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**Nevada Governor's Office of Energy
Final Report:
Executive Summary
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Executive Summary

In accordance with the Nevada Governor’s Office of Energy State Energy Program Bipartisan Infrastructure Law (SEPIL) Program scope of work, CREA conducted a statewide gap analysis and feasibility study to identify disadvantaged Nevada communities (organized by census tract), as well as the availability and gaps of jobs in the Energy Efficiency Workforce sector across the state. Census tracts are established by the U.S. Census Bureau and represent small, relatively stable, homogenous populations of between 2,500 and 8,000 residents. To that end, this study aims to answer the following questions:

Research Questions

1. What are the communities within the state of Nevada that qualify as disadvantaged communities, and what is the available county-level workforce within those communities?
2. Where are the jobs and gaps in Nevada across all Energy Efficiency Workforce job sectors?
3. What relevant educational opportunities, apprenticeships, trainings, certifications, professional associations, and trade unions are available and where are they located?

First, we examine disadvantaged Nevada communities and workforce availability in those communities, including census and employment data, organized by county. Next, we explore high-demand energy efficient jobs and gaps, including current employment numbers, growth data, and individuals completing training programs, as well as relevant educational and apprenticeship opportunities across Nevada counties. Last, we report statewide union data, including relevant programs and professional associations/unions within job sectors, and identify potential future funding opportunities. The purpose of these analyses is to assist the Nevada Governor’s Office of Energy and associated statewide policymakers and stakeholders in making decisions about how and where to target resources for workforce development in the Energy Efficient Workforce sector.

Method

What are the communities within the state of Nevada that qualify as disadvantaged communities, and what is the available county-level workforce within those communities?

Disadvantaged Communities

CREA used the Climate and Economic Justice Screening Tool (CEJST), developed by the White House Council on Environmental Quality, to evaluate and identify disadvantaged communities by census tract within each of Nevada's 17 counties. Using county heatmaps, we indicate Nevada's disadvantaged communities by census tract based on the number of relevant disadvantaged criteria met, as follows:

- **Low-income households** - At or above the nation's 65th percentile for low-income households (e.g., 200% below the poverty level).
- **Low high school attainment** - At or above 10% of individuals aged 25 or older who have not graduated from high school.
- **Linguistic isolation** - At or above the nation's 90th percentile for share of households in the census tract where no one over the age of 14 speaks English very well.
- **Low median income** - At or above the nation's 90th percentile for low median income, which is calculated as the median income of the tract divided by the income in the Metropolitan Statistical Area. For rural tracts, it is calculated as a percent of the state's median income.
- **Poverty** - At or above the nation's 90th percentile for share of people living at or below 100% of the Federal poverty level.
- **Unemployment** - At or above the nation's 90th percentile for the number of unemployed people as a share of the labor force.

- **Rural** - At least 10% of households were classified as rural in the 2020 census.

Workforce Availability

Within all 17 Nevada counties, CREA gathered workforce availability data in identified disadvantaged census tracts using the 2023 American Community Survey five-year estimates for tract population and the number and percentage of working-age individuals. Based on the Bureau of Labor Statistics definition of working-age individuals (anyone aged 16 or over) and the age at which individuals can begin to collect at least a portion of their Social Security benefits (62), we included workforce availability data for Nevadans aged 15-64 in disadvantaged census tracts.

Where are the jobs and gaps in Nevada across all Energy Efficiency Workforce job sectors?

Nevada Employment Data

To identify high-demand energy efficient jobs in Nevada, CREA used the North American Industry Classification System to identify industries related to the energy efficiency sector and to identify occupations that comprise the largest market share of each industry. Occupations are defined via their Standard Occupation Codes (SOC), which are maintained by the Bureau of Labor Statistics. We further narrowed our focus by highlighting Nevada occupations that have high hiring demand with low education and experience thresholds.

What relevant educational opportunities, apprenticeships, trainings, certifications, professional associations, and trade unions are available and where are they located?

Nevada Job Training Programs

Higher education programs

Degree and certification programs are organized through the Classification of Instructional Programs (CIP) codes. CIP codes represent education programs and are based on the learned skills acquired by the person completing the program. CREA used the Lightcast CIP-to-SOC tool to find CIP codes associated with each of the high-demand occupations identified in this report. For each occupation, we list the Nevada institutions that have educational or training programs related to the occupation, including the level of credential, the annual tuition, and whether distance training is available.

