Pacific Northwest Center of Excellence for Clean Energy
“A Centralia College Partnership”

Energy Education Resource Guide
Energy & Electrical Pre-Engineering programs in Washington state’s community and technical colleges
**Director’s Corner**

~Barbara Hins-Turner, Executive Director, Pacific Northwest Center of Excellence for Clean Energy “A Centralia College Partnership”

There is amazing work happening in the community and technical college system across Washington state and the region to develop a skilled and talented energy industry pipeline. Within these pages, you will find a vast array of programs that are dedicated to educating a population that will be prepared to replace our current workforce. The need for skilled and talented employees is at the forefront for our energy industry employers. As they face massive retirements along with the need for a higher level of technical skills, they are reaching out to the CTC system to support their workforce development initiatives.

The energy industry along with organized labor have been proactive in supporting the development and delivery of energy industry training in classrooms across the state. These programs have been “niched up” to focus on solar, wind, energy management, power generation, distribution line and more. Students are finding living wage jobs at starting wages from $15-$25 per hour with companies such as the Bonneville Power Administration, Avista, Tacoma Power, and Puget Sound Energy. We invite you to contact these colleges to learn more about an exciting career in the energy industry.

“Our community college system has helped me gain confidence, skills and knowledge to go out into the world to be a productive and effective driver in our community” ~ Sara Bowles, 2011 Grays Harbor College graduate, Lewis Economic Development Council Energy Program.

**Education Resource Guide**

This guide is designed to ensure you start your journey to a career in energy with all the information you need to successfully arrive at your goal. It is critical to any educational success that the college, degree, and certificate are the right fit.

**Associate in Applied Science-T (AAS-T)** is designed for students who plan to transfer to a 4-year institution with an applied science degree in a professional/technical program.

**Associate in Applied Science (AAS)** is awarded to students completing an approved course of study in a professional technical program.

**Certificate of Achievement** is designed for students who wish to take specialized courses in a particular field and desire certification acknowledging completion of specific program modules.

**Certificate of Accomplishment** is designed to provide recognition of completion of certain approved courses or small modules of courses offered through a particular technical program.
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For more resources and educational material, visit http://cleanenergyexcellence.org

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Ten Centers across the state represent a sector strategy to serve as economic development drivers for industries that help the state’s economy grow. Each Center focuses on a targeted industry and is built upon a reputation for fast, flexible, quality education and training programs for Washington state Community and Technical Colleges (CTCs).

Washington State Board of Community and Technical Colleges focuses on specialized workforce education and training for industries that help the state’s economy grow. Centers serve as a point-of-contact and resource hub for industry trends, best practices, innovative curriculum, and professional development opportunities. The Centers also maximize resources by bringing together workforce education and industry partners in order to develop highly-skilled employees for targeted industries.

What do Centers of Excellence do?
• Maintain an institutional reputation for innovation and responsive education and training delivery to their targeted industry.
• Act as a broker of information and resources related to their targeted industry for industry representatives, community-based organizations, economic development organizations, community and technical colleges, secondary education institutions, and four-year colleges and universities.
• Translate industry research into best practices.
• Provide system coordination, coaching, and mentoring to assist in building seamless educational and work-related systems.
• Build a competitive workforce for driver industries in Washington state.

Who/Where are we?
Aerospace and Advanced Materials Manufacturing at Everett Community College
Agriculture at Walla Walla Community College
Allied Health at Yakima Valley Community College
Careers in Education at Green River Community College
Pacific Northwest Center of Excellence for Clean Energy at Centralia College
Construction at Renton Technical College
Global Trade & Supply Chain Management at Highline Community College
Homeland Security Emergency Management at Pierce College
Information & Computing Technology at Bellevue College
Marine Manufacturing & Technology at Skagit Valley College

www.coewa.com
The Pacific Northwest Center of Excellence for Clean Energy is a nationally recognized model providing strategic coordination for the energy industry's skilled workforce in the Pacific Northwest. The Center is led by a broad based consortium comprised of industry and labor leaders that guide the center to:

- Develop and mature industry and labor partnerships to better understand the ever changing workforce issues facing electric utilities and independent power producers.
- Translate energy industry research into “Best Practices” training and education to ensure programs meet industry's workforce needs.
- Provide clear education and career pathways for students and job seekers for entry into high skills high wage energy jobs.
- Create a competitive workforce pipeline to meet increasing energy demands and support the economic future of the Pacific Northwest.

Advisory Board is a permanent standing board to provide advice and insight to the Center of Excellence from the perspective of industry, education, labor, and the community. The board helps the Center achieve its mission by ensuring that programs and projects advance the needs of the energy sector within the region. The diversity of membership provides an invaluable resource to Center Staff and program partners to easily access information and contacts throughout the industry. The strength of the advisory board was a key component in the elevation of the center from a state organization to a Department of Energy recognized Regional Center of Excellence. The current advisory board members are:

Pat McCarty (Chair), Tacoma Power
Avista – Mike Hanson
Bonneville Power Administration – P.J. LeCompte
Centralia City Light – Micah Goo
Clark County PUD Commissioner - Jim Malinowski
Northwest Territories Power Company (Canada) – Jay Pickett
Dept. of Labor Apprenticeship – Anne Wetmore
IBEW Local 77 – Bob Guenther
Lewis County PUD – Daniel Kay, P.E.
Lewis Economic Development Council – Dick Larman
Pacific Mountain Workforce Development Council
Portland General Electric – Tom Lindmark
Puget Sound Energy – Troy Nutter
Seattle City Light – Karen DeVenaro
TransAlta Centralia – Chuck Higgins
Veterans Conservation Corps, Washington Dept. of Veterans Affairs (WDVA) – Ahmad Bennett
Washington State Labor Council – Bill Messenger
Washington State Labor Council – Kairie Pierce

Educational Partners
Columbia Basin College - Clayton Gibson
Construction Center of Excellence – Shana Peschek
Edmonds Community College – Alison Pugh
Grays Harbor College – Mike Kelly and Nancy Estergard
New Market Skills Center – Randy Bachtell
Regional Education and Training Center, Satsop Campus – Dr. Bob Topping
The Evergreen State College – Martha Henderson
Washington State University Energy Program – Alan Hardcastle, Ph.D.

Centralia College/Pacific Northwest Center of Excellence (PNCECE) Members
Barbara Hins-Turner, Executive Director, PNCECE
Monica Brummer, Program/Communications Specialist, PNCECE
Rulon Crawford, Energy Technology Assistant Professor/Program Coordinator, Centralia College
John Steidel, Energy Technology Faculty, Centralia College
Electrical Construction - For students pursuing a degree or cert in electrical construction for jobs in commercial and residential construction, public utility agencies and industrial construction and maintenance.

Career options: Prepares students to apply to the Southwest Washington Electrical Joint Apprenticeship Training Committee, an organization affiliated with the International Brotherhood of Electrical Workers Local #76. Upon completion of the 3,000 hours of instruction, students will be given 4,000 hours that will apply toward the EL01 license.

