

EMPOWERING ENERGY CAREERS

An Energy Career Cluster Resources Guide



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AN ENERGY CAREER CLUSTER RESOURCES GUIDE

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- Careers in Energy
- Employability Skills
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- Energy Trades Textbooks

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About the Resource Center

The Resource Center for CareerTech Advancement is a division of the Oklahoma Department of Career and Technology Education, located in Stillwater, Oklahoma. The staff of the Center research educational materials and best practices to disseminate throughout the state CareerTech system. The Resource Center also provides support in identifying curriculum, assessments, professional development and other instructional delivery resources on request.

Website addresses were accurate during the development and production of this product. However, websites are subject to change; the Resource Center for CareerTech Advancement takes no responsibility for a site's address or content. The inclusion of a website does not constitute an endorsement of that site's other pages, products, or owners.

The positions or viewpoints in the resources collected here reflect their authors and source organizations. They do not represent the Resource Center for CareerTech Advancement, the Oklahoma Department of Career and Technology Education, or any employee of the state agency. No endorsement of organizations or viewpoints is implied by inclusion in this collection or on this web page.

The Oklahoma Department of Career and Technology Education does not discriminate on the basis of race, color, national origin, sex/gender, age, disability, or veteran status.

Websites are subject to change.

Empowering Energy Careers

The purpose of the Oklahoma Energy Workforce Consortium is to develop a talent pipeline for one of the state's top industries. Key to realizing this purpose is to make Oklahoma students aware of the career opportunities in the energy industry and the multiple career pathways available to them. As a leading industry that offers high-paying jobs, the energy industry is vital to sustaining the continued growth of the state. It also offers the potential for virtually unlimited personal growth. The resources in this document can serve as a catalyst for teachers in providing educational experiences that spotlight the brilliance in Oklahoma's energy sector.

Working with Websites

Websites are subject to change. The organization may no longer exist, a resource may no longer be supported, or an organization may have restructured its web pages. In some cases, the website address (URL) is still accurate, but does not work when you click on the link in a document.

If a website address appears to be no longer accurate:

- Try entering (or pasting) the website address directly into the browser window, instead of clicking on the link provided in this book.
- Search for the title of the referenced resource online to locate the new address.

Energy Basics

- 1. TITLE:** WindWise Curriculum
SOURCE: KidWind Project
LOCATION: <https://www.kidwind.org/activities/windwise>
DESCRIPTION: WindWise Education is our comprehensive curriculum exploring the dynamic field of wind energy and gives teachers the tools to teach 6th-12th grade students about this timely and critical energy resource. It is an advanced, interdisciplinary wind energy curriculum that can be incorporated into a wide range of subjects. WindWise has five conceptual areas: Energy, Wind, Turbines, Wildlife and Siting. Each unit includes a variety of lesson plans, handouts, support and background materials.
- 2. TITLE:** REcharge Labs Activities
SOURCE: KidWind Project
LOCATION: <https://www.kidwind.org/activities/recharge-labs>
DESCRIPTION: Resources to allow all learners (K-College) to more creatively explore wind and solar power by blending the art and science around renewable energy.
- 3. TITLE:** *Oil and Natural Gas*
SOURCE: Society of Petroleum Engineers
LOCATION: <https://energy4me.org/find-resources/classroom-materials/oil-and-natural-gas-book/>
DESCRIPTION: A hard-bound book from SPE and DK Publishing. Energy4me donates classroom materials for teachers, including a copy of the *Oil and Natural Gas* book, career brochures, and smart energy choice bookmarks.
- 4. TITLE:** Energy Basics
SOURCE: National Renewable Energy Laboratory
LOCATION: <https://www.nrel.gov/research/learning.html>
DESCRIPTION: Definitions, descriptions, and resources about energy sources, including biomass, geothermal, hydrogen, hydropower, ocean, solar, vehicles and fuel, and wind.
- 5. TITLE:** energy KIDS
SOURCE: U.S. Energy Information Administration
LOCATION: <https://www.eia.gov/kids/index.php>
DESCRIPTION: Energy sources, history of energy, games and activities, lesson plans, and more.
- 6. TITLE:** Wind Facts at a Glance
SOURCE: American Wind Energy Association
LOCATION: <https://www.awea.org/wind-101/basics-of-wind-energy/wind-facts-at-a-glance>
DESCRIPTION: Wind capacity by state, cumulative U.S. wind capacity, wind industry jobs, and more data.

- 7. TITLE:** Petroleum Museums
SOURCE: American Petroleum Institute
LOCATION: <https://www.api.org/oil-and-natural-gas/consumer-information/in-the-classroom/online-education-resources/petroleum-museums>
DESCRIPTION: A list of museums throughout the United States.
- 8. TITLE:** Shale Gas 101
SOURCE: U.S. Department of Energy
LOCATION: <https://www.energy.gov/fe/shale-gas-101>
DESCRIPTION: A webpage developed to answer the questions that people have about shale gas and hydraulic fracturing (or fracking). The information provided explains the basics, including what shale gas is, where it's found, why it's important, how it's produced, and challenges associated with production.
- 9. TITLE:** Liquefied Natural Gas (LNG)
SOURCE: U.S. Department of Energy
LOCATION: <https://www.energy.gov/fe/science-innovation/oil-gas/liquefied-natural-gas>
DESCRIPTION: A webpage developed to answer the questions that people have about liquefied natural gas.
- 10. TITLE:** Wisconsin Energy Institute Educational Materials
SOURCE: Wisconsin Energy Institute
LOCATION: <https://energy.wisc.edu/education/for-educators/educational-materials>
DESCRIPTION: The Wisconsin Energy Institute develops classroom and non-formal educational materials for students in elementary school up to the undergraduate level. The materials are oriented around a number of core themes, including inquiry-based learning, scientific thought and analysis, and the conservation of matter and energy.
- 11. TITLE:** *AGA Playbook*
SOURCE: American Gas Association
LOCATION: <https://www.aga.org/news/aga-playbook/>
DESCRIPTION: A profile of natural gas as an energy choice.
- 12. TITLE:** Hydrogen Tools Best Practices
SOURCE: H2Tools
LOCATION: <https://h2tools.org/bestpractices/best-practices-overview>
DESCRIPTION: The Pacific Northwest National Laboratory developed the Hydrogen Tools Portal through support from the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy (EERE). The goal of the Portal is to support implementation of the practices and procedures that will ensure safety in the handling and use of hydrogen in a variety of fuel cell applications. The portal brings together and enhances the utility of a variety of tools and web-based content on the safety aspects of hydrogen and fuel cell technologies to help inform those tasked with designing, approving or using systems and facilities, as well as those responding to incidents.

