COMMUNITY AND TECHNICAL COLLEGES
Washington State Board

WASHINGTON'S COMMUNITY AND TECHNICAL COLLEGES & THE CLEAN ENERGY SECTOR

Opportunities and Needs 2025

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Background

Zero-carbon emission goals are driving Washington's environmental policies and substantial portions of the state's economy. The Washington state Legislature passed four major pieces of climate related legislation between 2019 and 2022: the Clean Energy Transformation Act (CETA), the Climate Commitment Act (CCA), the Clean Buildings Act (CBA), and the Clean Fuels Standard (CFS). Together these acts direct the state's utilities to replace carbon-emitting fossil fuels with renewable and non-emitting resources, create a cap on carbon emissions that began in 2023, create a carbon market, mandate commercial structures to improve their energy consumption, and provide incentives to substitute electricity, biofuels, and green hydrogen for gasoline and diesel for the state's transportation needs. To deliver on these climate goals and realize the economic opportunities they create, the state needs a workforce appropriately skilled to implement new and emerging technologies and processes aimed at reducing carbon emissions.

According to the Clean Energy Transition Institute's (CETI) April 2024 Net-zero NW Workforce Analysis, "On the path to net-zero by 2050, energy employment in Washington grows by 14% from 2021 to 2030, with net job growth in every sector."[1] The largest increases will be in buildings and electricity.

Washington's Clean Energy Technology Workforce Advisory Committee (CETWAC) and the Washington Climate Partnership's Comprehensive Climate Action Plan (CCAP) are developing recommendations for the state Legislature to increase workforce system responsiveness to meet the state's zero-carbon goals. This report is intended to support that work by providing recommendations specific to the work of the state's community and technical colleges.

Washington's community and technical college system is in a unique position to help the state create, grow, and retrain the workforce necessary to support the rapidly changing clean energy sector. The 34 community and technical colleges offer a vast array of programs in communities across the state to help people of all ages and backgrounds get the education and training they need for well-paying jobs and career mobility. In 2024-25, more than 307,000 students enrolled in community and technical colleges — 55% of students identifying as people of color — making it the largest, most accessible system of public higher education in Washington.[2] More than half of those students were enrolled in some form of workforce training. For example, 120,892 students were enrolled in professional-technical education, 12,161 in apprenticeship related supplemental instruction, and an additional 10,700 in the Worker Retraining program.

Currently, Washington's community and technical colleges offer more than 850 certificate, degree, and apprenticeship-related programs that support the critical sectors of the state's clean energy economy in areas like transportation, electricity, building, fuels, and similar programs. The system's commitment to equity and to serve all students with means students from low-income households, students of color, and students from communities most impacted by climate change can access training that helps the state meet its climate goals while advancing economic justice as these

[1] Clean Energy Transition Institute Net-zero NW Workforce Analysis, April 2024, https://www.cleanenergytransition.org/post/net-zero-northwest-workforce-state-analysis
[2] State Board of Community and Technical Colleges, Enrollment Dashboard 2022-2023, https://www.sbctc.edu/colleges-staff/research/data-public/enrollment-data-dashboard

students and their families participate and benefit fully in the transition to a net zero economy.

While each college is independent, Washington's CTC frequently work together to meet statewide needs with localized solutions. With investment and statewide coordination, their programs, faculty expertise, wraparound student support, financial aid, and structures for employer engagement can be leveraged to help meet the state's climate goals and workforce development goals and the needs of the state's clean energy sector.

This report provides recommendations for policymakers to engage, support, and leverage the community and technical college system to develop the workforce necessary for Washington to meet its ambitious climate goals for 2030 and beyond.

Process

This report was developed using a variety of resources and approaches, including:

- A literature review of recent Washington clean energy policy documents and reports analyzing the status of the industry and its workforce. While these reports focused on diverse aspects of the clean energy workforce, they all noted that clean energy jobs are difficult to identify and track within labor market data. There are no single Standard Occupational Classification (SOC)North American Industry Classification System (NAICS) codes for "clean energy," or emerging technologies such as green hydrogen and fusion. This makes it challenging to gauge both the supply and demand for clean energy workers and the college system's capacity to meet that demand. In addition, the sector is evolving so rapidly that it can be difficult to find the data to track and document current trends.
- A review of clean energy college program data collected by the State Board for Community and Technical Colleges (SBCTC). Unfortunately, limitations of the Classification of Instructional Programs (CIP) codes used to collect college program information mask the level of clean energy-related activity; few courses or programs are labelled as "clean energy," and *most clean energy related training occurs within existing programs*. For example, the CIP data identified no programs for code 47.0614 Alternative Fuel Vehicle Technology/Technician, yet there are at least 11 automotive programs at various colleges that provide training for EV technology, at least three of which are for specific employers: Rivian, Tesla, and Toyota.
- A review of Pacific Northwest Center of Excellence for Clean Energy data and reporting focused on college clean energy-related programming and industry demand. The Center of Excellence's website includes a recently updated inventory of energy related educational programs in Washington, Oregon, Idaho, and Montana. It reports provide information and context on college programs and employer/industry needs.
- Implementation of two surveys, one for college deans and administrators and another for faculty, to gather insights into how clean energy-related instruction is being delivered across the state and what colleges need in order to meet local needs. The surveys focused on programs to meet clean economy subsectors, such as energy (i.e., energy efficiency, electrical, industrial technology, HVAC, mechatronics), construction/trades (i.e., apprenticeships, electricians, pipefitters), engineering (all), and transportation (i.e.,