Apprenticeships

An initial search for apprenticeship programs led to a list of registered programs provided by the Office of the Labor Commissioner, from the State of Nevada Department of Business and Industry. This list provides information about the 71 registered apprenticeships in the state, with the name of the program, the associated occupations (including the SOC codes), and contact information. The final list of applicable programs was determined by matching the SOC codes with the list of codes from the employment data. Additional SOC codes that were deemed to be appropriate were also included in the final list. Apprenticeship programs are organized around the union that provides it. We supply the union details, SOC codes relevant to the training, costs, length of apprenticeship, prerequisites, and continuing education requirements.

Nevada Union Information

Once job sectors from Sections Two and Three were developed, CREA developed a list of associated occupational fields, conducting a comprehensive online search to find relevant unions associated with those fields, including the local number and the areas served.

Further Funding Opportunities

Potential funding opportunities were discovered in several ways. First, CREA leveraged relevant online properties to determine federal funding sources for workforce development. We then conducted a narrow search targeting state and private funding opportunities.

Results

What are the communities within the state of Nevada that qualify as disadvantaged communities, and what is the available county-level workforce within those communities?

Disadvantaged Communities

While communities with varying levels of disadvantage can be found in multiple counties, many of Nevada's most disadvantaged communities are concentrated largely in or near the major urban centers of the state, in Washoe and Clark counties. In Washoe County, those communities are located in the core of Reno and in neighboring Sparks. For example, census tracts 1.02, 15.02, 18.01, 18.02, and 19.01, which cluster near the intersection of Highways 80 and 580, met the most relevant disadvantaged criteria and also contained some of the largest percentages of working-aged individuals in the county. In Clark County, communities are mainly located within the city of Las Vegas, especially east of Interstate 15. For example, Northeast Las Vegas census tracts 4.02, 5.16, 5.22, and 5.24, nestled between Interstate 15 and Highway 95, along with Southeast Las Vegas census tracts 5.21 and 11, met the most relevant disadvantaged criteria, coupled with some of the largest percentages of working-aged individuals in the county.

These communities, in particular, have high concentrations of low-income households and low rates of high school attainment. The high percentages of individuals over 25 with no high school diploma suggest the areas may be conducive for providing workforce development and training.

Where are the jobs and gaps in Nevada across all Energy Efficiency Workforce job sectors?

Demand Pressure

We measure employment demand with three values: the number of unique job postings for a given occupation in the region, the estimated number of current jobs in the occupation within the region, and the ratio of postings to jobs. We call the ratio the demand pressure ratio, and when the current job estimate is not too small, the demand pressure ratio can be interpreted as the percent of the current workforce that employers are hiring. A demand pressure ratio of .2 (hiring at 20% of the current workforce) is consistent with hiring at replacement rates in an occupation with mild turnover and /or mild growth. A demand ratio of .5 suggests much stronger demand, while 1 or greater suggests extreme demand. The full report is restricted to occupations that have demand pressure ratios over .20 within a given county.

Two Types of High-Demand Occupations

In cases where the estimated number of current jobs is more than five, we call the occupation “established,” suggesting the field currently has people working in it. When the number of estimated jobs is very small, from 0 to 5, we call it “emerging.” We make this distinction for two reasons. Firstly, they represent two different types of demand: established demand is likely more long term, while emerging demand is more likely to subside once initial hiring is complete. Second, as we will see in a moment, the demand pressure ratio tends to rise exponentially as the estimated number of jobs decrease into “emerging” levels. We will look at three occupations in Carson City to

see examples of the established and emerging occupations and how that relates to their demand pressure ratio.

Established High Demand Occupations

In Carson City, the HVAC Mechanics and Installers occupation (49-9021) has 96 current jobs and 25 unique postings, resulting in a demand pressure ratio of .26. This means that employers are hiring at 26% of the current workforce, which might suggest mild growth and/or turnover in the occupation. Compare this to Heavy Truck Drivers, which has 140 current jobs and 171 job postings for a resulting demand pressure ratio of 1.22. This represents a very high demand, as employers are hiring more positions than currently exist. Both examples show the demand pressure ratio behaving normally, and we refer to these as “established” occupations. There are many established occupations with high demand throughout the state, particularly in Clark County and Washoe County and Carson City County.