- 13. TITLE:** Little Bits
SOURCE: OERB
LOCATION: <https://oerbhomeroom.com/>
DESCRIPTION: K-2 curriculum resources from OERB (Oklahoma Energy Resources Board). *Little Bits* has eight lessons that cover reading, social studies, mathematics, and science standards while teaching about sound vibrations, force, physical properties and well site safety. This hands-on curriculum makes it fun for students in grades kindergarten through second to learn basic concepts about earth science, physical science and math through hands-on activities. To acquire the curriculum, teachers must attend a free, one-day professional development workshop. Educators receive a \$50 stipend for attending. Educators completing the workshop receive six (6) professional development hours.
- 14. TITLE:** Fossils to Fuel
SOURCE: OERB
LOCATION: <https://oerbhomeroom.com/>
DESCRIPTION: Grade 3-6 curriculum resources from OERB (Oklahoma Energy Resources Board). *Fossils to Fuel* is a hands-on science curriculum to help students learn about energy sources, geology, density, matter, porosity and sound waves. These eight lessons also teach math concepts like measurements, mass and volume, data organization, decimals and fractions. To acquire the curriculum, teachers must attend a free, one-day professional development workshop. Educators receive a stipend for attending. Educators completing the workshop receive six (6) professional development hours.
- 15. TITLE:** Fossils to Fuel 2
SOURCE: OERB
LOCATION: <https://oerbhomeroom.com/>
DESCRIPTION: Grade 3-6 curriculum resources from OERB (Oklahoma Energy Resources Board). Students studying *Fossils to Fuel 2* will team with Petro Pete, OERB's energy mascot, and learn how to use a dichotomous key to identify Oklahoma rocks. Students will also use an animated geologic computer model to "look" below the surface of Oklahoma, use viscosity tubes to study flow rate, use ordered pairs and a coordinate grid to locate Petro Pete, and study rocks, crude oil, porosity, pulley systems, cohesion and recycling. To acquire the curriculum, teachers must attend a free, one-day professional development workshop. Educators receive a stipend for attending. Educators completing the workshop receive six (6) professional development hours.
- 16. TITLE:** Petro Active
SOURCE: OERB
LOCATION: <https://oerbhomeroom.com/>
DESCRIPTION: Grade 6-9 curriculum resources from OERB (Oklahoma Energy Resources Board). *Petro Active* teaches middle school students about the formation and recovery of oil and natural gas and includes classroom energy experiments. In seven lessons, *Petro Active* covers science topics such as geologic timescales and processes, wavelength, amplitude, frequency, distillation, seismology and conservation. To acquire the curriculum, teachers must attend a free, one-day professional

development workshop. Educators receive a stipend for attending. Educators completing the workshop receive seven (7) professional development hours.

17. TITLE: Rockin' Ratios

SOURCE: OERB

LOCATION: <https://oerbhomeroom.com/>

DESCRIPTION: Grade 5-8 curriculum resources from OERB (Oklahoma Energy Resources Board). *Rockin' Ratios* has three lessons covering mapping, tangrams, slope, algebraic reasoning, ratios and proportional relationships. Students will practice these concepts and learn more about how land descriptions are used in the energy industry, how the concept of slope is used in directional drilling and will complete the curriculum by designing their own storage tanks by calculating volume and surface area. To acquire the curriculum, teachers must attend a free, one-day professional development workshop. Educators receive a stipend for attending. Educators completing the workshop receive six (6) professional development hours.

18. TITLE: Core Energy

SOURCE: OERB

LOCATION: <https://oerbhomeroom.com/>

DESCRIPTION: Grade 9-12 curriculum resources from OERB (Oklahoma Energy Resources Board). *Core Energy* includes four programs. Students use activity-based modules in science, math, social studies and language arts. By using activities that require critical thinking, students are preparing for success on standardized tests like the ACT. To acquire the curriculum, teachers must attend a free, one-day professional development workshop. Educators receive a stipend for attending. Educators completing the workshop receive professional development hours.

19. TITLE: Energy Explained

SOURCE: U.S. Energy Information Administration

LOCATION: <https://www.eia.gov/energyexplained/>

DESCRIPTION: A website that explains topics relating to energy, including nonrenewable sources, renewable sources, and secondary sources.

20. TITLE: NEED Materials

SOURCE: National Energy Education Development Project

LOCATION: <https://www.need.org/>

DESCRIPTION: Energy curriculum for all grades primary through secondary. Curriculum is organized by grade level and by topic: science of energy, energy sources, biomass, coal, geothermal, hydropower, uranium, natural gas, petroleum, propane, solar, wind, electricity, transportation, efficiency and conservation, climate science, and energy in society. NEED materials are designed to meet the needs of teachers and students, support the Next Generation Science Standards, and are correlated to all state science standards and the Common Core State Standards. Modules and materials embody NEED's Kids Teaching Kids pedagogy by encouraging students to teach others.

