ENERGY

Virginia's 17th Career Cluster

WHY IS THE CREATION OF AN ENERGY CAREER CLUSTER IN VIRGINIA IMPORTANT?

- The Energy industry is a vital part of Virginia's economy
- A 17th cluster introduces students to the industry, provides information on job opportunities needed to meet growing workforce demands and develops a talent pipeline for the Energy industry
- Adopting an energy career cluster will allow students to become interested in and aware of careers opportunities in the industry
- Courses and pathways in an Energy cluster will provide core skills which easily translate to industries such as architecture, construction, and manufacturing, increasing a student's options for post-secondary education and career pathways

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HOW WOULD AN ENERGY CAREER CLUSTER BE STRUCTURED?

Energy Career Cluster

Energy & Power: Engineering & Design

- Chemical Engineer
- Civil Engineer
- Electrical Engineer
- Electronics Engineer
- Environmental Engineer
- Industrial Engineer
- Materials Engineer
- Mechanical Engineer
- Nuclear Engineer
- Power Systems Engineer
- Designer
- Engineering Technician

Energy & Power: Construction & Technology

- Electrician
- Electrical Equipment Installer / Repairer
- Engineering Technician
- Instrumentation & Controls Technician
- Lineworker
- Maintenance Repairer / Technician
- Mechanic
- Millwright
- Pipefitter
- Pipeline Installer
- Pipelayer
- Power Plant & Nuclear Technician
- Solar & Renewable Energy Technician
- Substation & Relay Repairer / Technician
- Welder

Energy & Power: Plant & Systems Operations

- Electric Transmission & Distribution, Substation & Relay Operator
- Gas Compressor & Gas Pumping Station Operator
- Gas Plant Operator
- Nuclear Power Reactor Operator
- Power Plant Operator

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ENERGY COURSES & PROGRAMS

Secondary Courses/ Programs

- Energy & Power (8448)
- Renewable Energy (8408)
- Sustainable & Renewable Technologies (8414)

Post Secondary Certificate & Degree Programs

Community College

- Energy Technology CSC, Central Virginia CC
- Energy Technology CSC, John Tyler CC
- Energy Technology CSC, Paul D. Camp CC
- Renewable Energy Technologies CSC, Tidewater CC
- Electrical Technology A.A.S degree, Tidewater CC
- Power Line Worker Training Program, Southside Virginia CC
- Power Line Worker Training, Wytheville CC

Post Secondary Certificate & Degree Programs

Undergraduate

- B.S. in Electrical and Computer Engineering, Center for Power and Energy, Virginia Tech
- Energy Engineering Interdisciplinary Minor, ODU
- B.S. in Mechanical Engineering Technology – Nuclear Systems, ODU (*Only to graduates of the United States Navy Nuclear Power School or Nuclear Reactor Operator training at Dominion Energy*)
- B.S. in Mechanical Engineering with a concentration in Nuclear Engineering, VCU
- B.S. in Mechanical Engineering with a Nuclear Engineering minor, Virginia Tech

Graduate

- Advanced Engineering Certificate in Energy Systems, ODU
- M.S. / Ph.D. in Electrical and Computer Engineering, Center for Power and Energy, Virginia Tech
- M.S. in Mechanical and Nuclear Engineering (online), VCU
- Ph.D. in Mechanical and Nuclear Engineering, VCU
- M.S. / M. Eng. Ph.D. Nuclear Engineering Program, Virginia Tech

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Next Steps for Implementing an Energy Career Cluster in Virginia

- Understand state and regional workforce demand
  - Refer to NAICS / SOC codes in CEWD's Workforce Demand Reports
  - Consider contractor demand (InfraSource, Pike, Team Fishel, etc.)
- Determine grade level Energy courses begin and necessary course sequencing
  - Example:
    - 11th grade - Energy & Power (8448)
    - 12th grade - Renewable Energy (8408) or Sustainable & Renewable Technologies (8414) … based on regional workforce demand (?)
- Recommend cluster and course alignment with state's Energy plan and objectives
  - 2018 Virginia Energy Plan - https://www.dmme.virginia.gov/DE/VirginiaEnergyPlan.shtml
  - Grid Transformation and Security Act of 2018 - https://www.dominionenergy.com/about-us/electric-projects/grid-transformation
- May only need a Gas course and review / update of existing courses
  - Gas courses references may include CEWD, InfraSource, NCCER or other training courses

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REFERENCES & RESOURCES

Virginia 17th Energy Career Cluster Site: http://vaenergy17thcluster.org/
- Cluster FAQs
- Supporters of an Energy Cluster

Virginia Chamber of Commerce Blueprint 2025: https://www.vachamber.com/wp-content/uploads/2018/02/Blueprint-Virginia-2025.pdf
- Energy industry demand and recommendations for Virginia align with the need for an Energy Cluster

2017 CEWD Workforce Demand Report:
http://www.cewd.org/Workforce/DemandReports2017/CEWD2017EnergyWorkforceDemandMidAtlantic.pdf
- Clearly defined Energy Cluster and Pathways support the Virginia Energy workforce demand

Virginia Energy Workforce Consortium: www.vewc.org

CEWD Energy Career Cluster Step-by-Step:
http://www.cewd.org/summit2012/EnergyCareerCluster-Stepbystep.pdf

Florida's Cluster: http://www.fldoe.org/academics/career-adult-edu/career-tech-edu/curriculum-frameworks/2017-18-frameworks/energy.stml

Georgia's Cluster: https://www.gafutures.org/career-exploration/georgias-career-clusters-and-pathways/georgias-career-clusters/energy/

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