

**HIGH SCHOOL
TEACHER GUIDE**

I AM

EM



-Powered

www.iamempoweredpsegli.com



PSEG LONG
ISLAND



Introduction

Welcome to the **I Am EM-Powered High School Program & PSA Student Challenge**. This program offers five (5) learning LESSONS, several optional activities, a guide for "How to Create a Public Service Announcement," and a project-based learning experience. This program can be taught in the classroom, virtually or in hybrid scenarios.

The **I Am EM-Powered High School Program & PSA Project** is fully funded by PSEG Long Island and, therefore, FREE to Long Island and Rockaway educators and students.

Program Concept:

April 22, 2020 marked the 50th anniversary of Earth Day. Even after 50 years of celebrating Earth Day, there is still much to do. 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 peers, parents and teachers, along with them! Facilitating these lessons, you will inspire students to make a difference. They will learn how to use their voices and influence to educate and advocate for energy and environmental issues and organizations in order to make this world a better place now and in the future.

HOT TIP: As Stephen Covey shares in his best-selling book, *The 7 Habits of Highly Effective People*, be sure to "Begin with the end in mind." In other words, be sure to read through the 5 LESSONS and understand what the end project requires. This will help you to guide students through each LESSON which gives them everything they need to complete the PSA!



Table of Contents:

LESSON 1

Cultivate awareness about energy efficiency, renewable energy, and environmental conservation.

ACTIVITY 1: Environmental Impact Bingo

ACTIVITY 2: Energy & Environment Pre-Test

LESSON 2

Conduct research to explore some of the key issues and investigate professions and organizations that support energy efficiency, renewable energy, and environmental conservation.

ACTIVITY 1: Common Understanding of Key Concepts

ACTIVITY 2: Difference Makers Who Care About Energy Efficiency, Renewable Energy and Environmental Conservation

LESSON 3

Connect learning to personal values about energy and the environment and beliefs, as they explain why they (and others) should care.

ACTIVITY 1: What are the issues?

ACTIVITY 2: What do I value?

ACTIVITY 3: Why should I (and others) care?

LESSON 4

Construct a plan to advocate for an issue or organization related to energy or the environment that includes potential solutions.

LESSON 5

Create a Public Service Announcement (PSA) to educate and/or advocate for a specific issue or organization related to energy in the environment that includes a "call to action" for a targeted audience.

OPTIONAL ACTIVITIES:

ACTIVITY 1: Research Organizations That Make a Difference in My Community,

ACTIVITY 2: Interview Someone Who Really Cares

LESSON



CULTIVATE AWARENESS

ACTIVITY 1: *Environmental Impact Bingo*

- This activity is designed to get students' minds and bodies moving, to start conversations about how easy it is to take small actions that have a big impact on the environment and to prompt thoughtful reflection and immediate action from each student.
- Set up the classroom environment in a way that gives space for students to walk around. All students must be standing and mingling to find people to sign their Bingo cards. (Be sure that each student has a pen or pencil. Sharing will not work for this activity.)
- Add some fun by playing upbeat music when students are getting their signatures. (Suggested songs include: *Happy* by Pharrell Williams, *Walking on Sunshine* by Katrina and the Waves, and/or *With My Own Two Hands* by Ben Harper)
- There are many ways to facilitate a classroom Bingo game. This one works best if students must sign their own name on another Bingo Card. (For example, I cannot write the names of my peers in the boxes on my card. Students must write their own names in each box on my card.)
- If one student reaches "BINGO" quickly, you may continue with "Round 2" and allow the remaining students to continue until one student fills the entire card.
- When students have completed the activity, facilitate a class conversation. Ask students:
 - What do the actions listed in these boxes on the Bingo card have in common?
 - What observations can you make about your experience during this Bingo game? (i.e. What did you see? What did you hear? What did people say? Stick to observable facts.)
 - What did you find out about the students in this class? What did you find out about yourself? What did you discover (or what were you reminded of) about how your actions impact your world?