- 21. TITLE:** STEM Resource Library
SOURCE: Idaho National Laboratory
LOCATION: <https://inl.gov/inl-initiatives/partnering-with-inl/k-12-stem/>
DESCRIPTION: Flipbooks, available in English and Spanish, along with links to useful resources for educators, students and families. Includes STEM lesson plans and handouts.
- 22. TITLE:** *The Harnessed Atom*
SOURCE: U.S. Department of Energy
LOCATION: <https://www.energy.gov/ne/information-resources/stem-resources>
DESCRIPTION: *The Harnessed Atom* is a middle school science, technology, engineering, and math curriculum extension that focuses on nuclear science and energy. It is designed to provide students with accurate, unbiased, and up-to-date information on the roles that energy and nuclear science play in our lives. The curriculum includes essential principles and fundamental concepts of energy science. Includes student and teachers' editions. Teacher PowerPoint lessons cover the following topics:
- Lesson 1 - Energy Basics
 - Lesson 2 - Electricity Basics
 - Lesson 3 - Atoms and Isotopes
 - Lesson 4 - Ionizing Radiation
 - Lesson 5 - Fission
 - Lesson 6 - Atoms to Electricity
 - Lesson 7 - Waste from Nuclear Power Plants
 - Lesson 8 - Concerns
 - Lesson 9 - Energy Decision-making
- 23. TITLE:** "How Plastic is made from Natural Gas"
SOURCE: PennState Extension
LOCATION: <https://extension.psu.edu/how-plastic-is-made-from-natural-gas>
DESCRIPTION: Article from PennState Extension.
- 24. TITLE:** *Ocean Energy*
SOURCE: U.S. Department of the Interior
LOCATION: <https://www.energy.gov/sites/prod/files/2013/07/f2/OceanEnergyMMS.pdf>
DESCRIPTION: The U.S. Department of the Interior's Minerals Management Service developed this teacher's guide about the many energy resources found in, over, and under the ocean. Includes sections on petroleum, natural gas, and methane hydrates. Includes hands-on activities for ten days of instruction on these topics: Exploring Oil Seeps; Drilling for Oil in the Ocean; A Stationary Oil Rig; A Floating Oil Rig; Exploring Currents; Exploring Wave Energy; and Exploring Wind Energy.
- 25. TITLE:** energy4me
SOURCE: Society of Petroleum Engineers
LOCATION: <http://energy4me.org/>
DESCRIPTION: Website provides instructional content about energy and sustainability, lesson plans for primary through secondary students, and energy games and activities.

Websites are subject to change.

26. TITLE: *Contextualized Math for the Energy Industry*

SOURCE: Center for Energy Workforce Development

LOCATION: <http://www.cewd.org/curriculum/contextualized-math.php>

DESCRIPTION: The selected topics are those covered on pre-employment tests in the energy industry. The modules do not provide direction on how to teach the concepts--only word problems that use concepts. All of the questions in the modules are presented in the context of specific occupations so students not only learn better, but they gain awareness of careers in the energy industry. Includes instructor and student guides. Math concepts covered include the following:

- Basic Operations
- Forms of Fractions
- Operations with Fractions
- Converting Fractions to Percentages
- Ratios and Proportions
- Conversions (English & Metric)
- Use of Formulas

27. TITLE: Troops to Energy Jobs Work-Ready Boot Camp

SOURCE: Center for Energy Workforce Development

LOCATION: <http://www.cewd.org/curriculum/additional-resources.php>

DESCRIPTION: The Troops to Energy Jobs Work Ready Boot Camp program is designed to help those who have recently left the military make a smooth transition to the civilian work world, with the goal of them gaining employment in the energy industry. This program, if offered in full, would be 10 eight-hour days, or two business weeks. Upon completion of the boot camp, the veterans would take the WorkKeys assessments and the EEI pre-employment test.

28. TITLE: Out of the Rock

SOURCE: National Energy Foundation

LOCATION: <https://nef1.org/>

DESCRIPTION: Out of the Rock (OOTR) is the National Energy Foundation's brand of mining and mineral education. Since 1994, teacher workshops, mine tours and a premier suite of curriculum centered around mining and minerals have made OOTR an effective resource for introducing mining concepts to students. Programs and curriculum are available for kindergarten through 12th grade teachers and their students. OOTR approaches mining and minerals education with exciting, hands-on learning strategies.

29. TITLE: Ford Next Generation Learning

SOURCE: Ford Motor Company Fund

LOCATION: <https://fordnglcurriculum.teachable.com/>

DESCRIPTION: The free Ford PAS curriculum includes 20 modules on a range of topics, including the following:

- We All Run On Energy
- Energy from the Sun

- The Nuclear Revolution
- Calculating Your Future (personal finance)
- Energy for the Future
- Reverse Engineering
- Data to Knowledge
- From Concept to Consumer
- Careers, Companies, and Communities

30. TITLE: TryEngineering

SOURCE: IEEE

LOCATION: <https://tryengineering.org/teachers/>

DESCRIPTION: TryEngineering's lesson plans help teach engineering concepts for kids ages 4-18. TryEngineering.org connects educators to more than 130 free hands-on, low-cost, engineering lesson plans. Each lesson plan targets specific age ranges and aligns with education standards to allow teachers and students to apply engineering principles in the classroom. Educators have access to all of the resources they need to teach engineering and the tips and tricks to keep their students engaged.

31. TITLE: Petroleum Industry Overview

SOURCE: Extractives Hub

LOCATION: <https://www.extractiveshub.org/topic/view/ID/30>

DESCRIPTION: This topic material explains the traditional stages and elements of oil and gas industry; the upstream, midstream and downstream sectors, from a contemporary perspective, including an overview of the current and future challenges for the petroleum sector and recommendations for the policy makers.

32. TITLE: Clean Energy Career Maps

SOURCE: U.S. Department of Energy

LOCATION: <https://www.energy.gov/eere/education/map-career-clean-energy>

DESCRIPTION: Interactive maps showing the spectrum of careers in bioenergy, fuel cells, wind, and solar.

33. TITLE: All Energy Topics

SOURCE: Student Energy

LOCATION: <https://www.studentenergy.org/topics/>

DESCRIPTION: Tutorials about all types of energy.