automotive, diesel tech, and alternative fuels). Fifty-nine college deans, administrators, and faculty from 25 (73%) Washington community and technical colleges responded to the surveys between May 8 and May 23, 2025. While most responses were from the Puget Sound region, responses were also received from colleges in rural parts of the state's northwest corner, southwest corner, central region, and eastern region, particularly the Spokane area. Respondents represented a wide range of professional technical/STEM programs, including but not limited to workforce education, automotive, aviation, diesel, welding/maritime welding, information technology, engineering, manufacturing, sustainable building/facilities/construction, nuclear technology, information technology/cyber security, HVAC/ environmental systems and refrigeration. A list of participating colleges is included in Appendix A.

- Hosting two focus groups consisting of 11 deans, administrators, and faculty, the SBCTC climate solutions program administrator, and the director or the Pacific Northwest Center of Excellence for Clean Energy to share additional insights and offer potential recommendations for this report. A list of participating institutions is included in Appendix B.

Observations

Defining the sector

Avoiding the worst impacts of climate change requires an aggressive, comprehensive commitment to decreasing greenhouse gas emissions rapidly and equitably across all of Washington state's energy sectors: transportation, buildings, electricity and industry."

— Washington 2021 State Energy Strategy

Quantifying the need and supply for clean energy jobs and programs is difficult because clean energy strategies and occupations exist in so many different sectors. In fact, almost any job performed in a way that reduces climate impacts can be labelled as "clean." For example, a 2023 MDRC report defined jobs that address climate change as follows, "these jobs do at least one of the following: produce goods and services that benefit the environment; preserve natural resources; serve to make business processes more environmentally friendly; or reduce natural resource use. Other categories of jobs also include those defined as being dedicated to improving resilience to the effects of climate change." [3]

The clean energy sector spans numerous subsectors including alternative fuels, automotive technologies, alternative power generation and transmission, construction, natural resources management, and waste management. By policy, Washington has focused on industries with the highest carbon emissions that are easiest to transform: fossil-fueled generation, transportation, and manufacturing. However, as the MDRC report indicates, the effort to address climate change is transforming the broadest possible set of professional-technical occupations, and by extension, the programs that prepare individuals for these jobs.

[3] Rachel Rosen, MDRC, Career and Technical Education (CTE) for Climate Jobs, A Framework for Secondary and Postsecondary CTE, July 2023, https://www.mdrc.org/sites/default/files/Climate_Ready_Workforce_Working_Paper_1.3.pdf)

Currently, most job growth within the sector results from innovation within existing industries and occupations rather than creating whole new ones. The college response reflects this trend. Colleges adapt to industry changes by updating existing programs first, adding electives and short-term credentials to two-year and four-year programs until emerging technologies become commercially recognized and industry demand requires new programs be built.

One college developing a Carbon Neutrality Analysis and Plan is engaging its accounting program to collect data to analyze and understand sustainability accounting. This is an example of how a college professional-technical program outside of transportation, buildings, electricity, and manufacturing is responding to state clean energy policy.

Currently, the terms “clean energy program” or “clean technology program” mean little to employers and students since they don’t translate directly to job titles. Only a few programs are titled “Clean Energy” or “Clean Technology.” For this reason, the term “clean energy-*related* programs” is used in this report to describe college programs designed to meet the workforce needs of the sector.

Clean energy-related programs refer to programs wherein clean energy skills and content are taught. In a 2025 program inventory by the Pacific Northwest Center of Excellence for Clean Energy, most colleges (32 out of 34) offer programs related to this sector, including four applied bachelor’s degrees. The 122 community and technical college programs that support this sector include:

- Apprenticeship related supplemental instruction programs: 14
- Electrical: 13
- Energy efficiency: 7
- Engineering related programs: 48
- EV/Auto: 11; 21 traditional auto/diesel (not included in total)
- Industrial: 6
- Mechatronics: 11
- Nuclear: 3
- Trades: 9 (includes HVAC)

A rapidly changing context

Community and technical college programs are highly responsive to changes in these sectors; 67% of faculty and 64% of deans and administrators responding to our survey reported that they had recently made changes to their clean energy-related programs. Changes included adding new courses to existing programs for technologies like EV, purchasing new equipment for labs, implementing industry specific requirements into programs, building short-term certificates, responding to regulatory changes, and closing programs. Sixty-eight percent of survey respondents also stated that additional changes needed to be made for their clean energy-related programs to meet local needs. Examples include: adapting new technology such as high efficiency HVAC equipment and new building automation controls; responding to the growth of hybrid and electric vehicles; adding energy management subjects into current and future curriculum.

