Powering Alaska's Future

Opportunity Analysis of Clean Energy Workforce Challenges and Potential Solutions

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REAP
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Sunstone Electric electrician Jacob Magbual works on a solar project in Galena, Alaska. Photo: Haleigh Reed/REAP

Executive Summary

Alaska's energy industry must maintain and modernize critical infrastructure, but it struggles to recruit and retain the skilled workers needed for both clean and traditional energy projects. This challenge is not unique to the energy sector: The state has faced more than a decade of net outmigration,[1] with nearly a quarter of all Alaskan workers living out of the state in 2024.[2] The effects of an insufficient local energy workforce, however, are broadly felt across industries and communities. High energy costs, environmental degradation, unreliable service, and long-duration power outages have cascading impacts on vital dual-use infrastructure, community services, economic opportunities, and individual livelihoods. As interest and urgency in developing a homegrown clean energy workforce grow across the state, this analysis examines the most impactful and effective pathways to achieving that goal.

This report draws on 43 informational interviews and 10 Alaska Energy Training Group meetings with training providers, utilities, businesses, workers, Tribal entities, state employees, nonprofits, and community groups. Employment data from the U.S. Energy & Employment Report and a broad literature review provided additional context. Together, this research identified high-demand clean energy jobs, workforce challenges, and strategies for growth.

The hardest-to-fill clean energy jobs include construction trades, administrative roles, and engineering positions. Many of these are also in high demand in other industries and states. The roles specified as most difficult to staff were rural remote, rural hub, and statewide traveling positions.

IN-DEMAND CLEAN ENERGY OCCUPATIONS

- Accountants
- Bookkeepers
- Career and technical education teachers
- Diesel mechanics
- Electrical engineers
- Electricians
- Financial analysts
- HVAC mechanics
- Insulation/weatherization workers
- Line workers
- Power plant operators
- Project managers
- Solar photovoltaic installers
- Utility managers
- Wind turbine technicians

Energy workers, employers, and trainers described many reasons why it is hard to recruit, retain, and train clean energy workers in Alaska. Their input highlighted five main barriers that constrain the state's clean energy labor market.

[1] "Statewide Population and Components of Change, 1945 to 2024," Alaska Department of Labor and Workforce Development, Research and Analysis Section, last updated January 28, 2026.

[2] *Nonresidents Working in Alaska | 2024,* Alaska Department of Labor and Workforce Development, Research and Analysis Section, February 2026

KEY ENERGY WORKFORCE DEVELOPMENT CHALLENGES

1. In much of rural Alaska, clean energy positions are difficult to fill and retain.
2. Maintaining and repairing rural infrastructure, including clean energy systems, is expensive and hard to fund in remote areas.
3. Even on the road system, it's hard to keep experienced clean energy workers beyond entry-level roles, which impacts statewide workforce availability.
4. Accessing clean energy training is challenging across the state, especially in rural areas.
5. Clean energy training programs struggle to hire and retain experienced instructors.

Sources described many factors that fuel these challenges. The stressful nature of many essential energy positions, limited rural revenue streams, the high cost of implementing and maintaining new technologies, Alaska's relatively small scale and inconsistent investments in clean energy projects, the lack of wraparound support services for attending training, and rising instructor retirements were just some of the root causes mentioned and explored in this report. But interviewees also identified promising ways to overcome these constraints to support and grow Alaska's clean energy workforce.

TOP STRATEGIES FOR ENERGY WORKFORCE GROWTH

1. Pursue regional shared services for rural clean energy infrastructure and workers.
2. Increase opportunities for local employment and work-based learning in energy projects.
3. Advance creative partnerships between and among training providers and the energy industry.
4. Expand local opportunities for energy education and career awareness.
5. Research, implement, and bolster financing strategies for building and maintaining clean energy projects.

All entities in the diverse network of Tribal, nonprofit, private, state, and federal partners in Alaska have a role to play in bringing these strategies to life. Rural community life, economic development, and military readiness across the Arctic hinge on having efficient, resilient, and reliable energy systems—and the people to build and maintain them. Workforce development is a generational undertaking that is closely entwined with economic development and education systems. There is no silver bullet, no megaproject, no one-and-done recommendation that can solve the persistent energy workforce challenges Alaskans face. But the strategies laid out in this report include shorter-term mitigating actions and longer-term planning and development work that, when pursued together, can build the clean energy workforce to power Alaska's future.

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Introduction

Recruiting, retaining, and upskilling workers is a monumental task across all of Alaska's industries.[3] In the last decade, the state experienced a substantial decrease in its working-age population, largely driven by a similarly long streak of more people leaving the state than entering it.[4] In response, Alaska's economy is increasingly dependent on nonresident workers, who now make up nearly a quarter of the workforce.[5]

For Alaska's clean energy industry, the stakes are particularly high. The state tops nationwide rankings for both energy use[6] and per-person spending[7], driven by energy-intensive industries, the accelerating adoption of digital technologies, the cold climate, and aging housing and energy systems dating back to the 1970s pipeline boom. And costs will likely increase further as Southcentral Alaska is anticipated to begin importing natural gas—and paying higher prices for it—before the end of the decade.

Construction underway on a solar project in Galena, Alaska. Photo: Jade Powell/REAP

Federal investment is also increasing demand for Alaska's workforce, especially in clean energy. The Inflation Reduction Act (IRA) and Infrastructure Investment and Jobs Act (IIJA) brought major funding for clean energy, grid upgrades, and efficiency, particularly for Alaska Native communities, rural cooperatives, and remote microgrids. Funding and program changes in 2025 and 2026 brought uncertainty and timeline pressure into the state's already tight labor situation, stressing training providers' and project owners' abilities to align needed workers and deliver on these opportunities.

Clean energy—using energy efficiently and generating it from renewables—is crucial for controlling costs and expanding economic opportunity. And the success of clean energy developments depends on equipping Alaskans with the skills to plan, build, and maintain that infrastructure. Workforce development of any type, in any region, is a long-term undertaking that requires sustained effort and coordination to drive generational change. The distinctive characteristics of clean energy workforce development in Alaska make it an especially challenging and vital undertaking.

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[3] Mike Andrews, et al., *"Alaska Workforce Future,"* Alaska Safety Alliance, 2025.
[4] "Alaska's Workforce Challenge," Alaska Cross-Industry Workforce Plan 2030, accessed March 2026.
[5] *"Nonresidents Working in Alaska | 2024,"* Alaska Department of Labor and Workforce Development.
[6] "Alaska State Energy Data," U.S. Energy Information Administration, last updated May 15, 2025.
[7] "Total energy price and expenditure estimates," U.S. Energy Information Administration, accessed March 2026

Background

Alaska's diverse populations and geography make its clean energy workforce development challenges and opportunities stand out from other regions in the United States. The state spans more than 660,000 square miles, making it larger than 10 Midwestern states combined, but with less than 20,000 miles of public roads. Its vast land area includes treeless tundra, boreal forests, temperate rainforests, expansive wetlands, and more than 50% of the country's coastline. With about 737,000 residents, the population density ranges from 170 people per square mile in Anchorage to 0.04 people per square mile in the Yukon-Koyukuk Census Area in Interior Alaska.

Alaska's unique energy context

The Railbelt electric grid, named after the Alaska Railroad's primary route, stretches from Southcentral Alaska's Kenai Peninsula up to the start of the Interior region in Fairbanks. This grid serves roughly 70% of the state's population and generates about 80% of its electricity from fossil fuels, primarily natural gas from nearby Cook Inlet.[8] The remaining 20% comes from renewables, mostly from hydropower from conventional storage dams. Most heating needs within the region also depend on natural gas.

The community of Scammon Bay in the Yukon-Kuskokwim Delta. Photo: Haleigh Reed/REAP

Outside the Railbelt, most of the state's population centers are served by islanded, rural microgrids. There are about 200 microgrids spread throughout rural Alaska, served primarily by regional air carriers, ferries, wintertime ice roads, and summertime river barges. Larger microgrids are within rural hub communities that serve as regional centers, with populations of 2,000 to 7,000 people. These communities provide essential goods and services to rural, remote villages in the surrounding region, where populations commonly range from 100 to 1,000 people. These microgrids usually rely on imported fuel to run diesel generators for most of their electricity, except in some communities in Southeast and Southwest Alaska with developed hydro resources. There is growing integration of renewables, especially wind, solar, and battery energy storage systems, to reduce diesel purchases. Due to the high cost of electricity in rural communities and the state's investments in projects to serve the Railbelt and Southeast Alaska, the state established the Power Cost Equalization (PCE) program. The PCE program reimburses rural electric utilities to equalize rural electricity rates with those paid in more urban areas, but rural rates can still

[8] P. Asmus et al., *Railbelt Decarbonization Pathways Study Public Comment Summary*, Alaska Center for Energy and Power, University of Alaska, Fairbanks, 2023.

double, triple, or even quadruple those in Anchorage, Fairbanks, and Juneau. Heating systems in these communities often use fuel oil, along with some propane and biomass.

Alaska's rural communities may share regional similarities, but they have diverging local histories, cultural traditions, resources, and governance structures. Some communities date back thousands of years, often originating to fill the subsistence needs of one of the more than 200 federally recognized Tribes in Alaska. Others are more modern inventions, stemming from mineral discoveries or mandated Bureau of Indian Affairs school activities. Roughly half of Alaska's communities remain unincorporated, while the other half are local municipalities or boroughs, Alaska's "rough equivalent" of a county.[9] In any given community, a city, a Tribe, an Alaska Native Village Corporation, and an Alaska Native Regional Corporation might each play a different role in delivering key energy services. Add the many active nonprofits and state and federal agencies to the mix, and what emerges is a wholly unique network of organizations and individuals involved in planning, operating, and maintaining energy infrastructure, each with different responsibilities, priorities, and relationships with one another.

Defining the clean energy workforce

While hands-on renewable energy positions, such as wind turbine technicians and solar installers, are often the most visible clean energy jobs, clean energy careers are a larger share of the workforce than just positions in renewable generation technologies. This report defines the clean energy workforce as positions that support efforts to minimize energy waste (i.e., energy efficiency) and to generate, store, transmit, distribute, and use energy from renewable resources.

A workshop attendee learns how to weatherize an apartment in Nome, Alaska. Photo: Tyler Katzmar/REAP

Within the first workforce category, energy efficiency roles help households and businesses use less energy, either by using different technologies and methods or by changing individual or societal behavior. This group of careers is wide-ranging. Efficiency roles include beneficial electrification jobs that help implement high-efficiency electric technologies, construction trades directly involved in building and maintaining Alaska's built environment, and workers such as utility analysts and government regulators who set rates, bill customers, and enforce efficiency standards.

Renewable energy careers support the use of energy from biomass, geothermal, water, solar, and wind. These positions work in all phases of Alaska's energy systems, from generation to end use. Renewable

[9] "Alaska Tax Facts," Alaska Department of Commerce, Community, and Economic Development, Office of the State Assessor, accessed March 2026.

energy workers include people who plan, build, and maintain renewable energy systems, such as battery energy storage technicians and project managers, as well as the many individuals who make them possible behind the scenes, such as state permitting officials, grant writers, and accountants.

Both categories of clean energy workers are employed within many different industries and sectors, most notably construction, manufacturing, utilities, transportation, government, and nonprofit organizations. They are even within the oil and gas industry, which is often set up in conflict with clean energy work, yet has an economic interest in preventing energy waste in its operations. Using a broad definition of the clean energy workforce recognizes the connections between different roles, skills, and industries, and their importance in advancing energy efficiency and renewable energy projects.

The size of Alaska's clean energy workforce

To assess the size and share of the direct clean energy workforce in Alaska, this analysis uses publicly available data from the *United States Energy and Employment Report (USEER)*.[10] The *USEER* has been published since 2016[11] and collects national and state-level employment data in five technology areas: electric power generation; transmission, distribution, and storage; fuels; energy efficiency; and motor vehicles and component parts. Its employment estimates are from a combination of the U.S. Bureau of Labor Statistics' Quarterly Census of Employment and Wages data and employer surveys.[12]

This analysis draws on three years of *USEER* data (from the *2023–2025 USEERs*, which include data from the years 2022–2024), which provides two year-over-year growth periods. The data analysis is described in Appendix C, with the full datasheets available in Attachment B.[13] The *USEER* provides statewide employment estimates and doesn't delve into regional differences and variations that may buck statewide trends. Given the sharp differences between Alaska's road-connected Railbelt and 200+ rural hub and remote communities, this analysis supplements the *USEER*'s statewide data with qualitative and regional data from stakeholder interviews.

Crucially, the *USEER* documents direct, realized energy employment, which are roles that work with physical energy efficiency and renewable energy infrastructure. The reports do not consider indirect employment, which includes administrative, regulatory, financial, and supply chain jobs behind these projects, or induced employment, which encompasses the broader array of support and service jobs created by direct and indirect employee wages. Workforce data in other industries often calculates employment impacts by modeling indirect and induced positions created using economic multipliers.

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[10] *2023–2025 United States Energy & Employment Jobs Reports (USEERs),* U.S. Department of Energy, Office of Energy Jobs, last accessed June 2026.

[11] The Department of Energy (DOE) published the *2016, 2017,* and *2021–2025 USEERs*, and nonprofit organizations Energy Futures Initiative and the National Association of State Energy Officials published the *2018–2020 USEERs*.

[12] For smaller states like Alaska, survey sample sizes can be limited. Aggregate totals have greater confidence than subcategory year-over-year job count changes (*2025 USEER*, Appendix p 31).

[13] While this can help identify directional movement and broad patterns, it does not constitute a long-term trend. As additional *USEER* report years are studied, the growth trend analysis will gain reliability.

One recent analysis, developed by the McKinley Research Group using 2022 data and commissioned by the Alaska Oil & Gas Association, states that every direct oil and gas industry employee in the state supports another 15 indirect and induced, or support, positions.[14] Their modeling includes not only payroll, goods, and services positions but also positions funded by oil- and gas-related government revenue. Another recent report, also conducted by McKinley Research Group using 2022 data and commissioned by the Associated General Contractors of Alaska and the Construction Industry Progress Fund, shows that each direct construction industry position in the state supports an additional 0.6 indirect and induced jobs.[15]

Employment multiplier data for clean energy is limited at the state level. National estimates suggest that energy efficiency and renewable energy investments generate approximately 7.5–7.7 full-time-equivalent (FTE) jobs per $1 million in spending.[16] But this metric differs from the employment multiplier method used in oil & gas analysis and cannot be directly compared. Plus, Alaska's unique project environment can double or triple construction costs relative to the Lower 48 average due to logistics, weather, and labor availability, meaning that national FTE-per-dollar estimates likely overestimate Alaska-specific job creation per dollar invested. Developing Alaska-specific clean energy employment multipliers is an important area for future research and would significantly strengthen the economic case for clean energy workforce investment.

A heavy equipment operator at work in Galena. Photo: Jade Powell/REAP

According to the latest *USEER* data, Alaska's direct energy workforce numbered 27,741 in 2024 and made up 8.1% of the total civilian workforce of roughly 342,000. This makes energy employment proportionally more significant in Alaska than at the national level, where it accounts for 5.4% of all jobs. To understand Alaska-specific clean energy employment, this analysis mapped the *USEER's* technology subcategories to a clean energy definition spanning six domains: fuels, electric power generation, transmission and distribution (T&D), storage, energy efficiency, and clean motor vehicles. This classification approach is intentionally broad to recognize the range of technologies that bring energy efficiency and renewable energy projects to life. Alternative

[14] "The Role of the Oil and Gas Industry in Alaska's Economy," McKinley Research Group, prepared for the Alaska Oil and Gas Association, August 30, 2023.
[15] "The Economic Benefits of Alaska's Construction Industry," McKinley Research Group, prepared for the Associated General Contractors of Alaska and the Construction Industry Progress Fund, January 2024.
[16] Heidi Garrett-Peltier, "Green versus brown: Comparing the employment impacts of energy efficiency, renewable energy, and fossil fuels using an input-output model," Economic Modelling, Volume 61, 2017.

definitions[17] yield substantially different totals, particularly when changing the approach to transmission and distribution (T&D) and energy efficiency categories, which together account for roughly 88% of Alaska's clean energy workforce. See Appendix C for a crosswalk of *USEER* subcategories included in this report's clean energy definition.

When the clean energy categories above are applied to the available data, 46.4% (12,882 jobs) of all the state's direct energy positions in 2024 were clean energy roles. Alaska's share of clean energy workers within its overall energy workforce lags the national percentage of clean energy jobs in the energy sector, which stood at 58.6% (4,982,602 jobs) of all energy jobs in 2024. But it has expanded rapidly in the last few years, as seen in Figure 1.

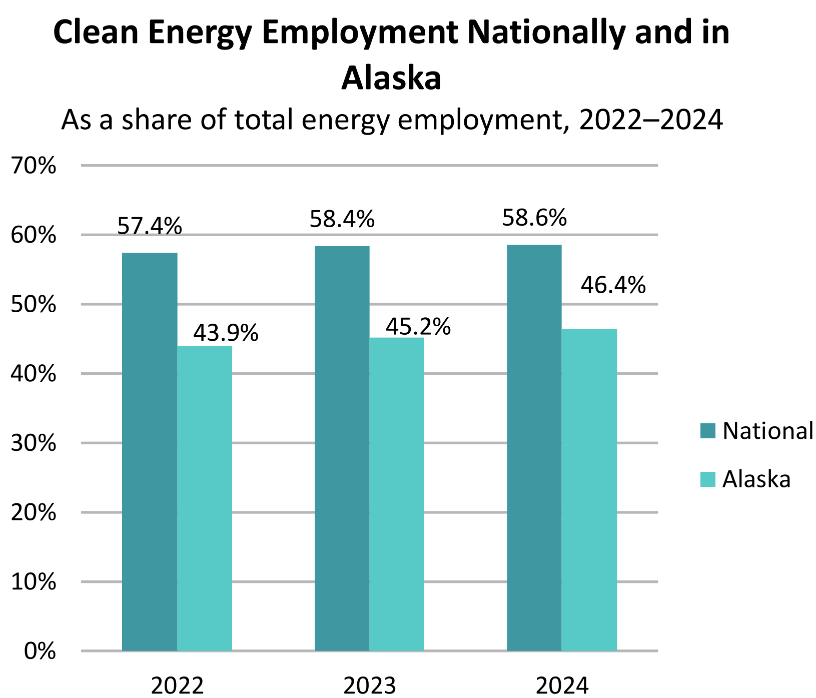

Figure 1: Clean Energy Employment Nationally and in Alaska, 2022-2024. Sources: *2023, 2024, and 2025 USEERs*.