Emerging High Demand Occupations

In Carson City County, Solar Photovoltaic Installers (47-2231) has 0 estimated current jobs (the 0 is actually a fraction rounded down) and 9 job postings. The result is a demand pressure ratio of 72.97. Saying employers are hiring at a rate of 7,297% of the current workforces is a bit misleading. A better interpretation is that there is no existing workforce for Solar Photovoltaic Installers in Carson City County. We will call these occupations with very low or non-existent current workforce “emerging” high-demand occupations.

Where are the two types of demand?

Established high demand occupations are mainly in the more populated areas of the state. 74% of the state’s population lives in Clark County, and Clark County has no emerging and many established high demand occupations. The western area of the state, including southern Washoe County, Carson City County, Douglas County, Lyon County, Story County, and parts of Mineral and

Churchill Counties are currently experiencing rapid growth in the tech and industrial sector, driving both established and emerging demand in the region. In addition to high growth regions, rural counties also tend to have emerging high demand occupations. Further, many of the emerging high demand occupations in rural counties are established high demand occupations in more populated counties.

Where are the established high demand occupations?

Among the established high demand occupations, Helpers - Installation, Maintenance, and Repair Workers (49-9098), Mechanical Engineers (17-2141), Electrical and Electronic Engineering Technologists and Technicians (17-3023), Telecommunications Equipment Installers and Repairers (49-2022), Electrical Engineers (17-2071), Civil Engineers (17-2051), Computer Systems Analysts (15-1211), Electrical and Electronics Repairers, Powerhouse, Substation, and Relay (49-2095), Heavy Tractor Trailer Truck Drivers (53-3032), Inspectors, Testers, Sorters, Samplers, and Weighers (51-9061), Network and Computer Systems Administrators (15-1244), and Software Developers (15-1252) have demand pressure of .6 or higher in 3 or more counties. In addition to the occupations that are in demand in multiple counties, we also suggest paying attention to high demand established occupations in urban Clark and Washoe counties. The large population in these counties translates to larger raw numbers of workers needed. Table 1 shows all established high demand occupations with demand pressure of .6 or higher by county. In addition to the occupation, it shows the number of current jobs and the current demand pressure ratio in that county.

Table 1: Established High Demand Occupations

County	Occupation	Jobs	Demand
Carson City	Network and Computer Systems Administrators (15-1244)	27	3.45
Carson City	Software Developers (15-1252)	93	12.13
Carson City	Natural Science Managers (11-9121)	11	5.46
Carson City	Computer Systems Analysts (15-1211)	62	5.39
Carson City	Heavy and Tractor Trailer Truck Drivers (53-3032)	140	1.22

Carson City	Inspectors, Testers, Sorters, Samplers, and Weighers (51-9061)	171	0.75
Carson City	Mechanical Engineers (17-2141)	59	0.74
Carson City	First-Line Supervisors of Mechanics, Installers, and Repairers (49-1011)	74	0.72
Carson City	Architectural and Civil Drafters (17-3011)	18	0.6
Churchill	Helpers - Installation, Maintenance, and Repair Workers (49-9098)	7	3.27
Churchill	Computer Systems Analysts (15-1211)	10	1.08
Churchill	Telecommunications Equipment Installers and Repairers (49-2022)	7	0.66
Clark	Solar Photovoltaic Installers (47-2231)	75	1.44
Clark	Natural Science Managers (11-9121)	277	1.05
Clark	Mechanical Engineers (17-2141)	518	0.78
Clark	Engine and Other Machine Assemblers (51-2031)	55	0.73
Clark	Electrical and Electronics Repairers, Powerhouse, Substation, and Relay (49-2095)	142	0.63
Clark	Chemical Equipment Operators and Tenders	83	0.62
Douglas	Helpers - Installation, Maintenance, and Repair Workers (49-9098)	9	2.85
Douglas	Network and Computer Systems Administrators (15-1244)	10	1.64
Douglas	Production Workers (51-9199)	79	1.11
Douglas	Heavy and Tractor Trailer Truck Drivers (53-3032)	129	0.86
Douglas	Computer Systems Analysts (15-1211)	16	0.74
Douglas	Software Developers (15-1252)	65	0.7
Elko	Helpers - Installation, Maintenance, and Repair Workers (49-9098)	23	3.43
Elko	Telecommunications Equipment Installers and Repairers (49-2022)	15	1.69
Elko	Electrical and Electronics Repairers, Powerhouse, Substation, and Relay (49-2095)	15	1.69
Elko	Biological Scientists (19-1029)	6	1.45
Elko	Surveyors (17-1022)	25	1.25
Elko	Electrical Engineers (17-2071)	8	1.17
Elko	Civil Engineers (17-2051)	53	1.14
Elko	Mechanical Engineers (17-2141)	13	1.1
Elko	Software Developers (15-1252)	16	1.06
Elko	Computer User Support Specialists (15-1232)	32	0.7
Elko	Maintenance and Repair Workers (49-9071)	327	0.7
Elko	Network and Computer Systems Administrators (15-1244)	10	0.67
Elko	Heating, Air Conditioning, and Refrigeration Mechanics and Installers (49-2095)	63	0.62