In response to a survey question about upcoming program changes, 15 colleges (44% of community and technical colleges) reported plans to create nine new programs, expand 31 existing programs, and make changes to 16 programs, especially in automotive, energy efficiency/HVAC, and electrical subsectors. They also reported recently closing or planning to close five clean energy related programs.

There is clearly a lot of activity related to the sector, despite the challenges of imperfect labor market information about graduate employment opportunities and industry demand. Deans, administrators, and faculty reported using multiple sources of information to determine when and how to change their clean energy related programs. The most common data sources cited by survey are local hiring needs, economic and labor market data from the Employment Security Department and other sources such as college advisory board input, instructor input, industry association data, and interest from students.

> *"I don't want to be training students on something where there's **potentially** a lot of jobs. I want to train students where there are jobs that they can go get and they can grow in their careers."*
>
> *— Focus group participant*

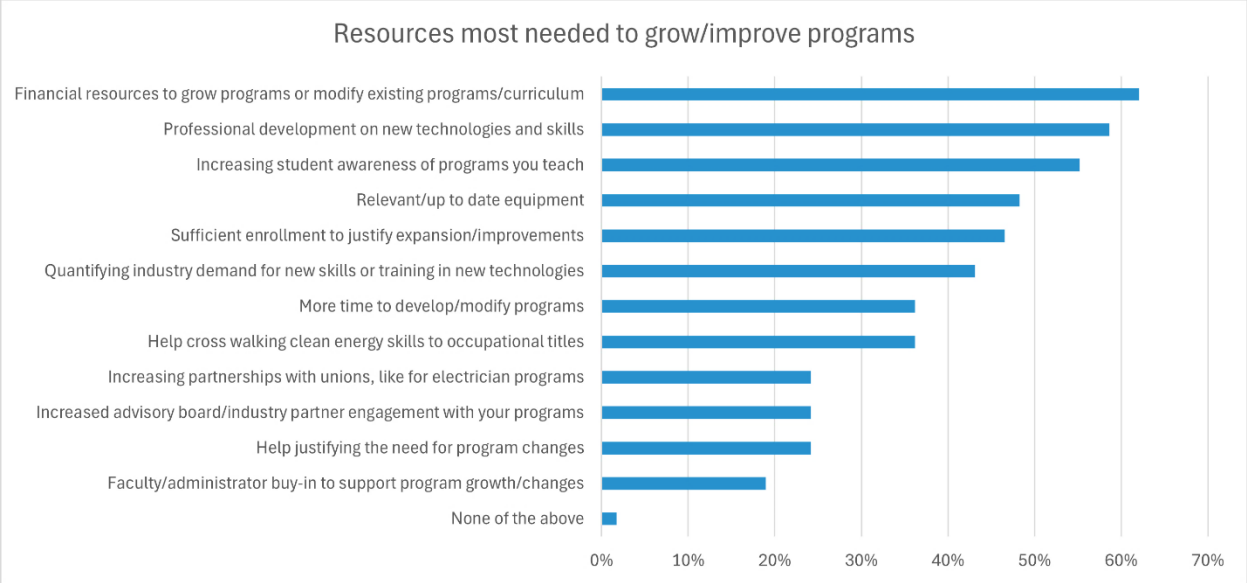
In both focus groups and surveys, colleges discussed the challenges of keeping abreast of industry changes necessitated by rapidly evolving technologies, the introduction of new technologies, uneven industry demand, and state and local regulatory changes. They also discussed the challenges of having sufficient resources to respond to these changes. Specifically, responders identified being able to gauge industry and student interest, finding the resources to support program development, finding and retaining faculty with the necessary skill sets, and obtaining up to date or nearly-up-to-date equipment and trainers.

Focus group participants noted that while industry representatives on program advisory committees report high clean energy industry demand for skilled technicians, some program enrollments have not rebounded since the COVID-19 pandemic. These programs are adjusting to address changing student demand by moving to quarterly admission opportunities, running evening classes, and engaging in transformational efforts such as using a competency-based education model to increase flexibility and make it easier for incumbent workers to participate. Programs will need additional resources to support these efforts and ensure increased access for all students.

Growing needs/shrinking resources

Limited resources to start, modify, update, and grow programs was a recurring theme in survey responses and focus groups. The cost of implementing clean energy-related programs is high and programs compete with other high-demand/high-need professional-technical programs for limited funding. State budget shortfalls are resulting in fewer resources for program development. The resources that are available may not be flexible enough to support the program changes necessary to keep up with clean energy industry innovation.

All focus group participants identified the lack of resources as a challenge. Survey respondents were asked to list the top five resources needed to expand and/or improve clean energy related programs. Results are displayed in the table below.