Degree offered: Associate of Technology: Electrical Construction (120-158 credits)
Certificate offered: Certificate of Competency: Residential Electrician (67 credits)
Extended learning options: Yes

Electrical Engineering Technician - Bates offers the only program in the region in which students prepare for careers in electrical code application, interior and exterior lighting design, and all aspects of electrical design. Instruction includes all phases of electrical engineering, CAD drafting, and design for commercial buildings. Students are encouraged to seek certification as electrical engineering technicians.

Career options: Design and draft electrical power, signal, interior and exterior lighting systems. Assist in specification writing and share on-site construction supervision.

Exam offered: National Institute for Certification in Engineering Technologies (NICET)
Degree offered: Associate of Technology: Electrical Engineering Technician (120 credits)
Certificate offered: None

Facilities Maintenance Engineer - Includes electricity, welding, blueprint reading, machine maintenance, grounds keeping, boiler repair and operation, HVAC/R and advanced industry applications. Students will be prepped for Class IV and Class V boiler operator/fireman certification. This is a pre-apprenticeship program for the Western Washington Operating Engineers Facilities Custodial Services Apprenticeship Committee and the Western Washington Stationary Engineers Apprenticeship Committee.

Career options: Students prepare for careers in the building care and maintenance industry, including boiler operator, building repairer, facilities maintenance engineer and custodian in industrial and office buildings, hotels, schools, and government agencies.

Degree: Associate of Technology: Facilities Maintenance Engineer (120 credits)
Certificates: Certificate of Competency: Facilities Maintenance Engineer (84-87 credits); Cert. of Training: Building Care and Maintenance I (18 credits); Cert. of Training: Maintenance Technician II (17 credits)
Extended learning options: Yes

HVAC/R Technician - Technical skills may be applied in areas such as air conditioning, systems controls, energy management systems, heating and ventilation technicians, and sales. Sufficient training is provided to qualify students to take the required exams to work in the industry. A total of 1,100 hours of credit is applied toward the Washington State O6A electrical certificate.

Career options: Students prepare for certified entry-level employment in the heating, ventilation, air conditioning, and refrigeration industry.

Exam offered: Air Conditioning and Refrigeration Institute industry competency exams (required for programs); Environmental Protection Agency CFC certification examination (required for career)
Degree offered: Associate of Technology: HVAC/R Technician (103 credits)
Certificate offered: Certificate of Competency: HVAC/R Support Technician (99 credits)
Extended learning options: Yes
Business Sustainable Practices

Business Sustainable Practices - This program prepares professionals to compete in a business environment that increasingly requires an understanding of sustainability practices that are proven to increase the financial return, competitiveness and effectiveness of business and operations. It explores and provides strategies on how to weave this knowledge into business practices at all levels of the organization including manufacturing, retail, energy, building management, financial and other services as well as across profit and non-profit sectors.

Career options: Job opportunities from this field includes but is not limited to serving as professionals in promoting and implementing sustainable business practices in a wide range of industries and organizations.

Degree offered: Associate in Arts: Sustainable Business Practices (90-94 credits)

Certificates offered (5):
- Certificate of Accomplishment: Sustainable Business Accounting (30 credits)
- Certificate of Accomplishment: Sustainable Systems Best Practices (30 credits)
- Certificate of Achievement: Sustainability Coordinator (49 credits)
- Certificate of Completion: Green Sustainable Design (15 credits)
- Certificate of Completion: Sustainable Business Best Practices (19 credits)
Electro Mechanical Technology (EMTEC) - Students obtain a broad knowledge of various industrial processes including electricity, hydraulics, pneumatics, engineering graphics, welding and boilers. Graduates will have the opportunity to work in a variety of industrial settings including advanced manufacturing operations — particularly petrochemical, refining, pharmaceuticals, chemical, value-added wood products, pulp and paper, power generation, utilities, and wastewater treatment facilities, as well as the opportunity to work in smaller facility maintenance.

Career options: Millwright, assembler, maintenance mechanic, maintenance millwright, manufacturers service representative, automated equipment engineer-technician, and machine erector/installer/mover/dismantler.

Degree offered: Associate in Applied Science: Electro Mechanical Technology (114 credits)

Certificate offered: Electro Mechanical Technology

Electrician - Students develop electrician skills along with communication and interpersonal skills. Instruction provides opportunities to achieve the competencies students need to maintain existing electrical systems, perform new electrical construction, and perform other electrical jobs. Graduates can be credited with up to 1,472 supervised work experience hours per RCW 19.28.191 and WAC 296-46B-940. In order to receive the approved experience hours, students must have an electrical trainee card from L&I prior to enrolling in the program.

Careers options: Most graduates work as electricians. In the United States, more than half of all electricians are employed in the construction industry. Others work as maintenance electricians in virtually every industry including electrical equipment distributors, communications companies, electrical utility companies and industrial manufacturing plants. Potential positions include apprentice electrician, journeyman electrician, electrical contractor, electrical equipment technician, maintenance electrician, television cable technician, utility company technician, telephone technician and electrical equipment salesperson. Nationally, one out of every 10 electricians is self-employed.

Degree offered: Associate in Applied Science: Electrician (116 degrees)

Certificates offered (2): Electrical Construction; Electrical Fundamentals

The Heating, Ventilation, Air Conditioning, & Refrigeration (HVAC/R) - Prepares students to be technicians in the design, operation, service, repair, installation, and sales of HVAC/R systems and equipment. Theory is combined with extensive practical hands-on training which simulates actual work environments. Student will install, repair and/or operate a wide variety of actual field equipment, such as commercial coolers; warm air, hydraulic, electric, gas, and oil furnaces; package and split system A/C; rooftop commercial gas packs; refrigerated sea water systems; liquid chillers; industrial ice machines; centrifugal chillers; cascade refrigeration; pneumatic controls; and direct digital controls. Students learn CFC refrigerants, Indoor Air Quality requirements and increased use of computerized building controls. The degree emphasizes the development of technical skills as well as diagnostic, problem solving, and customer service skills. Graduates of the degree can apply to the Department of Labor and Industries to become an HVAC/Refrigeration (06A) specialty electrician and are credited with 1,334 hours of supervised work experience per RCW 19.28.191 and WAC 296-46B-940. Students must have an electrical trainee card from L&I prior to enrolling in the program.

Careers options: Most graduates work as technicians for private heating, air conditioning, or refrigeration service companies. Opportunities may also exist to work for heating and air conditioning dealers, manufacturing companies, food processors and in self-employment. Potential positions include heating and air conditioning technician, service person, installer, contractor, estimator, food industry mechanic, or gasfitter.

Degree offered: Associate in Applied Science: HVAC/R (131 credits)

Certificate offered: None
Industrial Electrical Technology - This program reflects the industry's changing trends and maintains a broad-based curriculum which blends theory and practical applications. Instruction, rooted in safety, is a blend of electrical/electronic theory, applied industrial electricity, electrical codes, process control/instrumentation and programmable logic controllers.