I AM EM -Powered

- Count the number of boxes that you can personally sign and write that number next to your name in the center box. How do you feel about that number? Are you satisfied or disappointed? Are you open to learning more about how you can have a positive impact in your world? Why or why not? Tell me more. (NOTE: You may want students to write their responses to this particular line of questioning and then ask for responses.)
- There will be a handful of lessons with activities that will prepare us to create a Public Service Announcement (PSA) to either advocate about an issue or for a local organization related to energy efficiency and environmental conservation. What are you most looking forward to as we prepare to create a PSA and make a difference in our community?
- After facilitating a class conversation, direct students to independently and quietly complete the *QUICK THOUGHT* section located below the Bingo Card.
- Once students have completed the *QUICK THOUGHT* section, direct students to share their responses with a partner and then invite several students to share their responses with the class. (NOTE: Be prepared to refer back to this activity when you are introducing the **PSA Project**. For example: "Remember when we started with the Bingo game? After that very short experience, you were asked to list two action items that you want to start doing OR do more often. How many of you have completed one or both of the action items you listed? How many have plans to complete one or both? When you create a PSA, you are sharing a message and creating a common experience to connect with a certain audience and lead them to take action. It's truly that simple.")



ACTIVITY 2: Energy & Environment Pre-Test

- This Pre-Test is a way to check for background knowledge and understanding. It is also designed to get students to begin to understand the collective impact of individual actions and decisions. (NOTE: Expect for most students to not know most of these answers. That is the point. Hopefully, by completing this Pre-Test, they will realize they have a lot to learn!)
 - Direct students to individually and quietly complete the Pre-Test by circling TRUE or FALSE next to each statement.
 - Allow for students to check their answers with a partner before you reveal the answers. Give them an opportunity to change any of their answers after conferring with another student.
 - As you read through each statement and reveal the answer, feel free to pause and facilitate conversations about statements that seem most surprising, shocking or interesting to your students. (This may vary from class to class).
 - After facilitating a class conversation, direct students to independently and quietly complete the QUICK THOUGHT section located below the Pre-Test.
 - Below are the answers to the quiz and the web links to find more details and talking points for each quiz question.
1. Brightening rooms with efficient LED bulbs can save households about \$100 a year, adding up national savings of around \$12.5 billion (if LEDs were universally adopted).
TRUE
(nrdc.org)
 2. More than 150 varieties of LED bulbs--the most efficient lighting choice—are on the market.
TRUE
(nrdc.org)
 3. LED bulbs use up to 90 percent less energy than older, incandescent bulbs.
TRUE
(nrdc.org)
 4. Every time the refrigerator door is opened, approximately 30% of the cold air escapes.
TRUE
(<https://atomberg.com/8-fun-facts-about-energy-conservation-that-you-should-know/>)
(<https://www.psegliny.com/saveenergyandmoney/tipsandtools/66waystosavenheit>)

I AM -Powered

5. Almost 50% percent of electricity used to power home electronics is consumed while the products are off.
FALSE
(<https://atomberg.com/8-fun-facts-about-energy-conservation-that-you-should-know/>)
6. According to the Bureau of Labor and Statistics, there are more than 3.4 million jobs in the United States related to clean energy initiatives.
TRUE
(<https://www.bls.gov/>)
(<https://www.electricchoice.com/blog/50-surprising-facts-on-energy-consumption/>)
7. The United States is the second biggest consumer of energy in the world, after China.
TRUE
(<https://www.electricchoice.com/blog/50-surprising-facts-on-energy-consumption/>)
8. A single wind turbine can create enough energy to power as many as 300 American homes.
TRUE
(<https://www.electricchoice.com/blog/50-surprising-facts-on-energy-consumption/>)
9. Agriculture, industrial processes, untreated waste and degraded lands are leading causes of pollution in freshwater systems.
TRUE
(https://www.conservation.org/priorities/fresh-water?gclid=CjwKCAiA1uKMBhAGEiwAxzvX91y7-6HeBleORAh56ppRv23E-8x0La28jviXa_ut4l16-a03f5QNohoCxCAQAvD_BwE)
10. Nearly 97 percent of all the world's water is salty or otherwise undrinkable.
TRUE
(<https://www.eekwi.org/explore/water-wonders/water-facts-and-conservation-tips>)
(www.usgs.gov/special-topics/water-science-school)
11. Many disease-battling medicines sold worldwide are derived directly from plants found in rainforests — from the cancer drug vincristine to quinine, which is used to treat malaria.
TRUE
(<https://www.conservation.org/stories/11-forest-conservation-facts-you-need-to-know>)
12. In 2018, the U.S. total primary energy consumption was about 7% of the total world consumption.
FALSE
(<https://www.eia.gov/tools/faqs/faq.php?id=87&t=1>)

I AM EM-Powered

13. Tropical forests cover roughly 10 percent of Earth's land mass but are home to at least half of all living species on the planet.

