themselves a lower rating. In this case, tell them the first rating and ask if they have gotten better, worse, or are behaving the same in that category. If your family really believes they are doing less to save energy than before, record that number.

2. Calculate the average score for each section on the *Calculating Your Average Savings* worksheet and enter it in the "Rating After" column of the *Energy Conservation Contract*.

3. Calculate the Energy Conservation Units (ECUs) saved in each category and add them to find the Total Monthly Savings. Calculate the Energy Equivalents in the second chart to show your family the equivalent savings. Congratulate your family on the energy they have saved! Ask your family to keep the *Household Rating Guide* with its energy-saving tips in a prominent place, but you must keep the *Energy Conservation Contract* so that your class can make a final report. Take it back to class with you.

4. Encourage your family members to keep up their energy-saving behaviors and to implement any recommendations in the Living Efficiently section to which the answer was no. Invite them to any follow-up activities planned at your school.

Household Rating Guide

How to Rate Your Family's Energy Use

How much energy does your family use every month? Are your family members aware of the energy they use? Do they know about ways to save energy at home by changing their actions and taking simple steps to make the house more energy efficient?

This guide can help your family save energy in six energy areas:

- Home Heating and Cooling
- Water Heating
- Household Appliances and Electronics
- Lighting
- Transportation
- Living Efficiently

Start by finding your family's Household Energy Conservation Rating. First, read the statements in each energy section carefully. Decide how much or how little your family's energy use fits the statements and then rate your family's energy use by choosing a number from 0 to 5 for each statement in the first five categories.

For example, if your family never makes an effort to save energy in a category, choose 0. But if your family always makes an effort, choose 5. (If some members of your household are more energy conscious than others, choose the number you feel represents the average for your family.)

Please be honest with your responses. Do not be embarrassed if you give your family low ratings; most American households would receive ratings of 0, 1, or 2. The important thing is to honestly evaluate your current energy consumption and work to reduce it.

The Living Efficiently section deals with one time or long-term actions. Those statements are rated with simple "yes" or "no" answers. The actions listed in this section reduce energy consumption significantly and are given more weight.

At the end of the contract period, you will be rated again on your family's energy use and any energy-saving improvements your household has made.

You should know the contract rating system gives some energy conservation behaviors more weight than others. Turning down the thermostat, for example, saves more energy than turning off a light.

Household Rating Guide

Home Heating and Cooling

1. We inspect windows and doors, and make repairs as necessary, to make sure they are airtight.
Caulking and weatherstripping can deteriorate over time. Much of home heat loss is around windows and doors.

Never 0 1 2 3 4 5 Always

2. We inspect the ductwork to make sure there are no cracks or openings.
Openings or cracks in the ducts can allow conditioned (heated or cooled) air to escape into the attic and crawl spaces.

Never 0 1 2 3 4 5 Always

3. We clean or replace system filters as recommended.
Keeping filters clean will provide more efficient heating and cooling.

Never 0 1 2 3 4 5 Always

4. In winter, we dress warmly and set the thermostat at 68 degrees or lower during the day and 65 degrees or lower at night. *Setting the thermostat back for 8 hours a day can save 10%.*

Never 0 1 2 3 4 5 Always

5. In the summer, we dress lightly and set the thermostat at 75 degrees or higher.
This temperature is considered the most comfortable for humans if fans are used to circulate the air.

Never 0 1 2 3 4 5 Always

6. We keep windows and doors closed when the heating or air conditioning system is operating.
Having windows and doors open makes your heating or air conditioning system work harder.

Never 0 1 2 3 4 5 Always

Water Heating

1. The water heater thermostat is always set at 120 degrees.
Most hot water heaters are set much higher than necessary. You can save up to 10 percent on your energy bill by setting the temperature at 120 degrees.

Never 0 1 2 3 4 5 Always

2. We inspect the insulation on our hot water tank and piping, and make repairs as necessary.
Insulation can come loose or deteriorate over time.

