Portland Clean Energy Fund: Market Study Summary DRAFT

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About this Market Study

This Market Study informs understanding about demand and supply for trades labor on projects funded by the Portland Clean Energy Community Benefits Fund (PCEF) and provides insight on how to ensure a diverse and well-trained labor and contractor pool for that work.

Research Approach and Key Findings

Our Market Study research included four main steps: identify investment potential, demand, and supply, and consider factors shaping demand and supply in the region. These are described below along with key findings. The detailed reports that inform this summary will be available upon request in summer 2023.

Identify investment potential. The first step in our research was to identify the main PCEF projects for which workers and contractors in the trades will be needed. **These were defined as projects related to energy efficiency, solar photovoltaics (PV), tree canopy, and electric vehicle (EV) charging**. Next, we estimated the total investment potential for these projects based on information about building conditions, appliance stock, solar potential, tree canopy, and EV charging infrastructure needs.[1] The potential investments identified included, for example, approximately 225,000 energy efficiency and weatherization improvements in small commercial buildings, schools, houses of worship, community centers and residential buildings (with about 95,000 directly benefitting PCEF priority populations) and 3 GW of rooftop solar energy (with about 0.75 GW directly benefitting PCEF priority populations).[2]

Having identified potential investment, we then estimated the cost of making those improvements. Project costs are based on estimates for program and administrative costs, materials and labor to install the improvement, and necessary life, health, and safety upgrades, minus anticipated matching funds. **Based on today's estimated costs, completing the identified projects in Portland that would benefit PCEF priority populations would require approximately $18 billion; completing all of the identified projects in Portland would cost approximately $49 billion**. Note that this estimate does not include all of the potential climate investment in the city (e.g., regenerative agriculture[3], commercial buildings larger than 10,000 square feet, transportation decarbonization beyond the installation of EV charging stations).

[1] The building stock considered included single family and multifamily residential, commercial buildings less than 10,000 square feet, and schools, houses of worship, and community centers as these are the primary building types eligible for PCEF investment.

[2] Defined as low-income communities and communities of color: https://www.portland.gov/bps/cleanenergy/faq-changes-pcef-structure. People with low income and people of color are priority populations for PCEF projects that involve physical improvements because these populations have historically had less access to the benefits of clean energy investments and at the same time are more vulnerable to negative climate-related impacts such as extreme heat, wildfire smoke, diseases, and flooding.

[3] While there are estimates statewide related to demand for agricultural workers, those cannot be accurately extrapolated to Portland's urban agricultural setting. In addition, at the time of this analysis, work associated with PCEF's regenerative agriculture grants was being conducted primarily by non-profit staff and volunteers rather than agricultural workers.

Identify demand for workers and contractors. Next, we defined five potential PCEF investment scenarios and estimated the number of workers and contractors needed to implement each.[4] This allowed us to understand how various funding allocations might affect the demand for workers and contractors. For example, if the amount of investment in solar installation or weatherization changes how does that affect the number and type of workers and contractors needed? The analysis focused on the eight occupations that are most associated with the identified projects: carpenters; electricians; plumbers/pipefitters; heating, ventilation, and air conditioning (HVAC) technicians; insulators; construction laborers; construction inspectors; and landscape/tree technicians.

Assuming annual investment of $81 million for clean energy projects and $10 million for tree planting and maintenance yields an estimated minimum need for **141 to 171 Full Time Equivalent (FTE) annually** ("worker demand")**,** depending on the scenario. **The actual number of workers will be greater than the FTE estimate**, as workers may allocate some of their hours to non-PCEF jobs or other types of work (e.g., management), or work part-time or seasonally. Thus, implementation of PCEF projects will likely require more workers in the eight occupations than suggested by the FTE estimates. If workers on PCEF projects work only on PCEF projects, we estimate the number of workers will need to be at least 15 percent higher than the FTE estimate; however, based on typical work profiles for these occupations, there may be a need for up to four times as many workers as FTE. The upper estimate (700 workers) would be reasonable if most workers on PCEF projects spend the majority of their working hours on non-PCEF projects.

The estimated number of contractors needed to implement these projects ("contractor demand") was calculated based on the worker demand estimates and data regarding firm-level employment, occupational distributions, and FTE-to-employer ratios. **The low estimate for contractor demand is 128 contractors and the high estimate is 228 contractors**. These estimates assume that PCEF work accounts for a relatively small share of each contractor's portfolio and that contractor firm size is small but typical for the industry. While these contractor estimates are similar to the FTE estimates, contractor demand will likely fall below worker demand as more workers than FTE are anticipated. Fewer contractors will be needed if PCEF projects comprise a significant portion of contractors' work or if large firms are responsible for much of the implementation, and more contractors will likely be needed if PCEF projects account for a relatively small share of contractors' work or small firms are responsible for much of the implementation.