Humboldt	Helpers - Installation, Maintenance, and Repair Workers (49-9098)	9	3.71
Humboldt	Electrical Engineers (17-2071)	5	3.13
Humboldt	Mechanical Engineers (17-2141)	4	2.46
Humboldt	Telecommunications Equipment Installers and Repairers (49-2022)	5	2.37
Humboldt	Construction Managers (11-9021)	25	1.36
Humboldt	Electrical and Electronic Engineering Technologists and Technicians (17-3023)	8	1.28
Humboldt	Surveyors (17-1022)	9	1.21
Humboldt	Civil Engineers (17-2051)	10	0.69
Lander	Helpers - Installation, Maintenance, and Repair Workers (49-9098)	8	0.86
Lander	Electrical and Electronic Engineering Technologists and Technicians (17-3023)	6	0.62
Lincoln	Heavy and Tractor Trailer Truck Drivers (53-3032)	21	0.64
Lyon	Helpers - Installation, Maintenance, and Repair Workers (49-9098)	6	2.18
Lyon	Electrical and Electronic Engineering Technologists and Technicians (17-3023)	6	1.58
Lyon	Control and Valve Installers and Repairers (49-9012)	4	0.66
Lyon	Construction and Building Inspectors (47-4011)	7	0.6
Mineral	Heating, Air Conditioning, and Refrigeration Mechanics and Installers (49-2095)	3	1
Nye	Helpers - Installation, Maintenance, and Repair Workers (49-9098)	11	1.42
Nye	Mechanical Engineers (17-2141)	35	0.98
Nye	Civil Engineers (17-2051)	18	0.96
Nye	Electrical Engineers (17-2071)	18	0.94
Nye	Telecommunications Equipment Installers and Repairers (49-2022)	11	0.64
Pershing	First-Line Supervisors of Mechanics, Installers, and Repairers (49-1011)	20	1.13
Pershing	Inspectors, Testers, Sorters, Samplers, and Weighers (51-9061)	7	0.92
Storey	Helpers - Installation, Maintenance, and Repair Workers (49-9098)	7	0.89
Washoe	Electrical and Electronic Engineering Technologists and Technicians (17-3023)	33	3.77
Washoe	Chemical Equipment Operators and Tenders	11	2.41
Washoe	Solar Photovoltaic Installers (47-2231)	13	2.3
Washoe	Electrical and Electronics Repairers, Powerhouse, Substation, and Relay (49-2095)	20	2.24
Washoe	Control and Valve Installers and Repairers (49-9012)	20	2.22

Washoe	Mechanical Engineers (17-2141)	261	1.17
Washoe	Electrical Engineers (17-2071)	160	1.09
Washoe	Helpers - Installation, Maintenance, and Repair Workers (49-9098)	187	0.97
Washoe	Production Workers (51-9199)	796	0.9
Washoe	Mixing and Blending Machine Setters, Operators, and Tenders (51-9023)	59	0.78
Washoe	Inspectors, Testers, Sorters, Samplers, and Weighers (51-9061)	544	0.73
White Pine	Helpers - Installation, Maintenance, and Repair Workers (49-9098)	5	4.46
White Pine	Electrical and Electronic Engineering Technologists and Technicians (17-3023)	5	2.35

Where are the emerging high demand occupations?