34. TITLE: *Electrical Science Fundamentals Handbook*

SOURCE: U.S. Department of Energy

LOCATION: <https://www.standards.doe.gov/standards-documents/1000/1011-bhdbk-1992-v1>

DESCRIPTION: The handbook includes information on alternating current (AC) and direct current (DC) theory, circuits, motors, and generators; AC power and reactive components; batteries; AC and DC voltage regulators; transformers; and electrical test instruments and measuring devices.

35. TITLE: *Mathematics Fundamentals Handbook*

SOURCE: U.S. Department of Energy

LOCATION: <https://www.standards.doe.gov/standards-documents/1000/1014-bhdbk-1992-v1>

DESCRIPTION: The handbook includes a review of introductory mathematics and the concepts and functional use of algebra, geometry, trigonometry, and calculus. Word problems, equations, calculations, and practical exercises that require the use of each of the mathematical concepts are also presented.

36. TITLE: *Mechanical Science Fundamentals Handbook*

SOURCE: U.S. Department of Energy

LOCATION: <https://www.standards.doe.gov/standards-documents/1000/1018-bhdbk-1993-v1>

DESCRIPTION: The handbook includes information on diesel engines, heat exchangers, pumps, valves, and miscellaneous mechanical components.

37. TITLE: *Safety on the Job*

SOURCE: Oklahoma Department of Career and Technology Education

LOCATION: <https://www.okcareertech.org/educators/resource-center/teacher-trainer-tools>

DESCRIPTION: Each section in this guide addresses a top cause of injury or illness on the job by describing hazards and presenting ways to work safely. Topics include:

- Recognizing the Need for Safety On the Job
- Lifting and Moving Materials
- Using Tools and Ladders
- Using Personal Protective Equipment (PPE)
- Working with Machines
- Working with Hazardous Substances
- Working around Electricity
- Working in Heat and Cold
- Coping with Shiftwork
- Responding to Injury or Illness
- Preventing Transportation Incidents
- Managing Anger and Preventing Violence
- Preventing Accidents and Injuries at Work

38. TITLE: *Oil and Gas Well Drilling and Servicing eTool*

SOURCE: U.S. Department of Labor

LOCATION: <https://www.osha.gov/SLTC/etools/oilandgas/index.html>

DESCRIPTION: This eTool identifies common hazards and possible solutions to reduce incidents that could lead to injuries or fatalities.

39. TITLE: *U.S. Energy Storage Operational Safety Guidelines*

SOURCE: Energy Storage Association

LOCATION: <https://energystorage.org/thought-leadership/esa-corporate-responsibility-initiative-u-s-energy-storage-operational-safety-guidelines/>

DESCRIPTION: The purpose of these Guidelines is to: (1) guide users to current codes and standards that support the safe design and planning, operations, and decommissioning of grid-connected energy storage systems, and (2) present many primary recommendations which can be used in hazard reduction and mitigation. It is not intended to provide an exhaustive list of guidelines for all operational hazards that could arise. ESA also published a more detailed white paper in September

2019 addressing one subset of hazards, *Operational Hazard and Risk Management: Lithium-Ion and Thermal Events*. Another related ESA CRI product is a template *Emergency Response Plan* written for energy storage site owners and operators to use in developing their own emergency response plans that suit site and application specifics and hazards. None of these documents fully address cybersecurity or hazards which may be encountered during decommissioning; these will require their own white papers and guidelines.

- 40. TITLE:** U.S. Electrical Codes and Regulations by State
SOURCE: *IAEI Magazine*
LOCATION: <https://iaeimagazine.org/magazine/nec-code-adoption/united-states/>
DESCRIPTION: A profile of the electrical codes and standards in force in each state.
- 41. TITLE:** *Identifying Barriers and Pathways for Success for Renewable Energy Development on American Indian Lands*
SOURCE: U.S. Department of Energy, Sandia National Laboratories
LOCATION: <https://www.energy.gov/indianenergy/downloads/identifying-barriers-and-pathways-success-renewable-energy-development>
DESCRIPTION: This paper presents the results of an expert elicitation of 24 tribal energy experts from federal, tribal, academic, and private industry backgrounds to identify barriers and opportunities for federally recognized tribes in the lower 48 states.
- 42. TITLE:** Oklahoma State Profile and Energy Estimates
SOURCE: U.S. Energy Information Administration
LOCATION: <https://www.eia.gov/state/?sid=OK>
DESCRIPTION: Data about energy production and consumption in Oklahoma.
- 43. TITLE:** Grant Information and Resources for Teachers
SOURCE: Oklahoma Gas & Electric
LOCATION: https://www.oge.com/wps/portal/oge/about-us/community/educationalResources!/ut/p/z1/lZDBC0JAGISfpSfY-dfV1uPq1qpLmIVoewlPIpR1iJ4 lToEaTqn 4dvmGGYzVzffPs2ubR3frmMvwnF5xlYZBYQbucDhzKC7lw1EQmEKx6AxwxUsEzZMOpYqItEUYeEp-5RX5j-QbKal34e01pJOb5MSKFhfI5LAMqjNZkt0cOyWf6xwE3Xa9ibioCBh9gYuJv4MeG_1rcr-WgGl3arI5WyoXR/dz/d5/L2dBISEvZ0FBIS9nQSEh/
DESCRIPTION: Educational programs for teachers and students.

Multimedia

- 44. TITLE:** Energy 101 videos
SOURCE: U.S. Department of Energy
LOCATION: <https://www.energy.gov/eere/education/education-resources>
DESCRIPTION: Learn the fundamentals behind renewable energy and energy efficiency.