Order of Magnitude Impact Estimates

$91 million annual investment in energy efficiency, solar photovoltaics, tree canopy, and electric vehicle (EV) charging **equals approximately:**

- 141 to 171 FTE workers (162 - 700 workers)
- 128 to 228 contractors.

Estimates vary depending on assumptions such as firm size and percent of time working on PCEF projects.

This analysis of demand should be seen as providing **order-of-magnitude estimates rather than precise forecasts** for several reasons. First, these estimates are influenced by assumptions regarding project type, labor required, business composition, and project costs and there are limitations to these

[4] The scenarios modelled in this analysis were designed to reflect the PCEF funding portfolio as of summer 2022. While changes to the funding allocation could affect assumptions underlying the scenarios used to generate demand estimates, there is minimal impact to our findings regarding occupation types and existing supply. Future modeling can be adjusted to reflect changes to PCEF's funding allocations, allowing PCEF to assess and revise as the program evolves.

assumptions. In addition, we did not attempt to assess the need for general versus sub-contractors. Further, as noted above, these estimates do not include workers and contractors for regenerative agriculture, transportation decarbonization beyond the installation of EV charging stations, or other greenhouse-gas-reducing projects. They also do not include people engaged in roles other than physical improvements (e.g., project administration, management, design, outreach, or engagement).

Identify supply of workers and contractors and potential gaps. Having estimated demand for workers and contractors to implement PCEF projects, we then assessed existing supply to determine whether there may be gaps between demand and current supply. Our analysis considered the worker and contractor pool at large as well as for PCEF workforce and contractor priority populations.[5] This is important for ensuring that opportunities afforded by careers in the trades are available to historically disadvantaged and underrepresented populations. Additionally, PCEF's investments in workforce and contractor development must address underrepresentation in the workforce and contracting community.

PCEF investments are unlikely to contribute to supply constraints across the eight focus occupations because the expected demand for workers and contractors on PCEF projects is small relative to the existing supply of workers in these occupations in the tri-county region. Potential exceptions for worker supply include HVAC mechanics and installers and solar photovoltaic installers due to their more-specialized training requirements (postsecondary training and/or licensure) coupled with expectations for relatively quick growth in general market demand for these occupations. Potential exceptions for contractor supply include drywall and insulation contractors.

Although PCEF projects are not likely to account for a large share of overall demand for workers and contractors in the region, with the exceptions noted above, there is an opportunity to invest in increasing the **current supply for many PCEF-related occupations, especially for most PCEF priority populations**. For example, regarding workforce supply, individuals who identify as non-Hispanic, people of color account for 7 percent of employment in the eight occupations versus 18 percent of the tri-county workforce population, indicating a clear racial disparity in workforce participation in the region that can be addressed with PCEF workforce policy and investments. Individuals who identify as Hispanic have greater representation overall (22 percent of the eight occupations compared to 13 percent of the tri-county workforce population), however, they are underrepresented in higher wage occupations such as electricians, plumbers, and inspectors (6 percent) compared to the workforce population (13 percent). This finding regarding underrepresentation in higher-paid occupations applies generally to people of color (POC) populations, which highlights a need to invest in PCEF career advancement activities with diverse populations. Data on relevant credential programs[6] and active apprenticeships as of 2022 indicate that some gains are being made in representation of diverse populations in training pathways, though less so for gender diversity. Regarding contractor supply, woman-owned and minority-owned businesses account for a smaller share of all businesses across the focus industries and do not appear to exist in

[5] PCEF priority populations for workforce and contracting are defined as people with disabilities, people experiencing gender or sex-based discrimination in the workplace, women, and people of color: https://www.portland.gov/bps/cleanenergy/faq-changes-pcef-structure. These populations have historically had less access to the trades and remain underrepresented in the field.

[6] Three local program types associated with PCEF occupations include construction and building inspection; heating, air conditioning, refrigeration mechanics and installers; and industrial mechanic and maintenance technology/technicians.

numbers sufficient to meet PCEF demand. This is the case even when considering non-certified firms.[7] This highlights an opportunity to invest in business development with these firms to enable increased capacity and participation.