Between 2022 and 2024, Alaska's clean energy workforce grew from 11,544 to 12,882 jobs—an 11.6% increase over two years. This outpaced national clean energy workforce growth, which expanded by 6.9% over the same period, as well as Alaska's overall energy workforce growth of 5.5% during the same period. Alaska's clean energy growth was especially pronounced from 2022 to 2023 (6.4%), though small workforce sizes can inflate year-over-year percentage changes.

For additional context, Table 1 compares Alaska's recent clean energy job growth with relevant peer states. Among fossil-fuel-dependent states, Alaska's 46.4% clean energy share in 2024 is comparable to Wyoming, above North Dakota, and below West Virginia. Among cold-climate and rural peers, Alaska trails Montana, Maine, and Vermont. Hawaii, which is also an isolated grid, reaches 74.4%.

Alaska's recent clean energy growth rates, however, are among the highest of all peer states. This suggests that the state's clean energy transition is accelerating faster than similar economies, despite

[17] For the *2023* and *2024 USEERs*, DOE applied its own definition of clean energy to the *USEER's* state and national data. Readers will find a discrepancy between the *USEER's* clean energy categories and totals for those years and this report's clean energy categories and totals, due to this report's broader definition.

starting from a lower base. Maine is the only peer state with a higher recent clean energy job growth rate. Further investigating its workforce strategies could be a promising area of future study. For more information on the peer state comparison, see Appendix C.

Table 1: Clean Energy Workforce Peer State Comparison. Sources: *2023, 2024, and 2025 USEERs.*

Location	Peer Group Characteristic	Clean Energy Job Share Within All Energy Jobs, 2024	Clean Energy Job Growth, 2022-2023	Clean Energy Job Growth, 2023-2024
Alaska	Fossil fuel; Isolated grid; Cold/remote	46.4%	6.4%	4.8%
Wyoming	Fossil fuel	44.1%	-0.2%	1.9%
North Dakota	Fossil fuel	33.0%	1.8%	2.7%
Montana	Cold/rural	64.1%	2.3%	3.0%
West Virginia	Fossil fuel	54.4%	-3.8%	0.2%
Hawaii	Isolated grid	74.4%	1.3%	1.4%
Vermont	Cold/rural	87.4%	3.1%	0.8%
Maine	Cold/rural	66.9%	8.3%	4.0%

The recent growth in Alaska's clean energy workforce

The clean energy workforce in Alaska expanded 6.4% from 2022 to 2023 and 4.8% from 2023 to 2024. The fastest-growing clean energy categories during this period were T&D; storage; energy efficiency; and electric power generation, as seen in Figure 2. T&D is the largest single category within Alaska's clean energy workforce, accounting for approximately 7,000 jobs—over half (54.5%) of all clean energy employment in 2024. T&D grew 6.4% from 2023 to 2024 and 9.3% from 2022 to 2023. Within T&D, subcategory growth was broad from 2023-24: smart grid (4.2%), microgrid (3.5%), traditional T&D (3.6%), and other grid modernization (5.1%) all showed positive trends. This report classifies T&D as clean energy in its entirety, recognizing grid infrastructure as necessary for renewable energy deployment. It is particularly important in Alaska, where microgrid modernization is central to clean energy projects. It is important to note, however, that T&D also supports fossil fuel distribution.

When examining specific clean energy technology subcategories, marked growth of 5% or more occurred in wind generation, solar generation, efficient appliance and lighting installation,[18] and

[18] In the *2023 and 2024 USEER*s, this category was referred to as "Energy STAR and efficient lighting," while in the *2025 USEER*, it was titled "certified and efficient lighting."

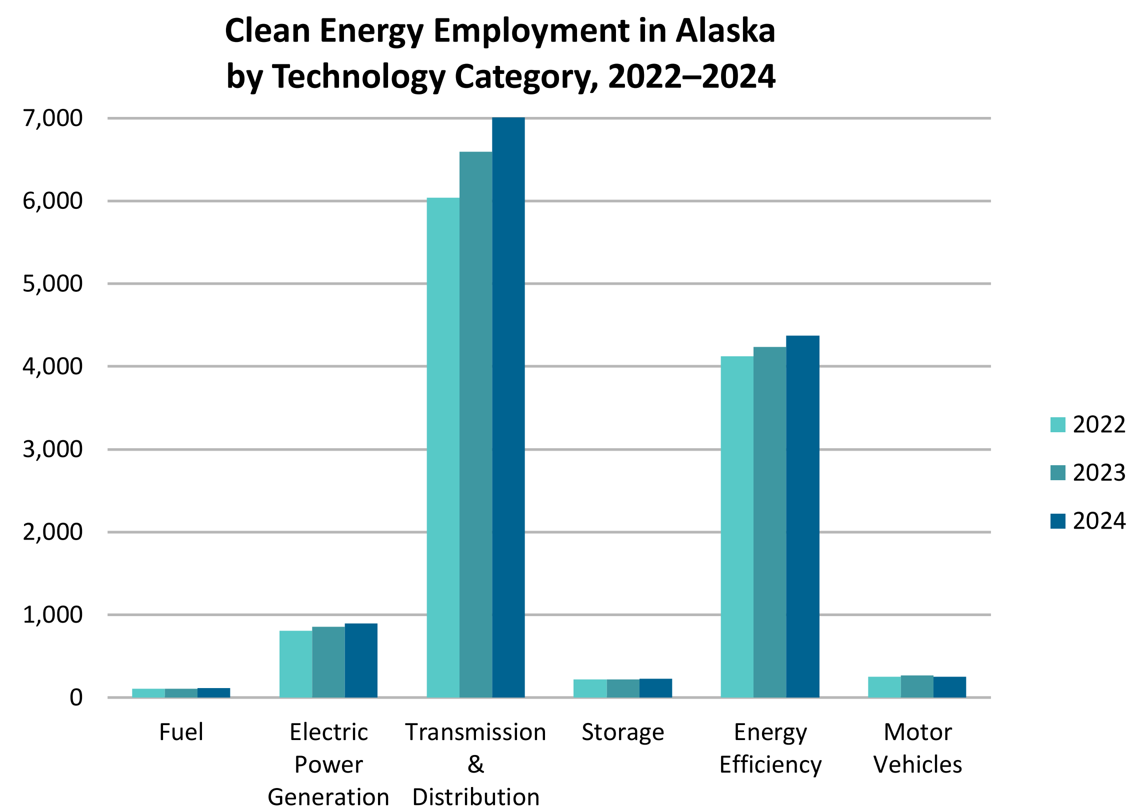

Figure 2: Clean Energy Employment in Alaska by Technology Category, 2022-2024. Sources: *2023, 2024, and 2025 USEERs*.

traditional heating, ventilation, and cooling (HVAC). Wind generation grew 21.4% in 2022-23 and 14.3% in 2023–24, adding approximately 31 positions over those two years to bring the statewide total to roughly 111 workers. Solar generation grew by 11.6%, followed by a further 7%, representing about 26 new positions, for a total of approximately 163. While these growth rates are strong, the small absolute numbers mean that a single project can significantly shift these percentages. As the clean energy workforce grows, these subcategory percentages may stabilize into more reliable trend indicators.

Within energy efficiency, the efficient appliance and lighting installation workforce grew 7% in 2022-23 and 5.6% in 2023-24, adding roughly 68 positions from 2022 to 2024 for a total workforce of 592 people. Traditional HVAC expanded 5.2% and then another 6.4%, representing 79 jobs and totaling 736 workers. These larger absolute numbers indicate less volatility and lend more confidence to the growth pattern.

The rest of the state's energy workforce, on the other hand, grew by 2.1% in 2024 and 3.3% in 2023, as documented in Figure 3. This increase was driven by the clean energy gains listed above, as well as gains in total electric power generation jobs, which included more jobs in natural gas and oil and other fossil-fuel generation. The slower growth in the total energy workforce was influenced by stagnation and slight employment losses in the fuel sector. Fuel employment in Alaska peaked at 12,149 jobs in 2023, then declined to 12,037 in 2024, resulting in a net decrease of less than 1% between 2022 and 2024. While the overall trend is slightly negative, the year-to-year pattern suggests relative stability rather

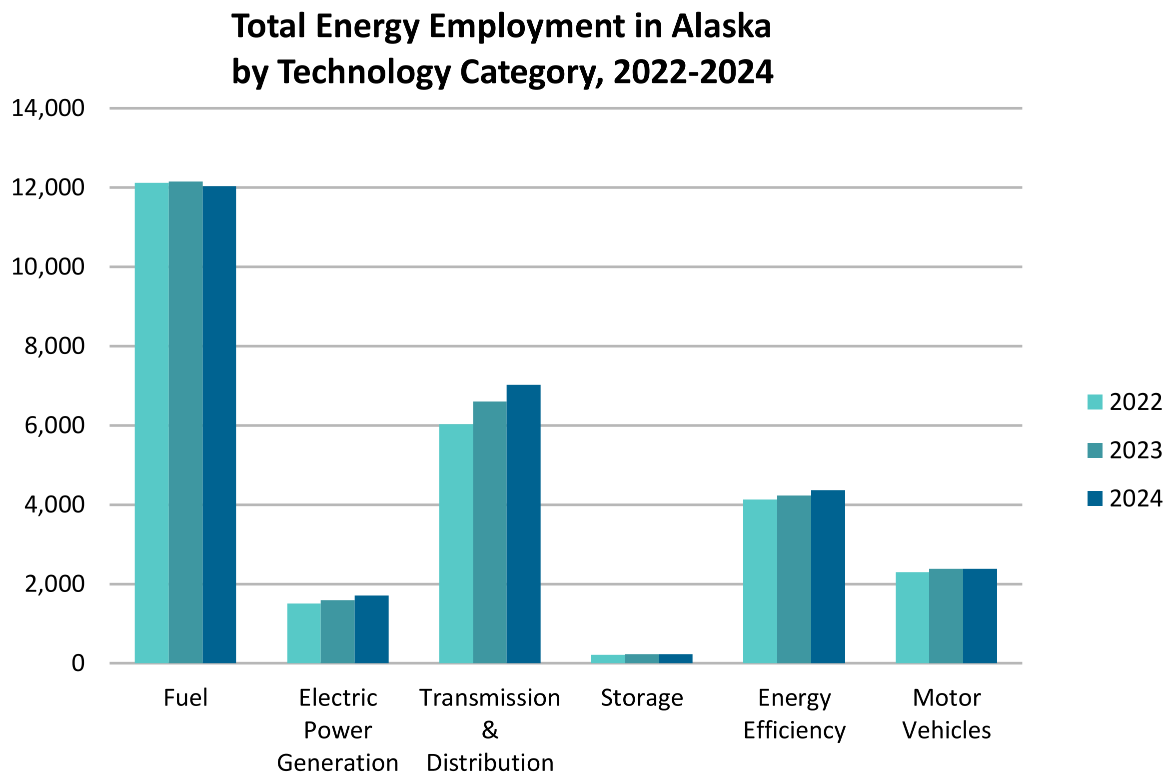

Figure 3: Total Energy Employment in Alaska by Technology Category, 2022-2024. Sources: *2023, 2024, and 2025 USEERs*.

than a sustained decline. Total fuel employment, which includes clean and conventional fuels, remained the largest technology category, accounting for 43.4% of Alaska's energy workforce in 2024.

Clean energy workforce demand projections

Comprehensively forecasting future demand for Alaska's clean energy workforce is difficult, especially given the outsized impact of federal funding on Alaskan development. The latest 10-year state industry workforce projections, published by the Alaska Department of Labor and Workforce Development in October 2024, predicted 6.9% job growth across all job categories from 2022 to 2032. The projections included 4.9% growth in utility jobs and 9% growth in construction jobs.[19]

For clean energy jobs, the National Laboratory of the Rockies, formerly the National Renewable Energy Laboratory, released state-level employment projections for four clean energy technologies in March 2022. The report used 2020 employment data, projected national deployment levels, and corresponding economic multipliers for solar, wind, battery storage, and energy efficiency jobs to model high- and low-workforce projections for 2025 and 2030.[20] Their projections for 2030 are for solar and wind energy jobs to double and battery storage and energy efficiency jobs to triple or quadruple.

[19] Paul Martz, "Alaska Industry Projections for 2022-2032," Alaska Department of Labor and Workforce Development, Research and Analysis Section.
[20] Sarah Truitt et al., *State-Level Employment Projections for Four Clean Energy Technologies in 2025 and 2030,* National Renewable Energy Laboratory, April 2022.

Several other indicators point to growing demand. National projections from the Bureau of Labor Statistics Occupational Outlook Handbook show 4-42% growth for in-demand clean energy occupations through 2034, above the all-occupations average of 3%.[21] In Alaska, the number of federally funded clean energy projects—including hydro projects in Southeast Alaska, solar and battery projects in Northwest Alaska, and an expanded wind project in Interior Alaska—suggests that near-term workforce demand could exceed current training capacity.

Cross-industry impacts

Investments and collaborations that target Alaska's clean energy workforce development also support statewide economic development and operational readiness. The occupations most in demand, like electricians, industrial machinery mechanics, HVAC technicians, engineers, and project managers, are the same roles required to build, operate, and sustain the distributed energy infrastructure that remote mining operations and military installation security depend on. The ability to plan, deploy, and maintain clean energy systems is a core capability for Arctic operations, and is especially key for national security.

A student group visits a battery energy storage system in Nome. Photo: Jenny Starrs/REAP

Alaska hosts significant and energy-intensive military operations, from radar stations in Northern and Interior Alaska to Coast Guard facilities in Southeast. The state's proximity to Asia, its importance for international flight routes, and its access to newly accessible shipping lanes are increasingly vital for national security. Energy reliability, especially along the state's coastline, is foundational for the communications infrastructure, emergency response capabilities, and year-round operations necessary for Arctic domain awareness. A workforce capable of designing, installing, and maintaining distributed energy resources in the harshest operating environment in North America is a national security asset with the skills to support resilient energy systems at remote military installations.

Across industries, Alaska's workforce is also fueled by a significant number of nonresident workers. The overall nonresident worker rate was 22.9% in 2024, with notable increases in construction, oil and mining, and health care and social assistance. The highest nonresident percentages are in sectors with "high seasonality, remote work sites, or a need for highly specialized skills," according to the Alaska Department of Labor and Workforce Development's annual *Nonresidents Working in Alaska 2024* report.[22] This indicates a seasonal drain on knowledge and capacity, especially affecting remote geographies and specialized skills. These pressures, compounded by the decline in Alaska's working-age population documented since 2013[23], point to the need to take an all-of-the-above approach and attract new entrants, increase retention, upskill incumbent workers, and compete for a shrinking labor pool.

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[21] "Occupational Outlook Handbook," U.S. Bureau of Labor Statistics, last modified August 28, 2025.
[22] *"Nonresidents Working in Alaska | 2024,"* Alaska Department of Labor and Workforce Development.
[23] "Alaska's Workforce Challenge," Alaska Cross-Industry Workforce Plan 2030.

Methodology

This report identifies key shared challenges and promising strategies for clean energy workforce development in Alaska. It includes qualitative and quantitative research and analysis performed by REAP staff from December 2023 to March 2026.

Informational interviews

REAP conducted 43 informational interviews with individuals from a range of organizations, including training providers, Tribal entities, utilities, private businesses, state agencies, nonprofits, and community organizations, from June 2025 to February 2026. These discussions focused on identifying barriers to successful clean energy training, planning, operations, and maintenance; gaps in the clean energy training landscape; success stories and examples; perspectives on past clean energy workforce development efforts; ideas for improving training and workforce development; and recommendations for further research. See Appendix A for more information on interview demographics and content.

Alaska Energy Training Group meetings

This effort also drew from 10 quarterly Alaska Energy Training Group meetings that REAP facilitated from December 2023 to March 2026 to identify pain points and best practices for energy workforce development. These meetings featured presentations and discussions with a wide variety of sources engaged in energy training, technical assistance, and service provision. Presenters included an electrical contractor, an HVAC training provider, a heat pump researcher and installation expert, solar installation experts, an energy auditor, a registered apprenticeship program sponsor and employer, a Local Government Specialist, a Circuit Rider, a diesel engine repair business owner, and remote monitoring specialists. See Appendix B for more information on group presentations, participants, and notes.

Data review

The United States Bureau of Labor Statistics Occupational Employment and Wage Statistics (OEWS) and the *United States Energy & Employment Reports (USEERs)* were the two main sources of employment data used in this analysis. The *USEERs* rely on data from the U.S. Bureau of Labor Statistics' Quarterly Census of Employment and Wages and stratified employer surveys. Rob Jordan of Dare to Know conducted an independent technical review of the *USEER* data analysis, including restructuring compiled employment data to resolve baseline discrepancies, developing a peer state comparative analysis, and producing a detailed gap assessment of the introduction's data methodology and framing. See Appendix C for more information on data sources and analysis.

Literature review

More than 25 publications from private, state, and federal sources were consulted to provide information on past efforts and contextualize interview input. Research conducted in REAP's *Gap*

Analysis of Alaska's Clean Energy Education & Training Opportunities (McConnell, 2019) provided a starting point for sources. See the bibliography for a full list of resources.

Analysis

Interview and Alaska Energy Training Group meeting notes were summarized and categorized by theme, interviewee location, and interviewee industry to identify trends in challenges and solutions. Anonymized interview notes and themes, as well as Alaska Energy Training Group presenter notes and themes, are available in Attachment A. This primary qualitative data was then compared with the *USEER* and other external publications to assess past and ongoing workforce development efforts, population data, and employment trends.

Analysis focused on the most relevant and actionable issues for clean energy employers, workers, and advocates—a difficult task when clean energy workforce development is profoundly affected by broader state and national factors. Issues such as stagnant state education and training funding, unreliable federal funding timelines and agreements for clean energy projects, and profound childcare and housing shortages are systemic challenges that undermine progress across regions and industries. These broader issues are not directly addressed in this report's strategies, but the constraints they create were noted and considered during analysis. See Appendix E for a list of identified challenges and strategies from interviews and meeting notes.