Career options:

Degree offered: Associate in Applied Science: Industrial Electrical Technology (105 credits)

Certificates offered (7):
- Certificate of Accomplishment: Basic Electricity (15 credits)
- Certificate of Accomplishment: Industrial Electricity (20 credits)
- Certificate of Accomplishment: Instrumentation (15 credits)
- Certificate of Accomplishment: National Electric Code (6 credits)
- Certificate of Accomplishment: Programmable Logic Controllers (21-24 credits)
- Certificate of Achievement: Industrial Electrical (48 credits)
- Certificate of Achievement: Programmable Logic Controllers (48 credits)
- Certificate of Achievement: Powerplant Maintenance Technician

Instrumentation & Control Technology - Prepares students to maintain, repair, and troubleshoot instrumentation and control systems. A combination of theory and hands-on training offers a variety of modern process measurement and control instrumentation with actual working processes and computer simulations which duplicate conditions that technicians experience. Approximately half of the instructional time is laboratory experience to develop knowledge and skills with electronic circuits, test equipment, individual instruments, multiple instrument control systems, and practical computer applications. The program is an active member of the Industrial Instrumentation & Controls Technology Alliance (IICITA), an organization with educational and industry partners across the nation. The IICITA's mission is to "promote the partnership of education, industry and businesses in developing activities to assure the existence of a sufficient quantity of highly qualified instrument & controls technicians who are highly sought after by the industry." These activities include: setting educational standards, promoting networking, and providing funding for scholarships and programs.

Careers options: Most graduates work as instrumentation and process control technicians in bio- pharmaceutical facilities, oil refineries, food processing, pulp/paper mills, power plants, metal smelters, systems integrators, research and development or water/sewage treatment facilities. Opportunities also exist in medical instrumentation, chemical plants, canneries, aerospace, sales and communications.

Degree offered: Associate in Applied Science: Instrumentation & Control Technology (132 credits)

Certificate offered: None
Environmental Technologies and Sustainable Practices - The renewable energy industry is a rapidly emerging field that promises a more environmentally sensitive, globally conscientious way of life. Governments and businesses in this state and around the world are clamoring for professionals who can “pioneer innovative pathways” in this relatively uncharted territory. Our world is redesigning how we consume energy; and students will have the chance to be a part of that as professional practitioners as well as in roles as informed consumers and political citizens.

This program teaches students to measure, monitor, and recommend actions to reduce and innovate energy use and applications in commercial settings. All graduates will have a business and scientific basis for choosing actions. Business graduates will be able to address savings and spending using terms and tools applicable to those settings. Technical graduates will be able to perform in a hands-on environment. All graduates will have tested and further developed their skills through internships, service learning and/or capstone projects.

Career options: Energy auditor, management specialist, system specialist

Degree offered: Associate of Applied Science-Transfer - Environmental Technologies and Sustainable Practices (105 credits)

Certificates offered (3):
- Community Energy Systems Specialist (55-60 credits)
- Energy Audit Specialist (32 credits)
- Energy Management Specialist (64-68 credits)
Energy Technology - Power Operations

Energy technology is the process used to create power to support existing and new micropower systems (where individual companies create power to meet the company’s energy needs). This field requires a blend of soft skills, such as communication, problem solving, creative and critical thinking.

The Energy Technology/Power Operations AAS program at Centralia College prepares students to compete for entry-level positions such as power plant operator, substation operator, technician, and other high voltage pre-apprentice and apprenticeship positions within the energy industry.

This program prepares students to compete for high-skilled, high-wage careers within the power industry. Coursework includes traditional sources of power generation, transmission, renewable energy, energy efficiency and smart grid technology.

The program is part of the Pacific Northwest Center of Excellence for Clean Energy*/A Centralia College Partnership (PNCECE). Our program advisors include industry and organized labor leaders from Avista, Bonneville Power, Centralia City Light, IBEW 77, Lewis County PUD, Puget Sound Energy, Seattle City Light, Tacoma Power and Washington State Labor Council. These companies as well as other utilities throughout the Northwest hire students.

Our program is broadcast through interactive (ITV) virtual classrooms in the following Washington community colleges: Grays Harbor, Peninsula, Wenatchee Valley and Spokane Community/IEL.

Career options: The program prepares students for entry level positions such as power plant assistant control operator, technician, and other high voltage apprenticeships. Jobs in this field include but are not limited to: power generation, transmission, metering, substation operations, plant mechanics, and boiler operations.

Degree offered: Associate of Applied Science: Energy Technology – Power Operations (94-97 credits)

Certificate offered: None

Exam offered: Centralia College is an authorized Edison Electric Institute testing center. We offer Plant Operator System Selection (POSS) testing each spring.

*PNCECE, a nationally recognized Center of Excellence model, provides strategic coordination for the energy industry’s workforce in a five-state region (WA, OR, ID, MT, UT).

Visit http://cleanenergyexcellence.org
Power Utilities Technology - Students will be prepared for various entry-level positions in electric utilities, firms servicing the utilities, and industrial businesses using power level electrical equipment in their operations.

Electric power system operation involves high power level generation; transmission and distribution facilities; and related monitoring, control, and protection equipment. Efficient and reliable operation of these systems requires operations and maintenance staff members who understand the characteristics of the various systems and understand how to safely operate and maintain such complex and high power level equipment.

Career options: Jobs in this field include but are not limited to positions within: electric utilities, firms servicing the utilities, and industrial firms using power level electrical equipment in their operations.

Degree offered: Associate in Applied Technology: Power Utilities Technology – Estimator/Engineering Technician (97 credits)

Certificate offered: Power Utilities Technology (49-50 credits)
Electrician Low Voltage Fire/Security - Participate in hands-on training with advanced equipment, techniques, and programming related to burglar alarms, fire alarms, card access, and closed-circuit TV to prepare for careers as alarm system installers and service technicians. This program is approved as a Limited Energy (06) specialty electrical training program in Washington state. Upon successful completion, graduates applying to become a Limited Energy (06) specialty electrician can be credited with 1,815 hours of work experience.

Career options: Low voltage electrician apprentices, service technicians, and installers in the electronic fire/security industry.

Degree offered: Associate in Applied Technology: Electric Low Voltage Fire/Security (120 credits)
Certificate offered: Electric Low Voltage Fire/Security (78 credits)

HVAC/Refrigeration (HVAC/R) - Participate in work-based training through realistic training activities. Upon successful program completion, graduates applying to become an HVAC/Refrigeration (06A) specialty electrician can be credited with an estimated 1,178 hours of work experience. This program is not applicable to any other electrical specialty or sub-category.

Careers options: Entry-level positions as service technicians, building maintenance technicians, equipment assemblers, and start-up residential and light commercial installers within the heating, air conditioning, and refrigeration industry.

Degree offered: Associate in Applied Technology: HVAC/R Technician (106 credits)
Certificate offered: HVAC/R – Basic Service Technician (84 credits)

Sustainable Building Science - Trains construction professionals and facilities managers for building applications and systems that consume a minimal amount of non-renewable resources and contribute to environmental and personal health.