It's important to keep in mind that these estimates of worker and contractor supply are limited in several ways. Most significantly, limitations regarding demographic data severely constrain our understanding of workforce participation by people with disabilities or LGBTQ+ populations[8] and business ownership by women, people with disabilities, and people who identify as LGBTQ+ or POC. In addition, existing data are limited with respect to the size, composition, and available capacity of potential PCEF contractors, particularly those from PCEF priority populations. This includes the absence of self-employed contractors from most data sources available for these estimates. Thus, while there is a reasonable understanding regarding overall and priority population supply, results should be seen as providing **a general indication rather than a precise description**. High quality data is a priority for PCEF; we will continue to explore how best to address data limitations, including working with grantees and contracted partners, to generate more complete and accurate estimates. Regardless, these data indicate an opportunity to invest in expanding and diversifying the workforce and contractor base to ensure equitable access to economic opportunities that come with ongoing PCEF project activity.

Consider factors shaping demand and supply of workers and contractors. As a complement to our quantitative analysis of labor and contractor demand and supply, we conducted qualitative research to understand factors that may be shaping supply over the next three to five years. This research consisted of a literature review; a review of relevant local, state, and federal initiatives; and engagement with key stakeholders.

Our review of relevant policy and program initiatives identified several factors that may positively or negatively influence availability of workers and contractors on PCEF projects. Recent federal and state climate legislation is likely to increase demand (and competition) for workers in the eight target occupations.[9] In addition, as more organizations in the region establish diversity goals PCEF will face increased competition, strengthening the need to increase the pool of diverse workers and contractors.[10] Recent federal, state, and local investments in worker and contractor diversity, jobsite culture programs that address recruitment and retention of priority populations in the trades, and general trends toward a more diverse population are existing trends and efforts that support diverse workforce goals and offer

[7] Businesses owned by a minority, woman, or service-disabled veteran can choose to apply for certification from the Oregon Certification Office for Business Inclusion and Diversity (COBID). Given that the number of COBID certified businesses represents a fraction of the relevant businesses owned by PCEF priority populations, the analysis included additional strategies to estimate contractor supply.

[8] LGBTQ+: lesbian, gay, bisexual, trans, queer, and other populations that experience discrimination based on gender or sexual orientation.

[9] This includes, for example, the 2021 Infrastructure Investment and Jobs Act (IIJA; also referred to as BIL – Bipartisan Infrastructure Law), and the 2022 Inflation Reduction Act (IRA) at the federal level. Additionally, recent state legislative actions such as the 2021 Oregon Climate Resilience Budget, and 2021 Clean Energy for All (HB 2021), and 2022 Right to Cooling (SB 1536) will likely increase the demand for workers in these sectors. These policies will accelerate the transition away from fossil fuels, make investments in lowering energy use, and increase the buildout of renewable energy generation.

[10] For example, the Regional Workforce Equity Agreement: https://www.oregonmetro.gov/news/new-agreement-paves-way-greater-diversity-construction-careers.

opportunities to build upon.[11] In addition, PCEF may have a competitive advantage in securing workers and contractors given its wage requirements[12], efforts to create an inclusive environment for traditionally marginalized populations, and potential to provide a steady stream of work over multiple years.

Our review of studies and reports identified four inter-related barriers to recruitment, retention, and advancement of diverse workers. The first pertains to talent development, with firms in these industries generally lacking well-defined strategies to increase the hiring, retention, and advancement of women, people of color, and other historically underrepresented populations. Second is an absence of diverse networks which reinforces existing workforce demographics given the lack of representation of women, people of color, people with disabilities, and people experiencing gender or sex-based discrimination in these industries. Third is an exclusionary work environment that stems from historical practices and policies that are implicitly or explicitly biased, as well a culture in the trades that discourages underrepresented populations from entering or remaining in these industries. Fourth is insufficient or inconsistent funding that results in limited capacity of pre-apprentice programs to serve historically underrepresented populations.

As part of the Market Study, we convened eight stakeholder groups to inform the factors shaping the supply of workers and contractors relevant for PCEF projects. Participants in the stakeholder listening sessions discussed what is helping and what is hindering the supply of diverse workers and contractors in Portland, along with potential strategies to ensure a robust supply of diverse firms and workers in the industry. Some of the identified items are generally well known, and some are already being addressed and/or incorporated into upcoming PCEF investments or programming. Others are less known and/or are not yet being addressed. Strategies recommended in the listening sessions include:

- Cleary articulate diversity goals on projects to enable employer partnerships and increase demand for diverse workers and contractors.
- Provide stable, long-term workflows, support businesses to plan for this work, and build contractors' capacity to work on PCEF projects.
- Better connect investments in diverse workforce and contractor development and PCEF project hiring and contracting demand.
- Incentivize and facilitate collaboration and mentorship between established firms and new, small, and racially and gender-diverse firms.
- Address challenges associated with licensure and certification.[13]
- Develop a training center for home weatherization to centralize weatherization training and reduce costs to contractors.
- Support firms in defining and meeting diversity goals.