Chapter 1: In-Demand Clean Energy Roles

Identifying the clean energy jobs with the highest demand and lowest supply is key to focus efforts within Alaska's tight labor market. In informational interviews, 60% of participants reported that hiring or retaining staff was difficult. Other employer surveys echo this sentiment. Nearly half (48.2%) of Alaska energy employers surveyed for the *2025 USEER* survey reported hiring difficulty, while most others (47.1%) did not hire at all. Only 4.6% said hiring was "not at all difficult." Hiring challenges in Alaska also match rates reported by energy employers in other cold and remote or fossil-fuel-dependent states as well, as seen in Appendix C. And an employer survey conducted for the *Alaska Workforce Future* report in 2024 found that 80% of employers of all sizes and economic regions in the state reported "moderate" to "extreme" difficulty recruiting new employees, and 57% reported difficulty retaining employees.[24]

When asked which positions were most difficult to fill and retain, interviewees identified 15 roles experiencing labor shortages, steep competition, or both.[25] Pay, competition, and workforce size all contribute to these challenges. Table 2 shows in-demand jobs alongside wage data, Alaska employment numbers, and job growth projections from the U.S. Bureau of Labor Statistics.[26]

Table 2: In-Demand Clean Energy Roles. Interviewees identified these occupations as either difficult to recruit for or retain. Wage, workforce size, and growth projection information is included for each in-demand role. Sources: Informational Interviews; BLS Occupational Employment and Wage Statistics, May 2024; and BLS Occupational Outlook Handbook.

Occupation	National Median Wage	Alaska Median Wage	Alaska Wage Differential	Alaska Employment	National Growth Projection, 2024-2034
General and Operations Managers	$102,950	$120,470	$17,520	6,010	4%
Project Management Specialists	$100,750	$105,360	$4,610	1,590	6%
Accountants and Auditors	$81,680	$81,950	$270	2,440	5%
Financial and Investment Analysts	$101,350	$94,480	-$6,870	210	6%

[24] Mike Andrews, et al., *Alaska Workforce Future,* Alaska Safety Alliance, 2025.
[25] An additional occupation, energy auditors, was mentioned as a potential future labor workforce shortage, especially for those willing to travel, but was not described as a current occupation experiencing labor shortages.
[26] BLS Occupational Employment and Wage Statistics produces employment and wage estimates for more than 800 occupations for the nation, individual states, and metropolitan and nonmetropolitan areas using business and government agency surveys collected from 1.1 million establishments over a three-year period. BLS Occupational Outlook Handbook includes 10-year projections of national employment by occupation.

Occupation	National Median Wage	Alaska Median Wage	Alaska Wage Differential	Alaska Employment	National Growth Projection, 2024-2034
Electrical Engineers	$111,910	$108,780	-$3,130	380	7%
Career/Technical Education Teachers, Postsecondary	$61,490	$63,350	$1,860	350	-1%
Bookkeeping, Accounting, and Auditing Clerks	$49,210	$54,510	$5,300	4,630	-6%
Electricians	$62,350	$81,860	$19,510	1,820	9%
Insulation Workers, Floor, Ceiling, and Wall	$48,680	$40,330	-$8,350	110	4%
Solar Photovoltaic Installers	$51,860	Unknown	Unknown	Unknown	42%
Diesel Engine Specialists	$60,640	$73,180	$12,540	740	2%
Heating, Air Conditioning, and Refrigeration Mechanics and Installers	$59,810	$83,660	$23,850	790	8%
Electrical Power-Line Installers and Repairers	$92,560	$107,330	$14,770	370	7%
Wind Turbine Technicians	$62,580	$64,220	$1,640	40	50%
Power Plant Operators	$99,670	$85,070	-$14,600	750	-10%

Note: The average projected growth rate across all occupations from 2024-2034 is 3%.

National growth projections for 11 of the 15 top clean energy jobs exceed the all-occupations' average. While these projections may not fully map Alaska's growth trends, they show strong national competition for these jobs. Solar photovoltaic installers, wind turbine technicians, electricians, HVAC technicians, linemen, and electrical engineers are expected to see the most growth nationwide, with 2,300 to 81,000 job openings each year.[27] For more information, including Alaska-specific growth projections and standard occupation classification (SOC) codes, see Appendix D.

Comparing Alaska's wages to the national average helps assess local job competitiveness. With Alaska's

[27] Solar photovoltaic installers and wind turbine technicians start from a very small total number of Alaska and national employees in 2024, which is a contributing factor in the strong growth projection.

high cost of living,[28] jobs that pay near or below the national median are likely to be more difficult to fill. In rural and remote areas, higher housing and energy costs, isolation premiums, and limited amenities make this even tougher. Jobs with high national growth but lower wages—like electrical engineers and financial analysts—are likely the most difficult to recruit for and retain.

Climate Pollution Reduction Grant workforce needs

Many of the in-demand occupations identified in interviews match the priority occupations identified in the State of Alaska's *Climate Pollution Reduction Grant (CPRG) Workforce Analysis*.[29] The *CPRG Workforce Analysis* identified workforce challenges and opportunities to reduce greenhouse gas emissions across residential, non-residential, solid waste, transportation, electric generation, and carbon use, capture, and sequestration sectors.[30]

The *CPRG* research team assessed more than 100 relevant occupations using 10-year demand projections and "living wage" criteria[31] to identify 12 priority occupations for Alaska. The commonalities in these independently derived lists strengthen confidence in the identified occupations. Seven roles appear in both sources, including electricians, HVAC mechanics, insulation workers, line workers, solar photovoltaic installers, project managers, and engineers. Two slightly different yet overlapping roles—diesel mechanics and automotive service technicians, and power plant operators and electrical repairers—are also in both analyses.

Some jobs—like power plant operators, accountants, and utility managers—came up in interviews but not in the *CPRG Workforce Analysis*. This may show emerging demand or Alaska-specific needs not covered by the *CPRG* framework. Other roles identified only in the *CPRG* may reflect priorities outside this report's clean energy definition, such as waste management or agriculture.

Both the interviews conducted for this report and the *CPRG Workforce Analysis* identify a mix of in-demand construction trades and project planning and management occupations, with varying levels of required work experience and education. Electricians and engineers take at least four years to amass the required instruction and work hours to obtain a license. On the other end of the spectrum, insulation workers and bookkeepers often receive short-term introductory instruction or on-the-job training. As discussed in the next chapter, these positions can turn over frequently without follow-up training and support. This illustrates the need for sustained workforce development efforts and partnerships to grow expertise and pathways beyond the introductory level.

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[28] Alaska's most populated municipalities regularly rank in the top 10 most expensive cities for household expenses like groceries, health care premiums, and energy bills, according to "The Cost of Living in Alaska," the July 2025 *Alaska Economic Trends* issue released by the Alaska Department of Labor and Workforce Development.
[29] *State of Alaska Climate Pollution Reduction Grant Workforce Analysis,* prepared by Kinetic West, June 2025.
[30] *Alaska Priority Sustainable Energy Plan,* prepared by the Alaska Municipal League for the Alaska Department of Environmental Conservation, March 1, 2024.
[31] Living wage was defined as a statewide average hourly wage between $23.99/hour (for a household with one working adult with no children) and $44.77/hour (for a household with two adults and two children, with one adult working outside the home).

Chapter 2: Clean Energy Workforce Challenges

Interviewees and Alaska Energy Training Group participants identified a host of challenges preventing clean energy workforce development throughout the state, documented in Appendix E. Their remarks coalesced around five key barriers. Many of the identified obstacles are felt across sectors but may have unique exacerbating factors or considerations for the clean energy workforce. Many are also closely tied together, as with many workforce and economic development issues. The challenges are most detrimental to workforce development in Alaska's rural hub and remote areas, due to Alaska's large geographic area, limited and costly transportation infrastructure, and small populations.

Finding 1: Difficult Rural Recruitment and Retention

In much of rural Alaska, clean energy positions and skills are difficult to fill and retain, largely due to their high-stress nature and limited job availability.

Sources who lived or worked in rural communities overwhelmingly focused on the difficulty of filling and retaining clean energy positions. In Alaska, every region outside Anchorage has fewer than 50,000 residents and fits the federal definition of rural, but this challenge focuses specifically on the smallest rural hub and remote communities in the state, rather than on rural communities in the Railbelt. In the 19 interviews and five Alaska Energy Training Group meetings that discussed this challenge, the reasons mentioned for rural clean energy staff vacancy or turnover included not having experienced applicants, struggling with technology, finding a better paying position, disliking the work schedule, experiencing housing issues, having inadequate on-boarding training and support, getting burnt out, leaving town for training and not returning, experiencing personal or family issues, moving elsewhere, retiring, mismanagement, and poor attendance or performance. The positions mentioned as most difficult to hire and retain in rural remote villages were bookkeeper and part-time power plant operator positions that require on-call work.

In rural hub communities, the most difficult positions mentioned were any traveling technician roles, including line workers and diesel mechanics.

Recruiting and retaining rural clean energy positions was described as especially challenging due to their high-stress nature.

RURAL OUTMIGRATION

All types of positions can be difficult to staff and retain in rural communities. Already small populations have continued to decrease over the last ten years in most rural regions.[32] The Lake and Peninsula Borough in southwest Alaska had the largest population decline over the last decade, with an average annual population loss of 1.5% or more from 2015 to 2025. The Dillingham Census Area, Kodiak Island Borough, Northwest Arctic Borough, Wrangell Borough, and the Yukon-Koyukuk Census Area were close behind, with annual population losses between 1 and 1.5% in the same period.

[32] "A Quiet Driver of Population Change." *Alaska Economic Trends*, Alaska Department of Labor and Workforce Development, Research and Analysis, March 2026.

Many essential clean energy jobs can fall to one or two individuals with minimal direct management, supervision, or support. They often have strict timelines with little room for error. Miscalculating a fuel order or failing to change an engine's oil can have big consequences in a remote community—and can bring public criticism and vitriol down on those involved. In a small community where everyone knows everyone, these interactions and pressures can create an untenable employment situation.

> *"Being a power plant operator can be a thankless job. The critical role operators play in keeping electricity consistently available often goes unrecognized. When the importance of this position is overlooked, it can lead to a lack of appreciation for the complexity and responsibility involved in maintaining a reliable power supply. In many cases, power generation is only truly valued when it is interrupted, highlighting just how essential it is to everyday life."*
> ***— Lucas Jury, Alaska Energy Authority Circuit Rider Technician***

And even when everything is going right, working these jobs can strain ties with friends and family, interrupt subsistence activities, and interfere with other seasonal income opportunities, such as commercial fishing. They can require being on call 24/7 and only getting paid for a few hours of work a day. This gets into the second exacerbating factor in finding and retaining rural clean energy workers: the scale of available clean energy work. Many needed clean energy skills and roles within a small community lack the funds or the capacity to support full-time positions. A drone technician or weatherization worker might only be needed for one or two projects a year. Even regularly in-demand workers like Toyo heating stove technicians, grant writers, and power plant operators are often only part-time in smaller rural remote villages. And once someone builds their experience through part-time work, they can often find better-paying, more sustainable positions in a hub community, on the Railbelt, or within a different sector. If they stay in a rural community, they often supplement their income with other paid work and subsistence activities to sustain themselves and their families.

What often results is rural workers with broad energy knowledge, skills, and capabilities, but who are not always easily identifiable or readily available. The response to this situation is often to fly technicians into small communities—sometimes for expert-level technical repairs and projects, but also for relatively small tasks that could be performed by residents, except for the hurdles of locating, scheduling, verifying, paying, and training a local technician. This removes a potential revenue stream from the community and drives up the cost of rural services due to travel costs. As a result, many sources cautioned against relying solely on outsourced expertise to ease rural staff shortages.

Sources also expressed skepticism about implementing new digital technologies without addressing underlying workforce stressors and issues. While many conceded that automation and artificial intelligence can be helpful and sometimes even necessary for modern clean energy infrastructure, they also shared stories of digital tools introducing new problems and pinch points in small communities. Two employers shared that new technologies can overwhelm rural staff members and even cause longtime employees to quit. Another shared the perception of new software and tablets as "one more thing" to keep charged, connected, and up to date, with a small staff and a long to-do list. The consensus from interviews was that these tools can be beneficial with proper training, implementation, and ongoing support, but that they are not solutions to workforce stressors and shortages in and of themselves.

Finding 2: High Rural Infrastructure Costs

The high cost of operating, maintaining, repairing, and replacing rural infrastructure is compounded by limited rural revenue streams and the expense of new technologies.

Interviewees specifically discussed the high cost and difficulty of funding operations and maintenance (O&M) and repair and replacement (R&R) of rural infrastructure, and the impact this has on the timeline and success of rural renewable energy infrastructure and workforce growth. O&M generally refers to regular, proactive maintenance tasks, such as changing the oil in a generator or inspecting wind turbine blades. R&R often entails major, more expensive interventions, such as emergency response to equipment failures and end-of-life expenditures.

High costs and insufficient funds have resulted in staggering deferred maintenance needs for energy infrastructure throughout the state. The Alaska Energy Authority estimates that the deferred maintenance backlog for bulk fuel tank farm upgrades is approximately $1 billion, and for rural power system upgrades is approximately $300 million.[34] When aging infrastructure is not proactively maintained, catastrophic equipment failures can harm community health and well-being, disrupt economic and subsistence activities, and increase costs.

RURAL ALASKAN INFRASTRUCTURE COSTS

Infrastructure projects and activities in Alaska can ring up double or triple the price tags of similar projects in the Lower 48. Travel costs, the harsh and demanding climate, and logistical complexities are just some of the factors that drive up costs. In their 2025 Report Card for Alaska's Infrastructure, the American Society of Civil Engineers found that maintaining a mile of road in Alaska costs roughly $27,500—nearly double the national average of about $14,500.[33] They gave Alaska a C grade for its overall infrastructure. Energy infrastructure earned a D+, largely due to disparities in reliable and affordable energy across different parts of the state and the "widening" funding gap for rural energy infrastructure.

In 12 interviews, sources described the need for greater collaboration, funding, and personnel to plan and perform preventive maintenance, emergency repairs, and upgrades of rural energy infrastructure. The highest-demand positions were diesel mechanics or technicians, bookkeepers, electricians, line workers, and electrical engineers. Sources also identified two main exacerbating factors for rural clean energy infrastructure: the growth in long-term O&M expenses that comes with technological advancements, and the difficulty rural organizations face in establishing and growing their savings with small ratepayer bases and the limitations of grant-funded infrastructure.

Modern energy technologies, including hardware such as Programmable Logic Controllers (PLCs) and software such as Supervisory Control and Data Acquisition (SCADA) systems, can enhance reliability,

[33] Tor Anderzen et al., *2025 Alaska Report Card,* American Society of Civil Engineers, Infrastructure Report Card. Reston, VA: ASCE, 2025.
[34] "Advancing Alaska's Energy Future," Alaska Energy Authority Presentation to the Resource Development Council, April 17, 2025.

efficiency, and resilience in remote grids. They are also increasingly necessary for new renewable energy integration and any system repairs and upgrades, as older equipment with minimal digital and electronic components has largely been phased out of manufacturing. But many interviewees also flagged the increased costs associated with maintaining and servicing these systems, especially for small staff in remote areas.

> *"You're reliant on outside vendors. That's outside help you need to pay to make sure everything is maintained."*
>
> ***— Clarissa Quinlan, longtime rural utility management and smart metering consultant***

In addition to increased O&M costs, many interviewees noted the economic and bureaucratic challenges that prevent rural organizations, municipalities, and utilities from building sufficient savings to fund long-term O&M or capital-intensive R&R projects for energy infrastructure. Small populations and already high energy costs often make it untenable to incorporate new capital costs or proactive savings into prices and rates. To fill this void, rural energy infrastructure is often financed through grants. While this can be the only way to upgrade and replace infrastructure, it adds administrative, management, and accounting complexity. And grants often come with short timelines and expenditure limitations, which usually prevent the inclusion of O&M expenses or long-term savings for R&R.

This challenge is also deeply interrelated with the rural recruitment and retention woes described in Finding 1. Without adequate support to maintain the equipment they use, such as their bulk fuel tank or generator, rural workers can come under even more stress. The cost of parts, contractors, and travel can also reduce funds for wages and fringe benefits, another factor that exacerbates the challenge of finding and retaining rural workers.

Finding 3: Statewide Expertise Shortage

Sustaining an experienced clean energy workforce is challenging statewide, influenced by the small scale of projects and inconsistent government support.

In interviews, 15 sources pointed to difficulties maintaining clean energy expertise within the state as a major hurdle to further clean energy development. Even on the Railbelt, where the applicant pool is larger, clean energy managers, employers, and program officers reported difficulty finding and retaining qualified candidates for higher-level energy positions. The positions highlighted were experienced project managers, engineers, line workers, analysts, management-level roles, and HVAC contractors.[36]

CROSS-SECTOR HIRING DIFFICULTIES
Difficulty getting and keeping top-level talent and experience is not unique to Alaska's clean energy industry. Across industries and regions, 80% of employers reported either moderate or extreme difficulty recruiting new employees. 57% relayed experiencing moderate or extreme difficulty retaining them.[35]

[35] Mike Andrews, et al., *Alaska Workforce Future,* Alaska Safety Alliance, 2025.

[36] Energy auditors, and especially traveling energy auditors, were mentioned as a potential future shortage.

Interviewees identified some cross-industry factors affecting hiring, including long state occupational licensing timelines and limited licensing reciprocity with other states for key construction trades; the higher cost of living in Alaska due to housing, food, and energy costs; and relatively low wages and benefits for in-demand state and local government positions. Within this competitive environment, though, they also pinpointed two factors unique to the clean energy workforce: the smaller scale of clean energy projects in the state and a history of unpredictable government support.

Alaska's clean energy projects are currently developed on a much smaller scale than other energy projects, both in-state and nationwide. This statewide observation was described differently from the similar scale-related factor influencing rural recruitment and retention. Instead, in the state's more populated regions, clean energy projects were often described as large enough to recruit entry-level talent but too small to outcompete other industries and locations for higher-level talent and experience.

In Alaska, clean energy projects often require expertise similar to that in larger, more established industries, such as oil and gas, where salaries, benefits, and job security are often more competitive. And nationally, other states are scaling up their clean energy projects much larger and faster than Alaska is, limiting out-of-state recruitment and fueling outmigration. Sources pointed to these factors as key drivers of the difficulty growing and recruiting higher-level talent in Alaska's clean energy industry. The experienced workers who overcame these factors were described as either very dedicated to living in Alaska or to the mission of renewable energy and energy efficiency.