Among the emerging high demand occupations, Chemical Equipment Operators and Tenders (51-9011), Natural Science Managers (11-9121), Biological Technicians (19-4021), Electrical Engineers (17-2071), Helpers – Installation, Maintenance, and Repair Workers (49-9098), Solar Photovoltaic Installers (47-2231), Tree Trimmers and Pruners (37-3013), and Wind Turbine Service Technicians (49-9081) have emerging demand in 3 or more counties and established demand in several others. Table 2 shows all the emerging high demand occupations with 3 or fewer current jobs within the occupation by county. It also shows the county where the closest formal training is for that occupation, and whether someone would need to travel more than 100 miles to get to that training.

Table 2: Emerging High Demand Occupations

County	Occupation	Closest Training	100+ Miles
Carson City	Solar Photovoltaic Installers (47-2231)	None	Yes
Carson City	Wind Turbine Service Technicians (49-9081)	Washoe	No
Carson City	Control and Valve Installers and Repairers (49-9012)	Washoe (union)	No
Carson City	Electrical Engineers (17-2071)	Washoe	No
Carson City	Helpers – Installation, Maintenance, and Repair Workers (49-9098)	Carson City	No

Carson City	Electrical Repairers, Powerhouse, Substation, and Relay (49-2095)	Washoe , Clark	No
Carson City	Surveyors (17-1022)	Washoe	No
Carson City	Chemical Equipment Operators and Tenders (51-9011)	None	Yes
Churchill	Chemical Equipment Operators and Tenders (51-9011)	None	Yes
Douglas	Natural Science Managers (11-9121)	Washoe	No
Elko	Chemical Equipment Operators and Tenders (51-9011)	None	Yes
Elko	Biological Technicians (19-4021)	Elko	No
Elko	Tree Trimmers and Pruners (37-3013)	None	Yes
Elko	Natural Science Managers (11-9121)	Elko	No
Esmeralda	Electrical Repairers, Powerhouse, Substation, and Relay (49-2095)	Clark	Yes
Eureka	Wind Turbine Service Technicians (49-9081)	Elko	No
Eureka	Biological Scientists (19-1029)	Elko	No
Eureka	HVAC Mechanics and Installers (49-9021)	Washoe	Yes
Lander	Software Developers (15-1252)	Online; Washoe	Yes
Lander	Natural Science Managers (11-9121)	Washoe	Yes
Lyon	Natural Science Managers (11-9121)	Washoe , Carson City	No
Lyon	Electrical Engineers (17-2071)	Washoe	No
Lyon	Biological Scientists (19-1029)	Washoe	No
Mineral	Mechanical Engineers (17-2141)	Washoe	Yes
Mineral	Solar Photovoltaic Installers (47-2231)	None	Yes
Mineral	Helpers – Installation, Maintenance, and Repair Workers (49-9098)	Washoe	Yes
Mineral	Electrical Engineering Technologists and Technicians (17-3023)	Washoe , Carson City	Yes
Mineral	Construction Managers (11-9021)	Washoe , Carson City	Yes
Nye	Wind Turbine Service Technicians	Elko	Yes
Nye	Chemical Equipment Operators and Tenders (51-9011)	None	Yes
Pershing	Chemical Equipment Operators and Tenders (51-9011)	None	Yes
Pershing	Biological Technicians (19-4021)	Washoe	Yes
Pershing	Electrical Engineers (17-2071)	Washoe	Yes
Pershing	Tree Trimmers and Pruners (37-3013)	None	Yes
Pershing	Helpers – Installation, Maintenance, and Repair Workers (49-9098)	Washoe	Yes
Pershing	HVAC Mechanics and Installers (49-9021)	Washoe	Yes
Storey	Solar Photovoltaic Installers (47-2231)	None	Yes
Storey	Surveyors (17-1022)	Washoe	No

Washoe	Engine and Other Machine Assemblers (51-2031)	None	No
White Pine	Chemical Equipment Operators and Tenders (51-9011)	None	Yes
White Pine	Biological Technicians (19-4021)	Elko	Yes
White Pine	Wind Turbine Service Technicians (49-9081)	Elko	Yes
White Pine	Tree Trimmers and Pruners (37-3013)	None	Yes
White Pine	Mechanical Engineers (17-2141)	Clark	Yes

What relevant educational opportunities, apprenticeships, trainings, certifications, professional associations, and trade unions are available and where are they located?