Focus group participants reported relying on two primary resources to build clean energy-related training:

- ***The Workforce Development Fund,*** administered by SBCTC, supports one-time projects that are necessary to meet changing needs and expectations of industry and/or prospective students or support local workforce and economic development initiatives. SBCTC recently awarded $1.5 million in Workforce Development Funds for the 2025-2026 academic year. An additional $1.5 million will be made available for competitive applications in late winter 2026 with awards starting on July 1, 2026. Clean energy-related programs must compete with other college programs for these funds. Grants range from $25,000 to $150,000 per proposal for individual colleges, more for consortium applications. Programs are required to demonstrate sustainability within a year of implementation. Unfortunately, costs for clean energy-related program development can be higher due to the high level of expertise and cost of trainers, and it can take more than one year to build student and employer understanding of and interest in new clean energy programs. Focus group participants targeted three to five years for clean energy-related programs to become sufficiently enrolled to sustain themselves with tuition funding.
- ***Career Launch Funding,*** administered by SBCTC in coordination with Career Connect Washington. Focus group participants identified Career Launch funding as a primary resource to build new clean energy-related programs, but $6 million for Career Launch enrollment funds to grow programs was cut in the last legislative session. While $3 million is still available for the 2025-2027 biennium, only programs with current Career Launch endorsements are eligible to apply through a competitive process. To receive a Career Launch endorsement, a program must show growth in enrollments and provide students with paid learning experiences, which is a high bar for most existing clean energy-related programs.

Because the sector is so diverse, equipment needs identified by survey respondents ran the gamut and included, but were not limited to:

- Updates to CAD equipment and labs, more computers, virtual reality simulators.
- Automotive technology trainers.
- Trucks, nearly current model semi-trucks and tractors, current "clean diesel" trucks, EV cars and trucks, hybrid and other vehicles, and vehicle components and equipment such as motors, wiring, inverters, batteries, chargers, charging stations, etc.
- Tools such as battery lifts and motor testers.
- Residential and commercial HVAC and building automation equipment, heat pumps, high voltage AC compressors.
- Solar and wind energy learning systems, labs, training modules, simulators.
- Hydroelectric trainers.
- Hydrogen trainers.
- A tube furnace, spin coater, sputtering system/UV litho setup, chemical bath station, wafer dicing saw, IV curve tracer, spectrophotometer, cleanroom, silicon wafers, doping agents, metal, glass substrates, etching and cleaning chemicals.

"Safety equipment maintenance costs [for clean energy related programs] are much higher. Each set of [EV] gloves needs to be sent off every six months for independent testing. Standalone lab equipment is very expensive but is designed to run at lower voltages which make the learning environment safer."

— Survey respondent

As the clean energy sector moves to increase electrification, automation, energy storage, and higher voltages, colleges will see increased costs for training, safety equipment, and specialized technology. For example, high-voltage training is more expensive than low-voltage training due to the specialized equipment, safety protocols, and expertise required for handling higher voltages. New hydrogen lab equipment costs $93,000 per trainer. In addition, existing programs like machining or electric programs will likely see increased demand. For example, a technical college 5-quarter electrician program that runs 24-student cohorts once or twice a year has an interest list of over 100 individuals.

Challenges hiring and retaining faculty

Another challenge to developing and growing clean energy-related programs is the difficulty of recruiting and retaining appropriately skilled faculty. When asked "Are you able to find faculty with the appropriate skills for your clean energy related programs?" more than one-third of deans and administrators responded "no."

As with many college professional-technical programs, wages for clean energy-related program instructors cannot compete with those paid by industry. Focus group participants noted that noncompetitive wages result in few applicants for job openings. For example, one focus group member reported that a recently posted opening for a full-time adjunct faculty for the electrician

program with an $82,000 salary garnered 600 views but no applications. Others noted that skilled employees in the private sector can often earn twice as much or more than college faculty.

I took a two-thirds pay cut to be a teacher at a community college, and not that many people are going to do that."

— Focus group participant

While funding to increase the salaries of instructors in "high needs" programs is available, focus group participants stated these resources did not adequately fill the gap because many clean energy-related programs do not meet the definition of a "high need" program. For example, one survey respondent noted, "Automotive instructors with electrical vehicle expertise are difficult to recruit in our rural service area, and unfortunately automotive faculty are not eligible for high-demand salaries."

Noncompetitive wages also impact the ability of colleges to retain highly skilled faculty. By providing significantly better pay, industry can attract faculty who are not only highly trained but also have strong interpersonal skills honed through class management experience. In these situations, colleges not only lose faculty, but also their training investment into those faculty, *and in some cases whole programs*. Several colleges that are closing clean energy-related programs reported that the loss or lack of skilled faculty was a primary reason for closure.

"The work just continues to mount and mount. The same people who show a high level of accomplishing things keep getting leaned on over and over to do more and more. The same person who helped write the electrician program is now writing our alignment program and is also writing our building engineering program. We may be compensating them, giving them some curriculum development funding for all those different programs, but after they develop three or four different programs, it's kind of hard to say, 'Okay, and now I need you to go over and help teach this program because we have some new faculty that need help.' It's a lot to keep leaning on people's passions without adding to their pocketbooks."

—Focus group participant

In one focus group, participants noted that most faculty who stay do so because they are passionate and mission driven. However, focus group participants also noted that passionate faculty often get tapped to do more, like helping less skilled faculty become more proficient, developing curriculum, writing grants to bring in resources, and, in some cases, being asked to guide or lead college clean energy initiatives. While these "passion projects" can generate excitement, programs do not have extra staff or substitutes to cover for faculty engaged in projects, potentially stretching and burning out faculty and administrators, making industry offers of higher wages even more appealing.