> *"How are we going to keep our workforce steady? Uncertainty is a bad thing at all levels … Shut [an industry] down for two years, and everybody leaves."*
> ***— Ben May, Alaska Solar Owner and Founder***

Stacked on top of this disadvantage is the sporadic nature of government support for clean energy projects in Alaska. This factor was described as harmful to the demand for clean energy projects and to long-term workforce planning and development efforts. Shifted federal tax credit timelines and canceled grant awards were the most recent and dire examples of government-created market instability, but the clean energy industry has long faced inconsistent political support. One source described Weatherization Assistance Program funding as "an annual political football." Another expounded on the "boom and bust" of the local energy rater workforce due to rebate programs that ended in 2015.

Even beyond specific program funding, interviewees also pointed to a lack of state investment in the regulatory processes and personnel needed to advance clean energy projects and priorities. They specifically referenced the Regulatory Commission of Alaska,[37] which had roughly 30% of budgeted staff positions unfilled in 2026 and had eliminated 5 full-time positions since 2024,[38] and the Department of Natural Resources, which was described as having robust oil and gas staff expertise and markedly less so in renewable energy generation or electric transmission projects. There have been some attempts to

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[37] Kassof, Brian. "Continued Turnover at the RCA as It Faces New Regulatory Challenges," *Alaska Energy Transparency Project*, September 27, 2024.
[38] "Regulatory Commission of Alaska Organization Chart, FY2026 Proposed Budget," State of Alaska Office of Management and Budget, 2025.

provide more state-level support for clean energy projects, including a 2024 review of how to improve DNR statutes and regulations for large-scale renewable energy project land leases.[39]

Taken together, the scale and stability challenges facing Alaska's clean energy workforce create a self-reinforcing cycle. Smaller projects offer less competitive compensation, limiting the talent pool and, in turn, constraining the capacity to execute projects. Unpredictable government support compounds this dynamic, making long-term workforce investment a financial risk for employers and a career risk for workers. Without addressing this challenge, the state risks continuing to lose experienced talent to other industries and other states, widening the gap between Alaska's clean energy ambitions and its ability to achieve them.

Finding 4: Systemic Barriers to Training Access and Attendance

Accessing and attending clean energy training is challenging across the state, especially in rural areas, due to the distance of training locations and the lack of supportive services.

Many sources described persistent barriers to participation in clean energy training opportunities, either experienced firsthand or by their employees or trainees. This was identified as a key challenge in 21 interviews, with the greatest obstacles faced by rural remote individuals. These obstacles can lead to lower training enrollment[40] and labor participation[41] in rural areas—exacerbating other challenges, such as rural recruitment and retention.

Contributing reasons mentioned in interviews included a lack of available comprehensive care and support services like childcare, travel scholarships, and training stipends; distant or inaccessible training locations; inadequate training formats; eligibility requirements; the high cost of maintaining training facilities in rural and remote areas; instructor availability and location; and unclear career progression. The factors emphasized as especially critical were remote training locations and a lack of wraparound or supportive services, like transportation assistance and childcare support.

Across industries, regularly scheduled in-state training programs are largely clustered in urban or urban fringe areas along the Railbelt or in more populous communities in Southeast Alaska. The state-run Alaska Vocational Technical Center (AVTEC), union apprenticeship programs like the Alaska Joint Electrical Apprenticeship Training & Trust and the Alaska Metal and Mechanical Apprenticeship, private training facilities like Northern Industrial Training, and the University of Alaska system's three main university campuses are in Alaska's larger population centers, from Juneau to Fairbanks.

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[39] "Administrative Order 355: Renewable Energy Project Land Leases Review," Alaska Department of Natural Resources, 2024.

[40] According to a recently published report from University of Alaska Anchorage's Institute of Social and Economic Research on priority occupations for transportation and infrastructure workforce demands (Staci Corey et al., *Alaska's transportation workforce detours: Maximizing training opportunities and outcomes in DOT&PF's key industries*, 2025.), students from rural areas often make up less than 10% of enrollment at construction-oriented training programs and centers.

[41] "Labor Force Home," Alaska Department of Labor and Workforce Development, Research and Analysis, accessed March 2026.

Beyond the road system, career and vocational learning and training opportunities are administered most regularly through state-recognized Alaska Regional Training Centers (RTCs) in rural hub communities. RTCs receive formula grant funds from the Alaska Technical Vocational Education Program (TVEP)[42] to provide vocational training, and are located in most rural hub communities.[43] RTCs often administer courses in general competencies, such as construction trades or driver's education. They often have dormitories and/or travel within their economic districts to serve participants from rural remote communities.[44] And with the high cost of building and maintaining training facilities in rural areas,[45] RTCs also host partnership and industry-sponsored training opportunities for adults and high school students. One example of a clean energy training partnership mentioned in interviews was a heat pump installation and maintenance training at the Alaska Technical Center in Kotzebue, planned and funded by the Northwest Arctic Borough.

RTCs, school districts, and a growing number of urban training providers often strive to provide short-term, intensive classes and training opportunities to nearby rural remote communities. But travel expenses, instructor availability, weather delays, and the small number of possible attendees impact their delivery and regularity. This leaves many rural community members with only virtual learning opportunities or expensive trips to a rural hub or urban area. [48] While hybrid and remote learning

A BRIGHT SPOT IN THE REGIONAL TRAINING LANDSCAPE

After a 2024 performance audit of TVEP,[46] the list of recognized RTCs was edited and expanded, the program was made permanent, and its funding was nearly doubled by increasing the percentage of unemployment insurance[47] sent to the program. In 2025, TVEP directed nearly $25 million to 12 grantees—roughly $10 million more than its annual funding in 2022–2024. AWIB is also facilitating greater coordination and collaboration among RTCs to increase student access to training, expand training capacity, and align instruction with regional and industry priorities.

[42] Funding comes from a percentage of employee unemployment insurance (UI) contributions, allocated in set percentages to Regional Training Center institutions that meet requirements in Alaska Statute 23.15.835, such as establishing dual credit articulation agreements for high school students and submitting yearly expenditure and performance reports to the Alaska Workforce Investment Board (AWIB).

[43] AVTEC is part of the RTC network but is distinct in that it is a division of the Alaska Department of Labor and Workforce Development. The other RTCs are either public or nonprofit educational partnerships and include the University of Alaska Fairbanks' four community and rural campuses in Dillingham, Kotzebue, Bethel, and Nome, and state-recognized regional training centers in Delta Junction, Kotzebue, Utqiagvik, Nome, Galena, Bethel, Fairbanks, King Salmon, Prince of Wales Island, and Juneau (*Technical and Vocational Education Program Report, Fiscal Year 2025*, Department of Labor and Workforce Development, January 2026).

[44] *TVEP Report, Fiscal Year 2025*, AKDOLWD.

[45] According to the Alaska Division of Legislative Audit, Report No. 07-30104-24, 2024, roughly 30% of annual TVEP funding in 2022 went toward maintaining and operating training facilities

[46] *Department of Labor and Workforce Development, Alaska Technical and Vocational Education Program (TVEP) Performance Audit,* Alaska Division of Legislative Audit, Report No. 07-30104-24.

[47] The percentage of unemployment insurance (UI) contributions to TVEP was increased from 0.16% to 0.25%.

[48] Interviews discussed trade-offs between training at hub and urban locations. Sources mentioned that traveling to training opportunities in urban areas is sometimes preferred over rural hub areas. During training trips to Anchorage, attendees can access health care services, shop at Costco, and use other services not available in

platforms have helped some rural trainees, multiple interviewees indicated that those formats are not optimal for all energy career paths or learning styles. And attending programs away from home can often interfere with family responsibilities, be costly in terms of travel and time, and not always cover content relevant to rural energy workers. Bill Stamm, the president and CEO of Alaska Village Electric Cooperative (AVEC), described signing up for out-of-town training as a "big commitment," especially for power plant operators for a small rural utility. Another source noted that travel issues and homesickness can make it difficult to attend in-person training.

> *"Having training in town on the equipment they're using is most useful."*
> ***— Bill Stamm, Alaska Village Electric Cooperative (AVEC) President and CEO***

And even though the distance to training programs is greater for individuals in rural remote areas, some clean energy learning opportunities were also described as out of reach for residents in rural hubs and even in urban areas. Participating in apprenticeship programs often requires moving to Anchorage, Fairbanks, or Juneau. And some specific clean energy topics, like tower climbing for wind technicians or basic building science certifications for weatherization workers, are not offered in Alaska at all. More information about in-state energy training opportunities is in Appendix F.

Multiple interviews also described the need for more trainee support services to broaden participation in training and professional development opportunities. This was mentioned for both local and remote students and was especially emphasized for underrepresented groups, such as rural and female participants. Lining up child or family care, paying for travel and lodging, saving for tuition, and finding local transportation can become huge hurdles. "It's not a very family-friendly type of schedule," said one interviewee when describing participating in an electrical apprenticeship program.

During interviews, training providers noted that funding comprehensive wraparound services, such as tuition, travel costs, and stipends, is sometimes ineligible under federal grant guidelines. They also emphasized the importance of the State Training and Employment Program (STEP) in providing flexible support services to trainees and the need to increase STEP funding to keep pace with training demand. Administered by AWIB, STEP awards grants to organizations to provide training and assistance that help individuals attend training and/or obtain or retain a job, especially in industries with high numbers of nonresident workers and in all regions of the state. The program can fund a wide range of services, including transportation, required licenses, identification, certifications, and childcare.[49]

"[STEP funding] has been a static number for decades, despite costs going up," said AWIB Executive Director Dirk Craft. Funding has held steady at around $5-7 million annually, despite more than $11 million in STEP funding requests for 2026. AWIB has been exploring ways to boost STEP funding at the legislative level, including increasing the portion of employee unemployment insurance contributions diverted to the fund and shifting its funding authorization.

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remote or hub communities. But training providers also referenced higher costs and lower retention rates for rural trainees attending programs in urban areas.

[49] "State Training and Employment Program (STEP)," Alaska Workforce Investment Board, Accessed March 2026.

The inaccessibility of clean energy training feeds into other challenges and can especially contribute to the difficulties retaining rural workers and fostering statewide clean energy expertise. Increasing training access also hinges on addressing Alaska's instructor shortage.

Finding 5: Growing Instructor Vacancies

Energy training programs and organizations across the state struggle to recruit and retain experienced instructors, especially amid lucrative opportunities in the energy industry and a high number of instructor retirements.

Individuals affiliated with educational and training institutions identified instructor shortages as the biggest hurdle to building a skilled clean energy workforce in the state. There are hundreds of vacant educator positions across the state,[54] which sources contributed to a mix of factors, including uncompetitive retirement benefits, volatile state budgeting processes, industry competition, the high cost of living in Alaska, the low number of new teachers being trained each year, stiff national competition for teachers, poor school infrastructure, and the state's shrinking working-age population, especially in rural areas.

HIGH TEACHER TURNOVER

Since 2021, roughly one in four teachers in Alaska has left their position each year.[50] Nationally, about 15% of teachers left their positions in 2021, compared to 27% in Alaska.[51] Turnover and vacancy rates are highest in rural hub and rural remote communities, where 44% and 55% of principals and 30% and 31% of teachers left their positions in 2024.[52] The growth trend behind Alaska's teacher turnover is especially troubling: Turnover rates increased during the pandemic years of 2020–2022, but have not decreased substantially since. The exodus of 1,500 teachers each year is difficult to combat with the roughly 200 new teachers certified annually. [53]

Career and technical education positions were described as especially difficult to recruit and retain. The Alaska Vocational Technical Center (AVTEC) is the state's largest multidisciplinary postsecondary training center and home to multiple classes and programs vital for energy workforce development, including industrial electricity, power plant operation, and diesel/heavy equipment technologies. As of March 2026, AVTEC had 16 positions vacant, including instructors for all three energy-related programs. At least one position had been posted for over a year.

[50] "Educator and Principal Turnover Data with Tables," Institute of Social and Economic Research, University of Alaska Anchorage, December 2025.
[51] Tiffany Tan et al., "Teacher Turnover in the United States: Who Moves, Who Leaves, and Why," Learning Policy Institute, March 2026.
[52] "Educator and Principal Turnover Data with Tables," ISER.
[53] "Alaska's Education Crisis: Teachers, Funding, and a Community's Resolve," Commonwealth North, April 24, 2025.
[54] Corinne Smith, "Alaska School District Officials Urge Lawmakers to Address Teacher Shortages, Financial Strain." *Alaska Beacon*, April 7, 2026.

"Every technical training provider is suffering from the same thing right now … It's very difficult to get people in the door," said Cory Ortiz, AVTEC's Division Director. Ortiz and 11 other interviewees described extreme difficulty finding and retaining experienced educators and instructors for energy-related courses and programs. The factors most often cited as contributing to the clean energy instructor shortage were the difficulty of competing with industry opportunities and the aging educator population. One interviewee mentioned the pay cut instructors often take to leave industry roles, citing industry salaries that can triple what's offered for technical training instructors.

> *"There haven't been CTE folks developed in probably a quarter of a century. It's hard to find the technical expertise to lead that. Folks with technical backgrounds can make a better income in industry."*
>
> ***— Doug Walrath, Northwestern Alaska Career and Technical Center (NACTEC) Director***

Ortiz also expressed a decrease in the perceived value of schooltime schedules when leaving industry positions. "It used to be a selling point to say, 'Come work for us and take summers off,'" he said. "But [working] every other week or two on, two off schedules has changed that dynamic." Leaving lucrative industry positions and schedules to enter the classroom was described as an especially hard sell.

The other key cause of energy instructor shrinkage mentioned in interviews was the growing number of instructor retirements. "All our instructors are exiting the field," said Rosa Vogel, program director at the nonprofit organization Cold Climate Housing Research Center. The advancing age of the baby boomer generation is partially responsible for the constriction of working-age instructors. Interviewees also mentioned that workers exiting industry roles, a key target for technical training instructor recruitment, are getting older and often only spending a few years teaching before fully retiring.

This only scratches the surface of Alaska's teacher shortage, which is becoming critical across schools, programs, and industries. Many studies and working groups have examined instructor recruitment and retention, including Governor Mike Dunleavy's Teacher Retention and Recruitment Working Group, and have offered a range of recommendations.[55] One recent positive change mentioned in an interview is the "Retired/Lifetime" certificate, which allows former teachers to take substitute teaching positions.

In this environment of high turnover and vacancy rates among energy instructors, students can wait up to 18 months to get into some AVTEC programs. Planned programs, program expansions, and grant-sponsored training partnerships become untenable. And without training opportunities, more young people will seek opportunities outside Alaska, continuing the state's outmigration trends. In the face of these acute constraints, dire consequences, and limited resources, scaling up instructional capacity to match economic and worker demand will require creative strategies and partnerships.

[55] "Teacher Retention and Recruitment Working Group," Alaska Department of Education and Early Development, August 2023.

Chapter 3: Strategies for Clean Energy Workforce Development in Alaska

Interviewees and Alaska Energy Training Group participants described a range of strategies to overcome the workforce constraints outlined in Chapter 2. These potential solutions have varying timelines, impacts, and partners, as outlined in Appendix E. Across the varied ideas and models, the following recommendations emerged as the five methods that could have the greatest impact on accelerating clean energy workforce development across the state. Many of these strategies address multiple challenges and can be used together for maximum impact.

Strategy 1: Regional Shared Services

Pursue regional shared services for rural clean energy infrastructure and workers.

Banding together within a region was put forth as the most promising way to support clean energy workers, employers, and infrastructure in rural areas. In 28 of 43 interviews (65%) and multiple Alaska Energy Training Group meetings, sources shared ideas for various regional actions to mitigate the factors identified in Findings 1–5 in the preceding chapter. Regional collaborations were described as particularly promising for overcoming the constraints of high infrastructure costs, limited training access, and small populations in rural hubs and remote areas. The examples shared included:

- Regional utility collaboratives that pool funds, plan projects, and share dedicated staff
- Independent power producers that operate under a regional umbrella with shared supportive staff
- Centralized administrative and bookkeeping services within a region
- Shared service contracts with in-region businesses
- Coordinating preventative maintenance and training with traveling technicians and mechanics among nearby communities

"If each community works as an island, costs pile up," said Lake and Peninsula Borough Manager Nathan Hill. "If you don't build capacity locally and you can't take care of your own problems, you're going to get left behind." In 2025, the Borough established a utility collaborative utilizing a Department of Energy 40101(d) Grid Resilience Formula Grant consortium as seed funding. It intends to pursue joint project planning, construction, and maintenance for the utilities serving the 17 communities in the borough to achieve advantageous economies of scale and expand the pool of in-region expertise.

Hill and others interviewed who are involved in regionally coordinated energy activities stressed the importance of starting with regular communication and smaller collaborations before scaling up large regional enterprises. Coordination around regularly scheduled maintenance visits from a diesel mechanic, bulk fuel tank technician, or electrician was mentioned as a possible way to pilot a partnership, investigate regionally specific needs and capacity, and assess cost savings before committing to a model. Another stepping stone discussed was pursuing regional service contracts with vetted, in-region businesses and service providers, especially for high-demand positions like linemen, to lay the foundation for a regional collaborative. Tribal organizations, especially Alaska Native regional nonprofits, and local governments play a key role in seeding and supporting regional collaboration.

Administrative and accounting assistance in the Bering Strait

Community Utility Assistance Program and Municipal Account Services (CUAP-MAS) is one such regional partnership operating in the Bering Strait region. Run by a trio of regional organizations—Kawerak, Norton Sound Economic Development Corporation (NSEDC), and Norton Sound Health Corporation (NSHC)—CUAP-MAS serves 13 municipal water and sewer utilities, not electric utilities, but is an example of the level of support that organizations with a regional reach can provide to overburdened staff in small communities. The program provides free technical support and training for water plant operators and financial and administrative support for local municipal managers and clerks, including stopgap bookkeeping services to prevent a backlog when a municipality is without a clerk.

> *"We have been very successful in some of the communities we've been helping because you can have one city clerk who's doing five different jobs and it's extremely overwhelming … We should be in the villages, building these relationships, and making sure the staff knows that they're not alone."*
>
> ***— Joni Yakunin, Kawerak CUAP-MAS Program Director and former city clerk in White Mountain, Alaska***

Pulling together and sustaining funding for regional collaboratives is a major hurdle and will likely require an individualized approach for each of Alaska's distinct regions and convening organizations. A portion of a $20 million philanthropic contribution kicked CUAP-MAS into action, with sustaining yearly contributions from NSEDC and NSHC. As an Alaska Native regional nonprofit, Kawerak's leadership was key to securing funding and relationships for this endeavor and could become a model for similar efforts to support electric utilities at other regional nonprofits.