TRUE

(<https://www.conservation.org/stories/11-forest-conservation-facts-you-need-to-know>)

14. The microwave is the most energy efficient appliance in most kitchens. It uses one-third of the wattage that the average oven uses.

TRUE

(<https://www.electricchoice.com/blog/50-surprising-facts-on-energy-consumption/>)

(<https://www.psegliny.com/saveenergyandmoney/tipsandtools/66waystosave>)

15. The average total home water use for each person in the U.S. is about 50 gallons a day.

TRUE

(<https://www.eekwi.org/explore/water-wonders/water-facts-and-conservation-tips>)

16. A five-minute shower uses 10 to 25 gallons of water.

TRUE

(<https://drinktap.org/Kids-Place/The-Story-Of-Drinking-Water/Fun-facts-and-conservation-tips>)

17. Landfills are composed of approximately 35 percent packaging materials.

TRUE

(https://www.theworldcounts.com/stories/amazing_environmental_facts)

18. Bathing uses the most hot water in the average household.

TRUE

(<https://www.psegliny.com/saveenergyandmoney/tipsandtools/66waystosave>)

19. Using a dishwasher to wash dishes is more efficient than washing dishes by hand.

FALSE

(<https://www.psegliny.com/saveenergyandmoney/tipsandtools/66waystosave>)

20. Freshwater ecosystems are home to more than 100,000 known species of plants and animals, and are now one of the most endangered habitats in the world as a result of human development, pollution, and climate change.

TRUE

(<https://www.dosomething.org/us/facts/11-facts-about-endangered-species>)

LESSON

2

CONDUCT RESEARCH

ACTIVITY 1: Common Understanding of Key Concepts

- CHOOSE ONE of the four (4) variations below as you guide students to complete the chart.

VARIATION #1: Create a “Gallery Walk” on the walls of your classroom. Use poster board, flip chart paper or white boards/chalk boards to post the six questions. There should be 6 posters/locations around the room. Write one of the following questions on the top of each poster/location:

1. What is energy efficiency?
2. What is environmental conservation?
3. What is renewable energy?
4. What is a Public Service Announcement (PSA)?
5. What are some energy and environmental related careers?
6. What organizations in your community address energy and the environment?

- Invite a student to read the directions aloud to the class.
- Divide the class into six (6) teams. (Allow students to self-select or choose a fun grouping strategy.)
- Direct each team to start at one of the posters. Give 2-3 minutes for the team to write several answers on the poster.
- Direct students to work with their teams to write responses under each question on each poster.

HOT TIP: If you have different color markers, give each team a different color to write answers as they walk around the room. This will help you and the teams to refer to their responses on each poster because it will be in the same color.

- Once teams have answered each question on each poster, direct students to return to their seats.
- Go through each question and invite students to share their responses. Once teams have shared their answers, be sure that they have the correct understanding. (Refer to suggested final answers on the chart following the four variations.)
- Give students time to write a final answer in each box on the chart provided (or on a separate sheet of paper).



VARIATION #2: Assign this chart as a homework assignment. Direct students to use credible sources to define the terms and list as many careers and organizations as they can find. Review the answer with the class the next day. Invite a few students to share their responses to each question. Direct the class to edit and/or add to their answers on the chart as they listen to others. (This option is helpful if you have limited classroom time.)

VARIATION #3: Provide notes for students to copy into the charts. Invite students to share their ideas and thoughts before revealing the notes you want them to copy into the chart. (This option is helpful if you students need to practice note-taking skills. It also helps with limited classroom time.)

- Notetaking Strategy: Consider giving students different color pens/pencils so that they can use a unique color for each box.
- Notetaking Strategy: After writing the teacher-directed notes in a box, direct students to create an image or icon to represent that box. Students may draw the image/icon next to that box.

VARIATION #4: Direct students to work in pairs or trios and give them access to the Internet to find the answers. Once students complete the chart, review the answers with them as a class. (This option is helpful for students who are learning how to find info and discern sources and sites when they are researching a topic.)

- After completing the chart, direct students to independently and quietly complete the *QUICK THOUGHT* section located below the chart.
- Once students have completed the *QUICK THOUGHT* section, direct students to share their responses with a partner and then invite several students to share their responses with the class.

I AM -Powered

What is energy efficiency?

Energy efficiency simply means using less energy to perform the same task – that is, eliminating energy waste.

Energy efficiency brings a variety of benefits: reducing greenhouse gas emissions, reducing demand for energy imports, and lowering our costs on a household and economy-wide level.