The need for professional development

Deans, administrators, and especially faculty listed professional development as a top resource need. This need is driven by professional-technical faculty requirements to implement ongoing professional development plans, the challenges of supporting staff training, and the cost of training.

Professional development for professional-technical staff typically takes two forms:

- ***Training to develop teaching skills to support adult learning.*** While new hires may have experience training coworkers, they likely lack the skills and strategies to meet the needs of diverse adult learners entering community and technical college programs. Many new hires require professional development to learn classroom management, student engagement, and other skills necessary to teach in college programs. They may also need to learn about student support services and systems to meet the needs of students furthest from opportunity served by Washington colleges.
- ***Training to maintain or increase technical skills and certification to keep up with industry innovation.*** The sector is constantly innovating, requiring faculty to learn about new technologies, changing processes, and new tools. Technical skills training is often expensive and may only be available outside the college district or out of state. This requires travel which adds to the cost of training.

Focus group members stated that sending faculty to training can have an impact on an entire program. Programs are highly specialized and understaffed, so covering faculty while they are in training is difficult. When professional development requires travel, which highly specialized training often does, faculty spend even more time away from their classrooms, adding to the challenge.

Because trainings are often highly specialized, they can also be expensive, and community and technical college training budgets are notoriously tight. Grants and other funds that cover the cost of new equipment do not always cover the cost of training. As a result, it can be difficult to stay up to speed on industry innovations and gain the expertise to develop responsive programming.

The state's Centers of Excellence provide industry specific professional development for deans, administrators, and faculty, including training related to clean energy. But their funding for the 2025-27 was cut by 26%, including a 21% across the board cut and elimination of one center in the biennial operating budget. This will likely constrain their ability to help meet needs for college programs in this growing sector.

Limited awareness

Survey respondents identified having sufficient student and employer interest to start and fill a program as another challenge. Programs that recently closed or are closing are doing so because a lack of faculty and because of low enrollment. Of the deans and administrators responding to the question "Do any clean energy related programs you oversee have difficulty meeting enrollment goals?" 41% said, "yes."

Half of the deans and administrators and 41% of faculty who responded to the survey question, "Are there clean energy industry employers with which you would like to have a better connection?" said "yes." Nearly two-thirds of faculty who answered the question, "Are employers meeting with you to discuss their hiring needs related to clean energy sectors?" said "no."

In addition, 44% of deans and administrators who responded to the question, "Do you have the industry support needed for your advisory committee(s) to anticipate and address changes to clean energy-related sectors?" said "no." Strong advisory committee members and industry champions are critical for networking and making industry connections, but it can take additional time and effort to

find, recruit, and cultivate them.

Colleges have limited resources for public outreach. Marketing is expensive and may not be very effective in this rapidly changing sector. Often, the most effective way to engage employers is through networking and direct outreach, which is time consuming; program staff are already spread thin. These challenges can be exacerbated in the clean energy sector. The sector is distributed across such a large variety of programs, requiring additional coordination and communication to leverage relationships and networks.

It's also difficult to raise awareness about clean energy programs because clean energy jobs often go by traditional job titles, making it difficult for students to translate job ads to clean energy industry demand. For example, machining plays a crucial role in the expansion of the clean energy sector. The American Clean Power Association reports that with the increasing demand for renewable energy technologies, manufacturing jobs, including machining, are expected to increase substantially. This growth is driven by investments in clean energy infrastructure and the need to manufacture components for solar panels, wind turbines, electric vehicles, and other clean energy technologies.[4] However, the public is unaware of this opportunity, and many machining programs are facing enrollment challenges.

> *"We've noticed a depleting population of students in the machining area. In our district we have solar panels manufacturing and we also have Janaki, which makes the blades for the wind turbines, but I'm thinking of any and all components [of the clean energy industry]. If we don't find ways to encourage students or at least let them know that machining exists as an occupation, because most people don't know what it is, we're not going to be able to support clean energy as a whole."*
>
> *—Focus group participant*

Case study

Clover Park Technical College's new lineman school is an example of the critical importance of having the right person or people and networks to build new programs. At Clover Park, that "right person" is a member of the college's Board of Trustees who retired from a career in the trades but maintained strong ties with organized labor. Her efforts to build labor-college connections resulted in the development of the college's new lineman program. These types of relationships take time and energy to build. They also take awareness of industry needs and a knowledge of programs to make the right connection.

Recommendations

> *"As we restarted our renewable energy program, the first grant we went after was a Workforce Development Fund grant, which is my favorite grant funding source because It's flexible. It allows you to say*

[4] The American Clean Power Association, America Builds Power: The State of Clean Energy Manufacturing, May 2025, https://cleanpower.org/news/america-builds-power/

if you want to expand a program or if you want to create a new one — tell us what you need to do it, and we'll help you out. That flexibility is super helpful. We're using it for curriculum development, and for instruction in the first year where we're not going to have enough students to justify a program on its own because it's the first year. So, it really does help fill the gaps."