Regional electrical services in Unalaska

In Unalaska, electrical and telecommunications service provider OptimERA began giving temporary labor assistance to the city-run local electric utility in 2022. The arrangement evolved into a long-term contract amid persistent challenges in recruiting and retaining linemen in the city. "They have the same problem as everybody else: it's hard to hire people," said Chief Operating Officer Matthew Scott. "Utility hours aren't a big draw for tradespeople used to working on rotation."

By securing larger, longer-term contracts in a busy hub community, OptimERA can offer the flexibility, stability, and competitive wages that help attract and keep in-demand electricians. As of 2025, their staff numbered 22, including three linemen and two wiremen who work on a rotating basis. They also administer apprenticeship programs for both wiremen and linemen electricians and host local interns, helping grow the next generation of energy workers. And stacking longer-term contracts allows them to retain the staff needed to serve smaller communities and projects.

For all the benefits, thorny challenges remain. Bids from contractors based in remote or rural areas can sometimes be more expensive than those from Anchorage or Lower 48 companies to cover their higher costs of doing business. And making the case for including apprentices on a job can be tricky. "They don't want me to hire an apprentice; they want a discount," Scott said. "But if you want really seasoned, educated people, you have to start somewhere."

Strategy 2: Local Work-Based Learning

Increase opportunities for local employment and work-based learning in clean energy projects.

Short-term group training programs and intensives are some of the most widely available clean energy training and professional development opportunities, commonly at established training centers in urban or rural hub communities. But multiple interviewees suggested that adding a range of work-based training methods could increase access to training and overcome instructor shortages and geographic limitations. 15 interviewees and multiple Alaska Energy Training Group meetings spoke of the promise and success of implementing locally relevant learning opportunities that support a paycheck and don't require individuals to leave their jobs, homes, or support systems. The ideas included:

- More paid on-the-job learning opportunities, like apprenticeships and internships
- Skills banks to connect local workers to local training and infrastructure projects
- Individualized in-community assistance from local experts
- Hybrid professional development cohorts
- Local mentorship connections

"Generic classes don't always go well," said Connie Fredenberg, a longtime consultant for rural utility managers and bookkeepers. "The most effective thing is to sit next to a utility clerk and go through their file cabinets with them, teach them how to do annual reports, including backup, how to set customer rates based on expenses, and create a list of what and when to submit all required paperwork," she said. This sentiment was echoed by multiple other interviewees, especially those working in rural hub or remote communities.

Connecting rural remote work with local talent

Helping connect skilled local workers with essential short-term work opportunities and relevant training in the clean energy industry was one method suggested for retaining rural residents, building their work experience, and lowering infrastructure costs. Rural Tribes and cities often already provide contractors with information on local workforce availability for projects ranging from runway repairs to new water plant construction. Alaska Native Corporations take it one step further by maintaining shareholder skills banks to keep track of shareholders who may be interested in opportunities at the corporation or its subsidiaries. Technological advances are making this strategy feasible for an even broader array of short-term employment opportunities within clean energy as well.

Remote Hands launched in the spring of 2025 to provide a platform to connect rural technicians with contracted work opportunities. The new venture's app allows local technicians to create a profile, list their skills and expertise, and sign up for jobs posted by employers, which can range from one-time repair work and airport pickups to longer-term environmental sampling and paperwork assistance. Remote Hands hires each technician as a W-2 employee to ease the insurance and tax burden on local technicians and derisk the arrangement for employers. It also includes work completion authentication, skill verification, and an evolving database of local training opportunities and credentials.

One of the endeavor's early successes was in Quinhagak, a village of 775 people in Western Alaska's Yukon-Kuskokwim Delta. A company's permafrost sensor needed a firmware update before it could resume data collection, but flying a technician from Anchorage to Bethel to Quinhagak and back again would cost upwards of $1,000 to perform a 20-minute task. Instead, the company hired a local "remote hand" who completed the work. Since then, the enterprise has helped community members complete weatherization assistance applications, installed Starlink terminals, and assisted with environmental sampling and monitoring.

> *"It helps keep talent in communities and saves outside entities money."*
> ***— Gabe Low, Remote Hands Founder***

There are potential challenges and pitfalls to this approach, including recruitment, work verification, and compensation structures, as well as ways to expand this strategy to provide even more meaningful clean energy work experiences to rural residents. Monthly or annual retainers could be provided to supplement variable work requests and recognize the value of having a year-round local resource in a community with high living expenses. Instead of working to automate work completion verification, it could become a role for experienced remote hands after they've completed a certain number of similar jobs. As this and other ways of connecting skilled rural individuals to clean energy work evolve, transparency and collaboration will be key to success.

Elevating local practitioners as experts and mentors

To encourage advancement and further build clean energy expertise in the state, interviewees and meeting participants shared stories of connecting talented local practitioners with contract or employment opportunities. This tactic can help both broaden individuals' own work experience and mentor and train others. Elevating local talent to positions of respect and authority can inspire others and share expertise more widely.

Reinforcement and confidence-building through one-on-one coaching and coordination assistance from external entities, such as contractors, local technical assistance providers, or nonprofit organizations, is often needed to scope and spark these opportunities. A critical part of this strategy also involves recognizing work experience as equally valuable as formal educational achievement and highlighting pathways for further development and entrepreneurship.

When Dina Dobkins became the manager of Levelock Electric Cooperative, Inc., in 2022, she inherited longstanding bookkeeping and billing discrepancies. After learning about QuickBooks and Alaska's rural electric utility reporting requirements, she put the cooperative on solid financial footing. Then she was ready to help others in similar positions. From 2024 to 2026, she helped three other utilities implement bookkeeping best practices and tackle backlogs, with support from REAP's People in Power utility training coordination program.

> *"It's pretty cool to see how different villages do their books and how it's all created … I'm still learning about the books, but also the power plant itself and the power lines and the transformers and everything that goes into it. I'm learning little by little how it operates."*
> ***— Dina Dobkins, Levelock Electric Cooperative, Inc., Manager***

Strategy 3: Trainer and Employer Partnerships

Advance creative partnership opportunities between and among training providers and the energy industry.

Encouraging closer communication and collaboration between regional training centers, school districts, unions, trade associations, state agencies, individual instructors, and employers was put forth as the central path to combatting instructor shortages and increasing training access around the state. 11 interviews described the benefits of educator-employer partnerships as implementing more responsive and relevant curriculum and credentials, identifying potential instructors and employees, and, ultimately, growing the pool of instructors and trainees in the state. The avenues suggested for fostering these working relationships included:

- Accessible industry advisory groups for input on curriculum and credentials
- Community of practice for educators and industry to share pain points, scope opportunities, and forge connections
- Train-the-trainer industry partnerships to cultivate new part-time instructors
- Industry-sponsored instructor shadows, swaps, or sabbaticals
- Industry instructor directory for short-duration itinerant positions

Many of these efforts are about lighting "a pathway from industry to the educational world," said Ortiz, AVTEC's director. "It takes a special skillset to become an educator. They have to want to give back a little bit."

Industry sponsorship and buy-in will be critical for the success of new partnerships and teaching arrangements. Alaska Native Corporations play a key role in these collaborations, especially at RTCs. Joe Groves, Director of the Alaska Technical Center in Kotzebue, has seen past sponsored training opportunities ease trainee recruitment challenges by providing a clear pathway to a job. "If we don't have a NANA-driven program or some other company-driven reason to train, classes are not full," he said. Layering industry instructor sponsorships and partnerships into sponsored training efforts could be another step toward further boosting instructional capacity and access.

Train-the-trainer momentum for solar installers

In response to the state's growing number of solar projects and the limited number of solar installation training professionals, the University of Alaska Fairbanks' Bristol Bay Campus launched a "train-the-trainer" initiative in the spring of 2023. Funded by TVEP, the Bristol Bay Economic Development Corporation, and the USDA, the program taught a cohort of 12 solar industry professionals how to teach others to install solar photovoltaic systems using Solar Energy International's curriculum. With a mix of theory and hands-on application, the program turned out Alaska's first locally trained solar installation instructors. The campus now offers regular 2-credit Solar Electric Design and Installation (listed as ENVI F271 in the UAF course catalog) classes taught by its former trainees.

"We cast a wide net," said Chandler Kemp, Assistant Professor of Sustainable Energy at UAF Bristol Bay Campus and an energy efficiency consultant. "Our cohort of trainees included a licensed electrician, an engineer, a former solar installation foreman, academics like myself, and several people with practical experience and interest. Almost all of those students have gone on to contribute to subsequent classes, whether through teaching ENVI F271, teaching a 1-credit off-grid solar class, teaching a high school intensive, teaching an online workshop, or helping to support logistics for subsequent classes." Their regular trainers for ENVI F271 are Kolt Garvey, a licensed electrical administrator and co-owner of Sunstone Electric; Amanda Garvey, a mechanical engineer and co-owner of Sunstone Electric; and Jacob Ivanoff, a former solar installation foreman and Unalakleet environmental coordinator.

Instructors and students practice wiring a solar panel during a weeklong training in Bethel. Photo: Jacob Ivanoff

Kemp also emphasized the time, money, and effort required to successfully support developing industry professionals in becoming teachers. "We invested a lot in getting people set up as instructors," he said. "We paid for instructors to come to Alaska and do three weeklong intensives. We covered tuition, travel, and lodging, so people came out feeling pretty confident. That was a big part of the success." He also mentioned that competitive pay and short class lengths—ENVI F271 typically runs for 5.5 days—are big benefits for working instructors.

With experienced industry instructors, the campus is offering an advanced grid-tie class with hands-on activities for the first time in May 2026. This class offers an opportunity to work with different mounting systems and receive new instruction on commissioning, operating, and troubleshooting best practices.

Building HVAC training and teaching partnerships in Southeast Alaska

The Alaska Metal and Mechanical Apprenticeship (AMMA) is the training arm of Sheet Metal Workers Local Union 23 and offers sheet metal and HVAC-R service technician apprenticeships. As a Joint

Apprenticeship Training Committee (JATC), AMMA has employer partnerships built into its very structure. Half of the JATC is made up of signatory contractors who hire union workers, and the other half is composed of union employees with significant expertise and experience.

Funded by a Department of Labor Critical Sector Job Quality Grant, AMMA has spent the last two years expanding its reach beyond Southcentral Alaska. While teaching introductory high school classes and building partnerships in Southeast Alaska, AMMA became aware of an instructor vacancy for a University of Alaska Southeast Mechanical Ventilation class.

"The construction program got a hold of us and said, 'Hey, I don't have a mechanical ventilation instructor,'" said Bruce Bold, AMMA's outreach coordinator and former apprenticeship coordinator. "We were able to find one of our local members who had a lot of experience in this area, and he ended up teaching that entire springtime class, imparting a lot of his knowledge, letting a lot of people know about opportunities in HVAC."

Journey workers are uniquely qualified to serve as instructors because they are expected to work with and teach apprentices on job sites. By providing instructional capacity in the region, AMMA has recruited seven apprentices from Southeast, including its first-ever HVAC-R service technician apprentice from Ketchikan and a pre-apprentice from Mt. Edgecumbe High School to work on a local hospital project in Sitka. AMMA is now working with statewide partners to develop and pilot short-term, introductory HVAC-R classes to offer across the state.

Bruce Bold, Outreach Coordinator for the Alaska Metal and Mechanical Apprenticeship, instructs Lower Yukon School District student Leona Xavier during an introductory sheet metal class. Photo: Nicholas Bianco/23 and Frosty

"It's hard to be a full-blown apprentice when you live in a village," Bold recognized. "We're looking at workforce development, doing some basic training, so that people can do basic stuff in their villages, and then maybe funnel them to the apprenticeship." He also mentioned that trainees could feed into local hire lists for contractors who need project labor or troubleshooting assistance as one way to build the required on-the-job training hours. These creative solutions can only come about with time and investment in industry-education relationships and partnerships.

Strategy 4: Local Energy Education

Expand local energy education, career awareness, and career navigation opportunities.

Offering more K-12, postsecondary, and community-wide opportunities and support to learn about and pursue energy topics and careers was discussed to address multiple clean energy workforce development challenges. Education was mentioned as a pathway to grow the future clean energy workforce, raise awareness and respect for essential energy workers, and build demand and buy-in for clean energy infrastructure. 12 interviewees and multiple Alaska Energy Training Group meetings raised this strategy, with their specific ideas including:

- K-12 energy lessons and courses
- Utility internships or job shadows
- Construction trades pre-apprenticeships
- Community energy or career fairs
- Community involvement in energy projects and planning
- Technical assistance and outreach to consumers and businesses about clean energy incentive and assistance programs

Increasing awareness and knowledge of clean energy systems, uses, roles, and training opportunities can seed interest in joining the energy workforce in Alaska. Facilitating first-hand experiences, such as guest speakers, board meetings, site visits, externships, job shadows, and internships, often offers strong experiential motivation. And even if participants discover they don't want to pursue a career in the energy industry, demystifying the essential tasks involved in clean energy operations can create a culture of awareness and respect for clean energy workers. This can help recruit and retain others, as well as prevent high-stress situations when things go wrong, especially in rural remote areas.

Educating potential consumers about clean energy technologies and applications can also help "create the need for a pipeline of projects," said Dan Smith, an engineer with previous experience at DOE, USDA, and AEA. "You have to build the understanding of what energy means for businesses and homes to build demand."

Introductory construction trades training

For the past 30 years, Alaska Works Partnership has delivered free introductory construction trades training and pre-apprenticeships to Alaskans across the state. The organization works with local apprenticeship programs, high schools, Alaska Native organizations, youth programs, veterans, and other education and employment partners to deliver foundational building trades training to 500–700 participants annually, from more than 3,000 applications. AWP training facilities are in Anchorage, Fairbanks, and Wasilla, and are mobile to support rural opportunities. Training generally lasts one to two weeks, with many trainees participating in more than one course. Participants also receive assistance after training completion, including health and safety certification, career counseling, interview skills preparation, job application suggestions, and assistance with job or apprenticeship program applications.

"We want to help people find the right fit," said Tiffany Caudle, AWP's longtime training coordinator. Caudle described multiple former trainees who are now progressing through careers in building maintenance, wireman, outside telecommunications, heavy equipment operating, ironwork, plumbing, and carpentry, including one who initially wasn't accepted. He took advantage of AWP's training and case management services, built up his work experience, and was offered an outside telecom apprenticeship the second time he applied. "The training and interview skills really did help him find his career path," Caudle said.

An Alaska Works Partnership carpentry instructor demonstrates how to safely use power tools to a group of high school students from the Lower Yukon School District's Kusilvak Career Academy. Photo: Jenny Starrs/REAP

In the past, AWP managed a building maintenance apprenticeship program with the Alaska Housing Authorities, ran a robust weatherization program, and maintained a larger training presence in rural Alaska. AWP continues to support building maintenance and weatherization efforts and is working to expand training and workforce development opportunities in these fields throughout the state. With adequate funding, these programs could significantly grow to help meet Alaska's ongoing infrastructure, housing, energy efficiency, and workforce needs, particularly in rural communities.

Long-term energy education at the Lower Yukon School District

REAP develops and delivers locally relevant education on energy literacy, technologies, and careers, in partnership with teachers, school districts, training entities, and nonprofit organizations across the state. The organization's educators regularly teach more than 5,000 students a year, through individual lessons and in-depth courses. A partnership with the Lower Yukon School District's Kusilvak Career Academy (KCA), a high school residential career and technical education program in Anchorage, started in 2020 and has grown since. In the 2023-2024 school year, REAP began teaching science classes for KCA students on home energy efficiency, sustainable community energy systems, and career exploration. These classes have continued into 2026.

These in-depth education opportunities increase students' awareness, knowledge, and skills related to energy. After a 2024 career exploration course with hands-on lessons, guest speakers, and field trips, all 17 students agreed that energy careers are important in their communities. Half of them said that they wanted to pursue an energy career after high school, most commonly in construction or electricity. "Talking about how homes could save energy based on their different sizes and how much technology is being used in the home," was Scammon Bay junior Akia Akerelrea's favorite part of the course, while Mountain Village junior Donnie Hess's was "the guest speakers taking their time to come over here."

Through a dual-credit partnership with the University of Alaska Fairbanks, KCA students have earned more than 60 college credits toward the Sustainable Energy Occupational Endorsement Certificate administered by the UAF Bristol Bay Campus. Future research efforts at REAP will focus more in-depth on challenges and potential opportunities for clean energy workforce development within the K-12 education sector. School districts, teachers, and students across the state are essential partners for growing Alaska's next generation of clean energy workers.

Strategy 5: New Financing Strategies

Research, implement, and bolster financing strategies for building and maintaining clean energy projects.

Interviewees from both energy businesses and nonprofits pointed to the persistent need to develop a sustainable market for statewide clean energy projects and new ways to finance their operations and maintenance in rural areas. Insulating projects from the boom-and-bust cycle of federally available funding and programs, as well as finding new funding for long-term operations and maintenance, were described as key to growing Alaska's clean energy workforce and infrastructure. 15 interviews discussed this topic, with many focusing on the long-term need to broaden demand and increase market adoption to sustain in-state expertise. The financing ideas mentioned were:

- Rebate and on-bill financing programs
- Revolving loan funds
- Long-term grant programs
- Long-term tax incentives
- Green Bank capitalization

Sources were optimistic that kickstarting clean energy demand with more accessible financing pathways would help provide the job security needed to fuel clean energy workforce development. They expressed hopes for new endeavors, such as the Alaska Sustainable Energy Corporation and the forthcoming Home Electrification and Appliance Rebate Program, to bolster future energy efficiency projects. And they highlighted the track record of success of longstanding programs, like the U.S. Department of Agriculture's Rural Energy for America Program and the State of Alaska's Renewable Energy Fund, and the need to insulate these programs from shifting budgetary and political winds.