Source: <https://www.eesi.org/>

What is environmental conservation?

Environmental conservation is the protection, preservation, management, or restoration of natural environments and the ecological communities that inhabit them.

Conservation is generally held to include the management of human use of natural resources for current public benefit and sustainable social and economic utilization.

Source: <https://www.longdom.org/>

Conservation: study of the loss of Earth's biological diversity and the ways this loss can be prevented. Biological diversity, or biodiversity, is the variety of life either in a particular place or on the entire planet Earth, including its ecosystems, species, populations, and genes. Conservation thus seeks to protect life's variety at all levels of biological organization.

Source: <https://www.britannica.com/science/conservation-ecology>

What is renewable energy?

Renewable energy is useful energy that is collected from renewable resources, which are naturally replenished on a human timescale, including carbon neutral sources like sunlight, wind, rain, tides, waves, and geothermal heat.

Source: https://en.wikipedia.org/wiki/renewable_energy

What is a Public Service Announcement (PSA)?

A PSA (Public Service Announcement) is a short informational clip that is meant to raise the audience's awareness about an important issue. PSAs may include interviews, dramatizations, animations and many other types of video and audio content.

Source: <https://mediacommons.psu.edu/>

Often in the form of commercials and print ads, PSAs are created to persuade an audience to take a favorable action. PSAs can create awareness, show the importance of a problem or issue, convey information, or promote a behavioral change.

Source: <https://www.govtech.com/>

What are some energy and environmental related careers?

See full list on the RESOURCE section on the website.

(NOTE: This is not an exhaustive list. Feel free to add to the list as students share ideas.)

What organizations in your community address energy and the environment?

See full list on the RESOURCE section on the website.

(NOTE: This is not an exhaustive list. Feel free to add to the list as students share ideas.)

ACTIVITY 2: Difference Makers Who Care About Energy Efficiency, Renewable Energy and Environmental Conservation

- Invite one student to read the introductory paragraph and directions.
- Ask for five student volunteers to read one of the quotes AND the short biography information about the person for whom the quote is attributed.
- Give students time to complete their responses.
- Feel free to direct students to write or type their responses.
- You may want to give extended time to complete this as a homework assignment.
- If there is time, invite students to create groups of 4-5 students and direct them to read their responses to the students in their small groups.

NOTE: There is a side box with definitions of the terms “advocacy” and “advocate.” After students share their responses to the question, “Why does energy efficiency and environmental conservation matter?,” invite a student to read the terms and definitions. Then, ask students if they think the five people quoted are advocates or not. Allow them to explain.



LESSON

3

CONNECT LEARNING TO PERSONAL VALUES

ACTIVITY 1: What are the issues?

- Invite a student to read the introductory paragraph and directions.
- Use the THINK-PAIR-SHARE method to facilitate a brainstorming session. First, give students 2 minutes to work independently and quietly as they list as many issues related to energy and the environment as they can. Then, direct students to work with a partner. Partners should share what they listed and work together to add a few more ideas. Finally, invite students to share responses with the class. Create one big list in the front of the class for students to view and reference. Students should continue to write new ideas to their brainstorming lists.
- Refer to this list for some ideas to prompt your students if they get stuck:
 - Acid rain impact on human health, wildlife and aquatic species
 - Air pollution
 - Airport noise on nearby wildlife
 - Bee pollination
 - Biodiversity (plants and animals)
 - CFCs and ozone layer depletion
 - Dead fish in local rivers and lakes
 - Deforestation
 - Depletion of natural resources
 - Emission of Greenhouse gases
 - Endangered animals
 - Energy conservation (i.e. biking/walking over driving, solar fans, etc.)
 - Food waste
 - Fossil Fuel consumption
 - Genetic modification of food
 - Green space designation in urban communities
 - Impact of pollution (air, water, soil, noise, radioactive, light and thermal) on the environment
 - Impact of urban sprawl on land use, traffic, pollution, health, etc.
 - Industrial waste impact on soil
 - Land use (urban, suburban, rural, etc.)
 - Lead in water
 - Nitrogen oxides from fertilizers
 - Non-biodegradable trash (i.e. plastic packaging, toxic e-waste, chemicals) that leach into waterways
 - Oil spills
 - Overfishing impact on natural ecosystems
 - Overgrowth of algae in local park pond
 - Plastic waste
 - Poaching problems
 - Pollution from industrial waste, sewage and pesticides
 - Recycle: plastic, clothes, rubber tires, etc.
 - Renewable energy: solar, wind, hydro energy
 - River clean-up
 - Scarcity of wildlife in park system
 - Soil degradation due to erosion, overgrazing, pollutants, monoculture planting, soil compaction, etc.
 - Soil restoration
 - Trash pick-up in the community
 - Urban runoff
 - Urban smog
 - Use of pesticides on food
 - Waste disposal
 - Water pollution
 - Water waste
 - Ways to reduce energy usage





ACTIVITY 2: What do I value?

