



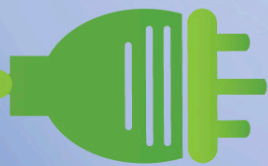
TEACHER
GUIDE



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INTRODUCTION

Even after 50 years of celebrating Earth Day, there is still much to do. However, according to the Earth Day Network (earthday.org), there is great hope for “a global outpouring of energy, enthusiasm and commitment to create a new environmental paradigm.” This generation can be the driving force behind this renewed enthusiasm, and can bring others, such as parents and teachers, along with them! In these lessons, you get to excite students about the ways they can make a difference.

Students will:



PREPARE themselves by learning about energy efficiency, renewable energy and energy sustainability, and what their peers are already doing to take action in these areas.



Select a topic and craft a message in the form of a Public Service Announcement (PSA) to **INSPIRE** others to become energy efficient.



Be **EM-POWERED** to take their message into the community and invite others to take action to be more energy efficient and responsible.

The lessons are aligned to both the Science and Engineering Practices from the Next Generation Science Standards (NGSS), the Ten Themes of Social Studies from the National Council for Social Studies (NCSS), the NYS Social Studies Practices and themes, the New York State English and Language Arts (ELA) standards and the Core SEL Competencies from the Collaborative for Social, Academic and Social Learning (CASEL).



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Lesson One: **PREPARE**

OVERVIEW: 90-120 MINUTES

Alignment to National Standards

NGSS PRACTICE 1: Asking questions and defining problems

NGSS PRACTICE 8: Obtaining, evaluating and communicating information

NGSS MS-ESS3: Earth and Human Activity

NCSS THEME 3: People, places and environments

NCSS THEME 5: Individuals, groups and institutions

NCSS THEME 8: Science, technology and society

CASEL CORE COMPETENCIES: Social Awareness and Responsible Decision-Making

NYS ELA STANDARD 4W5: Draw evidence from literary or informational texts to respond and support analysis, reflection and research by applying grade 4 reading standards.

If using **EXTENSION ACTIVITY** in Activity 2, the following standards are also covered:

NYS ELA STANDARD 3W3: Write narratives to develop real or imagined experiences or events using effective techniques, descriptive details and clear event sequences.

NYS ELA STANDARD 5W3C: Use a variety of transitional words, phrases and clauses to manage the sequence of events.

NYS ELA STANDARD 6W3C: Use a variety of transitional words, phrases and clauses to convey sequence and signal shifts from one-time frame or setting to another.



FACILITATION TIPS

Activity 1: GATHER INFORMATION AND EVIDENCE



Students will explore three main areas related to energy efficiency. Some useful online resources are listed below, but you may want to collect other resources in advance to have available for students. Not all the online resources provided are geared towards students, so consider reviewing them before the students to collect useful information.



Students are instructed to work with a partner to select and explore one of the suggested websites. Feel free to assign students to larger groups to accommodate your classroom size and needs. Students will use the table provided to collect information from their selected site. Each website presents a significant amount of information and students will not be able to explore everything in one class period. Encourage students to do a high-level review of the information presented.



Consider setting a time limit and prompting students to complete each section of the table at set times. For example you can provide 35 minutes for the overall activity.

- **Review Website** (10 minutes) – Instruct students to spend the first 10 minutes reviewing the website.
- **Review and Notice** (10 minutes) – Have students spend the next 10 minutes going over the site again and looking specifically for information for the “notice” column.
- **Wonder** (5 minutes) – Next, have students spend 5 minutes and move onto completing the ‘Wonder’ column.
- **Review Findings** (5 minutes) – The last five minutes can be spent collecting any final thoughts from their final review.



After reviewing their selected websites, students will explore the three main concepts using the information they collected and any additional resources such as textbooks, other websites, etc. While defining these terms, students may encounter words they do not know. Consider keeping a running list of these words on display in the classroom and with their definitions for future reference.



Students will submit a summary of their research to be shared with the class. The summary can be in the form of a written paragraph, tables or charts or even a creative drawing. Depending on your classroom setting, these can be submitted in person or electronically. All submissions can be compiled in one document and distributed to students to review and discuss. (If you have a larger class size, consider dividing the submissions into 3–4 separate documents and distributing them randomly to the other students.) You can facilitate a class discussion based on the students' summaries using a variety of formats — as a full class in-person, in small groups using breakout rooms in a virtual meeting or using a discussion board or similar platform.