Participants will receive a solid foundation in applied mathematics, applied physics, and communication, as well as receive training in industry-specific applications using energy efficiency technology to diagnose building deficiencies. Advanced training in sustainable systems, solar (photovoltaic) systems, resource conservation management, and weatherization will prepare graduates for a variety of careers within the construction and utilities industries.

Careers options: Resource energy management, resource conservation manager, energy auditor, weatherization specialist, solar energy specialist, home energy rater and other specialties that support the design, building, and maintenance of sustainable living environments.

Degree offered: Associate in Applied Technology: Sustainable Building Science (103 credits)
Certificate offered: Sustainable Building Science – Residential (40 credits)
Nuclear Technology - This program works closely with the nuclear industry, both locally and nationally, to develop the next generation of nuclear workers. As one of 36 Nuclear Uniform Curriculum Programs (NUCP) in the United States, Columbia Basin College (CBC) and Energy Northwest partner to assure that the CBC Nuclear Technology program is aligned with the needs of the nuclear power industry and are consistent with the established standards for accredited utility training programs so that all graduates have the same basic knowledge necessary to be successful power plant workers.

Career options: Graduates can work within the nuclear industry in areas such as the continued safe and economical operation of existing nuclear power plants and processing facilities, disposal of nuclear waste, and other advanced industrial applications of nuclear technology.

Degrees offered: Associate in Applied Science: Nuclear Technology with the following options:
- A: Instrumentation and Control Technician (127-129 credits)*
- B: Power Plant operator Non-Licensed Nuclear Operator (121-123 credits)*
- C: Radiation Protection Technician (117-119 credits)

Certificate offered: National Academy for Nuclear Training (NANT) certificate. This national certification is earned beyond the AAS degree in Nuclear Technology, and if achieved, affirms a graduate's skills and knowledge for the respective ACAD 08-006 curriculum and training position for two years after the issue date.

*Instrumentation and Control Tech and Power Plant Operator options receive transferable skills that allow them to also work in industries such as: energy generation, process operations, and manufacturing.

Solar/Photovoltaic (PV) Designer - The conservation of energy and generation of new energy from sources such as solar, wind, and biomass is increasingly becoming a national concern. CBC has developed a hands-on approach to address energy system design, installation, and maintenance.

Careers options: Solar/photovoltaic designer, installer and maintenance technician. Starting salaries in these programs range between $15-$18 per hour.

Degree offered: None

Certificate offered: Solar/Photovoltaic (PV) Designer Short-term Certificate (5 credits)
Energy Management - Students will be able to apply basic energy management and technical skills in support of businesses as well as electric, gas, and water utility companies and community action agencies engaged in developing energy-efficiency applications for homes and businesses. The program includes instruction in principles of energy and energy management, the technologies and techniques allowing for energy efficiency and conservation, energy end-use analysis, monitoring systems, energy-use accounting, project management, and report preparation and presentation skills.

Career options: Energy auditor, energy efficiency technician, energy efficiency manager, resource conservation manager, home energy rater and other specialties that support energy efficiency.

Degrees offered (2):
- Associate in Applied Science – Transfer: Energy Management (106 credits)
- Associate in Technical Arts: Energy Management (96 credits)

Certificates offered (5):
- Building Operations & Maintenance for Energy Efficiency (13 credits)
- Commercial Lighting Auditor (10 credits)
- Energy Accounting Specialist (8 credits)
- Energy Efficiency Technician (19 credits)
- Residential Energy Auditor (7 credits)

Edmonds Community College (ECC) has installed an energy forecasting service that Grid Navigator and ATS Automation say will add 3-5 percent savings and reduce energy demand by 7-10 percent across more than 30 facilities on the 50-acre campus.

The most recent energy management system designed by ATS Automation for ECC uses GridNavigator, which provides ESCOs and building engineers with accurate predictions of energy demand, based on advanced quantitative analysis models originally developed for the financial services industry.

Courtesy of Energy Manager Today.
Environmental Science/Studies - includes the study of living organisms in relation to their environments and the impact of human society and technology on those ecosystems. Students interested in global sustainability issues will find this an appropriate program of study.

Environmental science may be approached with an emphasis in the biological sciences, in legal issues, in economics, or in computer-modeled systems. In all of these cases, the student will need to finish a baccalaureate (4-year) degree, which may be a Bachelor of Science (BS) or a Bachelor of Arts (BA). The first two years of courses (or more if pre-college level courses are required) can be taken at the community college, and the junior and senior year completed at a 4-year college or university.

Career options: Students pursuing an undergraduate (baccalaureate) degree in Environmental Science/Studies have a broad variety of career options. Sample career fields in Environmental Science include: Sustainable Forest Management, Wildlife Conservation, Wildlife Biologist, Fisheries or Marine Biologist, Park Ranger or Toxicologist. Students interested in fields such as urban planning, GIS database manager, Environmental Advocate or Environmental Education, Planning and Policy, Geography, Economics or Journalism would be more likely to follow the Environmental Studies options. Students interested in being a Park Ranger can follow either pathway. Combined degrees with economics, journalism or education are also available. Career options are also available in law, business and industry. In some cases, there may be opportunities for traveling or living abroad.

Degree offered: Associate in Arts and Sciences – Transfer: Environmental Science/Studies (90 credits)
Certificate offered: None

Tacoma Power Cowlitz Salmon Hatchery
Utilities, such as Tacoma Power, hire fish biologists and park rangers.
The fish hatchery produces nearly 13 million fish each year.
Park Rangers care for four beautiful parks and campgrounds.
Energy Technology - Power Operations - Energy technology is the process used to create power to support existing and new micropower systems (where individual companies create power to meet the company’s energy needs). This field requires a blend of soft skills, such as communication, problem solving, creative and critical thinking.

The Energy Technology/Power Operations AAS program at Centralia College prepares students to compete for entry-level positions such as power plant operator, substation operator, technician, and other high voltage pre-apprentice and apprenticeship positions within the energy industry.

This program prepares students to compete for high-skilled, high-wage careers within the power industry. Coursework includes traditional sources of power generation, transmission, renewable energy, energy efficiency and smart grid technology.

The program is part of the Pacific Northwest Center of Excellence for Clean Energy*/A Centralia College Partnership (PNCECE). Our program advisors include industry and organized labor leaders from Avista, Bonneville Power, Centralia City Light, IBEW 77, Lewis County PUD, Puget Sound Energy, Seattle City Light, Tacoma Power and Washington State Labor Council. These companies as well as other utilities throughout the Northwest hire students.

Our program is broadcast through interactive (ITV) virtual classrooms in the following Washington community colleges: Grays Harbor, Peninsula, Wenatchee Valley and Spokane Community/I-EL.

Career options: The program prepares students for entry level positions such as power plant assistant control operator, technician, and other high voltage apprenticeships. Jobs in this field include but are not limited to: power generation, transmission, metering, substation operations, plant mechanics, and boiler operations.

