# ENERGY CAREER ACADEMY FRAMEWORK GRADE 9

**THEME:** Introduction to Energy and the Energy Industry/High Performance
**CREDENTIALS:** CMS High Performance Certificate

## MODULE 1: Science of Energy

**Curriculum Source:** NEED*
**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

- Energy Infobooks available at NEED(1)
- Enerrgy Infobook Activities available at NEED(2)

**Total instructional and testing time:** 4 hours

1) Define potential energy and kinetic energy.
2) Identify the forms of potential energy and kinetic energy.
3) Describe the term sources of energy.
4) Describe the term renewable energy.
5) Describe the term non-renewable energy.

## MODULE 3: Renewable Energy Sources

**Curriculum Source:** NEED

- Energy Infobooks available at NEED(1)
- Enerrgy Infobook Activities available at NEED(2)

**Total instructional and testing time:** 21 hours

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

## MODULE 4: Non-renewable Energy Sources

**Curriculum Source:** NEED

- Energy Infobooks available at NEED(1)
- Enerrgy Infobook Activities available at NEED(2)
- Energy Expos Guide available at NEED Energy Expos Guide

**Total instructional and testing 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

- Energy Infobooks available at NEED(1)
- Enerrgy Infobook Activities available at NEED(2)

**Total instructional and testing time:** 6 hours

1) Describe how electricity is transported from the plant to the consumer.
2) Describe the issues about electricity use.
3) Describe emerging technologies for electricity use.

## MODULE 6: Efficiency & Conservation

**Curriculum Source:** NEED (Lessons 4, 5, and 6)
Teacher Guide available at NEED
Student Guide available at NEED
**Total instructional and testing time:** 6 hours

1) Explain the relative efficiencies of incandescent, halogen, fluoresecent, and light emitting diode lighting.
2) Determine the life cycle cost for each of the types of lighting found in schools. 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.
6) Interpret data and make recommendations for energy savings based on the data.

## MODULE 7: Energy Careeers Curriculum

**Curriculum Source:** Teachers Section of Get Into Energy/Get Into STEM, available at stem.getintoenergy.com
**Total instructional and testing 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 eusing PPT.

## MODULE 8: CSM High Performance Course and Credenttial/CSM+ Courses

**Curriculum Source:** CSMlearn, available at csmlearn.com

- Contact Mirriam Goldbererg at miriam@csmlearn.com
- Cost isapproximately $39 per student, if teacher(s) at the school can serve in the coaching role.

**Total instructional and testing time:** Approximateley 60 hours dedicated time to CSM course and CSM+ courses, but will vary by student.

1) Aply key quantitative skills, such as mental math, basic statistical conceptst, measurement, and more.
2) Appraise information from a variety of foms of complex informatitonal text and graphs.
3) Analyze problems using a variety of advanced problem-solving strategies.
4) Develop new skills independently though reading; and develop and formulate strategies to solve quantatitive problems, including quantitative and problem-solivng.

*National Energy Education Development project.