Never 0 1 2 3 4 5 Always

3. We use cold water whenever hot water is not necessary (e.g., washing clothes, rinsing dishes, running disposal). *Using cold water saves energy and most tasks do not require hot water.*

Never 0 1 2 3 4 5 Always

4. We take short showers and fill the tub with only the water we need.
Short showers use less energy than baths.

Never 0 1 2 3 4 5 Always

5. We fill the sink to wash dishes rather than running the water, and use the short cycle on the dishwasher.
Running water to wash dishes and long dishwasher cycles use a lot of water and energy.

Never 0 1 2 3 4 5 Always

Household Rating Guide

Household Appliances and Electronics

1. We turn off appliances and electronics, such as televisions, when not in use.
Many appliances continue to draw energy when they are in the off position.

Never 0 1 2 3 4 5 Always

2. We preheat the oven for only five minutes or not at all.
It also saves energy to cook several dishes at once to make maximum use of this concentrated heat.

Never 0 1 2 3 4 5 Always

3. When baking, we keep the oven door closed rather than opening it often to look inside and use a timer. *An open oven door lets valuable heat escape.*

Never 0 1 2 3 4 5 Always

4. Whenever possible, we use a toaster oven or microwave instead of a regular oven.
These smaller appliances save energy for most cooking jobs.

Never 0 1 2 3 4 5 Always

5. We inspect refrigerator and freezer door seals often to make sure they are airtight.
Insert a piece of paper halfway in the door. If you can pull the paper out easily, the seal is not airtight.

Never 0 1 2 3 4 5 Always

6. We use the energy-saver feature on the dishwasher, allowing the dishes to air dry.
Producing heat to dry dishes uses a lot of energy.

Never 0 1 2 3 4 5 Always

Lighting

1. We turn off indoor and outdoor lights when they are not needed.
Many people leave lights on without thinking—wasting energy.

Never 0 1 2 3 4 5 Always

2. We use natural lighting whenever we can by opening blinds/shades.
Natural lighting is free to use.

Never 0 1 2 3 4 5 Always

3. We use energy-efficient lights in garages and work areas that need lots of light.
A 9-watt LED provides 80-85 lumens per watt, while a 60-watt incandescent provides only 13-15 lumens per watt. You save energy and get more light from LEDs.

Never 0 1 2 3 4 5 Always

4. We replace burned-out incandescent light bulbs with light emitting diode (LED) bulbs.
New LEDs fit conventional light fixtures. They cost slightly more to buy, but last at least ten times longer and use one-fourth or less of the energy of incandescent bulbs, saving you money and energy in the long run.

Never 0 1 2 3 4 5 Always

5. We keep lamps and light fixtures clean because dirt absorbs light.
Get the best use of lighting by dusting regularly.

Never 0 1 2 3 4 5 Always

Household Rating Guide

Transportation

1. We check tire pressure regularly and keep oil and air filters clean.
Under-inflated tires decrease fuel economy by as much as one mile per gallon. Clogged filters waste gasoline.

Never 0 1 2 3 4 5 Always

2. We have the car's engine tuned regularly.
A well-tuned engine can improve gas mileage by as much as 10 percent.

Never 0 1 2 3 4 5 Always

3. We use public transportation or carpool whenever we can.
Using public transportation and carpooling saves on transportation fuel.

Never 0 1 2 3 4 5 Always

4. We avoid unnecessary trips by planning carefully.
The fewer trips you make, the less fuel you use.

Never 0 1 2 3 4 5 Always

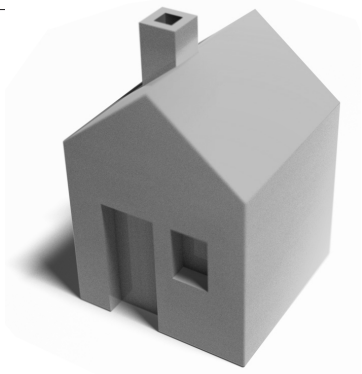
5. We do not exceed the speed limit and maintain a steady speed when driving.
Driving faster than the speed limit uses more fuel. It is more efficient to keep an even speed.

