Objective | The students will conduct their own research over the different types of energy and present which type is the best to be utilized for their community.

**TEKS**

### §112.34. Biology
(c) Knowledge and skills.
(3) Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions within and outside the classroom. The student is expected to:

(A) in all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student;
(B) communicate and apply scientific information extracted from various sources such as current events, news reports, published journal articles, and marketing materials;
(C) draw inferences based on data related to promotional materials for products and services;
(D) evaluate the impact of scientific research on society and the environment;
(E) evaluate models according to their limitations in representing biological objects or events; and
(F) research and describe the history of biology and contributions of scientists.

### §112.36. Earth and Space Science
(c) Knowledge and skills.
(12) Solid Earth. The student knows that Earth contains energy, water, mineral, and rock resources and that use of these resources impacts Earth's subsystems. The student is expected to:

(A) evaluate how the use of energy, water, mineral, and rock resources affects Earth's subsystems;
(B) describe the formation of fossil fuels, including petroleum and coal;
(4) Earth in space and time. The student knows how Earth-based and space-based astronomical observations reveal differing theories about the structure, scale, composition, origin, and history of the universe. The student is expected to:

(A) evaluate the evidence concerning the Big Bang model such as red shift and cosmic microwave background radiation and current theories of the evolution of the universe, including estimates for the age of the universe;
(B) explain how the Sun and other stars transform matter into energy through nuclear fusion; and
(C) investigate the process by which a supernova can lead to the formation of successive generation stars and planets.
(14) Fluid Earth. The student knows that Earth's global ocean stores solar energy and is a major driving force for weather and climate through complex atmospheric interactions. The student is expected to:
(A) analyze the uneven distribution of solar energy on Earth's surface, including differences in atmospheric transparency, surface albedo, Earth's tilt, duration of insolation, and differences in atmospheric and surface absorption of energy;
(B) investigate how the atmosphere is heated from Earth's surface due to absorption of solar energy, which is re-radiated as thermal energy and trapped by selective absorbers; and
(C) explain how thermal energy transfer between the ocean and atmosphere drives surface currents, thermohaline currents, and evaporation that influence climate.

§112.37. Environmental Systems
(c) Knowledge and skills.
(6) Science concepts. The student knows the sources and flow of energy through an environmental system. The student is expected to:
(A) define and identify the components of the geosphere, hydrosphere, cryosphere, atmosphere, and biosphere and the interactions among them;
(B) describe and compare renewable and non-renewable energy derived from natural and alternative sources such as oil, natural gas, coal, nuclear, solar, geothermal, hydroelectric, and wind.

§112.33. Astronomy
(c) Knowledge and skills.
(8) Science concepts. The student knows the reasons for the seasons. The student is expected to:
(A) recognize that seasons are caused by the tilt of Earth's axis;
(B) explain how latitudinal position affects the length of day and night throughout the year;
(C) recognize that the angle of incidence of sunlight determines the concentration of solar energy received on Earth at a particular location; and
(13) Science concepts. The student knows the scientific theories of cosmology. The student is expected to:
(A) research and describe the historical development of the Big Bang Theory, including red shift, cosmic microwave background radiation, and other supporting evidence;
(B) research and describe current theories of the evolution of the universe, including estimates for the age of the universe; and
(C) research and describe scientific hypotheses of the fate of the universe, including open and closed universes and the role of dark matter and dark energy.

§112.35. Chemistry
(c) Knowledge and skills.
(11) Science concepts. The student understands the energy changes that occur in chemical reactions. The student is expected to:
(A) understand energy and its forms, including kinetic, potential, chemical, and thermal energies;
(B) understand the law of conservation of energy and the processes of heat transfer;
(C) use thermochemical equations to calculate energy changes that occur in chemical reactions and classify reactions as exothermic or endothermic;

<table>
<thead>
<tr>
<th>STAAR</th>
<th>17 Which molecule synthesized by plants is a major source of energy for cellular processes in both plants and animals?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A Wax</td>
</tr>
<tr>
<td></td>
<td>B Nucleic acid</td>
</tr>
<tr>
<td></td>
<td>C Glucose</td>
</tr>
<tr>
<td></td>
<td>D Chlorophyll</td>
</tr>
</tbody>
</table>

24 The energy pyramid below shows the energy made available by producers.

Based on the energy flow between trophic levels in an energy pyramid, how much energy would be expected to be found at the secondary consumer level in this pyramid?

F 100 joules
G 500 joules
H 1,000 joules
J 50 joules
| Struggling Learners | The struggling students will need to only research one energy.  
|                    | The struggling students will only need to describe how this energy could be beneficial. |
| Advanced Learners  | The advanced learners will research three energies.  
|                    | The advanced learners will present, individually, one additional energy. |

**Helpful Links**
- [Ocean Energy](#)  
- [Oil History](#)

## Engage
The students will be put into groups of three - four. When they are walking in the door they will be given a popsicle stick that is labeled 1, 2, 3, 4, 5, and 6. This will be the quickest way to separate the friends, and put them into groups without bias. When they walk in the room they will have a bell ringer that will have several different types of energy that they will need to research.

## Explore
The students will need to research at least two different types of energy that can be used in their own community. They will need to explain why this energy can be used. How the energy can be used. How a device will break down the energy to better the community.

## Explain
Students will create a presentation and present their energy to the class. They will also need to each say a sentence or two about their energy. Each person in the group must participate and give accurate details about the energy.

## Elaborate
The students will present their energy to the classroom. The will need to describe why this energy is beneficial to the community. The will need to explain how it can be used. They will need to explain what will be used in conjunction, if anything, to use the energy.
| Evaluate | This will be the time that students can have a reteaching moment. The evaluate section will be conducted after everyone presents their energy. This is because the students will be the ones answering the audience’s questions about their energy. |