"I think sometimes opportunities come in and they're too specific. If there has to be a new program and it has to be on this topic and it has to be tied to an apprenticeship, it makes it difficult to respond effectively. I think what we're trying to do is incorporate these new technologies and these new workforce skills and skill gap alignments to industry within [existing] programs as the technology and the career opportunities present."

— Focus group participants

To deliver on the state's commitment to avoid the worst impacts of climate change by increasing energy efficiency and reducing carbon emission across as many sectors as possible, investments into community and technical college clean energy-related programs are critical. This is a once-in-a-generation opportunity to strengthen the backbone of our economy — the blue collar, middle-class jobs that require skills training. The jobs created by the clean energy sector provide new opportunities for workers in fields and occupations that require education or training past high school, but not a four-year degree, making the role of community and technical colleges pivotal to meeting the sector's needs.

A recent Washington State University Energy Program report concludes, "a more proactive technical education system will be necessary to meet our near and long-term challenges, consisting of improved communication between employers and educational systems, enhanced employment data analysis and tracking, and regular reviews of progress."[5] Deans, administrators, and faculty engaged in the development of this report added that flexible resources and greater coordination are also necessary. The following recommendations consider the state's resource constrained context by focusing on ways to leverage existing efforts, strengths, and investments to the extent possible so strategic investments can bring real results.

Ensure resource flexibility

One of the greatest risks to the state's climate agenda are challenges faced by the community and technical college system. Colleges grapple with increasing responsiveness to sector innovation due to the risks and high cost of program upgrades for this sector, the short timeframe these changes need to happen, and lack of resources to support that work.

As noted elsewhere in this report, focus group participants stated that clean energy-related programs may take longer to become self-sufficient because the field is evolving and occupational demand is hard to quantify. They recommended a 3-to-5-year horizon for programs to prove themselves which means programs will need flexible funding support in the first few years while enrollments are built.

[5] Matt Booth, Washington State University Energy Program, Strengthening Workforce Development in the Context of Clean Energy Transformation, 2023

While this report recommends aggregating system needs to find common solutions, because the state's clean energy economy varies regionally, support for college clean energy-related programs also needs to be college by college, program by program, and region by region. Funding needs to respond to each regional context and the unique faculty and programs of each college and provide the time to develop and take risks without dire consequences.

Because equipment and staff training for these programs is expensive, focus group participants recommended creating more flexibility in how program development funding can be spent to respond to local needs. Increasing the caps on equipment spending could also help support the growth of clean energy-related programs. Allowing programs to include the costs of training with equipment purchases would also help.

Maintain clean energy-related investments

Dedicated investments into clean energy programing make a difference. For example, in 2022, SBCTC received $1.5 million in state funding to create the Climate Solutions Program to integrate climate justice and solutions education across college curriculum and upgrade programs to meet green workforce needs. As a result:

- More than 500 new climate justice, solutions-focused assignments, and professional technical "green workforce" modules for students were developed.
- 43 faculty leads from 21 colleges were trained in a model for faculty professional development and collaborative curriculum redesign.
- 93 workforce faculty from 23 colleges attended a retreat to connect with industry, learn about the clean energy economy and climate policies that affect their region, and identify shared needs.

Funding was also distributed to faculty to make curricular changes, develop new employer partnerships, get professional development, or purchase equipment.

In 2025, SBCTC received an additional $475,000 to build on the Climate Solutions Program. These funds were made available as grants for climate solutions-related equipment purchases, professional development, and curriculum upgrades. Nearly $850,000 in applications were submitted, almost twice the amount available. However, despite high demand and impressive results, no additional funding for the Climate Solutions program was allocated for the next biennium.

The Workforce Development Fund, administered by SBCTC, is the most consistently available funding for making program improvements and creating new programs. This is the preferred funding source for colleges, as it is the most flexible and reliable, and administered by the SBCTC workforce team. While focus group members praised the fund's flexibility, the resource is not targeted specifically for clean energy-related programing. Clean energy-related programs must compete for funding with other high-need, rapidly-changing programs like nursing. Increased investment in this already established fund and process would benefit all colleges and programs in making the changes that are needed to respond to clean energy sector needs.

"Most of the colleges had used Career Launch [funding] in alignment with their clean energy program. For us, it was our HVAC program.

The loss of [Career Launch] funding for FTE destabilizes our long-term efforts towards growing these programs because what's happening in a lot of the clean energy sectors, like HVAC, is that the industry is changing really rapidly right now. So, we really need more stable, long-term funding to address not only the equipment needs, but the training needs of the faculty."

— Focus group participant

Focus group members also cited Career Connect Washington Career Launch funding as a resource to develop and support new programs. That resource has been significantly cut, leaving programs to seek other competitive grants to build their programs. Unfortunately, searching for and writing grants is time intensive and requires expertise that is not always available at the program level at many community and technical colleges.

Climate solutions program workforce training impacts

- "Our construction instructor developed several assignments and assessments integrating green building, wastewater management, sustainable design, wastewater reduction and reuse into several classes including facilities maintenance, advanced carpentry, engineered building materials, alternative building methods, and permits and amp codes."