Degree offered: Associate of Applied Science: Energy Technology – Power Operations (94-97 credits)

Certificate offered: None

Exam offered: Students are encouraged to take the Plant Operator System Selection (POSS) testing available at Centralia College each spring.
Energy and Science Technology - Prepares students to meet the increasing demand for jobs related to green technology and alternative energy. Graduates will be qualified to serve as technical representatives across a range of industries that include developmental technologies in the renewable energy field.

Career options: Technicians in areas such as biomedical and industrial and pharmaceutical laboratories, manufacturing operations, energy companies, oil and gas companies, and environmental positions in public and private institutions.

Degree offered: Associate in Applied Science: Energy & Science Technician (93-99 credits)

Certificates offered (6):
- Certificate of Completion: Bio-Energy (19 credits)
- Certificate of Completion: Energy Technology (19 credits)
- Certificate of Completion: Industrial/Laboratory (19 credits)
- Certificate of Completion: I-BEST Bio-Energy (28 credits)
- Certificate of Completion: I-BEST Energy Technology (25 credits)
- Certificate of Completion: I-BEST Industrial Laboratory (25 credits)

Engineering Technology - Provides a broad foundation in engineering principles, and in the application of math, science, and design theory to solve engineering problems. By completing the degree, students will acquire a broad foundation in engineering principles, and in the application of math, science, and design theory to solve engineering problems which, coupled with electives in a chosen area of specialization, will equip graduates to work as an engineering technician in a number of industries.

Career options: When coupled with electives chosen in a focus area, students will be well-equipped to work as an engineering technician in industries such as electronics, manufacturing, biomedical equipment, or alternative energy; or to progress to more advanced studies.

Degree offered: Associate in Applied Science - Transfer: Engineering Technology (95 credits)

Certificate offered: None

Working in the building and maintenance lab at Lake Washington Institute of Technology.
North Seattle Community College
9600 College Way North, Seattle, WA 98103
https://northseattle.edu/

HVAC - Restarted in 2007 in partnership with Lennox, a manufacturer of climate control solutions for heating, ventilation and air conditioning markets worldwide. North's HVAC program provides system training in residential heating, ventilation and air-conditioning.
EPA requires certification to handle refrigerants, and one of the industry standards for certification of residential HVAC workers is available through the program.

Career options: Besides specially designed student training and well-equipped labs, North's ties to the HVAC community help you in getting your first internships and entry-level jobs. Dealers selling Lennox, Trane, Carrier, American Standard and other HVAC equipment appreciate the quality of the training at North. Interviews with NSCC students may be arranged by North's intern instructor

Degree offered: None
Certificates offered (2): HVAC Core (28 credits); HVAC Service (51 credits)
Exam offered: North American Technician Excellence (NATE)

Sustainable & Conventional Energy & Control Technology (Industrial Power and Control) - Prepare to work with the complex electrical and electronic systems that control machinery, automation and modern manufacturing processes with NSCC's newly revamped program.

Career options: NSCC provides basic training/retraining for entry-level employment or future advancement in companies or government organizations that manufacture, service, sell, design or support electrical and electronic systems. There is an added focus on alternative, renewable and sustainable energy systems. If you are a currently employed technician, the program can help you update skills as your facilities become more automated.

Degree offered: Associate of Applied Science: Sustainable & Conventional Energy & Control Technology (121 credits)
Certificate offered: Sustainable & Conventional Energy & Control Technology (63-68 credits)

Seattle Central Community College
1701 Broadway, Seattle, WA 98122
http://www.seattlecentral.edu/

Sustainable Building Advisor (SBA) - Specifically designed for working professionals who desire to apply sustainability principles to the buildings they design and construct. The course is part of a 12-year-old national curriculum and certification program offered in about 30 locations throughout North America.
SBA runs one weekend (Fri/Sat) a month for nine months. Through expert instructors and guest speakers, team projects, site visits to exemplary projects, and access to the latest in green building resources, the SBA course provides attendees the information they need to create buildings that are energy and resource efficient, healthy working and living environments, environmentally responsible and cost effective.

Degree offered: None
Certificate offered: Sustainable Building Advisor

http://cleanenergyexcellence.org
Clean/Green Technology - A multi-tiered approach to prepare students to enter into the energy and utility careers, green building industry and conservation, and weatherization fields. South is also updating curriculum in existing programs to incorporate sustainable practices across the campus community and throughout its facilities and operations.

Career options: Energy Auditor, Building Sustainability Manager

Degree offered: None

Certificates offered: Energy Audit; Conservation and Weatherization; Building Sustainability Managers

Engineering Technology - Provides students with a solid background in mathematics, physics and applied engineering, as well as skills in problem solving and creative thinking, technical communications and leadership.

Degree offered: Associate of Applied Science: Engineering Technology (95 credits)

Certificate offered: None

Energy Audit Courses and Certification – Prepares students for the national Building Performance Institute and Energy Star certification. The nine-credit course covers conservation measures and analysis techniques, conservation technologies, indoor air quality, energy auditing software and reporting, and the effects of improvements on total building performance.

GE-NEW Pre-Apprenticeship Program – In partnership with King County and the Apprenticeship and Nontraditional Employment for Women (ANEW) program, South piloted a green energy program aimed at low-income youth to improve their math, physical and electrical theory and applications in preparing the students to enter into the energy utility, green building and electrical green jobs field.

Programs offered at:
Georgetown Campus
Puget Sound Industrial Excellence Center/Apprenticeship & Education Center
6737 Corson Avenue South, Seattle, WA 98108
Phone: (206) 934-5350
Clean Energy Technology - Students will have an understanding of alternative energy and high performance and zero energy building practices including alternative energy systems, green building techniques, and designing and installing residential and commercial electric, metering and control systems. Emphasis is on residential and commercial buildings with specialties in passive solar and sustainable (green) building Design and photovoltaic (solar electric) system. A strong-hands-on component is obtained through the use of Washington State University’s Zero Energy House, which is permanently located on the main campus of Shoreline Community College.

Career options: The career outlook is very promising. Graduates can work as utility conservationist; solar certification specialists; solar customer service professional; entry level energy consultant; green building project specialist; inventory control specialist-solar; solar-process data miner; renewable energy educational liaison; solar PV system designer; solar sales consultant; solar technical support; construction trainee; energy auditor; and LEED documenters.

Potential employers include but are not limited to: a variety of regional and national solar installation companies, solar manufacturing industries, electric utilities, architectural firms, and design build firms. Solar electric system specification and evaluation is practiced in places such as Puget Sound Solar, Outback Power Systems, Silicon Energy, Puget Sound Energy, Sparling Electric, Mithun Architects, Burke Electric, Northwest Mechanical, Solar Washington, and others. For more, please visit career information and resources at www.shoreline.edu/acc/CareerCounseling.

Degree offered: Associate of Applied Arts and Sciences: Clean Energy Technology (90 credits)
Certificate offered: Certificate of Proficiency: Clean Energy Technology (45 credits)

Solar/Photovoltaic (PV) Designer and Marketing - This program will train students to specify and/or recommend solar panel systems for residences and buildings. Participants will be able to assist and inform the electricians who install solar panels. The program will have a strong-hands-on component.