- Invite a student to read the introductory paragraph and directions.
- Direct students to reflect upon their personal values relating to the environment and to write down their response. They can write words, phrases, sentences, bullet points, paragraphs, etc. The goal is to get them to get these values written down.
- Invite individual students to share one or more of their values with the class. As students share, encourage the rest of the class to listen and add to their own list if what they hear resonates with them.
- After students have completed their list of values, invite one student to read aloud the equation on the bottom of the page. Invite several students to share what message they think this message is attempting to convey.

ACTIVITY 3: Why should I (and others) care?

- Invite one student to read the directions aloud.
- Give students time to complete the reflection.
- Feel free to direct students to write or type their responses.
- You may want to give extended time to complete as a homework assignment.
- If there is time, invite students to create groups of 4-5 students and direct them to read their reflections to their small groups.

LESSON

CONSTRUCT A PLAN

- Invite one student to read the introductory paragraph and directions aloud.
- Give students time to read through the five (5) steps for constructing a plan.
- Invite one or more students to explain the steps “in their own words” to the class.
- Ask students if they have any questions or need clarification.
- Give students time to work in teams and construct a plan.

LESSON

CREATE A PUBLIC SERVICE ANNOUNCEMENT (PSA)

- Invite one student to read the introductory paragraph and directions aloud.
- Check for understanding and answer questions as needed.
- Direct students to work with their teams to create the PSA.
- *OPTIONAL:* If you have student teams that create a PSA to promote a local organization, encourage your students to reach out to that organization to share the final PSA.

Final Step:
COMPLETE THE ENTRY FOR THE IAE COMPETITION

Go to website:

www.iamempoweredpsegli.com/submit-psa/

OPTIONAL ACTIVITIES

OPTIONAL ACTIVITY 1: Organizations That Make a Difference in My Community

- Direct students to work in small teams (up to 3 students per team).
- Invite a student to read the introductory paragraph and directions aloud.
- Give students access to the Internet in order to view the resources tab that lists various local organizations.
- Direct each team to choose a local organization from the list provided on the resource page at www.iamempoweredpsegli.com. *(NOTE: Feel free to allow students to choose a local organization that is not on the list, as long as it is local and addresses energy or environmental issues.)*
- *OPTIONAL:* Once students have completed the information sheet about the organization, direct them to create ONE PowerPoint slide to share what they think is the most important and relevant information about that organization. Place each PowerPoint slide in a class presentation. As you show each PowerPoint slide, invite the team that created the slide to share the information with the class.

OPTIONAL ACTIVITY 2: Interview Someone Who Really Cares

- Invite a student to read the directions aloud to the class.
- Direct students to choose a career from the list provided on the resource page at www.iamempoweredpsegli.com. (NOTE: Feel free to allow students to choose a different career that is not on the list, as long as it is a career related to energy or the environment. Students could explore the local Chamber of Commerce to find specific businesses and organizations.)
- Guide students as they create interview questions.

HOT TIP: You may want to take a few moments to brainstorm with students ways to open the interview conversation before asking their questions. For example, a personal introduction and an explanation about what they are doing and why they are asking questions.

- **VARIATION 1:** If students are unable to conduct a live interview (in-person, on the phone, on a Zoom Call), suggest for them to send an email with their questions. As they craft an email, they may need to write a paragraph to introduce themselves and explain why they are reaching out with questions.
- **VARIATION 2:** If students are unable to conduct an interview, direct them to find the answers for their interview questions online. They could search for different career posts and see what the job announcement lists as the job description and candidate requirements.
- **VARIATION 3:** Schedule a guest speaker (live or virtual) to speak with your entire class about a specific career related to energy and/or the environment. Work with the class to create a set of questions to ask when your guest is sharing. Assign specific students to ask each question. Direct students to take notes during the presentation. Students may use this experience to complete the summary.
- After Step 1 is completed, direct students to write or type a summary about that specific career. Use the guiding questions provided to help with a response, but encourage students to not be limited by those questions as they summarize and analyze the career.



Developed by