- "The Electrician program purchased new lab materials for students to learn about renewable energy systems and energy-efficient, low voltage-controlled lighting systems … These new lab materials will provide each student with the resources required to work independently on projects and claim personal ownership of the hands-on concepts taught during this course. The plan is for each student to design and build their own stand-alone solar energy system, as well as their own energy-efficient, low voltage daylight sensing lighting control system."

- "In support of the regional transit authorities' transition to electric buses, the college developed a fundamental electrical theory course that the employer had identified as needed for its employees. [Employees needed this course] before [they] were able to fully benefit from the advanced high voltage training the employer was paying a significant amount to obtain for its employees. The college was proud to have been able to deliver the requested educational offering for an important regional partner, a key function of the community college. Utilizing a continuing education pathway as the initial offering enabled the college to swiftly identify quality faculty to design and teach the program and have the first cohort underway as quickly as possible. Within hours of the first cohort opening for sign-ups, a local business secured all additional six spots not reserved for the transit authority employees. The overwhelming interest from other businesses in securing the opportunity for this training for their employees enabled college staff to identify that a for-credit (academic) program would likely sustain enough interest to warrant being added to the college's professional-technical program portfolio. This is a significant milestone for the college as it is the first program specific to supporting the transition to the green economy that the institution will offer."

Enhance coordination and collaboration

While the community and technical college system is loosely confederated, there are many

examples, like the Climate Solutions Program described above, of how colleges work together to respond to statewide and industry needs. Structures for aggregating and responding to sector needs already exist at the state level and can be leveraged to create systemic solutions for the clean energy sector.

The State Board for Community and Technical Colleges provides systemic coordination, support, and advocacy for Washington community and technical colleges. SBCTC aligned policy associate positions with key workforce development activities in support of funding, policy, and legislative priorities. These policy associates are key resources for Washington's system of 34 public community and technical colleges, workforce partners, and related state agencies. Funding to support the clean energy sector would allow a similar support structure to be created to address the growing demand in this sector.

SBCTC's work is complemented by the state's network of Centers of Excellence, housed at community and technical colleges throughout the state. Centers of Excellence serve as statewide resources representing the needs and interests of a specific industry sector. Centers are charged with narrowing the gap between employer workforce needs and the colleges' supply of work-ready graduates. While the Pacific Northwest Center of Excellence for Clean Energy is the go-to resource for supporting college programs in this sector, clean energy activity is growing in sectors supported by other Centers of Excellence as well, including

- Aerospace and Advanced Manufacturing
- Agriculture & Natural Resources
- Construction
- Cybersecurity
- Global Trade and Supply Chain Management
- Homeland Security-Emergency Management
- Information and Computing Technology
- Marine Manufacturing and Technology
- Semiconductor and Electronics Manufacturing

However, Centers of Excellence overall funding was cut by 26% for the 2025-27 biennium.

Additional resources are needed for the SBCTC and Centers of Excellence could provide coordination, find synergies, and support colleges to meet the needs of the clean energy sector.

Examples of how statewide coordination could help colleges meet clean energy related sector needs include:

- Aggregating faculty professional development needs and scheduling/providing the most requested trainings to reduce costs so that colleges can use their training budgets for more specialized/localized professional development needs. Examples of areas with common needs include, but are not limited to EV Automotive, HVAC heat pumps, energy efficiency,

automation, and high voltage safety.

- Building cross-college learning and training opportunities that require best practice sharing to help programs avoid "recreating the wheel," thereby saving resources. Focus group participants noted the futility of each program having to create everything on their own.
- Housing/supporting a curriculum development expert/process and open educational resource repository. This would allow the college system to work with an expert curriculum developer to shortcut the time, effort, and cost of curriculum development and increase access to low-cost resources for program improvement, like the open educational curriculum on heat pumps from the National Green Jobs Advisory Council.
- Diversify funding via a statewide sector grants strategy. The strategy could include preparing "shovel-ready" consortia projects responsive to recurring and emerging federal and other large grants. This would allow the system to pursue large grants and be ready to collaborate with other entities who want to include a ready-made workforce development component. Additional components of the strategy could include identifying grant opportunities in real time on behalf of college clean energy-related programs. This would reduce dependence on state grant resources and aggregate program needs so that a single grant proposal could meet the needs of multiple colleges. Most programs need similar upgrades, so consortia-based grant writing can 1) share the labor of grant writing (as many colleges do not have grant writing staff, and faculty experience in grant writing varies); 2) efficiently structure collaboration and resource sharing; 3) share professional development and curriculum development costs; and 4) increase impact beyond one program, which is often a requirement of grants with higher funding levels. This would require staffing to coordinate, build partnerships, cultivate competitive proposals, and manage awarded grants.
- Create an ecosystem of partnerships. Partnerships are difficult to create because they are often added to a faculty member's existing workload without much institutional support. Yet they are essential for work-based learning, good student outcomes post-graduation, and are required for many workforce development models and larger funding opportunities.