Useful Online Resources:

<https://www.eia.gov/kids/index.php>

<https://www.energy.gov/eere/education/eere-energy-101-video-series>

<https://www.energy.gov/science-innovation>

A World Without Energy

<https://www.youtube.com/watch?v=wNmpuUN0ZYQ>

How We Waste Energy

<https://www.youtube.com/watch?v=QsAgaD7IeuA>

Non-Renewable Resources

<https://www.youtube.com/watch?v=MpEJnnpye-k>

Renewable Energy

https://www.youtube.com/watch?v=Giek094C_l4

PSEG Long Island Commercial

<https://www.youtube.com/watch?v=cxC-ZMLsB2Q>

PSEG Long Island YouTube Channel

<https://www.youtube.com/@PSEGLI>



Activity 2: IMAGINE THE FUTURE



This activity can be completed individually, in pairs or small groups.



Consider having a group discussion to think about what a day without power might be like before having students complete the activity. This will help students brainstorm ideas and think about all the many ways their daily life might be affected by a loss of power.



Allow time for students to share their “imaginary day” with the class.



EXTENSION ACTIVITY: Consider asking students to use their imaginary day timeline to create a cartoon strip of a day in the future without power. Students could create just one cartoon strip that would illustrate a day in the future without power, or they could create two cartoons (one representing a current day with power and another for a future day without power) in order to compare the two. This extension activity gives students an opportunity to use chronological reasoning as they place events in the order they would happen and explore the concepts of correlation and causation.

Activity 3: LEARN THE ISSUES



You may want to refer back to the resources used in Activity 1 to help students explore the three main areas further.



Encourage students to think about examples of conserving energy and renewable energy sources from their own daily lives and the community around them.



As students share the points from each of the three main areas, consider making a list on the whiteboard or a poster in the classroom to refer to throughout the project.



Lesson Two: **INSPIRE**

OVERVIEW: 60-90 MINUTES

(with individual student time outside of class)

Alignment to National Standards

NGSS PRACTICE 1: Asking questions and defining problems

NGSS PRACTICE 6: Constructing explanations and designing solutions

NGSS PRACTICE 8: Obtaining, evaluating and communicating information

NCSS THEME 3: People, places and environments

NCSS THEME 5: Individuals, groups and institutions

NCSS THEME 7: Production, distribution and consumption

NCSS THEME 8: Science, technology and society

CASEL CORE COMPETENCIES: Social Awareness and Responsible Decision-Making

FACILITATION TIPS

Activity 1: FIND SOURCES OF INSPIRATION



Several stories of young, inspirational leaders have been included in this lesson. Consider asking students to find more examples to share with the class.



You could add more examples of young leaders working for different causes and ask students to determine what they have in common with the leaders in the stories from this activity.





You may have all students read all the stories, or you can divide students into small groups and assign each group a story. If they read the stories in small groups, allow time for each group to share the leader from their story with the class.








After students have read the stories, leave time to discuss the listed questions as a class. Review the questions in advance so you are prepared to prompt students if they are hesitant to share or unsure how to answer the questions.



Activity 2: SELECT YOUR TOPIC

-  Students may have varying levels of experience with research and exploring topics. You may want to provide extra scaffolding and/or more detailed instructions for students who may struggle with this activity.
-  Consider reviewing topics with students before they begin their research. If you feel the topic they have selected is too broad, facilitate a discussion to help them select a specific topic on which they can focus for the PSA. Videos should be 30 seconds long, so focused topics will be important. (official submissions must be 45 seconds or less)

Activity 3: CREATE YOUR MESSAGE

-  While the first two activities can be completed during a regular class period, students will need more time to complete this activity. Plan time for students to work on their PSAs both in and out of class.
-  Consider having students work in small groups to create their PSAs. Each group can select a common topic and create a PSA to share with the class.
-  Be available throughout the process to assist students as needed. Creating the PSA requires multiple steps and it will be important to keep students focused and on task so they can create a high-quality product.
-  Consider using the CER chart in the Student Guide to facilitate a discussion to guide students as they are crafting their PSAs.
-  Encourage students to think creatively about their PSAs. The videos will be short and students will need to capture the audience's attention quickly.

Consider showing examples (provided below) of popular PSAs to inspire your students. These PSAs are not about electricity, rather they are meant to show students how they can share a very strong message in a very short period of time. As you share, encourage students to focus on the production elements used, rather than the message itself.

Fatherhood.gov

<https://www.youtube.com/watch?v=QPwIWDA6Brs>

U.S. Department of Transportation, "You could learn a lot from a dummy."

<https://www.youtube.com/watch?v=C5h2NF2xMYI&feature=youtu.be>

Partnership for a Drug Free America, "This is your brain on drugs."

<https://www.youtube.com/watch?v=GOnENVylxPI>



*OPTIONAL SOCIAL STUDIES LESSON

Lesson Three: A FOCUS ON ENERGY CONSERVATION

Students will:



PREPARE BY LEARNING ABOUT:

- Human Interactions with renewable and non renewable resources.
- The negative consequences of being overly reliant on fossil fuels and other non renewable forms of energy.
- How life has changed since the inception of electricity — where is it now and where is it going in the future?



