**Energy Career Academy Framework: Grade 9**

***Themes: Introduction to Energy and the Energy Industry/High Performance***

***Credential: CSM High Performance Certificate***

**MODULE 1: Science of Energy**

Curriculum Source: NEED \*

<https://the-need-project.myshopify.com/collections/secondary-guides/products/science-of-energy-kit>

Total Instructional Time: 6 hours

1. Explain the main things energy enables us to do.

2. Differentiate between forms and sources of energy.

3. Describe how energy is stored in the major energy sources.

4. List the forms of energy and give examples.

5. Explain energy transformations.

6. Trace the energy flow of a system.

**MODULE 2: Introduction to Energy Curriculum**

Curriculum Source: NEED

<https://the-need-project.myshopify.com/collections/secondary-guides/products/energy-infobooks>

<https://the-need-project.myshopify.com/collections/secondary-guides/products/energy-infobook-activities>

Total Instructional Time: 4 hours

1. Define potential and kinetic energy.

2. Identify the forms of potential and kinetic energy.

3. Describe the sources of energy.

4. Describe the term renewable energy.

5. Describe the term nonrenewable energy.

**MODULE 3: Renewable Energy Sources**

Curriculum Source: NEED

<https://the-need-project.myshopify.com/collections/secondary-guides/products/energy-infobooks>

<https://the-need-project.myshopify.com/collections/secondary-guides/products/energy-infobook-activities>

Total Instructional Time: 21 hours

1. Define biomass, geothermal, hydropower, solar, wind, and hydrogen as sources of renewable energy. 2. Describe how biomass, geothermal, hydropower, solar, wind, and hydrogen generate energy.

**MODULE 4: Nonrenewable Energy Sources**

Curriculum Sources: NEED

<https://the-need-project.myshopify.com/collections/secondary-guides/products/energy-infobooks>

<https://the-need-project.myshopify.com/collections/secondary-guides/products/energy-infobook-activities>

NEED Energy Expos Guide

<https://the-need-project.myshopify.com/collections/secondary-guides/products/energy-expos>

Total Instructional Time: 19 hours

1. Define coal, natural gas, petroleum, uranium, and propane as sources of non-renewable energy.

2. Describe how coal, natural gas, petroleum, uranium, and propane generate energy.

**MODULE 5: Electricity**

Curriculum Source: NEED

<https://the-need-project.myshopify.com/collections/secondary-guides/products/energy-infobooks>

<https://the-need-project.myshopify.com/collections/secondary-guides/products/energy-infobook-activities>

Total Instructional Time: 6 hours

1. Describe how electricity is transported from the plant to the consumer.

2. Describe issues about electricity use.

3. Describe emerging technologies for electricity use.

**MODULE 6: Efficiency and Conservation**

Curriculum Source: NEED

<https://shop.need.org/collections/secondary-guides/products/school-energy-managers> (Lessons 4, 5, 6)

Total Instructional Time: 6 hours

1. Explain the relative efficiencies of incandescent, halogen, fluorescent, and light emitting diode lighting.

2. Determine the life cycle cost for each of the types of lighting found in schools and evaluate the data to determine the most economic choice.

3. Explain the impacts one energy-consuming system might have on another.

4. Justify upgrade choices based on efficiency and payback period data.

5. Evaluate the energy use of a school building at a basic, grade-appropriate level. I

6. Interpret data and make recommendations for energy savings based on that data.

**MODULE 7: Energy Careers Curriculum**

Source: Teachers Section of Get Into Energy/Get Into STEM

<https://stem.getintoenergy.com/teacher-resources/>

Total Instructional Time: 4 hours

1. Identify energy career job positions in the energy industry.

2. Describe each energy career position.

3. Identify entry requirements for each energy career position.

4. Conduct a presentation on an energy career of your choice using PPT.

**MODULE 8: CSM High Performance Course and Credential/CSM+ Courses**

Curriculum source: CSMlearn

<https://www.csmlearn.com/>

Contact: Miriam Goldberg, miriam@csmlearn.com

Total Instructional Time: varies by student; dedicated time to CSM course and CSM+ courses: 60 hours

*\*Cost: $39 per student, if teacher(s) at the school can serve in the coaching role.*

1. Apply key quantitative skills, such as mental math, basic statistical concepts, measurement, and more. 2. Appraise information from a variety of forms of complex informational text and graphs.

3. Analyze problems using a variety of advanced problem-solving strategies.

4. Develop new skills independently through reading; and develop and formulate strategies to solve quantitative problems, including quantitative reasoning and problem-solving.

\*National Energy Education Development project.