Beneficial electrification rebates in Southeast Alaska

Alaska Heat Smart, Southeast Conference, and the Alaska Municipal League began rolling out a five-year heat pump rebate program in 2024. Accelerating Clean Energy Savings (ACES) received $37 million from an EPA Climate Pollution Reduction Grants (CPRG) implementation grant for home energy assessments and heat pump installation rebates for qualifying homes from coastal Southcentral to Southeast Alaska. The heat pump rebates range from $4,000 to $8,500 and are dependent on household income. Rebates can also be paired with low-interest loans from local lenders to further broaden the market.

> *"Build the demand, and the workforce will come. We're seeing this work with the ACES program, with at least one shop in Juneau adding staff and a new HVAC business opening its doors."*
> ***— Andy Romanoff, Alaska Heat Smart Executive Director***

Andy Romanoff, Alaska Heat Smart's executive director, reported receiving inquiries from companies in Anchorage, the Matanuska-Susitna Borough, and even the Pacific Northwest, all interested in working with the program. AHS has since developed a list of more than 34 qualified contractors across the region as a resource for homeowners.

The program facilitated about 114 installations as of early May 2026 and aims to complete 6,000 by 2029. Getting contractors to rural, remote communities remains a challenge, but program staff hopes to promote bundling projects to reduce costs and maximize contractors' time during visits.

State support for renewable energy projects

Established in 2008, Alaska's Renewable Energy Fund (REF) has financed more than 110 operational renewable energy projects across the state. Its appropriations from the state legislature have totaled more than $330 million and have helped spur on similar amounts of local and federal funding. The program was established in perpetuity in 2023 and now has nearly 50 projects in various stages of development, fostering greater workforce certainty about future projects.[56]

Iliamna-Newhalen Electric Cooperative's Tazimina hydroelectric plant is one of many renewable energy generation projects in the state that has received support from the Renewable Energy Fund. Photo: Emma Hamilton/REAP

While the program is subject to annual budget swings—it was not funded for four of the last 18 years and received less than $7 million in FY2026—it is an impactful mechanism for job creation. Alongside significant energy cost savings and greenhouse gas reductions, a 2023 report commissioned by the Alaska Energy Authority found that the REF program has created nearly 3,000 new jobs and more than $237 million in labor income. The new jobs were spread across sectors, with the largest number created in construction.

[56] "Renewable Energy Fund Round 18 Status Report," Alaska Energy Authority Presentation to the Alaska State Legislature, January 2026.

Conclusion

The challenges facing Alaska's clean energy workforce, from tricky rural recruitment and retention to instructor shortages, are formidable. Yet the evidence gathered for this analysis revealed a network of individuals, organizations, and communities actively building toward solutions. The strategies outlined in this report offer a replicable and expandable foundation for the work ahead, and are already underway in communities like Unalaska, Nome, and Juneau.

REAP will incorporate the strategies identified in this report into its ongoing statewide workforce development efforts and partnerships. As the convener of the Alaska Energy Training Group, a direct provider of energy education to thousands of students each year, a coordinator for proactive electric utility training, and a regional partner for energy technical assistance projects in rural remote communities, REAP is positioned to help translate many of these findings into action. Among the most actionable, near-term strategies are connecting training providers with employers, elevating local practitioners, and advocating for the policy and funding changes needed to create a more stable environment for workforce development and investment.

This report focuses on postsecondary and adult workforce development, but clean energy workforce development is ultimately a generational undertaking. In the future, REAP will pursue a similar analysis of K-12 and university-level clean energy education and training activities within Alaska. This effort will build on the promising models documented here to identify gaps and opportunities across the full educational pipeline. Future updates to this report may include additional case studies, emerging challenges, and new strategies as the field continues to evolve. The clean energy workforce landscape in Alaska is dynamic, and this analysis is intended as a living resource rather than a static snapshot.

Several areas of additional research would significantly strengthen the foundation for future workforce development efforts. Among the most valuable future research areas would be economic modeling of the clean energy workforce's total employment impact, accounting not just for direct jobs but for the indirect and induced positions that clean energy investment generates across Alaska's broader economy. In addition, developing Alaska-specific clean energy occupation projections that incorporate federal investment timelines, state policy targets, and nonresident workforce data is another vital research undertaking. Further examination of clean energy workforce development strategies in peer states with strong workforce growth, like Maine, could also benefit Alaska's clean energy industry.

This report also underscores the need for further research on culturally integrated education and training resources. Alaska's rural communities represent extraordinary cultural diversity, with more than 200 federally recognized Tribes and centuries of Indigenous knowledge informing how communities relate to, use, and steward their natural environment and energy systems. Training programs that acknowledge and incorporate local cultural contexts are more likely to resonate with rural participants, build local trust, and result in lasting workforce gains. Documenting which culturally grounded approaches are already working across the state and identifying where investment in new models is needed are important next steps for equitable and effective workforce development.

The hurdles to building Alaska's clean energy workforce are rooted in geography, economics, and demographic trends that have been unfolding for decades. The strategies shared in this report shine a light on the dedicated organizations, communities, and individuals overcoming these challenges, as well as on some of the actions needed to continue and expand their work. But ultimately, clean energy workforce development in Alaska cannot be reduced to any single intervention. Growing the pool of qualified workers requires sustained, coordinated effort across training providers, employers, Tribal organizations, state agencies, and communities. Addressing the labor shortages and challenges explored in this analysis means investing simultaneously in entry points and advancement pathways, in rural remote communities and Railbelt cities, and in both short-term stopgaps and long-term structural change. No single partner can do this alone, and there is no silver bullet. But the collaborative strategies identified here can meaningfully move Alaska toward a future where its clean energy infrastructure is built and maintained by a skilled, homegrown workforce.

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Appendices

Appendix A: Informational Interview Demographics and Content

Informational interviews were conducted from June 2025 to February 2026, with most interviews occurring between July and December 2025. Interview requests were sent to individuals and entities involved in either clean energy project development or career and technical education across the state. 61 individuals were contacted, and 43 interviews were conducted. Interviewed individuals worked for a range of entities, including training providers, Tribal entities, utilities, private businesses, state agencies, nonprofits, and community organizations. As seen in Figure A1, the largest share of entities represented were nonprofit organizations, followed by private businesses, education institutions, and state government agencies.

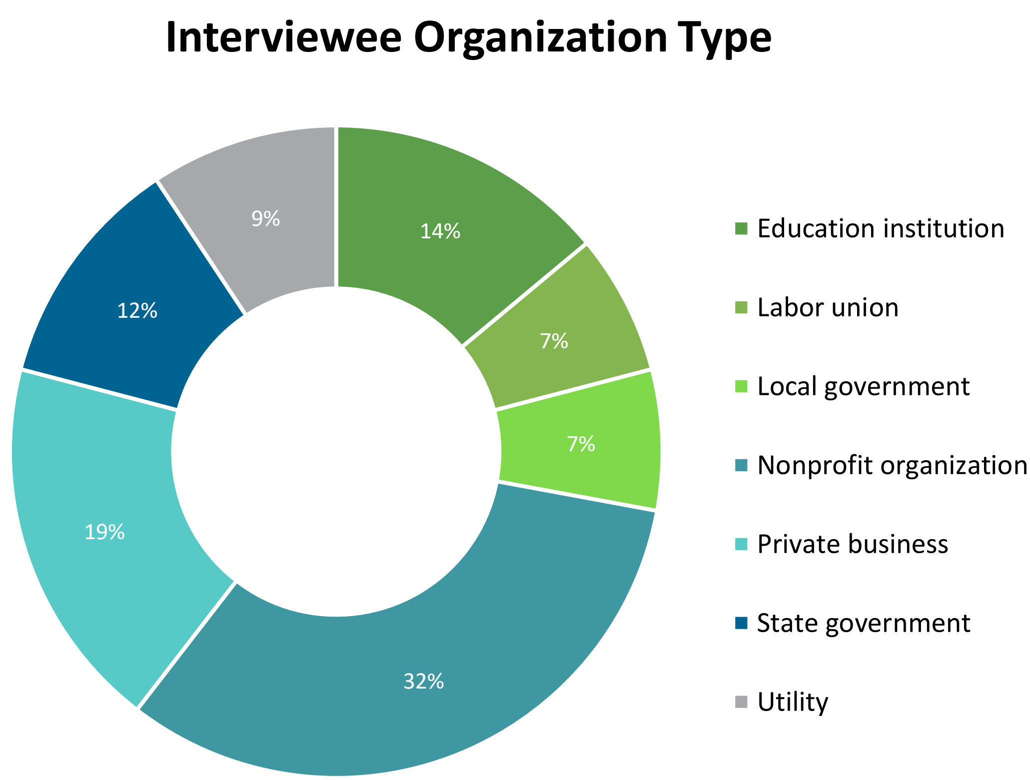

Figure A1: A pie chart showing the spread of interviewees' organization type across seven categories.

Interviewees' organization categorizations were determined by their current employment and that entity's alignment into seven categories. If two categories applied to an entity, the more specific category was selected rather than including the entity in multiple categories. For example, labor unions often have a separate but related training arm (often called a joint apprenticeship training center or apprenticeship training trust and managed jointly by the union and signatory contractors), but this categorization counts them solely as labor unions. In addition, some utilities are nonprofit organizations; this framework includes them in the utility category, not the nonprofit category.

Interviewees also worked or lived in nearly every region of the state, except for the Far North. The largest category of interviewees worked for organizations with a statewide reach, as seen in Figure A2. That category includes businesses, agencies, and nonprofits that work within multiple regions. For instance, the Alaska Village Electric Cooperative (AVEC) falls into this category, because its member communities, though largely clustered in Western Alaska, are also in Interior, Southcentral, and Southeast Alaska.

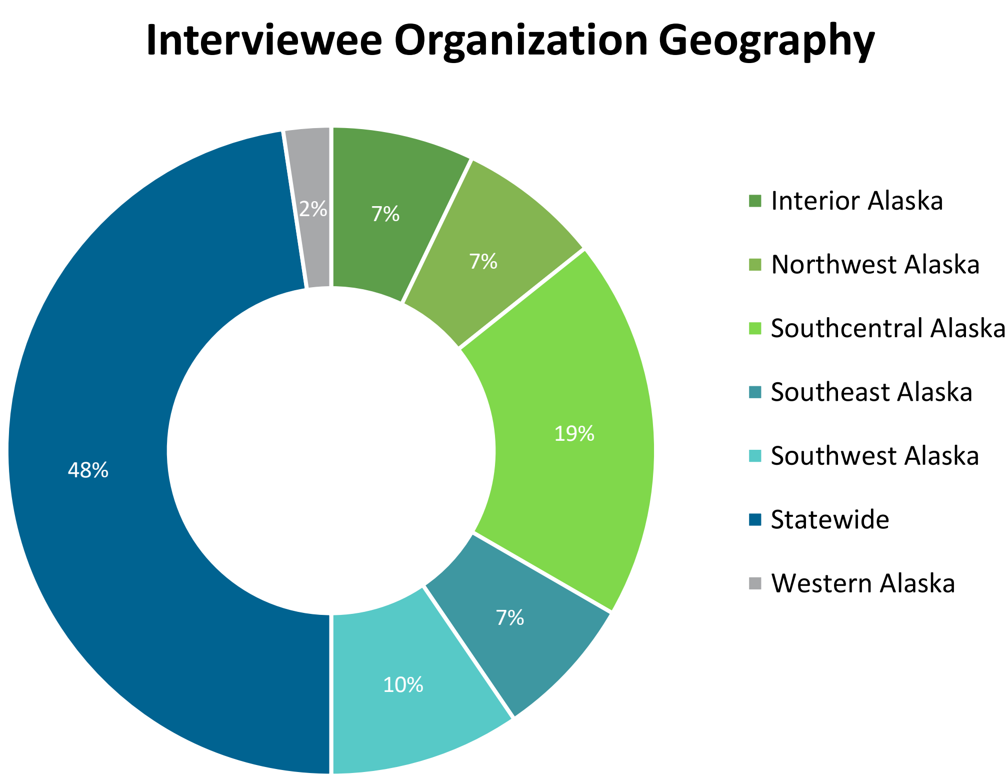

Figure A2: A pie chart illustrating the geographic scope of interviewees' organizations.

Interviews focused on six key areas, depending on the interviewee's entity and scope. The six topics addressed in interviews were:

1. Sharing information and identifying barriers to successful clean energy training, planning, operations, and maintenance
2. Identifying gaps in the clean energy training landscape, including curriculum, programs, funding, and people
3. Sharing success stories and examples of efforts or individuals who have overcome identified barriers and gaps

4. Giving their perspectives on past and present clean energy workforce development efforts
5. Brainstorming ideas for improving training and workforce development
6. Sharing recommendations for further research and outreach

Interview notes were broken apart and categorized by themes for analysis. A data sheet of anonymized interview notes is included in Attachment A.

Appendix B: Alaska Energy Training Group Meetings' Presenter Demographics and Content

REAP facilitated Alaska Energy Training Group meetings from December 2023 to March 2026, with support and partnership from the Denali Commission. Meetings included presenters and participants from a range of energy training, technical assistance, workforce development, and troubleshooting efforts around the state. The 24 presenters who participated in the 10 Alaska Energy Training Group meetings included in this analysis represented a range of organizations, categorized into the six of the broad organizational types discussed in Appendix A. Utility is the sole organization type not represented among group presenters. The largest share of entities represented were private businesses, followed by state governments and then nonprofit organizations, as seen in Figure B1.

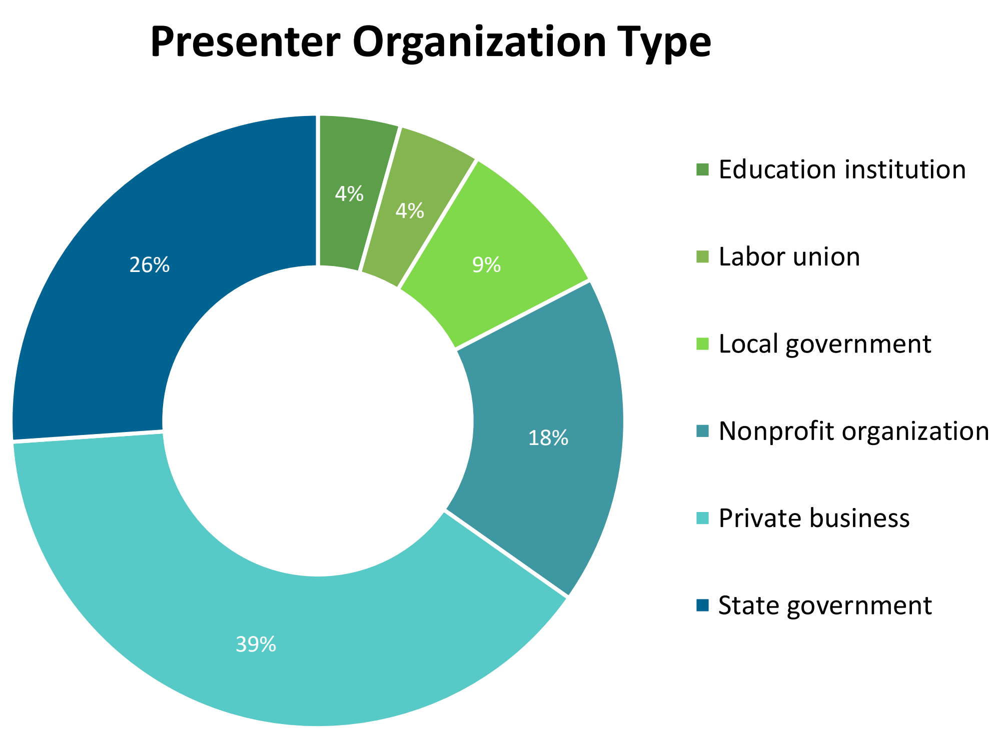

Figure B1: A pie chart showing the spread of presenters' organization type across six categories.

Like the organizational categorization in Appendix A, presenters' organization categorizations were determined by their current employment and role. If two categories applied to an entity, the more specific category was selected, rather than including the entity in multiple categories.

Presenters worked or lived in nearly every region of the state, with most presenters working for statewide entities that work within multiple regions (see Figure B2). No presenters described past or active work in Interior, Southcentral, Southeast, or Far North Alaska.

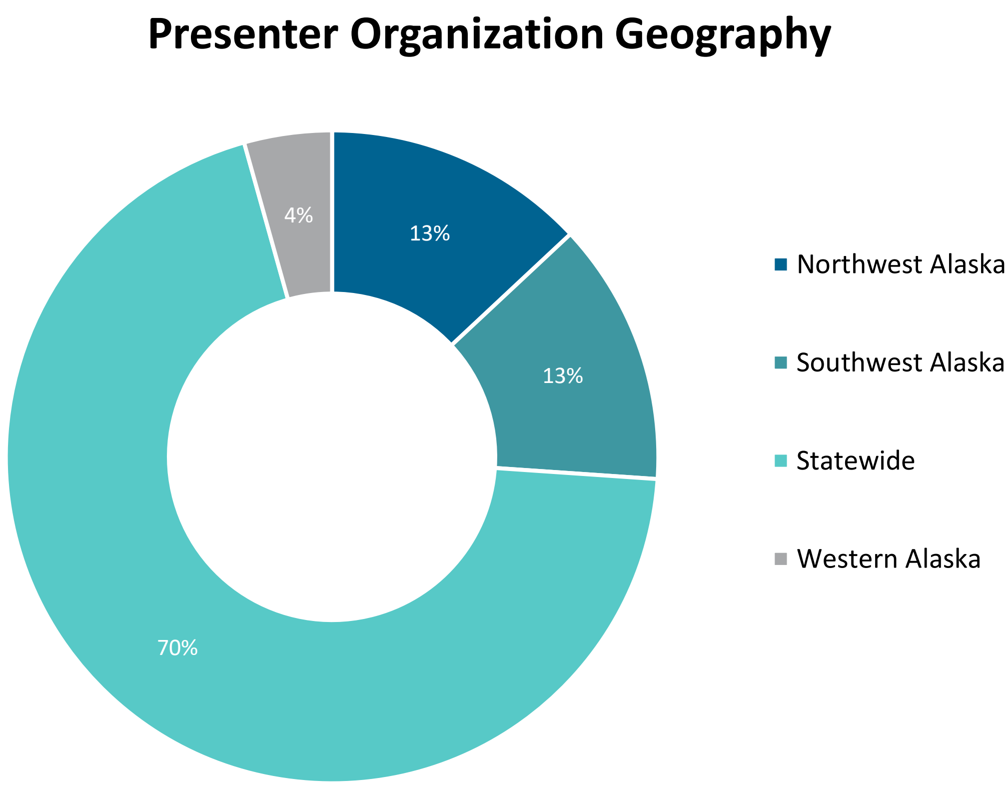

Figure B2: A pie chart illustrating the geographic scope of presenters' organizations.