- 45. TITLE:** Tour a Wind Turbine
SOURCE: U.S. Department of Energy
LOCATION: <https://www.energy.gov/videos/tour-wind-turbine>
DESCRIPTION: A look from inside a wind turbine.
- 46. TITLE:** The Power of Natural Gas
SOURCE: ExxonMobil
LOCATION: <https://energyfactor.exxonmobil.com/news/power-of-natural-gas/>
DESCRIPTION: A multi-part tutorial on the uses of natural gas and its place within the energy industry.
- 47. TITLE:** Careers in Engineering videos
SOURCE: energy4me
LOCATION: <https://energy4me.org/find-resources/careers-energy/>
DESCRIPTION: Videos about the day-to-day work of engineers and why the individuals profiled decided to become an engineer.
- 48. TITLE:** Career Profile Videos
SOURCE: CITGO
LOCATION: <https://www.fuelingeducation.com/stem-career-videos>
DESCRIPTION: Video profiles of CITGO professionals.
- 49. TITLE:** Shell Energy Podcast
SOURCE: Shell Energy
LOCATION: <https://www.shell.com/inside-energy/the-energy-podcast.html>
DESCRIPTION: Podcast episodes on various topics.
- 50. TITLE:** LNG: 101 Series
SOURCE: ConocoPhillips
LOCATION: <https://lnglicensing.conocophillips.com/lng-101-series/>
DESCRIPTION: Video titles include “Liquefaction” and “Heat Exchangers.”
- 51. TITLE:** We Lead Webcast Series Library
SOURCE: GRID Alternatives
LOCATION: <https://gridalternatives.org/what-we-do/workforce-development/women-in-solar/webcasts/archive>
DESCRIPTION: Videos of discussions with women working in every aspect of the solar industry, from construction to tech to sales and marketing. These discussions cover a range of topics to help individuals understand the challenges in a rapidly growing industry and gain valuable career insights.

- 52. TITLE:** Classroom Poster: Shale Gas and Hydraulic Fracturing
SOURCE: U.S. Department of Energy
LOCATION:
https://www.energy.gov/sites/prod/files/2016/07/f33/InDepth%20Shale%20Fracking%20Poster%20%282016%29_0.pdf
DESCRIPTION: A full-color poster to download.
- 53. TITLE:** Oil in everyday life
SOURCE: International Association of Oil & Gas Producers
LOCATION: <https://www.iogp.org/oil-in-everyday-life/>
DESCRIPTION: Infographic.
- 54. TITLE:** Creating an Industry Career Map
SOURCE: ACT
LOCATION: <https://www.act.org/content/act/en/workforce-solutions/readyforworkpodcast/episodes/interactive-career-map-paths-joe-sarubbi.html>
DESCRIPTION: Joe Sarubbi from the Interstate Renewable Energy Council shares why and how IREC created an interactive career map for the solar energy and climate control industries.

Careers in Energy

- 55. TITLE:** Get Into Energy
SOURCE: Center for Energy Workforce Development
LOCATION: <http://getintoenergy.com/>
DESCRIPTION: Get Into Energy was designed and launched by the Center for Energy Workforce Development (CEWD) to build awareness among students, teachers, military veterans, transitioning workers, and others about the career opportunities available in the energy industry.
- 56. TITLE:** Careers in Engineering videos
SOURCE: energy4me
LOCATION: <https://energy4me.org/find-resources/careers-energy/>
DESCRIPTION: Videos about the day-to-day work of engineers and why the individuals profiled decided to become an engineer.
- 57. TITLE:** Clean Energy Career Maps
SOURCE: U.S. Department of Energy
LOCATION: <https://www.energy.gov/eere/education/map-career-clean-energy>
DESCRIPTION: Interactive maps showing the spectrum of careers in bioenergy, fuel cells, wind, and solar.

- 58. TITLE:** Careers in Climate Control Technology Map
SOURCE: California Community Colleges Chancellor's Office
LOCATION: <https://www.hvaccareemap.org/>
DESCRIPTION: Developed by the Interstate Renewable Energy Council in conjunction with Santa Rosa Junior College and a panel of subject matter experts from across the HVAC/R industry.
- 59. TITLE:** *U.S. Energy and Employment Report*
SOURCE: NASEO and EFI
LOCATION: <https://www.usenergyjobs.org/2019-report>
DESCRIPTION: The *U.S. Energy and Employment Report* (USEER) is an annual report, based on a survey administered to over 30,000 employers across 53 different energy technologies. Originally published by the U.S. Department of Energy (DOE), the USEER was adopted in 2018 by the Energy Futures Initiative (EFI) and the National Association of State Energy Officials (NASEO) under the identical, federally-approved protocols as previous editions. The USEER survey is designed to supplement Federal Bureau of Labor Statistics (BLS) employment data to provide a deeper and more complete understanding of the following sectors of the economy: Electric Power Generation; Fuels Production; Transmission, Distribution, and Storage; Energy Efficiency, and Motor Vehicles. For the first time, the 2019 USEER includes wage data by sector.
- 60. TITLE:** *The Wind Energy Workforce in the United States: Training, Hiring, and Future Needs*
SOURCE: National Renewable Energy Laboratory
LOCATION: <https://www.nrel.gov/docs/fy19osti/73908.pdf>
DESCRIPTION: To better understand the wind industry workforce, hiring needs, and educational pathways, researchers surveyed wind industry employers and educational institutions that offered degrees or certificates in wind energy or renewable energy with some coursework dedicated to wind.
- 61. TITLE:** A&R Solar Careers Flowchart
SOURCE: A&R Solar
LOCATION: <https://www.seia.org/jobs>
DESCRIPTION: A flowchart to help individuals find the right fit for a career in the solar industry.
- 62. TITLE:** We Lead Webcast Series Library
SOURCE: GRID Alternatives
LOCATION: <https://gridalternatives.org/what-we-do/workforce-development/women-in-solar/webcasts/archive>
DESCRIPTION: Videos of discussions with women working in every aspect of the solar industry, from construction to tech to sales and marketing. These discussions cover a range of topics to help individuals understand the challenges in a rapidly growing industry and gain valuable career insights.