[11] This includes, for example, investments in workforce and/or contractor development from PCEF, Prosper Portland's Community Opportunity and Enhancement Program, IRA/IIJA workforce development, the state's Future Ready Oregon Workforce Training and Education Investment Package, the Safe from Hate Alliance jobsite culture work.

[12] See https://www.portland.gov/bps/cleanenergy/pcef-wage-requirements.

[13] Examples of issues to address include cost, accessibility, and availability of programs (including non-English options) and consideration of the value of credentialing for PCEF related sectors. Suggestions were made for specific programs including the Limited Renewable Energy Technician (LRT) certification (e.g., awarding credit for prior learning, granting the ability to test out, lower barriers to licensure to make it more accessible for people with experience but no licensure), Landscape Contractors Board certifications (provide translation and coaching services), and the Building Performance Institute (BPI) (make tests more relevant/applicable to project work).

- Facilitate better coordination in the workforce and contractor development ecosystems to promote efficiency and effectiveness.
- Support effective outreach, recruitment, training, placement, and advancement.[14]

Implications and Next Steps

This Market Study offers valuable insights into the projected demand and current availability of workers and contractors involved in PCEF projects. The program is not expected to significantly impact the overall demand for workers and contractors in relevant occupations within the region, however, there is a noteworthy opportunity to expand the supply of, and foster more equitable economic opportunities for historically marginalized and disadvantaged populations. Given recent federal and state policies, along with increasing regional demand for workers and a focus on equity goals, there is likely to be added strain on a limited supply of workers and contractors, necessitating coordinated efforts to develop emerging regional strategies. PCEF, alongside other entities, can contribute to the growth of the workforce and contractor pool through strategic investments, resulting in a competitive advantage for PCEF projects in attracting businesses and workers. This advantage stems from higher wages, inclusive job site practices, and a consistent flow of work opportunities. Lastly, it is important to note that overall labor market conditions play a pivotal role in determining both demand and supply for workers and contractors. Any changes in market conditions are likely to impact both demand and supply dynamics.

The findings from the PCEF Market Study are instrumental in shaping the program's five-year Climate Investment Plan (CIP). The plan includes the equity goals for workers and contractors, along with investments and programming that will ensure a robust supply of diverse workers and contractors. Despite data limitations, it's clear that workers and businesses in relevant occupations are generally less diverse than the population overall. This reaffirms the necessity for investing in the development of the workforce and contractor pool, particularly for historically marginalized and disadvantaged populations.

When establishing workforce and contractor equity goals, thoughtful attention must be given to several factors. First, the goals should be firmly grounded in PCEF's core values of community engagement, accountability, and prioritizing the needs of those most affected by climate change. This process requires robust engagement with individuals most impacted by these decisions, such as the High Road Advisory Council[15]. The Council represents a diverse range of expertise across PCEF's funding areas including energy efficiency, renewable energy, regenerative agriculture, green infrastructure, workforce development, and contractor development. Second, it is important to note that the study did not consider all PCEF investments. Therefore, the findings should only be applied to the project and occupation types considered in this study. Third, the goals should be differentiated by priority population (e.g., race/ethnicity and gender) and occupation type (e.g., those with fewer barriers to entry) to ensure equitable opportunities are advanced across all career paths and business lines. Fourth, the process should recognize the intersectionality of PCEF priority populations (e.g., POC-owned businesses can also be woman-owned businesses) and avoid the potential for double-counting that could dilute the intended

[14] A number of ideas were offered to support stronger access to and support through the training and employment pathway including better connections between workforce specialists and industry-specific training and employers, stronger relationships with culturally specific organizations, paid on-the-job training, improved public perception of the industry, and transportation barriers.

[15] https://www.portland.gov/bps/cleanenergy/high-road-advisory-council/high-road-advisory-council

outcomes (e.g., combining separate goals for POC-owned businesses and woman-owned businesses). Fifth, careful consideration must be given to various options for determining business ownership by PCEF priority populations and its implications for goal setting. Finally, the goals should be ambitious and achievable, with a commitment to periodic adjustment based on ongoing advancement of success and updated data regarding supply and demand.

As PCEF progresses, the valuable information presented in this report will aid in enhancing and clarifying the route for diverse workers and contractors to join and thrive in the field. Additionally, PCEF will play a crucial role in establishing a fair and long-lasting clean energy and green infrastructure economy.

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