A full datasheet of Alaska Energy Training Group presenters, meetings, and themes is available in Attachment A. Meeting notes, recordings, attendee links, and shared resources are hosted publicly and updated quarterly at https://alaskarenewableenergy.org/initiatives/alaska-energy-training-group/. Group updates are sent out to a public mailing list of more than 100 individuals, available at https://groups.google.com/a/realaska.org/g/alaskaenergytraininggroup/members.

Appendix C: U.S. Energy and Employment Report Data Analysis

This analysis draws on three years of U.S. Energy Employment Report (USEER) data to estimate and put the state's energy employment size and recent growth into national context. The USEER uses data from the U.S. Bureau of Labor Statistics' Quarterly Census of Employment and Wages and stratified employer surveys to provide national and state-level direct energy employment estimates.[57] Publicly available USEER datasets from the Department of Energy's Office of Policy[58] and the Energy Futures Initiative[59] were used to determine Alaska's clean energy employment and conduct a peer state comparison, and are available within Attachment B.

Clean energy employment definition and crosswalk

To scope Alaska-specific clean energy employment, this analysis used the following clean subcategories within the USEER's five overarching technology categories: clean fuels (corn ethanol, other ethanol, woody biomass, other biofuels); electric power generation (solar, wind, traditional hydro, low-impact hydro, geothermal, bioenergy/CHP); transmission, distribution, and storage (including smart grid, microgrid, EV charging); energy efficiency (traditional HVAC, efficient appliance and lighting installation,[60] renewable heating/cooling, advanced building materials, recycled building materials); and clean motor vehicles (hybrid/electric, hydrogen/fuel cell, natural gas). A full crosswalk is included below in Table C1.

Table C1: Clean Energy Crosswalk. This table maps every subcategory used in the national and state USEER datasheets to REAP's clean energy definition. Source: *2023, 2024, and 2025 USEERs.*

Technology Category	National Subcategories	Clean YES/NO	State Subcategories	Clean YES/NO
Fuels	Coal	NO	Coal fuels	NO
Fuels	Onshore Petroleum	NO	Oil (petroleum and other fossil fuels)	NO
Fuels	Offshore Petroleum	NO	Natural gas fuels	NO
Fuels	Onshore Natural Gas	NO	Corn ethanol	YES
Fuels	Offshore Natural Gas	NO	Other ethanol and non-woody biomass	YES
Fuels	Other Fossil Fuel	NO	Woody biomass	YES
Fuels	Corn Ethanol	YES	Other biofuels	YES
Fuels	Other Ethanol/Non-Woody Biomass, including Biodiesel	YES	Nuclear fuels	NO
Fuels	Woody Biomass/Cellulosic Biofuel	YES	Other fuels	NO
Fuels	Renewable diesel fuels	YES		

[57] More information about the USEER's methodology and changes over time is available in the USEER appendices: https://www.energy.gov/documents/2025-useer-appendices
[58] https://www.energy.gov/policy/us-energy-employment-jobs-report-useer
[59] https://efifoundation.org/reports/2019-u-s-energy-and-employment-report/
[60] In the *2023* and *2024 USEER* data, this category was referred to as "Energy STAR and efficient lighting," while in the *2025 USEER* data, it was titled "certified and efficient lighting."

Technology Category	National Subcategories	Clean YES/NO	State Subcategories	Clean YES/NO
Fuels	Biodiesel fuels	YES		
Fuels	Waste fuels	YES		
Fuels	Other Biofuels	YES		
Fuels	Nuclear Fuel	NO		
Fuels	Other	NO		
Electric Power Generation	Solar	YES	Solar	YES
Electric Power Generation	Land-based Wind	YES	Wind	YES
Electric Power Generation	Offshore Wind	YES	Traditional hydropower	YES
Electric Power Generation	Geothermal	YES	Low impact hydropower, marine, and hydrokinetics	YES
Electric Power Generation	Bio	YES	Geothermal electricity	YES
Electric Power Generation	Low Impact Hydropower	YES	Bioenergy/Combined heat and power	YES
Electric Power Generation	Traditional Hydropower	YES	Natural gas electricity	NO
Electric Power Generation	Advanced Natural Gas	NO	Coal electricity	NO
Electric Power Generation	Nuclear	NO	Oil and other fossil fuel electricity	NO
Electric Power Generation	Coal	NO	Nuclear electricity	NO
Electric Power Generation	Oil and Other Petroleum	NO	Other electricity	NO
Electric Power Generation	Nat Gas	NO		
Electric Power Generation	Combined Heat and Power	YES		
Electric Power Generation	Other	NO		
Transmission and Distribution	Trad Transmission and Distribution	YES	Traditional transmission and distribution	YES
Transmission and Distribution	Smart Grid	YES	Smart grid	YES
Transmission and Distribution	Micro Grid	YES	Micro grid	YES
Transmission and Distribution	Other Grid Modernization	YES	Other grid modernization	YES
Transmission and Distribution	EV Charging	YES	Other (including commodity flows)	YES
Transmission and Distribution	Other	YES		
Storage	Pumped Hydro	YES	Storage*	YES
Storage	Battery	YES		
Storage	Mechanical	YES		
Storage	Thermal	YES		
Storage	LNG	YES		

Technology Category	National Subcategories	Clean YES/NO	State Subcategories	Clean YES/NO
Storage	Compressed NG	YES		
Storage	Crude Oil	YES		
Storage	Refined Petrol Fuels (Liquid)	YES		
Storage	Refined Petrol Fuels (Gas)	YES		
Storage	Coal	YES		
Storage	Biofuels	YES		
Storage	Nuclear	YES		
Storage	Other Gas	YES		
Storage	Other Liquid Fuel	YES		
Storage	Other Storage	YES		
Storage	Other	YES		
Energy Efficiency	Certified Appliances (not including HVAC) / Energy STAR and efficient lighting**	YES	Certified and efficient lighting / Energy STAR and efficient lighting	YES
Energy Efficiency	Certified Heating, Ventilation, and Cooling (HVAC), except for air-source or ground-source heat pumps	YES	Traditional HVAC with an efficiency component	YES
Energy Efficiency	Certified air-source heat pumps	YES	High efficiency HVAC and renewable heating and cooling	YES
Energy Efficiency	Certified ground-source or geothermal heat pumps	YES	Advanced materials	YES
Energy Efficiency	Other high efficiency HVAC that are out of scope for certification (e.g. indirect evaporative coolers, air to water heat pumps, energy recovery systems, etc.)	YES	Other	YES
Energy Efficiency	Traditional HVAC goods, control systems, and services	YES		
Energy Efficiency	Certified water heaters	YES		
Energy Efficiency	Certified Electronics (TVs, Telephones, Audio/Video, etc.)	YES		
Energy Efficiency	Certified Windows, Doors and Skylights	YES		

Technology Category	National Subcategories	Clean YES/NO	State Subcategories	Clean YES/NO
Energy Efficiency	Certified Roofing	YES		
Energy Efficiency	Certified Insulation	YES		
Energy Efficiency	Air sealing	YES		
Energy Efficiency	Certified Commercial Food Service Equipment	YES		
Energy Efficiency	Certified Data Center Equipment	YES		
Energy Efficiency	Certified LED lighting	YES		
Energy Efficiency	Other LED, CFL, and efficient lighting	YES		
Energy Efficiency	Solar thermal water heating and cooling	YES		
Energy Efficiency	Other renewable heating and cooling (geothermal, biomass, heat pumps, etc.)	YES		
Energy Efficiency	Advanced building materials/insulation	YES		
Energy Efficiency	Recycled building materials	YES		
Energy Efficiency	Reduced water consumption products and appliances	YES		
Energy Efficiency	Energy auditing services	YES		
Energy Efficiency	Other	YES		
Motor Vehicles***	Gasoline and diesel vehicles	NO	Gasoline and diesel vehicles	NO
Motor Vehicles	Hybrid electric vehicles	YES	Hybrid electric vehicles	YES
Motor Vehicles	Plug-in hybrid electric vehicles	YES	Plug-in hybrid electric vehicles	YES
Motor Vehicles	Battery electric vehicles	YES	Battery electric vehicles	YES
Motor Vehicles	Natural gas vehicles	NO	Natural gas vehicles	NO
Motor Vehicles	Hydrogen/fuel cell vehicles	YES	Hydrogen/fuel cell vehicles	YES
Motor Vehicles	Other vehicles	NO	Other vehicles	NO
Motor Vehicles	Motor vehicle commodity flows	NO	Motor vehicle commodity flows	NO

** 2025 USEER only included one storage subcategory, while 2023 and 2024 USEERs separated storage into "clean storage" and "other storage" subcategories. Since all storage jobs are considered clean, this change did not impact the analysis.*

*** Technology subcategory titles that used "Energy STAR" in 2023 and 2024 USEERs were replaced with "Certified" in USEER 2025.*

**** Due to limited motor vehicle subcategories within the national-level data sheets, the sum of each state's included technology subcategory employment count from the state-level data sheets was used.*

Peer state comparison

To compare Alaska's clean energy employment trends with similar states, this analysis analyzed seven peer states that shared one of three similarities with Alaska: having fossil-fuel dependent economies (Wyoming, North Dakota, and West Virginia); having cold/remote climates and geographies (Montana, Vermont, and Maine); and having an isolated grid from the rest of the U.S. (Hawaii). The comparison used the same clean energy employment definition and method described above and shown in Table C1. The peer state comparison consisted of evaluating clean energy employment and recent growth, as seen in Table C2, and hiring difficulty reported by energy employers, as seen in Table C3.

Table C2: Peer State Clean Energy Employment Comparison. This table compares clean energy job counts and recent growth in states that have similar characteristics to Alaska. Sources: *2023, 2024, and 2025 USEERs.*

State	Peer Characteristic	2024 Total Energy Jobs	2024 Clean Energy Jobs	2024 Clean Energy Share	'22–'23 Clean Energy Growth	'23–'24 Clean Energy Growth
Alaska	Fossil fuel; Isolated grid; Cold/remote	27,740.8	12,882	46.4%	6.4%	4.8%
Wyoming	Fossil fuel	46,442.2	20,495	44.1%	-0.2%	1.9%
North Dakota	Fossil fuel	59,440.3	19,596	33.0%	1.8%	2.7%
Montana	Cold/remote	33,237.3	21,320	64.1%	2.3%	3.0%
West Virginia	Fossil fuel	85,992.5	46,786	54.4%	-3.8%	0.2%
Hawaii	Isolated grid	26,274.9	19,540	74.4%	1.3%	1.4%
Vermont	Cold/remote	22,268.9	19,453	87.4%	3.1%	0.8%
Maine	Cold/remote	27,639.8	18,483	66.9%	8.3%	4.0%
U.S. Total	National	8,498,552	4,982,603	58.6%	2.6%	4.2%

U.S. Total is the sum of all states and excludes Puerto Rico and the U.S. Virgin Islands.

Table C3: Peer State Hiring Difficulty. This table compares the hiring difficulty reported by energy employers in states that have similar characteristics to Alaska. Source: *2025 USEER*.

State	Very Difficult	Somewhat Difficult	Not at All Difficult	Did Not Hire	Total Difficulty (Very + Somewhat)
Alaska	22.3%	26.0%	4.6%	47.1%	48.2%
Wyoming	21.1%	24.4%	7.8%	46.7%	45.5%

State	Very Difficult	Somewhat Difficult	Not at All Difficult	Did Not Hire	Total Difficulty (Very + Somewhat)
North Dakota	21.8%	29.2%	3.6%	45.3%	51.1%
Montana	17.9%	28.3%	4.5%	49.2%	46.3%
West Virginia	28.1%	32.0%	5.7%	34.2%	60.1%
Hawaii	21.8%	28.0%	4.7%	45.5%	49.8%
Vermont	19.7%	29.4%	4.8%	46.1%	49.1%
Maine	25.7%	26.8%	4.4%	43.1%	52.6%

Appendix D: In-Demand Clean Energy Occupations

In-demand clean energy occupations were compiled from interviews (see Appendix A for information on interview demographics and content, and Attachment A for anonymized interview notes and themes) and then compared with wage, employment and growth projection data, as seen in Table D1. Positions included are those that interview respondents either expressed current difficulty in hiring or retaining. In-demand occupations are not separated by region, but hiring was generally expressed as most difficult in rural remote and hub communities.

Table D1: In-Demand Clean Energy Occupations. This table lists the clean energy positions that interviewees identified as difficult to hire or retain and maps them to a corresponding standard occupational classification (SOC) code to provide relevant information about wages, workforce size, and growth projections. Sources: Occupational Employment and Wage Statistics, Bureau of Labor Statistics, May 2024; Employment Projections, Bureau of Labor Statistics, 2024-2034; and "Alaska Occupational Projections 2022 to 2032", Alaska Department of Labor and Workforce Development, Research and Analysis.

Position(s) Identified in Interviews	Occupation (SOC code)	National Annual Median Wage	Alaska Annual Median wage	Alaska Wage Differential	Alaska Employment	National Growth Projection ('24 – '34)	Alaska Growth Projection ('22 – '32)
Utility managers	General and Operations Managers (11-1021)	$102,950	$120,470	$17,520	6,010	4%	7%

Position(s) Identified in Interviews	Occupation (SOC code)	National Annual Median Wage	Alaska Annual Median wage	Alaska Wage Differential	Alaska Employment	National Growth Projection ('24 – '34)	Alaska Growth Projection ('22 – '32)
Project managers	Project Management Specialists (13-1082)	$100,750	$105,360	$4,610	1,590	6%	10%
Utility clerks, bookkeepers, and accountants	Accountants and Auditors (13-2011)	$81,680	$81,950	$270	2,440	5%	6%
Energy analysts	Financial and Investment Analysts (13-2051)	$101,350	$94,480	($6,870)	210	6%	8%
Electrical engineers and utility managers	Electrical Engineers (17-2071)	$111,910	$108,780	($3,130)	380	7%	7%
Instructors	Career/Technical Education Teachers, Postsecondary (25-1194)	$61,490	$63,350	$1,860	350	-1%	9%
Utility clerks, bookkeepers, and accountants	Bookkeeping, Accounting, and Auditing Clerks (43-3031)	$49,210	$54,510	$5,300	4,630	-6%	5%
Electricians	Electricians (47-2111)	$62,350	$81,860	$19,510	1,820	9%	13%
Weatherization workers*	Insulation Workers, Floor, Ceiling, and Wall (47-2131)	$48,680	$40,330	($8,350)	110	4%	18%

Position(s) Identified in Interviews	Occupation (SOC code)	National Annual Median Wage	Alaska Annual Median wage	Alaska Wage Differential	Alaska Employment	National Growth Projection ('24 – '34)	Alaska Growth Projection ('22 – '32)
Solar installers	Solar Photovoltaic Installers (47-2231)	$51,860	Unknown	Unknown	Unknown	42%	Unknown
Diesel mechanics	Diesel Engine Specialists (49-3031)	$60,640	$73,180	$12,540	740	2%	10%
HVAC technicians and heat pump installers	Heating, Air Conditioning, and Refrigeration Mechanics and Installers (49-9021)	$59,810	$83,660	$23,850	790	8%	8%
Power line workers and linemen	Electrical Power-Line Installers and Repairers (49-9051)	$92,560	$107,330	$14,770	370	7%	4%
Wind turbine technicians	Wind Turbine Technicians (49-9081)	$62,580	$64,220	$1,640	40	50%	Unknown
Power plant operators	Power Plant Operators (51-8013)	$99,670	$85,070	($14,600)	750	-10%	3%

SOC code = Standard Occupational Classification code. See http://www.bls.gov/soc/home.htm for more information.
Annual wages were calculated by multiplying the corresponding hourly wage by 2,080 hours.
The Alaska wage differential was calculated by subtracting the Alaskan median wage from the national median wage.
The average national projected growth rate for all occupations between 2024–2034 is 3%. The average Alaska national projected growth rate for all occupations between 2022–2032 is 6.9%.
Some data is not available for solar installers and wind turbine technicians in Alaska, likely due to small employment numbers.
**Weatherization workers often fall into one of two broader SOC codes, 47-4090 or 47-4099, alongside other miscellaneous construction workers. To target data toward building efficiency workers and laborers, insulation workers' SOC code 47-2131 was used instead.*

Appendix E: Challenges and Tactics for Clean Energy Workforce Development

Along with in-demand occupations, interviewees and Alaska Energy Training Group presenters also identified a host of shared barriers to optimal clean energy workforce development. Those challenges are listed in Table E1 in the order they appear in the report, alongside information about how prevalently these challenges were discussed in interviews and Alaska Energy Training Group meetings.

Table E1: Challenges to Clean Energy Workforce Development. This table compiles the central challenges to clean energy workforce development that were identified in informational interviews and Alaska Energy Training Group meetings. Source: Informational Interviews.

	Challenge	Interview Count	Meeting Count
1	In much of rural Alaska, clean energy positions and skills are difficult to fill and retain.	19	5
2	Operating, maintaining, repairing, and replacing rural infrastructure is incredibly expensive and difficult to fund.	15	1
3	Sustaining an experienced clean energy workforce beyond entry-level roles is challenging statewide.	12	2
4	Accessing and attending clean energy training is difficult across the state, and especially in rural areas.	18	2
5	Energy training programs and organizations across the state struggle to recruit and retain experienced instructors.	9	1

These sources also pinpointed tactics for overcoming shared challenges and successfully training, recruiting, retaining, or upskilling needed clean energy occupations. Some solutions are already being tested by different entities and in different regions throughout the state, while others shared were hypothetical. Within the report, these were combined into five overarching strategies:

1. Pursue regional shared services for rural clean energy infrastructure and workers.
2. Increase opportunities for local employment and work-based learning in energy projects.
3. Advance creative partnership opportunities between and among training providers and the energy industry.
4. Expand local opportunities for energy education and career awareness.
5. Research, implement, and bolster financing strategies for building and maintaining clean energy projects.

The individual tactics are listed in Table E2, along with information about their time horizon, the challenge(s) they combat, and the potential partners involved in bringing their strategies to life.