Career options: Program completers could work with customers, electricians, builders, architects, equipment manufacturers and distributors, engineers, consultants; utility companies and governmental officials. Students may find employment in a variety of regional and national solar installation companies, solar manufacturing industries, electric utilities, architectural firms, and design build firms. Solar electric system specification and evaluation is practiced in places such as Puget Sound Solar, Outback Power Systems, Silicon Energy, Puget Sound Energy, Sparling Electric, Mithun Architects, Burke Electric, Northwest Mechanical and Solar Washington and others.

Potential positions include: utility conservationist; solar design and sales; solar customer service professional; entry level energy consultant; green building project specialist; inventory control specialist-solar; solar-process data miner; renewable energy educational liaison; solar sales consultant; solar technical support; construction trainee; energy auditor; and LEED documenters.

Degree offered: None
Certificate offered: Solar/Photovoltaic (PV) Designer and Marketing (5 credits)
Heating, Ventilation, Air Conditioning & Refrigeration (HVAC/R) - Prepares the student for an entry-level position in one of the most challenging occupations available.

**Career options:** Entry-level HVAC/R technicians typically work on residential and light commercial systems performing equipment installations, preventative maintenance, and service and repair functions. Opportunities also are available in systems design and sales.

**Degree offered:** Associate of Applied Science – HVAC/R (120 credits)

**Certificate offered:** None

Electrical Maintenance & Automation - Provides students with knowledge to maintain, test, repair and/or replace the electrical systems and controls found in modern industrial plants and large commercial buildings.

**Career options:** Increasing employment is being created by the expanding industrial and manufacturing growth in the Pacific Northwest. The energy changeover to alternate energy sources (which are primarily electrical) are expected to make the long-range demand for industrial electricians even greater. Ever increasing automation and mechanization of processing and manufacturing plants have created a need for well-trained entry-level electrical maintenance technicians.

Potential positions include but are not limited to: electrical apprentice, electric service technician, industrial plant electrician technician found in automated manufacturing industries such as wood and paper products, food processing, metals processing, hydro projects, and equipment manufacturing.

**Degrees offered:** Associate of Applied Science: Electrical Maintenance & Automation (123 credits); Associate of Applied Science: Power Systems Maintenance (123 credits)

**Certificate offered:** None

Energy Technology - Power Operations - Prepares students to compete for employment in the power generation industry. Coursework includes traditional sources of power generation, renewable energy and energy efficiency. The program prepares students for entry level positions such as power plant assistant control operator, technician, and other high voltage apprenticeships. This program’s instruction is provided by Centralia College through distant learning via ITV. Centralia College is designated as Washington state’s Center of Excellence for Clean Energy and is supported by statewide energy industry and labor leaders.

**Career options:** The program prepares students for entry level positions such as power plant assistant control operator, technician, and other high voltage apprenticeships. Jobs in this field include but are not limited to: power generation, transmission, metering, substation operations, plant mechanics, and boiler operations.

**Degree offered:** Associate of Applied Science: Energy Technology – Power Operations (94-97 credits)

**Certificate offered:** None

**Exam offered:** Students are encouraged to take the Plant Operator System Selection (POSS) testing available at Centralia College each spring.
Participants will learn the skills and knowledge required of a line crew helper - how to set and climb poles, install crossarms, hardware, line, and transformers; and how to use various tools and equipment of the trade through actual field experience. Overhead and underground construction practices will be taught along with associated subjects such as basic electricity, transformers, etc. Classroom training will cover safety, electrical theory, interviewing skills, and the importance of attitude and teamwork to succeeding in today’s work environment. Participants will be exposed to physically demanding outdoor construction work in varying weather conditions. Students will be assigned to crews for the more demanding tasks and for actual crew experience. Safety and teamwork will be stressed throughout the course. Participants will be expected to become accustomed to heights while pole climbing and to complete a variety of tasks while on the pole. The typical day starts with three to four hours of classroom work such as safety briefings/tailboards, electrical theory, math, and interviewing skills. The rest of the day is spent in the training yard doing hands-on training.

The line construction trade requires an extreme physical fitness level, hard work, and commitment both mentally and physically. Students must be able to work under pressure and make quick, sound decisions. The trade sounds fun and looks cool, but it is extremely dangerous. Lineworkers put their lives and the lives of their coworkers on the line every day.

This is NOT your typical college course. Students are expected to be in class every day just as they would be present at a job site. Tardiness and absenteeism are NOT tolerated. The class is very fast-paced, and missing one day or partial days puts a student too far behind in course work to catch up. Training is four months (78 days, 624 hours instruction time) divided into three steps. The course runs Monday through Friday, eight hours per day, with academic and skills training. Homework will be assigned. Testing and certifications may require some evening and/or weekend scheduling.

Photos courtesy of Avista.
Energy Systems Technology - Electrical Technology - Electrical Technicians apply technical knowledge and skills to operate, maintain and repair electric apparatus and systems. Such systems include residential, commercial, industrial and power generation. This program provides entry level training with emphasis on the new technology for controls and energy efficiency. Two year technical training covers safety, electrical theory, applied wiring, controls, electric motors, electronics, programmable logic controllers, and power generation–distribution.

**Career options:** There is a need for trained electrical employees for installation and maintenance. Energy is a very important part of our nation’s future, and new technologies to save energy are emerging every day. Work may include but is not limited to: installation of new systems - residential and commercial, basic circuit repair/troubleshooting, advanced control circuit repair/troubleshooting, electrical motors and motor maintenance, and programmable logic controller programming.

**Degree offered:** Associate in Applied Arts and Sciences: Electrical Technology (107 credits)

**Certificate offered:** Electrical Technology (64 credits)

Wind Energy Technology - Provides entry level training for wind energy and wind turbine generator technicians. The two-year technical training focuses on safety, power generation, distribution, electrical theory and control mechanisms, mechanical systems, along with crane rigging, bolt torque, and general education components. Wind Turbine Technicians play a key role in ensuring quality, safety and service involving the operation and maintenance of wind turbine units, performing mechanical and electrical troubleshooting, as well as repair and preventative maintenance. Work may include basic circuits, electrical motors and their controls, electronic controls, programmable logic controllers and variable frequency drives. Wind Turbine Technicians install and maintain, repair and replace malfunctioning parts and equipment, transmissions and drives, programmable logic controllers, motors, and breakers.

**Career options:** The need for employees to service the wind generators and wind turbines will increase. Approximately 250 technicians are needed in the next five to seven years within a 50 mile radius of WWCC, Walla Walla and Clarkston campuses. Work may include basic circuits, electrical motors and their controls, electronic controls, programmable logic controllers, and variable frequency drives. Potential careers for Wind Energy and Wind Turbine Technology graduates include positions such as wind technician, high voltage technician, electronic technician, relay technician, and supervisor.

