



Career and Technical Education (CTE) Middle School Competencies

Career Cluster:

M57-Energy & Natural Resources

May 2026



M57-Energy & Natural Resources

Powering Progress and Preserving Our Planet

Cluster Definition: "The Energy & Natural Resources Career Cluster spans careers in traditional and renewable fuel production, power generation and energy conversion, utilities, environmental preservation, ecological research, and resource extraction. These industries focus on efficient and responsible resource management, including conservation, transmission, distribution and storage, to minimize environmental impacts and meet global energy needs. Careers in this Cluster are dedicated to creating a sustainable future, innovating cleaner energy solutions, and preserving our planet's natural resources for generations to come."

Sub-Clusters:

- Clean & Alternative Energy
- Conservation & Land Management
- Ecological Research & Development
- Environmental Protection
- Resource Extraction
- Utilities

More details can be found at [Energy & Natural Resources - Advance CTE](#)



Middle School Competencies

The MS Instructional Design form will be used to communicate the delivery model of the program, which will also be entered into the Career and Technical Education Information System (CTEIS).

Competency Code	M57 Energy & Natural Resources Middle School Competency Statements
M1	Evaluate industry safety protocols by identifying common energy and natural resources hazards (e.g., electrical exposure near power lines, chemical handling, or fieldwork risks in rugged terrain) and implementing proper use of personal protective equipment (PPE), safe work zones, and clear signage.
M2	Explain the roles and responsibilities of professionals across Energy & Natural Resources sub-clusters—such as energy engineers, power plant operators, wind turbine technicians, conservation rangers, and environmental protection specialists—and how they collaborate from generation and transmission to resource stewardship.
M3	Analyze sustainable resource practices by comparing clean and alternative energy systems (e.g., solar, wind, hydro, nuclear) with conventional fuel production, considering efficiency, storage, transmission, and environmental impact.
M4	Apply basic measurement, mapping, and data-collection techniques to interpret simple site maps, monitor environmental indicators (e.g., water quality, wildlife presence), or estimate energy output for classroom simulations.
M5	Differentiate between types of energy and natural resources equipment and tools—including solar PV arrays, wind turbines, grid distribution components, and field sampling instruments—and describe routine maintenance and safety procedures that support reliability.
M6	Create small-scale projects—such as model wind turbines, solar-powered circuits, or simple habitat conservation plans—using safe practices, teamwork, and iterative problem-solving to simulate real-world energy generation and land management processes.
M7	Assess environmental protection policies, utility standards, and conservation guidelines to understand how compliance ensures safe, ethical, and sustainable energy production and natural resource management.
M8	Explore careers in the Energy and Natural Resources Career Cluster and connect the opportunities to personal interests, strengths, and future goals.

Advance CTE Career Ready Practices

Career Ready Practices, built on a meta-analysis of over 30 different listings of general professional skills developed by industry and educational institutions, represent the skills needed to succeed in the modern workplace. These practices should be embedded across the pre-kindergarten to workforce continuum. Refer to the [Advance CTE Career Ready Practices](#) document for more detailed information.

Competency Code	Career Ready Practices
CRP 01	Lead as a contributing and professional employee
CRP 02	Communicate clearly, effectively, and with reason
CRP 03	Think critically to make sense of problems and persevere in solving them
CRP 04	Collaborate productively while using cultural and global competencies
CRP 05	Use digital skills and technologies to enhance productivity and make data-informed decisions
CRP 06	Remain resilient in a changing workplace and world of work
CRP 07	Manage time and space effectively
CRP 08	Demonstrate a creative and innovative mindset
CRP 09	Act as a good steward of organizational and personal finances and resources
CRP 10	Navigate an education and career path aligned to strengths, work style, interests, and goals
CRP 11	Consider the environmental and social impacts of decisions
CRP 12	Apply appropriate academic and technical skills