- 63. TITLE:** Women & Minorities in the Oil & Natural Gas Industry
SOURCE: API
LOCATION: <https://www.api.org/news-policy-and-issues/american-jobs/women-minorities-in-oil-industry>
DESCRIPTION: Resources from the American Petroleum Institute, including the *Oil & Gas Career Guide*.
- 64. TITLE:** *Wind Energy: A Gender Perspective*
SOURCE: International Renewable Energy Agency
LOCATION: <https://www.irena.org/publications/2020/Jan/Wind-energy-A-gender-perspective>
DESCRIPTION: This brief tracks the presence of women across the wind energy value chain. Based on a survey of more than a thousand individuals and organizations, it examines female representation, gender-inclusive policies, and perceptions of gender bias in the industry.
- 65. TITLE:** *Energy Efficiency Jobs in America*
SOURCE: E2
LOCATION: <https://e2.org/reports/energy-efficiency-jobs-in-america-2019/>
DESCRIPTION: The 2019 *Energy Efficiency Jobs in America* report includes a 7-page national summary and individual factsheets for all 50 U.S. states and the District of Columbia that include more detailed findings including job totals for every congressional and legislative district, industry and technology breakdowns, and maps of every state's top counties.
- 66. TITLE:** Career Profile Videos
SOURCE: CITGO
LOCATION: <https://www.fuelingeducation.com/stem-career-videos>
DESCRIPTION: Video profiles of CITGO professionals.
- 67. TITLE:** Green Careers
SOURCE: U.S. Bureau of Labor Statistics
LOCATION: <https://www.bls.gov/green/greencareers.htm>
DESCRIPTION: The Green Career Information staff within the Employment Projections program produces career information on green jobs. The information available for occupations includes: wages, expected job prospects, what workers do on the job, working conditions, and necessary education, training, and credentials.
- 68. TITLE:** On the grid: Careers in energy
SOURCE: U.S. Bureau of Labor Statistics
LOCATION: <https://www.bls.gov/careeroutlook/2008/fall/art02.pdf>
DESCRIPTION: Feature article from *Occupational Outlook Quarterly*.
- 69. TITLE:** Green Growth
SOURCE: U.S. Bureau of Labor Statistics, *Career Outlook*
LOCATION: <https://www.bls.gov/careeroutlook/2018/data-on-display/green-growth.htm>
DESCRIPTION: Employment projections in environmentally focused occupations.

- 70. TITLE:** Architecture and Engineering Occupations
SOURCE: U.S. Bureau of Labor Statistics
LOCATION: <https://www.bls.gov/ooh/architecture-and-engineering/home.htm>
DESCRIPTION: Information from the *Occupational Outlook Handbook*.
- 71. TITLE:** *Strategies for Solar Workforce Development*
SOURCE: Solar Training Network
LOCATION: <https://www.americansolarworkforce.org/resources/>
DESCRIPTION: This toolkit addresses information gaps centered around themes of workforce development and work-based learning. With an implementation guide, case studies, and best practices, it outlines actionable, collaborative solutions for the industry to better align education with evolving workforce needs.
- 72. TITLE:** *National Solar Jobs Census*
SOURCE: The Solar Foundation
LOCATION: <https://www.thesolarfoundation.org/national/>
DESCRIPTION: Annual report on the size and scope of the American solar workforce.
- 73. TITLE:** *U.S. Solar Industry Diversity Study*
SOURCE: The Solar Foundation
LOCATION: <https://www.thesolarfoundation.org/diversity/>
DESCRIPTION: Report on diversity, inclusion, and equity in the solar industry. It includes new data on wages, advancement, and career pathways for women and people of color.
- 74. TITLE:** *Diversity Best Practices Guide for the Solar Industry*
SOURCE: Solar Energy Industries Association and The Solar Foundation
LOCATION: <https://www.seia.org/research-resources/diversity-best-practices-guide-solar-industry>
DESCRIPTION: This guide is designed to assist companies with the practical application and implementation of diversity and inclusion programs and initiatives.
- 75. TITLE:** *Sustainable Energy in America Factbook*
SOURCE: The Business Council for Sustainable Energy
LOCATION: <https://www.bcse.org/publications/>
DESCRIPTION: Documents the transformation of the US energy system and the growing contributions of sustainable energy technologies over the previous year. Includes employment data by energy sector.

Employability Skills

- 76. TITLE:** *Skills to Pay the Bills: Mastering Soft Skills for Workplace Success*
SOURCE: U.S. Department of Labor
LOCATION: <https://www.dol.gov/agencies/odep/topics/youth/transition/soft-skills>

Websites are subject to change.

DESCRIPTION: Skills to Pay the Bills is a curriculum focused on teaching workforce readiness skills to youth, including youth with disabilities. Created for youth development professionals as an introduction to workplace interpersonal and professional skills, the curriculum is targeted for youth ages 14 to 21 in both in-school and out-of-school environments. The basic structure of the program is comprised of modular, hands-on, engaging activities that focus on six key skill areas: communication, enthusiasm and attitude, teamwork, networking, problem solving and critical thinking, and professionalism.

77. TITLE: *Career Focus Magazine*

SOURCE: Oklahoma Department of Career and Technology Education

LOCATION: <https://www.okcareertech.org/educators/resource-center/employability-and-adult-basic-education-resources>

DESCRIPTION: *Career Focus* is a career exploration and preparation guide. This 32-page, full-color magazine combines essential guidance with web activities and “skill builder” opportunities to help prepare users for college and the workplace.

78. TITLE: *Employability Guide*

SOURCE: Oklahoma Department of Career and Technology Education

LOCATION: <https://www.okcareertech.org/educators/resource-center/employability-and-adult-basic-education-resources>

DESCRIPTION: This 30-page guide describes eight skills that employers want, why they want those skills, and how job seekers can build and demonstrate each skill.

79. TITLE: *Let’s Talk: A Guide to Resolving Workplace Conflicts*

SOURCE: Alberta Human Services

LOCATION: <https://alis.alberta.ca/tools-and-resources/content/products/let-s-talk-a-guide-to-resolving-workplace-conflicts/>

DESCRIPTION: The conflict resolution methods presented are helpful for employees and employers of large, medium and small organizations, whether it's a private sector company or a not-for-profit association. Contains information on how to handle situations internally and where to get outside help.