SELECT A TOPIC AND CREATE A MESSAGE TO INSPIRE

others to take action to seek sustainable energy options.



BE EM-POWERED TO TAKE YOUR MESSAGE INTO THE COMMUNITY

and invite others to take action to be energy efficient.

OVERVIEW: 90-120 MINUTES

Alignment to Social Studies Practices

1. Gathering, Interpreting and Using Evidence
2. Chronological Reasoning and Causation
3. Comparison and Contextualization
4. Geographic Reasoning
5. Economics and Economic Systems
6. Civic Participation

<http://www.nysed.gov/common/nysed/files/programs/curriculum-instruction/ssframework-k-8a2.pdf>

NCSS THEME 4: Geography, Humans, and the Environment (GEO)

NCSS THEME 7: Civic Ideals and Practices (CIV)

NCSS THEME 9: Science, Technology, and Innovation (TECH)

NCSS THEME 10: Global Connections and Exchange (EXCH)



FACILITATION TIPS

Activity 1: GATHER INFORMATION AND EVIDENCE



Students will explore three main areas related to human interaction with the energy consumption.



Students will use the graphic organizers to explore vocabulary terms associated with this theme (Human Interaction with energy). They should fill in the “vocabulary word map” following the directions for each phrase. They may use the internet to research the terms and teachers have the option to do it online.



Consider setting a time limit to complete the vocabulary based on age level.

Activity 2: HUMAN-ENVIRONMENTAL INTERACTION PICTURE CHART



Students will view each picture of Human-Environment Interaction on the chart.



Students should decide which type of interaction is demonstrated in the description/ picture and explain their choice. Note: there may be more than one answer for each picture but students must explain their choice.



Keep the following definitions in mind in evaluating student responses:

- Depend – people need things from the environment
- Modify – people change the environment
- Adapt – people adjust to the environment



Activity 3: LEARN THE ISSUES AND ORGANIZE YOUR THOUGHTS USING CER (CLAIM, EVIDENCE, REASONING)

If you need help organizing your thoughts, use the CER Method-Claim, Evidence and Reasoning. Watch the short video to review what that is:

https://www.youtube.com/watch?v=N_TxYZHrmpU&t=25s

Here is an example of how you can use CER to organize your thoughts:

QUESTION: Do wind turbines help the community be more energy efficient?

<p>CLAIM <i>(Write a statement that responds to the question.)</i></p>	<p>Wind turbines help the community be more energy efficient.</p>
<p>EVIDENCE <i>(Provide scientific data to support your claim. There should be enough evidence to prove your claim is correct.)</i></p>	<ul style="list-style-type: none"> • Wind turbines use wind to make electricity • Wind is a renewable resource • Wind turbines do not release pollution in the air or water • About 85% – 90% of the mass of a wind turbine is made of materials that can already be recycled • Provides electricity without burning any fuel
<p>REASONING <i>(Explain how your data proves your point? Add detail to your evidence.)</i></p>	<p>Wind turbines help the community to be more energy efficient and create electricity without adding pollution to our planet. They are used to make electricity, using wind, which is a renewable resource. Wind turbines can be made from decommissioned wind turbines, as 85–90 percent of their material gets recycled after use. People do not have to rely on a non-renewable source if they utilize the power of wind turbines.</p>



PSEG Long Island Public Service Announcement Rubric

Instructions: Each category gets a score of 1–4, 4 being the highest. If all areas are met with the highest score, a 20 is the best score that can be achieved.

Areas Assessed	Great Work 4	Good Job 3	Getting There 2	Needs More 1
EFFECTIVENESS Score _____	The viewer is inspired to make a difference and will act now	The viewer learns facts and is thinking about changing energy behavior	Not motivating the viewer to make a change	The viewer is not sure what changes regarding energy they are supposed to make
PRESENTATION Score _____	Bright, sound is great, speaks clearly, enthusiastic	Bright, sound is great, speaks clearly, lacks enthusiasm	Obvious that presenter is reading, appears nervous, not having fun	Dark background, sound quality poor, speaks too fast, hard to understand
ORIGINALITY Score _____	The audience immediately sees it is different and unique	Creative-average use of original ideas	Reflects minimal creativity-no pictures, visuals	Read a script only
MESSAGE Score _____	Energy efficiency and sustainability is the focus — electricity is mentioned	Energy issues shared but minimal learned vocabulary mentioned	Topic is too broad and too many issues mentioned	Energy and/or electricity is never mentioned
TIMING Score _____	PSA is 30–45 seconds	PSA is 46–55 seconds	PSA is 20–30 seconds	PSA is more than 55 seconds or less than 20

Name _____ Final Score _____