  The community and technical college system primarily relies on individuals to maintain partnerships for programs and colleges. Partnerships must be held at higher levels and sustained through ongoing forums and additional staffing. Equity in representation, decision-making, and outcomes must be central to these partnerships. Investment in these ongoing sector partnerships serves multiple purposes and entities, but it is essential for these partnerships to be sustained and productive toward coordinated and strategic action. Models include Next Gen Partnerships, Front and Centered: Community Assemblies, and Perkins Comprehensive Local Needs Assessment. Several focus group participants also noted that the California community college system and green workforce strategies could provide a model for supporting partnerships.
- Expanding support and personnel to help connect programs with employers for advisory committees and other program support.
- Maintaining an inventory of equipment needs to help connect programs with employers who may be willing to donate or loan equipment to college programs.

- Promoting effective ways to build interest and awareness of clean energy-related programs, developing shared marketing resources and toolkits.
- Exploring expanded college and organized labor partnerships. 16 (47%) community and technical colleges responded to a question about how they engage with organized labor. Thirty-seven percent of responders indicated that their clean energy-related programs did not have union partnerships. Of colleges that said they had union partnerships, the most common was via advisory boards (53%). Only a few reported sharing apprenticeship openings with organized labor, having union representatives visit classrooms, having apprenticeship pathway agreements, or partnering in other ways. Exploring ways to better engage with organized labor, considering that many clean energy jobs are in existing occupations where union representation is prevalent, could create new synergies and approaches to meeting the needs of the sector.
- To implement any of these recommendations would require resources and additional staffing, like a program associate for SBCTC, and reinstated funding for the Centers of Excellence. The Pacific Northwest Center of Excellence for Clean Energy has already initiated aspects of the activities listed above, but cuts to the 2025-2027 biennial budget threaten its ability to expand strategic work at the very time the center's support is needed most. SBCTC has also played a role in this work but does not currently have staff or programming focused exclusively on tracking policy changes in this rapidly changing sector, creating strategy, coordinating college efforts, and building a clean energy sector or otherwise climate ready workforce.

Focus group feedback

"I would really appreciate something that we started with State Board for workforce development, a share-out. Nobody should start from scratch. If I have something built, like the EV [certificate], I would love to share that with anybody across our system and showcase what we did, the obstacles we faced, our story, what you should be prepared for before you advance or move in this area."

"There's a lot of work going on, and we're reinventing the wheel. Every program we have is trying to spend all of its energy to spin up, recruit staff, do it again when there are great resources out there that are free if we had an aggregator."

"We're putting effort into program growth because students are willing to travel, especially in the Puget Sound from Everett to Tacoma or Olympia. We're doubling up a lot of program generation effort there, and we have programs kind of competing and cannibalizing rather than putting our shoulders into strategic growth of those programs so that we can serve big student bodies."

"California has intermittently done this much better, where they have an aggregator that is defining careers, marketing, and highlighting careers with a long-term, ongoing growth path. People are making 6- to 8-year investments inside the community and technical college system to level up in careers, especially from an AA to a BAS or beyond. And they want to understand how that aligns with long-term career growth. They need sophisticated marketing and pathway documents."

Conclusion

To support robust implementation of state policy to impact Wahington's climate goals, the

community and technical college system will need support and investment. This report provides details about the current state of clean energy-related programs in Washington as well as recommendations for how the state's community and technical college system can be supported and leveraged to ensure a sufficiently skilled workforce for the sector's growth. Among the key themes are the need for ongoing, flexible funding to support growth in rapidly evolving clean energy programming and increased support for statewide coordination to streamline and reduce the cost of program innovation.

Washington is at a critical juncture in its clean energy-related economic development. Support for its community and technical college programs will result in a skilled workforce ready for the increase in demand for middle-skilled, blue-collar jobs and help achieve the state's climate goals. The community and technical college system has a century of experience in career connected-education and workforce development. It is the largest and most accessible workforce education system that serves the most diverse populations. Investing in Washington's community and technical college system leverages the expertise, infrastructure, and access it offers for equitable and sustainable workforce development for the clean energy economy in every part of the state.

Appendix A

Colleges responding to SBCTC Clean Energy Workforce Programs Survey by region.

Northwest Washington

Bellingham Technical College

Peninsula College

Skagit Valley College

Puget Sound Area

Bates Technical College

Bellevue College

Cascadia College

Clover Park Technical College

Everett Community College

Green River College

Highline College

Lake Washington Institute of Technology

Renton Technical College

Shoreline Community College

South Puget Sound Community College

South Seattle College

Southwest Washington

Centralia College

Clark College

Grays Harbor College

Central Washington

Big Bend Community College

Columbia Basin College

Walla Walla Community College

Wenatchee Valley College

Yakima Valley College

Eastern Washington

Spokane Community College

Spokane Falls Community College

Appendix B

Community and technical colleges whose deans, administrators, and/or faculty participate in focus groups.

Puget Sound Area

Bates Technical College

Clover Park Technical College

Everett Community College

Lake Washington Institute of Technology

South Seattle College

Southwest Washington

Clark College

Central Washington

Columbia Basin College

Walla Walla Community College

Yakima Valley College

Statewide

State Board for Community and Technical Colleges

Pacific Northwest Center of Excellence for Clean Energy