80. TITLE: *Creating Presentations and Delivering Presentations*

SOURCE: Oklahoma Department of Career and Technology Education

LOCATION: <https://www.okcareertech.org/educators/resource-center/teacher-trainer-tools>

DESCRIPTION: Units of instruction covering presentation concepts including researching and preparing informative and persuasive presentations; guidelines for presenting speeches, tool-based presentations, and extemporaneous speaking; the difference between paralanguage and body language; and techniques for question-and-answer sessions.

Glossaries and FAQs

- 81. TITLE:** Understanding Energy: FAQ
SOURCE: Constellation
LOCATION: <https://www.constellation.com/energy-101/energy-choice/common-energy-terms.html>
DESCRIPTION: Questions and answers about common energy concepts, including:
- Understanding Energy
 - Understanding Energy Sources
 - Understanding the Energy Grid
 - Understanding Energy Suppliers and Utilities
 - Understanding Energy Regulations
 - Understanding Energy Units
 - Understanding Energy Infrastructure
 - Understanding Energy Demand
 - Understanding Energy Markets
 - Understanding Energy Choice
 - Understanding Bills and Payments
- 82. TITLE:** Glossary
SOURCE: U.S. Energy Information Administration
LOCATION: <https://www.eia.gov/tools/glossary/>
DESCRIPTION: A-Z glossary that can also be browsed by fuel groups.
- 83. TITLE:** Natural Gas Industry Glossary
SOURCE: American Gas Association
LOCATION: <https://www.aga.org/natural-gas/glossary/>
DESCRIPTION: A-Z glossary of industry terms.
- 84. TITLE:** “Upstream vs. Downstream Oil & Gas Operations: What’s the Difference?”
SOURCE: Investopedia
LOCATION: <https://www.investopedia.com/ask/answers/060215/what-difference-between-upstream-and-downstream-oil-and-gas-operations.asp>
DESCRIPTION: A blog post from Investopedia.

Frameworks, Standards and Assessments

- 85. TITLE:** *Energy Literacy: Essential Principles and Fundamental Concepts for Energy Education*
SOURCE: U.S. Department of Energy
LOCATION: <https://www.energy.gov/eere/education/energy-literacy-essential-principles-energy-education>
DESCRIPTION: A framework that identifies seven Essential Principles and a set of Fundamental Concepts to support each principle. The guide does not seek to identify all areas of energy understanding, but rather to focus on those that are essential for all citizens K-Grade. It presents energy concepts that, if understood and applied, will help individuals and communities make informed energy decisions.

86. TITLE: *Climate Literacy: The Essential Principles of Climate Science*

SOURCE: U.S. Global Change Research Program

LOCATION: <https://www.globalchange.gov/browse/educators>

DESCRIPTION: The Essential Principles of Climate Science presents information that is deemed important for individuals and communities to know and understand about Earth's climate, impacts of climate change, and approaches to adaptation or mitigation. Principles in the guide can serve as discussion starters or launching points for scientific inquiry. The guide aims to promote greater climate science literacy by providing this educational framework of principles and concepts. The guide can also serve educators who teach climate science as a way to meet content standards in their science curricula.

87. TITLE: North American Board of Certified Energy Practitioners

SOURCE: Same.

LOCATION: <https://www.nabcep.org/>

DESCRIPTION: NABCEP offers certifications and credentials for skilled professionals, specialists and those new to working in the areas of photovoltaics, solar heating, and small wind technologies. Available resources for educators include the following:

- *PV Installation Professional Job Task Analysis*
- *PV Design Specialist Job Task Analysis*
- *PV Technical Sales Job Task Analysis*
- *PV Associate Job Task Analysis*
- *PV System Inspector Job Task Analysis*
- *NABCEP Career Pathways Brochure*
- *PV Installer Specialist Job Task Analysis*
- *Small Wind Associate Learning Objectives*

88. TITLE: Study Guides

SOURCE: CareerTech Testing Center

LOCATION: <https://www.okcareertech.org/educators/assessments-and-testing/testing/study-guides>

DESCRIPTION: The CareerTech Testing Center (CTTC) works closely with instructors, industry representatives and credentialing entities to identify and develop assessments and assessment preparation materials that are aligned with recognized industry standards. Study guides help students prepare for the assessments. Each study guide includes information about the assessments within a content area, the standards upon which each assessment is based, test plans, practices questions and test-taking strategies. Many study guides also include a crosswalk to instructional materials that may be used during instruction or when studying for assessments. CTTC assessments are directly aligned to assessments needed to obtain credentials that are required and/or valued by industry. Available assessments and study guides include the following:

- Commercial/Industrial Electrician's Assistant
- Residential Electrician's Assistant
- Electrical/Electronic Mechanic
- HVACR Technician
- Heavy Equipment Mechanic
- Industrial Maintenance Mechanic
- Heavy Equipment Operator
- Job Seeking & Retention Skills
- Wind Turbine Technician
- Workplace Readiness Skills

- 89. TITLE:** List of NFPA Codes and Standards
SOURCE: National Fire Protection Association
LOCATION: <https://www.nfpa.org/Codes-and-Standards/All-Codes-and-Standards/List-of-Codes-and-Standards>
DESCRIPTION: NFPA publishes more than 300 consensus codes and standards intended to minimize the possibility and effects of fire and other risks. NFPA codes and standards, administered by more than 250 Technical Committees comprising approximately 8,000 volunteers, are adopted and used throughout the world.
- 90. TITLE:** Solar Codes and Standards
SOURCE: Solar America Board for Codes and Standards
LOCATION: <http://www.solarabcs.org/codes-standards/index.html>
DESCRIPTION: The Solar America Board for Codes and Standards (Solar ABCs) collaborates and enhances the practice of developing, implementing, and disseminating solar codes and standards. The Solar ABCs provides formal coordination in the planning and revision of separate, though interrelated, solar codes and standards. The Solar ABCs is a centralized repository for collection and dissemination of documents, regulations, and technical materials related to solar codes and standards.
- 91. TITLE:** ISO Standards for use in the oil and gas industry
SOURCE: International Association of Oil & Gas Producers
LOCATION: <http://www.iogp.org/wp-content/uploads/2016/12/Standards-Issued-2017.pdf>
DESCRIPTION: An infographic with a list of standards.

