



Solar Potential in Philadelphia: **Labor Market Data**

November 1, 2019



Photo credit: Adam Stein for Solar States

SUMMARY

There is good news for Americans who need living wage jobs. According to a study conducted for the Philadelphia Energy Authority by the American Council for an Energy Efficient Economy, *15 living wage* jobs are created for every 100 solar installations. Further, solar PV installer is the fastest-growing occupation in the nation, and experts predict this trend will continue.

And there is even more good news. The job of solar PV installer does not require a college degree. With a foundation of basic training, these workers can undergo on-the-job training and find themselves in a good-paying, solid occupation that is currently in very high demand. Additionally, the industry has committed to ensuring diversity among its workforce.

Pennsylvania, in particular, is establishing itself as a prime market for solar PV installer jobs. PA ranks as the #11 state in the U.S. for clean energy employment, and more than 550 solar companies call Pennsylvania home. There is a strong demand for solar PV installers in Pennsylvania, and right now, this demand is significantly outstripping available workers. A full 40% of PA solar employers say it is “very difficult” to hire qualified employees. This represents a perfect opportunity to create opportunities for citizens in Pennsylvania who need a living wage, including minority and female students who are about to enter the workforce.

Substantial market and legislative forces are in play to maintain this market momentum – including but not limited to new programs such as AEPS closed borders, enabling C-PACE legislation, strong bipartisan/multi-stakeholder partnerships calling for grid-scale solar production in the state, and very recent acceleration of in-state solar PPA projects to generate electricity for large entities in the state.

Philadelphia, by all measures, is at the center of this market. The Philadelphia-Camden-Wilmington metro area is the *largest* market for renewable energy jobs in Pennsylvania. The City of Philadelphia has led the way in creating solar PV demand in the state, by establishing aggressive clean energy goals for the entire City and all City-owned properties; creating programs to make solar PV accessible to all, like Solarize Philly; introducing a new solar PV incentive/rebate program; being the first adopter of C-PACE in the state; and creating the largest solar PV project in Pennsylvania with the recent signing of a PPA contract for a 70 MW solar farm, which will power 22% of the city's municipal buildings by 2021. The project is the largest in Pennsylvania by sevenfold and will employ Philadelphia workers. In addition, the surrounding suburban area is following suit: 25 municipalities in three counties in the Philadelphia region have formally committed to 100% renewable energy goals. Solar PV will be a cornerstone strategy of these plans.

National data, statewide data, and local Philadelphia-area data describing the solar PV labor market follow.

NATIONAL DATA

The solar industry is employing more and more Americans every year. In 2018, 242,343 Americans spent 50% or more of their time working to manufacture, install, distribute, or provide professional services to solar technologies across the nation. Another 92,649 employees spent less than half their time on solar work.

See:

<https://static1.squarespace.com/static/5a98cf80ec4eb7c5cd928c61/t/5c7f3708fa0d6036d7120d8f/1551849054549/USEER+2019+US+Energy+Employment+Report.pdf>

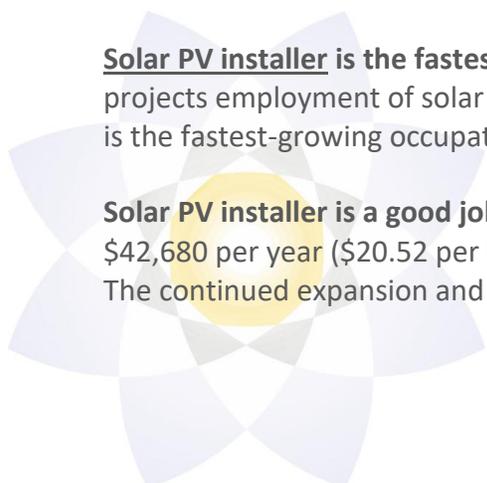
Residential-scale projects have created more than half of the demand for solar PV workers. In 2018, more than 56% of U.S. solar workers spent the majority of their time working on residential-scale projects.