Table E2: Tactics for Clean Energy Workforce Development. This table lists tactics identified in interviews and Alaska Energy Training Group meetings as either promising or in progress for addressing barriers to clean energy workforce development, as well as information about when and how to enact them. Source: Informational Interviews.

	Tactics	Time Horizon to Enact	Challenge(s) Addressed	Potential Partners
A	Provide more access and support for staff and management training, especially for key business and preventative maintenance topics.	Short-term (1-3 years)	1, 3	Rural utilities; regional nonprofit organizations; state agencies; Tribal entities; energy businesses; training providers; universities; trade associations; nonprofit organizations; federal agencies
B	Connect rural workers with contract and seasonal clean energy employment opportunities.	Short-term (1-3 years)	1	Local and regional businesses; regional nonprofit organizations; regional Alaska Native Corporations
C	Increase access to networking and learning opportunities, especially to those that help exchange information between Alaskan and Outside clean energy professionals, by covering tuition costs, offering hybrid options, providing wraparound services, and offering remedial math and writing assistance.	Short-term (1-3 years)	1, 2, 4, 5	State agencies; local technical assistance providers; nonprofit organizations; regional training centers; school districts; unions; trade associations; universities
D	Mentor and elevate local practitioners as experts and instructors for in-state knowledge sharing and training opportunities.	Short-term (1-3 years)	2, 5	Local technical assistance providers; training providers; nonprofit organizations; Tribal entities
E	Set up new projects for success and ease training and operation & maintenance issues by including sufficient commissioning time and support, service contracts, staff training, community workforce development, and remote monitoring systems into grant-funded project budgets.	Short-term (1-3 years)	1, 3	Rural utilities; consultants; state agencies; federal agencies; nonprofit organizations

	Tactics	Time Horizon to Enact	Challenge(s) Addressed	Potential Partners
F	Increase coordination, such as resource and instructor sharing, among training providers, including regional training centers, school districts, state agencies, unions, and energy businesses.	Short-term (1-3 years)	5	Regional training centers; school districts; state agencies; energy businesses; unions; trade associations; universities
G	Increase paid on-the-job learning opportunities by establishing hub-based registered apprenticeships, local utility internships, and rural mentorship opportunities for both incumbent and new workers.	Short-term (1-3 years)	1, 4, 5	State agencies; local governments; federal agencies; nonprofit organizations; energy businesses; unions; Tribal entities
H	Increase energy literacy, education, and career awareness opportunities at the K-12, post-secondary and community levels to build awareness and understanding of clean energy job responsibilities.	Mid-term (3-5 years)	1, 4	School districts; Tribal entities; local governments; nonprofit organizations; career and technical education training providers; regional training centers; local governments; Tribal entities
I	Expand opportunities for electric utilities to share needed staff and equipment, such as through mutual assistance agreements.	Mid-term (3-5 years)	1, 3	Utilities and utility collaboratives; trade associations; state agencies; nonprofit organizations; Tribal entities
J	Implement train-the-trainer programs and intensive-style seasonal training programs to foster more industry participation in instruction.	Mid-term (3-5 years)	5	Regional training centers; school districts; universities; state agencies; energy businesses; trade associations
K	Evaluate and clarify licensing requirements for in-demand positions, including extending trainee and provisional licenses and expanding reciprocal licensing with other states.	Mid-term (3-5 years)	1, 2	State agencies; businesses; unions; trade associations
L	Utilize regional service providers through hub-based utility service contracts with vetted businesses to allow for	Mid-term (3-5 years)	1, 2, 3, 4	Rural utilities; Local and regional service providers (ex: electrical contractors and diesel mechanic

	Tactics	Time Horizon to Enact	Challenge(s) Addressed	Potential Partners
	rotational and flexible employment opportunities for in-demand technical roles.			outfits); regional nonprofit organizations; Tribal entities
M	Expand or establish regional collaboratives to share needed employees and provide long-term support services and technical assistance across multiple communities. Activities can include tracking maintenance tasks, checking operator logs, and optimizing performance data regionally.	Long-term (5+ years)	1, 2, 3, 4, 5	Rural utilities; local and regional service providers; regional nonprofit organizations; regional Alaska Native Corporations; local governments
N	Expand AEA's Circuit Rider program to offer more on-site assistance for rural utilities, including in clean energy integration.	Long-term (5+ years)	1, 3, 4	State agencies; local governments; rural utilities; regional nonprofit organizations
O	Investigate and implement new financing strategies to strengthen the market for clean energy projects and assist in their long-term success, like the use of renewable independent power producers to set aside funds for ongoing staff training, preventative maintenance, replacement funds, and other operation & maintenance needs.	Long-term (5+ years)	3, 4, 5	Rural utilities; consultants; regional nonprofit organizations; trade associations; Tribal entities; regional Alaska Native Corporations
P	Increase state training funds that support regular clean energy training coordination and delivery.	Long-term (5+ years)	4, 5	State agencies; local governments; regional and statewide nonprofit organizations; Tribal entities
Q	Strengthen local industry partnerships and employment opportunities that identify and train the next generation of instructors, including expanding assistant teaching positions, creating mentoring opportunities for retiring instructors, and involving	Long-term (5+ years)	4, 5	Regional training centers; school districts; universities; state agencies; energy businesses; nonprofit organizations; trade associations; unions; Tribal entities

	Tactics	Time Horizon to Enact	Challenge(s) Addressed	Potential Partners
	advisory boards in succession planning.			
R	Identify, develop, and strengthen market-relevant and recognized credentials through more robust partnerships between employers and training providers.	Long-term (5+ years)	4, 5	Regional and statewide nonprofit organizations; Tribal entities; state agencies; regional training centers; universities; unions; trade associations; school districts
S	Develop, implement, and continue researching culturally integrated training programs.	Long-term (5+ years)	4	Regional and statewide nonprofit organizations; Tribal entities; state agencies; regional training centers; universities; unions; trade associations; school districts

Appendix F: Alaska's Clean Energy Career and Technical Education and Training Resources

Through research for this report and REAP's past decade of involvement in clean energy education and training, a list of available clean energy training resources throughout the state was compiled. This list largely includes regularly scheduled programs, courses, and services. Still, availability can be hard to predict in Alaska's career and technical education ecosystem, especially in rural hub and remote communities. Whenever possible, organizational and instructor information was included so that interested individuals or organizations can contact the training provider for more information. The list of training providers and programs is included in Table F1, and a full sheet of training resources, including type of training, topics covered, locations, trainee eligibility, and websites, is available in Attachment C.

Table F1. Clean energy workforce and training organizations and their programs, courses, or resources.

Organization	Program, Course, or Resource
Alaska Center for Energy and Power (ACEP)	ACEP Undergraduate Student Internship
Alaska Center for Energy and Power (ACEP)	Arctic Remote Energy Networks Academy (ARENA)
Alaska Center for Energy and Power (ACEP)	AlaskaX: Resilient and Renewable Grid
Alaska Center for Energy and Power (ACEP)	Energy Leadership Accelerator (ELA)
Alaska Craftsman Home Program	Advanced Cold Climate Homebuilding Techniques

Organization	Program, Course, or Resource
Alaska Department of Environmental Conservation (ADEC)	ADEC Aboveground Storage Tank Operator Handbook
Alaska Department of Environmental Conservation (ADEC)	ADEC Small Spill Management and Best Practices
Alaska Energy Authority (AEA)	AEA Utility Board Training PowerPoint
Alaska Energy Authority (AEA)	Utility Clerk Handbook and Slides: Keeping The Lights On
Alaska Energy Authority (AEA)	Guidebook for Management of a PCE-Eligible Utility
Alaska Energy Authority (AEA)	AEA PCE Program Guide
Alaska Energy Authority (AEA)	AEA Rural Bulk Fuel Facilities Operator Handbook
Alaska Energy Authority (AEA)	AEA Bulk Fuel O&M Video Tutorials
Alaska Energy Authority (AEA)	Circuit Riders
Alaska Energy Authority (AEA), Alaska Vocational Technical Center (AVTEC)	AVTEC Power Plant Daily Inspection Log
Alaska Energy Authority (AEA), Alaska Vocational Technical Center (AVTEC)	Power Plant Operator Training
Alaska Energy Authority (AEA), Alaska Vocational Technical Center (AVTEC)	Bulk Fuel Operator Training
Alaska Energy Authority (AEA), Alaska Vocational Technical Center (AVTEC)	Person in Charge Training
Alaska Housing Finance Corporation (AHFC)	Energy Efficiency NOW! Training
Alaska Housing Finance Corporation (AHFC), Renewable Energy Alaska Project (REAP)	AK Energy Smart
Alaska Housing Finance Corporation (AHFC), Renewable Energy Alaska Project (REAP)	Power Pledge Challenge
Alaska Housing Finance Corporation (AHFC), Renewable Energy Alaska Project (REAP)	Home Energy Efficiency
Alaska Joint Electrical Apprenticeship Training & Trust (AJEATT)	Lineman Apprenticeship
Alaska Joint Electrical Apprenticeship Training & Trust (AJEATT)	Tree Trimmer Apprenticeship
Alaska Joint Electrical Apprenticeship Training & Trust (AJEATT)	Wireman Apprenticeship
Alaska Laborers Training School	Construction Craft Labor Apprenticeship
Alaska Metal and Mechanical Apprenticeship (AMMA)	HVAC-R Service Technician Apprenticeship or Pre-apprenticeship
Alaska Metal and Mechanical Apprenticeship (AMMA)	Sheetmetal Apprenticeship or Pre-apprenticeship
Alaska Municipal League (AML), Denali Commission	Rural Energy Conference
Alaska Operating Engineers/Employers Training Trust (AOEETT)	Heavy Equipment Operator Apprenticeship
Alaska Operating Engineers/Employers Training Trust (AOEETT)	Heavy Duty Equipment Mechanic Apprenticeship
Alaska Power Association (APA)	Safety Summit
Alaska Power Association (APA)	Legal Issues Workshop
Alaska Power Association (APA)	NRECA Director Training

Organization	Program, Course, or Resource
Alaska Power Association (APA)	Director Academy
Alaska Power Association (APA)	Accounting & Finance Workshop
Alaska Teamster Employer Training Trust	Construction Truck Driver Pre-apprenticeship and Apprenticeship
Alaska Teamster Employer Training Trust	Survey Technician
Alaska Technical Center (ATC)	Electric Vehicle Maintenance
Alaska Technical Center (ATC)	Welding
Alaska Technical Center (ATC)	Small Engine Repair
Alaska Technical Center (ATC)	Heavy Equipment Operator
Alaska Technical Center (ATC)	Boiler and Furnace Repair
Alaska Technical Center (ATC)	Microsoft Office 365 Bootcamp
Alaska Technical Center (ATC)	Introductory 12 Volt Battery System Course
Alaska Technical Center (ATC)	Heavy Equipment Mechanic
Alaska Technical Center (ATC)	Commercial Driver's License Training
Alaska Technical Center (ATC)	Heat Pump Training
Alaska Technical Center (ATC)	Toyo Stove Repair
Alaska Technical Center (ATC)	Construction Trades
Alaska Vocational Training Center (AVTEC)	Industrial Electricity
Alaska Vocational Training Center (AVTEC)	Construction Technology
Alaska Vocational Training Center (AVTEC)	Diesel/Heavy Equipment Technologies
Alaska Wood Energy Development Task Group	Biomass Operator Training
Alaska Works Partnership (AWP)	HVAC
Alaska Works Partnership (AWP)	Plumbing
Alaska Works Partnership (AWP)	Diesel Mechanics
Alaska Works Partnership (AWP)	Heavy Equipment Operators
Alaska Works Partnership (AWP)	Heavy Equipment Mechanics
Alaska Works Partnership (AWP)	Power Tools
Alaska Works Partnership (AWP)	Welding
Alaska Works Partnership (AWP)	Residential Framing
Alaska Works Partnership (AWP)	Sheetmetal
Alaska Works Partnership (AWP)	Electrical Wiring
Alaska Works Partnership (AWP)	Building Maintenance
Alaska Works Partnership (AWP)	Carpentry
Alaska Works Partnership (AWP)	Weatherization
Alaska Works Partnership (AWP)	First Aid/CPR/AED
Alaska Works Partnership (AWP)	OSHA 10
Cold Climate Housing Research Center (CCHRC)	Cold Climate Weatherization Installer Badges

Organization	Program, Course, or Resource
DeerStone Consulting	Consulting and training on renewable energy project development
Galena Interior Learning Academy (GILA)	Construction Trades
Galena Interior Learning Academy (GILA)	Media & Tech
Generations Southeast	Commercial Driver's License (Simulator)
Generations Southeast	Flagger Certification
Generations Southeast	HAZWOPER (Hazardous Waste Operations and Emergency Response)
Generations Southeast	Workplace Success
Generations Southeast	Community Emergency Response Team
Generations Southeast	Carpentry Fundamentals
Generations Southeast	Heavy Equipment (Simulator)
Generations Southeast	Career 101
Generations Southeast	Beginning Welding
Hartford Accounting	Utility accounting training and consulting
HDH Consulting	Utility clerical and management training and consulting
Ilisagvik College	Accounting
Ilisagvik College	Business Management
Ilisagvik College	Construction Technology
Ilisagvik College	Data Analysis
Ilisagvik College	Office Management
Individual trainer - Dina Dobkins	Utility clerical and management training and consulting
Individual trainer - Jamie Matson	Power plant operations training and consulting
Individual trainer - Pati Crofut	Utility clerical and management training and consulting
Integrity Environmental	Consulting and training on bulk fuel operations
Kawerak, Norton Sound Health Corporation, Norton Sound Economic Development Corporation	Community Utility Assistance Program Municipal Account Services
Learn to Return	Certified Tower Climber and Rescuer
Northern Industrial Training (NIT)	Carpentry
Northern Industrial Training (NIT)	Administrative Assistant Training
Northern Industrial Training (NIT)	Health, Safety, Environmental Technician
Northern Industrial Training (NIT)	Microsoft
Northern Industrial Training (NIT)	Construction Equipment
Northern Industrial Training (NIT)	Mechanics
Northern Industrial Training (NIT)	Welding
Northern Industrial Training (NIT)	OSHA
Northern Industrial Training (NIT)	Truck Driver
North Star Computing	Utility clerical and management training and consulting

Organization	Program, Course, or Resource
Northwestern Alaska Career and Technical Center (NACTEC)	Heavy equipment
Northwestern Alaska Career and Technical Center (NACTEC)	Driver education
Northwestern Alaska Career and Technical Center (NACTEC)	Introduction to Construction
Northwestern Alaska Career and Technical Center (NACTEC)	Introduction to Welding
Northwestern Alaska Career and Technical Center (NACTEC)	Heavy equipment operator
Northwestern Alaska Career and Technical Center (NACTEC)	Career exploration
Northwestern Alaska Career and Technical Center (NACTEC)	Small Engine Repair
Partners for Progress in Delta	Heavy Equipment Academy
Partners for Progress in Delta	National Safe Tractor & Machinery Operation Program
Partners for Progress in Delta	Welding
Partners for Progress in Delta	Commercial Driver's License
Partners for Progress in Delta	Microsoft Excel: Beyond the Basics
Partners for Progress in Delta	Grant Writing
Partners for Progress in Delta	Driving Academy
Plumbers and Pipefitters UA Local 367	Plumbing, Pipefitting, Welding, and Heating Apprenticeship
Remote Hands	Work-based training and verification
Renewable Energy Alaska Project (REAP)	Clean Energy Olympics
Renewable Energy Alaska Project (REAP)	People in Power
Renewable Energy Alaska Project (REAP), University of Alaska Fairbanks Bristol Bay Campus (UAF BBC)	Home Energy Basics
Renewable Energy Alaska Project (REAP), University of Alaska Fairbanks Bristol Bay Campus (UAF BBC)	Renewables in Alaska Communities
Renewable Energy Alaska Project (REAP), University of Alaska Fairbanks Bristol Bay Campus (UAF BBC)	Energy Career Exploration
Rural Alaska Fuel Services (RAFS)	Itinerant training for bulk fuel operations
Sealaska Heritage Institute	STEAM internships
Smitty's Diesel & Transmission Service	Power plant operations training and consulting
Southwest Alaska Vocational and Education Center (SAVEC)	Accounting 101 with QuickBooks
Southwest Alaska Vocational and Education Center (SAVEC)	Small Engine & Outdoor Equipment
Southwest Alaska Vocational and Education Center (SAVEC)	Intro to Carpentry
Southwest Alaska Vocational and Education Center (SAVEC)	Grader Training

Organization	Program, Course, or Resource
Southwest Alaska Vocational and Education Center (SAVEC)	Hot Water Heater Maintenance & Repair
Southwest Alaska Vocational and Education Center (SAVEC)	Intro to Welding
Southwest Alaska Vocational and Education Center (SAVEC)	Toyo Stove Maintenance & Repair
Southwest Alaska Vocational and Education Center (SAVEC)	QuickBooks
Southwest Alaska Vocational and Education Center (SAVEC)	Microsoft Office 365
Southwest Alaska Vocational and Education Center (SAVEC)	Driver education
Southwest Alaska Vocational and Education Center (SAVEC)	HAZWOPER (Hazardous Waste Operations and Emergency Response)
Spruce Root	Work readiness coaching and small business support
State of Alaska Department of Commerce, Community, and Economic Development's Division of Community and Regional Affairs (DCRA)	Rural Utility Business Advisors (RUBA)
State of Alaska Department of Commerce, Community, and Economic Development's Division of Community and Regional Affairs (DCRA)	Rural Administrative Fuel Advisors (RAFA)
Statewide Machinery Inc. (SMI)	Diesel engine consulting, training, and contracting
Sunstone Electric	Solar installation and maintenance training and consulting
Superior Solutions of Alaska	Power plant operations training and consulting
Teaching Through Technology (T3)	Energy summer camps and clubs
University of Alaska Fairbanks Bristol Bay Campus (UAF BBC)	Solar Electric Design and Installation (ENVI F271)
University of Alaska Fairbanks Bristol Bay Campus (UAF BBC)	Sustainable Energy Occupational Endorsement Certificate
Utility Management Assistance	Consulting and training on rural electric utility bookkeeping and PCE reporting
Werba CPA	Utility clerical and management training and consulting
Wisdom & Associates	Building Techniques for Cold Climates Class
Yuut Elitnaurviat	Driver Education
Yuut Elitnaurviat	Welding
Yuut Elitnaurviat	Construction Trades
Yuut Elitnaurviat	Construction Laborer

Attachments