Teaching Skills

- 92. TITLE:** *Good Teaching Matters: Five Teaching Practices to Improve the Quality of a Training Course*
SOURCE: Interstate Renewable Energy Council
LOCATION: <https://irecusa.org/good-teaching-matters-five-teaching-practices-to-improve-the-quality-of-a-training-course/>
DESCRIPTION: A compilation from a series on important practices in teaching.
- 93. TITLE:** Solar Energy Education and Training Best Practices
SOURCE: Interstate Renewable Energy Council
LOCATION: <https://irecusa.org/workforce-education/training-resources/best-practices-the-series/>
DESCRIPTION: A seven-part compendium of best practices.
- 94. TITLE:** *Developing Modules for Self-Paced Learning: A Handbook for Teachers*
SOURCE: Oklahoma Department of Career and Technology Education
LOCATION: <https://www.okcareertech.org/educators/resource-center/competency-based-education-cbe>
DESCRIPTION: This handbook offers a framework for teachers who develop self-paced learning modules for their CareerTech courses. Topics include accessibility, copyright and fair use,

organization, planning, grading rubrics, testing, and more. Useful profiles, guidelines, and checklists help you create an effective self-paced learning module in either digital or print format.

95. TITLE: Competency-Based Education Resources

SOURCE: Oklahoma Department of Career and Technology Education

LOCATION: <https://www.okcareertech.org/educators/resource-center/competency-based-education-cbe>

DESCRIPTION: Free tools from the Resource Center for CareerTech Advancement, including the following:

- Overview of Competency-Based Curriculum Essentials (PowerPoint)
- Personalized Learning and Competency-Based Education (Resources Profile)
- A Recipe for Achievement Using Competency-Based Instruction (handout)
- Curriculum Review Rubric (handout)

96. TITLE: Facilitating Adult Learning

SOURCE: Oklahoma Department of Career and Technology Education

LOCATION: <https://www.okcareertech.org/educators/resource-center/teacher-trainer-tools>

DESCRIPTION: Free resources from the Resource Center for CareerTech Advancement, including the guides *Understanding Adult Learners* and *Managing the Instructional Environment* and the PowerPoint presentation *Facilitating Adult Learning*.

97. TITLE: *Special Populations Resource Guide*

SOURCE: Oklahoma Department of Career and Technology Education

LOCATION: <https://www.okcareertech.org/educators/career-and-academic-connections/special-populations-special-needs-resources>

DESCRIPTION: Guidelines for teaching students.

Energy Trades Textbooks

98. TITLE: NCCER Resources

SOURCE: NCCER-Pearson

LOCATION: <http://www.nccer.org/shop>

DESCRIPTION: Instructional materials on a wide range of topics, including the following:

- Electrical
- Field Safety
- Heavy Equipment Operation
- HVAC
- Industrial Maintenance Mechanic
- Introduction to the Pipeline Industry
- Pipeline Field and Control Center Operations
- Power Industry Fundamentals
- Power Line Worker
- Project Management
- Project Supervision
- Solar Photovoltaics
- Wind Energy

Websites are subject to change.

99. TITLE: Cengage Resources

SOURCE: Cengage

LOCATION: <https://www.cengage.com/>

DESCRIPTION: Courses and resources on a wide range of topics, including the following titles:

- *The Complete HVAC Lab Manual*
- *Delmar's Standard Textbook of Electricity*
- *Electrical Essentials for Powerline Workers*
- *Electrical Safety*
- *Electrical Transformers and Rotating Machines*
- *Electrical Wiring Industrial*
- *Engineering Communication*
- *The Guidebook for Linemen and Cablemen*
- *Illustrated Guide to the National Electrical Code*
- *Industrial Electricity*
- *Introductory Technical Mathematics*
- *Power System Analysis and Design*
- *Sustainable Energy*
- *Technical Drawing for Engineering Communication*
- *The Trade Technician's Soft Skills Manual*

100. TITLE: ATP Resources

SOURCE: American Technical Publishers

LOCATION: <http://www.atplearning.com/>

DESCRIPTION: Instructional materials for career and technology education, including the following titles:

- *Boiler Operator's Workbook*
- *Circuit Breakers: A Technician's Guide to Low- and Medium-Voltage Circuit Breakers*
- *Conduit Bending and Fabrication*
- *Effective Leadership Skills for Construction Field Leaders*
- *Electrical Principles and Practices*
- *Electrical Safety: A Practical Guide to OSHA and NFPA 70E*
- *Electrical Systems*
- *Essential Teaching Skills*
- *HVAC and Refrigeration Systems*
- *Industrial Maintenance and Troubleshooting*
- *Industrial Mechanics*
- *Instructional Analysis and Course Development*
- *Lineworker Rigging Practices*
- *Occupational Safety and Health*
- *Photovoltaic Systems*
- *Practical Math*
- *Printreading*
- *Rigging, Hoisting, and Signaling Practices*
- *Solar Water Heating Systems: Fundamentals and Installation*
- *Technician Tool Set with Online Resources*
- *Test Instruments and Applications*
- *Transformer Principles and Applications*

101. TITLE: Goodheart-Willcox Resources
SOURCE: Goodheart-Willcox Publishers
LOCATION: <https://www.g-w.com/college-career>
DESCRIPTION: Instructional materials for career and technology education, including the following titles:

- *Applied Electricity and Electronics*
- *Career Success: The Attitude Advantage*
- *Electricity*
- *Energy, Power, and Transportation Technology*
- *Industrial Maintenance and Mechatronics*
- *Math for HVACR*
- *Modern Commercial Wiring*
- *Print Reading for HVACR*
- *Print Reading for Industry*
- *Soft Skills for the Workplace*

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