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Energy Explorer

Fall 2019 e-newsletter

What is energy, and how do we use it?

Energy has become a major topic in today's news. It is imperative that students become aware of its importance, as today's children will be tomorrow's energy activists. Because energy can be an abstract concept for students, it's helpful to give your class a basic understanding of the forms energy takes and how it serves us.

In simplest terms, energy is the ability to do work. Here are some forms of energy students may recognize:

- Electrical
- Heat
- Light
- Motion
- Chemical

By changing one form of energy to another, we can make it work for us in activities such as cooking our meals, heating and cooling our homes and running our cars. A simple example is an ordinary toaster. We use electricity (one form of energy) and convert it to heat (another form of energy) to toast bread.

Electricity can be converted into many types of energy. In addition to heat, it can be converted into motion (mechanical energy) in the form of a motor. Motion can, in turn, be used in appliances that help us with many types of work, such as washing machines, pencil sharpeners and dishwashers. Electricity can also be used to run vehicles.

Chemical energy is stored in fuels, such as natural gas and gasoline. When fuels are burned they create heat that can be used to heat our homes, warm up water for showering, cook our food, dry our clothes and run our vehicles.

As a class, brainstorm examples of electrical energy, heat energy, light, motion and chemical energy in use at your school and in students' homes.

Simple steps to save energy at school

Did you know the annual energy bill to run America's primary and secondary schools is a staggering $6 billion? That's more than what's spent on textbooks and computers combined.

Students and teachers can do a lot to save energy in their schools. By being more energy efficient, schools can help reduce greenhouse gas emissions and save money from improved energy performance. The savings can be used for projects that improve the learning environment, such as building improvements and new textbooks.

Below are some tips you can implement in your classroom to save energy:

- **Create "Save Energy" signs** to hang near classroom light switches as a reminder to turn the lights off when not in use.
- **Pick an energy monitor** to make sure lights and computers are turned off before recess, lunch and after school.
- **Make sure books or furniture don't block the vents** in your classroom.
- **Encourage students to keep doors and windows closed** when heat or air conditioning is running.
- **Remind students to turn off the water** in the bathroom when they are finished using it.
- **Ask students to report water leaks** to you or the custodian.

When students learn to be more energy effificient at school, they can bring what they've learned home. Ask your students to use our **energy-saving tips** and the **Home Energy Inspection** to identify and implement more energy-saving behaviors.

Notify 811 for safe digging

Electric power lines and natural gas pipelines run under streets, sidewalks, yards and homes. If people dig into these utility lines, they can be damaged. A damaged electric line poses a shock hazard; a damaged gas pipeline may result in a gas leak that can cause a fire or explosion. Protecting underground lines from damage is everyone's responsibility.

The local 811 service makes sure underground utility lines are clearly marked so people can dig a safe distance away from them. Anyone planning a digging project must call 811 to notify this service about their project. No job is too small to call!

After you call 811, you must wait at least **two full working days before digging in New York,** excluding the date of your call, weekends and legal holidays. You must wait at least **72 hours before digging in Massachusetts and Rhode Island,** excluding weekends and legal holidays.

Students may wonder what happens after someone calls 811. Here are the steps:

- The caller explains to the 811 operator where the digging will occur.
- The 811 service notifies all the major utilities that have underground lines near the dig area.
- A worker from each utility identifies the location of each buried line near the dig area and marks it with colored spray paint or small plastic flags. Each type of utility line gets marked in a different color. Electric lines are marked in red; natural gas lines in yellow.

American Public Works Association color code for locator marks

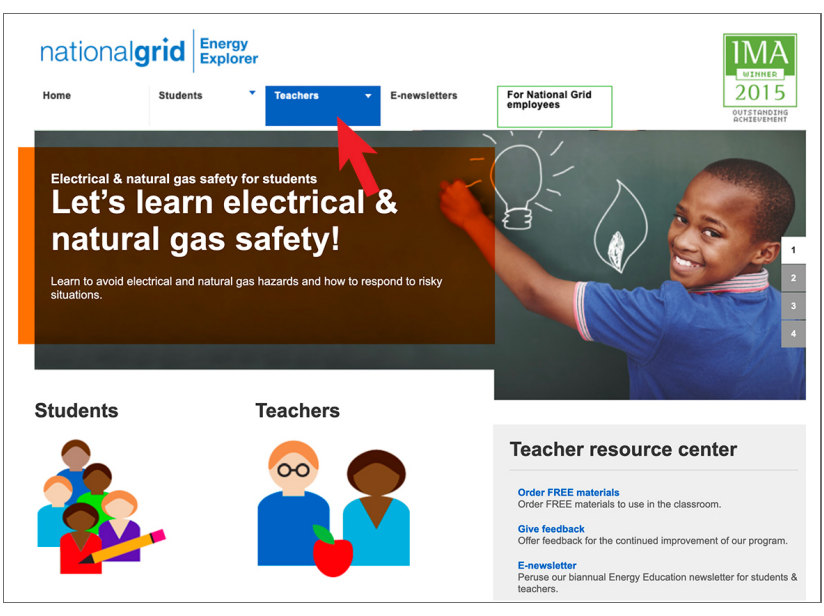
Electric power lines	Potable water
Temporary survey markings	Sewer and drain lines
Proposed excavation	Communications lines, cables or conduit
Gas, oil or steam	Reclaimed water, irrigation and slurry lines

Remind students that they should never tamper with utility flags and markings. Anyone who compromises these markings puts others at risk of contacting an underground utility line. Help protect your community by leaving them alone.

Explore all our teacher resources

Our **Energy Explorer** website at **ngridenergyworld.com** is designed so that you can use it with little or no planning. The "Teachers" tab for each thematic section *(Ethics, Electrical & Natural Gas Safety, Energy Efficiency* and *Environment)* includes many helpful teacher resources:

- One-page Student Worksheets and Answer Keys help students review key content.
- Teacher Tips help you explain all experiments.
- E-books have companion Teacher's Guides with background and discussion suggestions for each page, plus downloadable and reproducible Pre/Post Tests.



Explore our world of energy education.
Visit ngridenergyworld.com.

811 Know what's below. 811 before you dig.

Smell Gas. Act Fast.

To report emergencies, call 911 and National Grid immediately.

In case of gas emergencies:

Long Island and the Rockaways:
911 and 1-800-490-0045

Metro New York:
911 and 1-718-643-4050

Upstate New York:
911 and 1-800-892-2345

Massachusetts:
911 and 1-800-233-5325

Rhode Island:
911 and 1-800-640-1595

In case of electric emergencies:

Upstate New York:
911 and 1-800-867-5222

Massachusetts:
911 and 1-800-465-1212

Rhode Island:
911 and 1-800-465-1212

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