Where is Training?

Higher Education Programs

Formal training programs eligible for federal Title IV funding is provided at the community colleges, state colleges, universities, trade schools, and private training schools in the state. Many of these programs can be supported through federal student financial aid programs. Clark County houses most of the education facilities, including trade schools (Advanced Training Institute), private colleges (Devry Institute), and public community (College of Southern Nevada), state (i.e. Nevada State University), and research universities (University of Nevada – Las Vegas). Washoe County houses a trade school (Career College of Northern Nevada), a community college (Western Nevada College), and a research university (University of Nevada – Reno). Carson City County houses a community college (Truckee Meadows). Elko County houses a community college (Great Basin).

Apprenticeships

Many in-demand occupations do not require a formal education credential beyond a high school diploma or its equivalent. Further, many also typically involve on-the-job training. As such, there are many apprenticeship programs that are registered within the state. As with the education

programs, apprenticeships are concentrated mainly in Reno and Las Vegas. These programs are often offered for free, with support from the union/local and sponsoring contractors, and include thousands of hours of on-the-job training over several years. Local/union and sponsoring contractors also support hundreds of hours of classroom instruction to supplement hands-on experiences. Many programs provide apprentices along with the foundation for associate's degrees, which can be transferred to complete a bachelor's degree.

No Identified Programs

Several occupations did not have any formal training programs in the state that we could identify. These include Chemical Equipment Operators and Tenders (51-9011), Engine and Other Machine Assemblers (51-2031), Heavy and Tractor-Trailer Truck Drivers (53-3032), Mixing and Blending Machine Setters (51-9023), Tree Trimmers and Pruners (37-3013), Control and Valve Installers and Repairers (49-9012) (may have some union support), Production Workers (51-9199), and Solar Photovoltaic Installers (47-2231).

Training Takeaways: Meeting the Demand

Training needs and availability for the occupations identified in this report are varied. Training is often available through trade schools and community colleges for many of the occupations we identified. However, many of these occupations do not require degrees or formal training beyond high school. Building a pipeline into these occupations should include both avenues. Work with existing training institutions to support enrollment, leveraging Title IV funding to help cover cost of attendance. Additionally, work with employers and trade unions willing to provide on the job training and recruit graduates directly from high school. Finally, some resources might be allocated to developing programs that are currently non-existent in Nevada. Solar Photovoltaic Installers, Engine and Machine Assemblers, and Chemical Equipment Handlers and Tenders all

have high demand, both emergent and established, throughout the state but no formal training programs. Developing community college or trade school programs to feed into these occupations could help sustain long-term employment demand.

Other high demand occupations, such as those in engineering and science management, require formal degrees. These degrees can only be obtained at the colleges and universities in Clark, Washoe, and Elko counties. For people outside of those counties, the cost of living and/or commuting to get education becomes a large burden. Efforts to meet this higher education demand should include support to both recruit into the training programs and to help offset the cost of attending far from home. Title IV funding can often be used for these programs, but the long-term (typically four years or more) commitment to training may require additional incentives. Forging internship programs between higher education programs and energy efficiency workforce employers can help get graduates into the targeted jobs and demonstrate a clear path to employment that can ease enrollment hesitancy.

Emerging and established occupations likely have different training needs. The urgent demand for many emerging occupations may be temporary. Training and pipeline programs for these occupations may not need to be sustained long term as the demand and urgency will likely subside once the few needed positions are filled. High demand established occupations, on the other hand, will likely have sustained high demand and would benefit from a more long-term approach to connect potential workers to training and employment.

Unions

Unions are located mostly within Clark and Washoe counties. Many of the international organizations have locals within both Las Vegas and Reno to serve members in Southern and Northern Nevada, respectively. Trade workers, especially those outside of Nevada's major metro

areas, also can join regional unions from other states that provide resources and services across states. Many locals are officially associated with an apprenticeship program registered with the state's Department of Labor.

Further Funding

Several federal and state opportunities to find additional funding that support the development of Nevada's energy workforce come from the federal government, state agencies, and private foundations. Organizations use funding to support the growth of clean and efficient energy production and to develop the necessary workforce to fulfill those goals. Additionally, there are specific programs that could be useful within Nevada to address the unique needs of individuals living in the rural countries that make up most of the state.

