

Colorado CTE

# **Energy (2015): Grades 9, 10, 11, 12, Higher Education**

Adopted 2015

**Demonstrate adequate technical knowledge & skills** ENCL.01

- 01. Understand the essential knowledge and skills common to all pathways in the Energy and Utilities sector.** ENCL.01.01
- a. Select, use, adjust, and maintain tools, equipment, systems, and products common to the school energy and utilities instructional program in a safe, effective, and appropriate manner. ENCL.01.01.A
  - b. Interpret the common energy and power technologies. ENCL.01.01.B
  - c. Identify the sources and systems of power and energy. ENCL.01.01.C
  - d. Diagram the energy resources currently in use or under research. ENCL.01.01.D
  - e. Explain the basic theory of energy conversion processes and energy transmission systems and know their common applications. ENCL.01.01.E
  - f. Know the fundamentals of energy extraction processes and conserving and storing systems. ENCL.01.01.F
  - g. Use service resources, including print and electronic retrieval systems, to diagnose and solve technical problems. ENCL.01.01.G
  - h. Recognize the essential elements of a clearance and tagging program. ENCL.01.01.H
  - i. Understand the basic principles and proper selection and use of equipment designed for working in confined spaces and equipment designed for working at heights in a safe and appropriate manner. ENCL.01.01.I
  - j. Interpret material safety data sheets and locate information on hazardous materials. ENCL.01.01.J
  - k. Execute the fundamentals of lubricants and lubrication. ENCL.01.01.K
  - l. Understand the basic principles associated with the use of fasteners and the skills required in good bolting practices. ENCL.01.01.L
  - m. Research the need to participate in sector-related professional improvement activities, SkillsUSA, other career technical education leadership and skill associations, and related career pathway specializations. ENCL.01.01.M
  - n. Comprehend complex details and specifications from both technical documentation and presentations. ENCL.01.01.N
  - o. Examine the need and process to obtain and maintain industry-standard, technical certifications and affiliations with professional organizations, including the American Gas Association and the Institute of Electrical and Electronic Engineers, Incorporated. ENCL.01.01.O

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**02. Explore the history of energy.** ENCL.01.02

- a. Explain the physical geography related to various forms of energy. ENCL.01.02.A
- b. Describe the geology of energy (i.e., how it all began). ENCL.01.02.B
- c. Identify the geographic locations of key energy hot spots for various energy types and the geopolitical challenges presented by their locations. ENCL.01.02.C
- d. Examine the political, social, economic and environmental roles of energy in the development of world history. ENCL.01.02.D
- e. Explore the current integration status of alternative and/or renewable energy. ENCL.01.02.E