Never 0 1 2 3 4 5 Always

6. We do not let an automobile idle for more than one minute.
Less gas is used to restart an engine than to idle for more than one minute.

Never 0 1 2 3 4 5 Always

Living Efficiently



1. We have had an energy audit of our house.
Your local utility will send someone to your house to perform an audit and show you where your house is wasting energy and what you can do to correct it.

Yes No

2. We have eliminated drafts around windows and doors with caulking and weatherstripping.
Proper caulking and weatherstripping can cut fuel costs by up to 10 percent.

Yes No

3. We have the proper amount of insulation in the attic and walls.
If you need to add insulation, the cost will be returned to you in lower utility bills.

Yes No

4. We have insulated our hot water tank and piping.
A well-insulated tank can save $10-20 in energy costs over a 12-month period.

Yes No

5. We have low-flow shower heads.
These easy-to-install devices save energy and provide adequate shower pressure.

Yes No

6. When buying new appliances, we compare EnergyGuide labels and buy energy efficient models.
The most energy efficient new appliances cost a little more, but save money and energy over their operating life.

Yes No

7. When purchasing vehicles, fuel mileage is one of our most important considerations.
A fuel efficient vehicle can save thousands of dollars in fuel costs over the life of the vehicle.

Yes No

Energy Conservation Contract

Number in Household: _____

Household Energy Conservation Rating

Energy Saving Measure	Rating After	– Rating Before	= Change	X ECU* Factor	= ECUs Saved
Heating and Cooling				X 10 ECU	=
Water Heating				X 5 ECU	=
Household Appliances				X 3 ECU	=
Lighting				X 2 ECU	=
Transportation				X 10 ECU	=
Living Efficiently				X 50 ECU	=
Total Monthly Savings = Total ECUs Saved				TOTAL	

*ECU= Energy Conservation Unit - an average energy-saving unit calculated by considering the many different appliances and fuels used by homes to accomplish the tasks. The actual amount of energy saved by an individual household is difficult to measure precisely, because it depends upon the age of the house, furnace, air conditioner, appliances, and many other factors. Long-term monitoring of weather conditions and energy meters is the only method of determining actual energy savings in an individual residence.

Total ECUs Saved	Conversion	Energy Equivalent
	ECU X 100,000 BTUs	Btu
	ECU X 0.8 gallons of gas	gallon
	ECU X 1.0 Ccf natural gas	Ccf
	ECU X 10 kWh electricity	kWh

ENERGY CONSERVATION PLEDGE

We, the members of this household, agree to make a sincere effort to save energy and to learn more about energy conservation and efficiency.

_____ _____

_____ _____

_____ _____

Calculating Your Average Savings

Rating Before

HEATING/COOLING: Add the scores you circled and divide the total by six. _____

WATER HEATING: Add the scores you circled and divide the total by five. _____

APPLIANCES: Add the scores you circled and divide the total by six. _____

LIGHTING: Add the scores you circled and divide the total by five. _____

TRANSPORTATION: Add the scores you circled and divide the total by six. _____

LIVING EFFICIENTLY: Add the number of yes answers. _____

Record these average ratings on the **Energy Conservation Contract** *in the* **Rating Before** *column.*

Rating After

HEATING/COOLING: Add the scores you circled and divide the total by six. _____

WATER HEATING: Add the scores you circled and divide the total by five. _____

APPLIANCES: Add the scores you circled and divide the total by six. _____

LIGHTING: Add the scores you circled and divide the total by five. _____

TRANSPORTATION: Add the scores you circled and divide the total by six. _____

LIVING EFFICIENTLY: Add the number of yes answers. _____

Record these average ratings on the **Energy Conservation Contract** *in the* **Rating After** *column.*

How Much Energy Did We Save?

How many families signed Energy Conservation Contracts? _____

Indicate the total number of ECUs saved in each of the following categories:

Heating/Cooling _____

Water Heating _____

Appliance Use _____

Lighting _____

Transportation _____

Living Efficiently _____

Total ECUs saved in all categories (add above numbers for total) _____

Energy Projections

How much energy would the families save if they continue the energy-saving measures for one year?