**Degree offered:** Associate in Applied Arts and Sciences: Wind Energy Technology (100.2 credits)

**Certificate offered:** Wind Energy Technology (63.2 credits)
Environmental Systems and Refrigeration Technology - Refrigeration principles, applied electricity, heating systems, air conditioning systems, control fundamentals, DDC and PLC controls, boiler systems, and basic welding. Additional coursework emphasizing energy efficiency includes efficient HVAC systems, energy load calculations, commissioning and TAB (Test, Adjust, and Balancing).

**Career options:** This program prepares graduates for a wide variety of entry-level jobs such as service technicians, mechanics, maintenance personnel, application engineers, electronic temperature controls specialists, and environmental systems designers. Graduates will be prepared to apply for positions in agriculture storage facilities, office buildings, shopping malls, schools, industrial plants and many other facilities around the world.

**Degree offered:** Associate in Technical Science: Environmental Systems and Refrigeration Technology (96 credits)

**Certificate offered:** Certificate of Completion: Basic HVAC/R and Controls (53 credits)

Energy Technology - Power Operations - Prepares students to compete for employment in the power generation industry. Coursework includes traditional sources of power generation, renewable energy and energy efficiency. The program prepares students for entry level positions such as power plant assistant control operator, technician, and other high voltage apprenticeships. This program's instruction is provided by Centralia College through distant learning via ITV. Centralia College is designated as Washington State's Center of Excellence for Clean Energy and is supported by statewide energy industry and labor leaders.

**Career options:** Jobs in this field include but are not limited to: power generation, power transmission, metering, substation operations, plant mechanics, and boiler operations.

**Degree offered:** Associate in Applied Science: Energy Technology – Power Operations (94-97 credits)

**Certificate offered:** None

**Exams offered:** Students are encouraged to take the Plant Operator System Selection (POSS) testing available at Centralia College each spring.

HVAC/R Technology - HVAC/R Technicians apply technical training in electrical, electronics, environmental, and mechanical to operate, maintain and service these types of HVACR systems: 1) Heating and air conditioning (HAC) equipment, the climate control systems installed in buildings; 2) Ventilation (V) systems, forced or displacement ventilation systems also used to control humidity or odors through heat recovery ventilators or displacement ventilation systems; and 3) Refrigeration (R), the process of controlling temperature and humidity to process or preserve products such as food, pharmaceuticals, semiconductors, artifacts, and medical.

**Career options:** Jobs in this field include but are not limited to: environmental control technician, energy auditor, HVACR installation and service, sheet metal worker, millwright/industrial mechanic, boiler operator, refrigeration mobile service technician (land, rail, sea), and alternative energy plant operator.

**Degree offered:** Associate in Applied Arts and Sciences: Refrigeration and Air Conditioning (116 credits)

**Certificate offered:** Refrigeration and Air Conditioning (62 credits)
A partnership between Yakima Valley Community College and Perry Technical Institute provides students the opportunity to receive an Associate of Applied Science Degree in different technical areas. Students take the technical program at Perry Technical Institute and complete 27 credits at YVCC to receive an Associate of Applied Science Degree. 24 of the 27 credits must be YVCC classes. Perry Technical Institute: 2011 W Washington Ave., Yakima; www.perrytech.edu

Electrical Technology - The Electrical Technology program guides students through the steps required to become a construction or industrial maintenance electrician. With successful completion of this 24-month program at PTI and the required YVCC classes, students receive an Associate of Applied Science Degree in Electrical Technology. The diversified curriculum covers everything from electrical math and AC/DC fundamentals to National Electric Code and solid state electrical fundamentals. Gain valuable theory and hands-on application through classroom assignments, shop experience and fieldwork.

Career options: Upon graduation, you’ll be qualified to take a variety of career paths. You can work in the construction field; in industrial settings such as manufacturing plants; and for electrical contractors maintaining and repairing existing electrical systems. Electricians work in nearly every industry.

Degree offered: Associate of Applied Science: Electrical Technology
Certificate offered: None

HVAC/R - The refrigeration and air conditioning industry manages indoor environments through designing, building, installing, servicing, maintaining, troubleshooting and repairing comfort and cooling systems.

Career options: This fast-growing industry has taken graduates all over the world, providing them with entry-level technician jobs that offer competitive salaries and benefit packages, as well as excellent chances for advancement. With a solid foundation of training, you can become a contractor, business owner, engineer, inspector, designer or explore many other career opportunities.

Degree offered: Associate of Applied Science: Refrigeration & Air Condition Technology
Certificate offered: None

Photos courtesy of Yakima Valley Community College.
Pre-Engineering Programs

Solve technical problems with Math & Science! Are you interested in high tech? Engineering is essentially solving problems by using science to design applications. It is practical and scientific. These colleges cover the associate degree of a typical engineering bachelor’s program.

Bellevue Community College - http://scidiv.bellevuecollege.edu/engr/degrees
Cascadia Community College - http://www.cascadia.edu/programs/degrees/default.aspx
Centralia College - www.centralia.edu
Everette Community College - www.everettcc.edu
Green River Community College - www.greenriver.edu
Lower Columbia Community College - lowercolumbia.edu
North Seattle Community College - northseattle.edu
Olympic College - www.olympic.edu
Spokane Falls Community College - www.spokanefalls.edu
South Seattle Community College - www.southseattle.edu
Tacoma Community College - www.tacomacc.edu

Students engineer future with IEEE PES

Pre-Engineering students collaborate on a clean energy outdoor learning lab at Centralia College. These students are also student members of the Institute of Electrical and Electronics Engineers Power & Energy Society (IEEE PES) - an association dedicated to advancing innovation and technological excellence for the benefit of humanity. Student members have access to mentors, who are professionals in power engineering, and scholarships!

IEEE-PES Scholarship Plus Initiative – awardees receive up to $7,000 over three years and opportunities for 2 – 3 years of career experience with leading industry employers.

http://ieee-pes.org
What is Apprenticeship?

“Apprenticeship is a combination of on-the-job training (OJT) and related classroom instruction under the supervision of a journey-level craft person or trade professional in which workers learn the practical and theoretical aspects of a highly skilled occupation.” ~Washington State Department of Labor and Industries

The energy industry trades require skilled crafts people to perform jobs. Apprenticeship is a required training program for most of these journey level positions.

Helpful resources for Apprentices:
Bonneville Power Administration Apprenticeships
Chelan County P.U.D. Apprenticeships
Idaho Power Apprenticeships
Seattle City Light Apprenticeships
Tacoma Public Utilities Apprenticeships

Workforce Partners

Workforce Development Councils (WDCs) assure quality services to customers in the implementation of the Workforce Investment Act (WIA). The WDCs provide workforce development planning and promote coordination between education, training and employment efforts in their communities. To inquire about services, contact one of the Workforce Development Councils or a WorkSource Center below.

