



Thank you for inviting our assembly to your school. Now that students understand how electricity is generated they hopefully have a deeper appreciation for the electricity they use. We also hope it empowered them to make choices to reduce their electricity use. Use this guide with your class to build on the concepts introduced during the assembly.

Review Questions

What is a renewable resource? “Renewable” means that you harness something from the Earth that never gets used up or taken away. These energy sources can be replenished over and over again through natural and/or human processes in a short amount of time. In addition to hydropower, other examples include solar, wind, geothermal and biomass.

What is an example of a non-renewable resource? “Non-renewable” means that you take something out of the Earth that can’t be put back or made again. These energy sources can be used up because they exist in fixed amounts. Once they are used up, they are gone forever or it takes an extremely long amount of time to make them again. Examples include oil, natural gas, coal and uranium.

During the assembly, what were the renewable inputs of “The System” that can be used to generate electricity? Water (hydropower) and wind were both shown during the assembly. Geothermal and biomass were also mentioned.

Which source didn’t need to use “The System” and instead generates electricity directly? The sun because solar panels can be placed on a rooftop generating electricity for the home or business it is attached to.

Why is it important to conserve electricity? Every energy source has some associated problems (personality flaws). Conserving electricity saves money, reduces environmental impacts, conserves natural resources and reduces the need for additional sources of energy.

Extension Activities

- ▶ **Hold an Energy Source Expo:** Divide students into groups and assign each group an energy source to research. Each group should create a display to share their findings. See the Energy Kids website under Web Resources for a great place to get students started.
- ▶ Make a large earth out of paper and stick it up on the wall. Each time a student uses their common conservation sense to conserve electricity (or really any resource) at school or at home, have them write it on a sticky note. Stick it on the earth and see if your class can fill it with lots of positive actions! Hang it up where other students at your school can see it to celebrate Earth Day, which is Saturday, April 22, this year.

Did you Know?

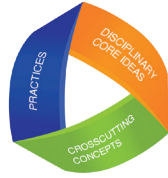
- ✓ Over 74% of Snohomish County PUD’s electricity is generated by hydropower.
- ✓ About 20% of total U.S. electricity generation was from renewable energy sources.*
- ✓ Approximately 27% of the total U.S. hydroelectricity generation was generated in Washington State.*

(*US Energy Information Administration statistics for 2021)

Web Resources

- 🔗 Learn about all types of renewable energy sources using the Energy Kids website: www.eia.gov/kids/.
- 🔗 Visit the PUD’s Career-Connected Learning webpage for PUD career videos and to take a virtual field trip to our local Woods Creek Hydro Project: www.snopud.com/CCL.

WA State Learning Standards Targeted



NEXT GENERATION SCIENCE STANDARDS (NGSS)

Performance Expectations

4-PS3-2. Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.

4-ESS3-1. Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.

5-ESS3-1. Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.

- ▶ Communicate scientific and /or technical information orally and/or in written formats, including various forms of media and many include tables, diagrams and charts.
- ▶ Use a model to test cause and effect relationships or interactions concerning the functioning of a natural or designed system.

- ▶ Energy can be moved from place to place by moving objects or through sound, light or electric currents.
- ▶ Energy can also be transferred from place to place by electric currents, which can then be used locally to produce motion, sound, heat, or light. The currents may have been produced to begin with by transforming the energy of motion into electrical energy.
- ▶ The expression "produce energy" typically refers to the conversion of stored energy into a desired form for practical use.

- ▶ A system is a group of related parts that make up a whole and can carry out functions its individual parts cannot.
- ▶ A system can be described in terms of its components and their interactions.
- ▶ Energy can be transferred in various ways and between objects.
- ▶ Engineers improve existing technologies or develop new ones to increase their benefits, decrease known risks, and meet societal demands.

WASHINGTON STATE SOCIAL STUDIES STANDARDS

Economics: E1 – Understands that people have to make choices between wants and needs and evaluate the outcomes of those choices.

Geography: G1 – Understands the physical characteristics, cultural characteristics, and location of places, regions, and special patterns on the Earth's surface.

Geography: G2 – Understands human interaction with the environment.

WASHINGTON STATE ENVIRONMENTAL & SUSTAINABILITY STANDARDS

ESE Standard 3 – Students develop and apply the knowledge, perspective, vision, skills, and habits of mind necessary to make personal and collective decisions and take actions that promote sustainability.