_____

How much energy would your community save if the following number of homes practiced the measures outlined in the *Household Rating Guide*?

500 _____

1,000 _____

5,000 _____

CHANGE A LIGHT BINGO

A. Knows the average cost per kilowatt-hour of electricity for residential customers

B. Can name two renewable energy sources

C. Has an ENERGY STAR® appliance at home

D. Knows which energy source generates the most electricity in the U.S.

E. Can name two ways to save energy at home

F. Has taken the ENERGY STAR® change a light pledge

G. Knows the perfector/patent holder of the incandescent light bulb

H. Knows how electricity is generated

I. Can explain the concept of energy efficiency

J. Has CFL or LED bulbs at home

K. Can name two reasons to use an ENERGY STAR® CFL or LED

L. Knows the significance of the ENERGY STAR® rating on appliances

M. Knows what a lumen is

N. Knows how much energy an incandescent bulb converts to wasted heat

O. Knows a greenhouse gas produced by the burning of fossil fuels

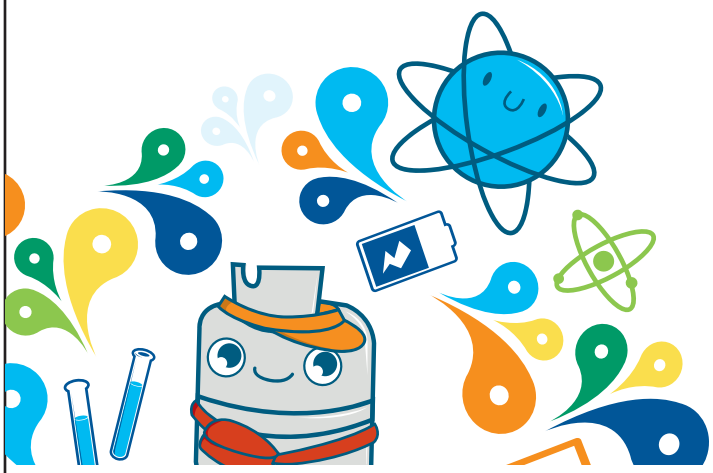
P. Knows what LED stands for

A NAME	B NAME	C NAME	D NAME
E NAME	F NAME	G NAME	H NAME
I NAME	J NAME	K NAME	L NAME
M NAME	N NAME	O NAME	P NAME

YouthEnergyConferenceand Awards

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

For More Info:
www.NEED.org/event/youth-energy-conference-and-awards/



Youth Awards Program for Energy Achievement

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

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

What's involved?

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

Want more info?

Check out **www.NEED.org/need-students/youth-awards/** for more application and program information, previous winners, and photos of past events.

Energy Conservation Contract Evaluation Form

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

1. Did you conduct the entire activity?	❑ Yes	❑ No
2. Were the instructions clear and easy to follow?	❑ Yes	❑ No
3. Did the activity meet your academic objectives?	❑ Yes	❑ No
4. Was the activity age appropriate?	❑ Yes	❑ No
5. Was the allotted time sufficient to conduct the activity?	❑ Yes	❑ No
6. Was the activity easy to use?	❑ Yes	❑ No
7. Was the preparation required acceptable for the activity?	❑ Yes	❑ No
8. Were the students interested and motivated?	❑ Yes	❑ No
9. Was the energy knowledge content age appropriate?	❑ Yes	❑ No
10. Would you teach this activity again? *Please explain any 'no' statement below*	❑ Yes	❑ No

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

What would make the activity more useful to you?

Other Comments:

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

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Minneapolis Public Schools
Mississippi Development Authority–Energy Division
Mississippi Gulf Coast Community Foundation
National Fuel
National Grid
National Hydropower Association
National Ocean Industries Association
National Renewable Energy Laboratory
NC Green Power
Nebraskans for Solar
New Mexico Oil Corporation
New Mexico Landman's Association
NextEra Energy Resources
NEXTracker
Nicor Gas
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North Shore Gas
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