**Benton-Franklin Workforce Development Council** - Serving Benton and Franklin Counties
http://www.bentonfranklinwdc.com
815 North Kellogg Street, Suite C, Kennewick, WA 99336
(509) 734-5984
**WorkSource Area Director**
815 North Kellogg Suite D, Kennewick, WA 99336
(509) 734-5945

http://www.ewpartnership.org
956 S. Main, Ste. B, Colville, WA 99114
(509) 684-8421
**WorkSource Area Director**
1530 Stevens, Walla Walla, WA 99362
(509) 527-1801

**SkillSource** - Serving Adams, Chelan, Douglas, Grant and Okanogan Counties
http://www.skillsource.org
Workforce Development Council
PO Box 2360, 233 N. Chelan Ave., Wenatchee, WA 98801
(800) 999-8694; (509) 663-3091
**WorkSource Area Director**
PO Box 1927, Wenatchee, WA 98807-1927
(509) 665-3733

**Northwest Workforce Council** - Serving Island, Skagit and Whatcom Counties
http://www.nwboard.org
PO Box 2009, Bellingham, WA 98227
(800) 833-6388; (360) 676-1521
**WorkSource Area Director**
PO Box 938, Bellingham, WA 98227
(360) 676-3204
Olympic WorkSource - Serving Jefferson, Clallam, and Kitsap Counties
http://www.olympicworksource.com
614 Division Street, MS-23, Port Orchard, WA 98366
(360) 337-7185
WorkSource Area Director
1300 Sylvan Way, Bremerton, WA 98310
(360) 337-4747

Pacific Mountain Workforce Development Council- Serving Grays Harbor, Mason, Thurston, Pacific and Lewis Counties
http://www.pacmtn.org
150 Technology Way, Suite 160, Elma, WA 98541
(360) 482-1700
Pac Mountain WorkSource Area Director
1570 Irving St SW, Tumwater, WA 98512
(360) 570-4231

Seattle-King County Workforce Development Council - Serving King County
http://www.seakingwdc.org
Market Place One, Suite 250, 2003 Western Avenue, Seattle, WA 98121-2162
(206) 448-0474
WorkSource Area Director
2707 I Street NE, Auburn, WA 98002
(253) 804-1157

Snohomish County Workforce Development Council - Serving Snohomish County
http://www.wdscs.org
Workforce Development
728 134th Street SW, Suite 128, Everett, WA 98204
(425) 921-3477
WorkSource Area Director
3201 Smith Ave. Suite 114, Everett, WA 98201
(425) 258-6313

South Central Workforce Development Council - Serving Yakima, Kittitas, Klickitat and Skamania Counties
http://www.yakimacounty.us/WDC
120 S. 3rd, Suite 200-A, Yakima, WA 98901
(509) 574-1950
WorkSource Area Director
306 Division, Yakima, WA 98902
(509) 574-0123

Southwest Washington Workforce Development Council - Serving Wahkiakum, Cowlitz and Clark Counties
http://www.swwddc.org
805 Broadway Street, Suite 412, Vancouver, WA 98660
(360) 567-1070
WorkSource Area Director
5411 East Mill Plain Blvd. Suite 15, Vancouver, WA 98661
(360) 735-4950
Workforce Partners continued

Spokane Area Workforce Development Council - Serving Spokane County  
http://www.wdcspokane.com  
2000 N Greene St., MS 2158, Spokane, WA 99217  
(509) 533-8480  
WorkSource Area Director  
130 S. Arthur Street, Spokane, WA 99202  
(509) 532-3030

Workforce Central - Serving Pierce County  
http://www.workforce-central.org  
3650 South Cedar St, Tacoma, WA 98409  
(800) 999-8168; (253) 472-8094  
WorkSource Area Director  
1305 Tacoma Ave South #201, Tacoma, WA 98402  
(253) 680-2888

Washington State Labor Council AFL-CIO (WSLC) is the largest labor organization in the Evergreen State. A state federation of the AFL-CIO, WSLC is a non-profit organization dedicated to protecting and strengthening the rights and conditions of working people and their families.  
http://www.wslc.org/

Washington Workforce Training and Education Board  
A state agency committed to the development of a highly skilled workforce that will sustain Washington’s economic vitality. http://www.wtb.wa.gov/default.asp

International Brotherhood of Electrical Workers (IBEW) Local 77  
IBEW Local 77 offers an Apprenticeship Program through the Joint Apprenticeship & Training Committee of the Northwest Line Construction Industry (NW Line JATC). NW Line JATC is a non-profit association designed to train unionized workers for the outside electrical construction industry.  
http://www.ibew77.com/apprenticeship.htm

The International Trade and Economic Development division offers resources for businesses considering relocating to or expanding in the state of Washington. Microsoft, Boeing, Starbucks and over 200,000 other companies have taken advantage of Washington State’s strategic location and highly educated workforce.  
http://choosewashington.com/index.asp

Workforce Study

Understanding the employment and training needs of the Pacific Northwest* electric-sector employers takes time to plan, interview and assemble data. We rely on the data managing experts at Washington State University’s Energy Program - led by Senior Researcher Alan Hardcastle, PhD. Alan surveyed 12 employers in 2008 and 19 employers through 2012 to compare data pre- and post- the economic downfall. The following graphs depict some of his findings. The full report will be published in fall of 2013.  

Courtesy of WSU Energy Program.
Good Jobs: Average Annual Wages, Utilities vs. All Employment, 2011

2011 Utility Payrolls by State
(in millions)

2013 Early Findings

- Recession: demand down, companies rightsizing
- Retirements imminent—replacement concerns
- Fewer vacancies, especially entry level and apprenticeships—no room to enter
- Largest current openings are for power engineers, line workers, customer service reps
- Openings at mid and upper levels hardest to fill
- Greater reliance on technology and automation
- Rising knowledge and skills bar

Slides courtesy of WSU Energy Program.
WASHINGTON STATE COMMUNITY AND TECHNICAL COLLEGES

Colleges in blue offer energy and Pre-engineering programs

| 1 - Bates TC          | 13 - Green River CC          | 25 - Skagit Valley College |
| 2 - Bellevue College  | 14 - Highline CC             | 26 - South Puget Sound CC  |
| 3 - Bellingham TC    | 15 - Lake Washington IT      | 27 - South Seattle CC      |
| 4 - Big Bend CC      | 16 - Lower Columbia College  | 28 - Spokane CC            |
| 5 - Cascadia CC      | 17 - North Seattle CC        | 29 - Spokane Falls CC      |
| 6 - Centralia College| 18 - Olympic College         | 29B - Spokane IEL/Ione     |
| 7 - Clark College    | 19 - Peninsula College       | 30 - Tacoma CC             |
| 8 - Clover Park TC   | 20 - Pierce College-Fort Steilacoom | 31 - Walla Walla CC |
| 9 - Columbia Basin College | 21 - Pierce College-Puyallup | 32 - Wenatchee Valley College |
| 10 - Edmonds CC      | 22 - Renton TC               | 33 - Whatcom CC            |
| 11 - Everett CC      | 23 - Seattle Central CC      | 34 - Yakima Valley         |
| 12 - Grays Harbor College | 24 - Shoreline CC             |

For the most current information, visit http://cleanenergyexcellence.org/CollegePrograms