Recommendations

1. **Target outreach to youth in urban centers.** Many of the disadvantaged communities in Nevada are concentrated within Washoe and Clark counties. Specifically, those communities are located within the downtown regions of Reno/Sparks and the eastern region of Las Vegas. These census tracts also have larger communities of young people, with many of their residents falling within the 15 -34 age range. These communities are predominantly low-income, have higher rates of unemployment, and have many people without a high school diploma. As such, these areas would prove ripe for interventions that support the education and training of a workforce for clean energy endeavors. While many educational and/or apprenticeship programs begin at or after high school, targeted outreach to high schools to introduce students to opportunities within these fields and occupations would be advantageous. Additionally, the department should focus on adult education programs and other GED courses to target individuals for early training in these fields.

2. **Invest in career retraining programs in rural areas.** Several rural counties outside of the state's two major metropolitan areas meet multiple disadvantaged criteria, further complicated by their status as rural areas. We found that these areas also have higher concentrations of middle-aged individuals (ages 35-54). In these communities, targeted support for workforce development should focus on career retraining programs for individuals who may need to seek a second career or are interested in increasing their earning potential.
3. **Use demand pressure data to drive decision making.** High demand occupations that are "emerging" may need urgent, but temporary training and pipeline support, while "established" high demand occupations are likely to have sustained demand over time.
4. **Work with employers and training providers to develop training programs.** Solar Photovoltaic Installers (47-2231) and Chemical Equipment Operators and Tenders (51-9011) are both entry level positions with high demand and no formal training programs in Nevada. Communicating between top employers and education providers is a key first step to developing a training pipeline for these types of occupations.
5. **Encourage union outreach statewide.** The unions representing workers in the occupations identified in this report are headquartered mainly in Reno or Las Vegas. While these locals do represent individuals throughout the state, they should make targeted efforts to connect with their members in rural areas. Unions could also help defray the costs of participating in a registered apprenticeship for individuals living in rural counties, as they may need to relocate or reside temporarily in larger, more expensive metropolitan areas during their training programs.

6. **Continue seeking outside funding for clean energy job development.** There are opportunities to secure external funding to develop the clean energy workforce in Nevada further. Notably, two federally funded programs are most applicable to our state. First, the Perkins V program allocates money to states each year to advance career and technical education programs. This funding would be particularly suitable in the field of clean energy to continue developing a highly qualified workforce. Secondly, the Department of Energy provides funding to support projects that improve energy programs and access to energy in rural areas, which can be used throughout the majority of the state.
7. **Address additional barriers to entry.** Education and training programs through postsecondary education institutions and trade schools are not as accessible to the state's rural residents as they are to individuals living in urban counties, as discussed previously. When developing training programs for rural workforce development, it will be crucial to consider factors such as transportation, housing, and other elements that may impede rural residents' participation and completion of these programs.

In urban areas, we found that numerous census tracts were disadvantaged due to linguistic isolation, which means low rates of working-age residents who speak English fluently. As language status may pose an additional barrier to participation and completion in education and training programs in urban areas, program sponsors may want to consider ways to support a linguistically diverse population. Some possible solutions include offering bilingual training programs or offering additional classes to participants to improve their English language acquisition.

Conclusions

This report was designed to highlight disadvantaged communities throughout the state of Nevada how they aligned with the demand for jobs in the energy efficiency field. By providing information about training programs for these positions and how they fit within the disadvantaged communities, this report provides data-driven insights to support informed decisions about improving the size and quality of Nevada's clean energy workforce. The urban centers within the state, mainly the Las Vegas and Reno areas, dominate the report, as the highest concentrations of disadvantaged communities, most of the in-demand jobs, and the bulk of relevant training programs, either formal educational setting and on-the-job apprenticeships, are located in the most urban areas. These spaces include communities that have the most potential to maximally benefit from the Department of Energy's efforts to grow the workforce needed to continue developing clean energy sector within Nevada. As stakeholders move to address the identified community needs and gaps of opportunities, more research can support decision makers to determine how to best support those communities, so as to promote the competitive growth of Nevada's clean energy workforce.