Educator Introduction

Thank you for using the CERT **Energy Generation** module in your classroom. This module links directly with the science curriculum "Essential Standards and Clarifying Objectives" for 8th grade and High School. Specifically it aligns with the Energy: Conservation and Transfer standard 8.P.2, EEn.1.1 Earth in the Universe, and EEn.2.8 Earth Systems, Structures, and Processes**.** Details of the standards addressed in this module are listed at the end of this document. The Generate Game was developed by the US Environmental Protection Agency (EPA).

Energy Generation will be taught with a homework assignment and 2 class periods.

Homework Assignment: Prior to playing the game, the teacher will assign students to teams (up to 8) prior to the assignments. Each member of the team will be given an energy source to research. The students should download the *Energy Generation Research Sheet.docx* on their tablet to complete the assignment.

Class 1: After completing the assignment, the students will share their research with the rest of their group. Students will take notes on their downloaded *Energy Generation Research Summary Sheet.docx*.

Class 2: The students will play Generate Game. All instructions and the energy generation lecture are incorporated into the videos. It is plug-and-play.

Module Contents

The module you have received contains all of the items necessary to teach Energy Generation. The full module includes the following:

- *CERT Educational Series, Energy Generation, Educator Introduction.docx*
- *CERT Educational Series, Energy Generation, Educator Introduction.mp4* video: Short instructional video for teacher to explain set-up and classroom preparation
- *CERT Educational Series, Energy Generation, Step-by-Step Generate Game Set-up Instructions.pdf:* notes to guide you during class delivery
- Classroom videos for the CERT Generate module (.mp4)
  - *CERT Educational Series, Energy Generation, Basics.mp4*
  - *CERT Educational Series, Energy Generation, EPA Generate Game.mp4*
- *CERT Educational Series, Energy Generation Research Sheet.docx*
- *CERT Educational Series, Energy Generation Research Summary Sheet.docx*
- *CERT Educational Series, Energy Generation, Quiz Question Bank.pdf*
- A Generate Game kit containing the components for 8 game set-ups for the classroom:
  - Game board and energy pieces

    - *CERT Educational Series, Energy Generation, Generate Calculation Support Sheet.xlsx* (downloadable). Sorted from lowest-to-highest cost by generator type, and for $0 and $10/metric-Ton carbon tax.
    - *CERT Educational Series, Energy Generation*, *Team Score Card.xlsx* (downloadable)
    - *CERT Educational Series, Energy Generation, Generate Scoreboard for Scoring and Ranking Teams.xlsx* (downloadable)
    - Portable mouse
    - A memory stick containing all files listed above/below
    - A notebook with all documents listed above/below
- The classroom videos above in .ppt format. These are provided to allow the educator to make variations if desired.
    - *CERT Educational Series, Energy Generation.pptx*
    - *CERT Educational Series, Energy Generation, EPA Generate Game.pptx*

Classroom Module Delivery

You need to view the "*Educator Introduction.mp4*" video that will introduce you to the Energy Generation module and the kit contents.

You can then use the "*Step-by-Step Generate Game Set-up Instructions.pdf*" to assist you with set-up and classroom instructions for the Homework, Class 1, and Class 2.

After the students have done a readout of their homework and filled in the *Energy Generation Research Summary Sheet.docx* in Class 1, you start the classroom video:
CERT Educational Series, Energy Generation, Basics.mp4. This video will reinforce the students research assignment.

When you are ready to begin Class 2, you start the classroom video:
CERT Educational Series, Energy Generation, Generate Game.mp4. The video will lead the student teams through 4 rounds of the game.

There are places in the Generate Game video where you may want to pause the video and have discussion. These places are marked with a "sun icon," along with a laser sound. When you see and hear these markers, use the mouse to pause the video, and have a discussion with your class. Then resume the video.

Module Feedback

When you have finished using the module we ask you to provide feedback using this link.

Thank you for using the CERT Educational Series. Visit our CERT website to discover our other energy education module offerings.

If you have questions please contact us at CERT@ncat.edu or 336-256-2406. We appreciate the opportunity to provide you with our energy education content, and we also look forward to working with you to define other modules for your use.

Kindly,

Dr. Gregory Monty, Dr. Vicki Foust, and Elizabeth Keele, MEd
Center for Energy Research and Technology (CERT)

Guilford County School Curriculum Standards

Essential Standard (8th Grade)

8.P.2 Energy Conservation and Transfer

Explain the environmental implications associated with the various methods of obtaining, managing, and using energy resources.

Clarifying Objective:

- 8.P.2.1 Explain the environmental consequences of the various methods of obtaining, transforming and distributing energy.

- 8.P.2.2 Explain the implications of the depletion of renewable and non-renewable energy resources and the importance of conservation.

Essential Standard (Earth and Environmental Science – EES)

EEn.1.1 Earth in the Universe

Explain the Earth's role as a body in space

Clarifying Objective:

- EEn.1.1.3 Explain how the sun produces energy which is transferred to the Earth by radiation

- EEn.2.2 Understand how human influences impact the lithosphere.

- EEn.2.2.2 Compare the various methods humans use to acquire traditional energy sources (such as peat, coal, oil, natural gas, nuclear fission, and wood).

EEn.2.8 Earth Systems, Structures, and Processes

Evaluate human behaviors in terms of how likely they are to ensure the ability to live sustainably on Earth.

Clarifying Objective:

- EEn.2.8.1 Evaluate alternative energy technologies for use in North Carolina