See:

<https://static1.squarespace.com/static/5a98cf80ec4eb7c5cd928c61/t/5c7f3708fa0d6036d7120d8f/1551849054549/USEER+2019+US+Energy+Employment+Report.pdf>

Solar PV installer is the fastest-growing occupation in the country. The U.S. Bureau of Labor Statistics projects employment of solar photovoltaic (PV) installers will grow **63%** between 2018 and 2028. This is the fastest-growing occupation in the country; the average growth rate for all occupations is 4-6%.

Solar PV installer is a good job that does not require a college degree. The 2018 median pay was \$42,680 per year (\$20.52 per hour) and the position required only a high-school diploma or equivalent. The continued expansion and adoption of solar panel installations will result in more and more



excellent job opportunities for qualified individuals, particularly those who complete photovoltaic training courses.

See:

<https://www.bls.gov/ooh/construction-and-extraction/solar-photovoltaic-installers.htm>

<https://www.bls.gov/ooh/fastest-growing.htm>

<https://www.bls.gov/ooh/about/ooh-faqs.htm#info>

Demand is outstripping supply of workers. Interestingly – and importantly – a 2019 solar industry diversity study by The Solar Foundation shows that one-quarter of solar companies report it was “very difficult” to hire qualified workers in 2018, an increase of 18% from the prior year.

The industry has committed to a diverse workforce. Solar industry leaders name diversity, inclusion, and equity as top business priorities because diversity stimulates creativity, cooperation and innovation. They report diversity and inclusion are vital for building a skilled, innovative and competitive workforce. As of today, the solar workforce has lower participation by women and black workers compared to the U.S. workforce overall, see the table below for reference. Solar training programs that reach young women and students of color can help diversify the solar workforce.

| | % of Solar Workforce | % of U.S. Workforce |
|--------------------------|-----------------------------|----------------------------|
| Women | 26% | 47% |
| Black / African American | 8% | 12% |

See:

<https://www.thesolarfoundation.org/wp-content/uploads/2019/05/Solar-Industry-Diversity-Study-2019-2.pdf>

STATE DATA (PENNSYLVANIA)

Pennsylvania is in the top tier of clean energy job employers in the country. One in three energy jobs in PA are in clean energy. PA ranks as the #11 state in the U.S. for clean energy employment and saw a 6% growth in this job sector in 2018 – a growth rate five times faster than the overall employment growth rate in the state. In Pennsylvania, solar jobs climbed by almost 10% in 2018, representing the third consecutive year of job growth in the industry in PA.

See:

<https://www.e2.org/reports/clean-jobs-pennsylvania-2019/>

<https://why.org/articles/solar-jobs-grow-in-pennsylvania-while-declining-nationally/>



Solar is a key component of the clean energy jobs market in PA. As a growing hub for clean energy jobs, PA is a burgeoning market for solar jobs. Solar jobs comprise 53% of all clean energy jobs in the state, and PA ranks 17th among all states in sheer number of solar jobs, according to The Solar Foundation.

See:

<https://www.e2.org/reports/clean-jobs-pennsylvania-2019/>

<https://www.thesolarfoundation.org/solar-jobs-census/factsheet-2018-pa/>

More than 550 solar companies call Pennsylvania home. Currently, there are 559 solar companies in Pennsylvania, and this presence is expected to contribute to a projected 9.6% increase in solar jobs growth in PA this year (2019). This growth rate is 66% higher than the projected job growth rate for all PA occupations for 2019.

See:

<https://www.thesolarfoundation.org/solar-jobs-census/factsheet-2018-pa/>

Employers in PA find it particularly difficult to hire qualified solar installers. It's even harder to find qualified solar employees in PA than elsewhere in the country. A full 40% of PA solar employers say it is "very difficult" to hire qualified employees.

See:

<https://www.thesolarfoundation.org/solar-jobs-census/factsheet-2018-pa/>

Market and legislative forces point to future solar growth in Pennsylvania. These include:

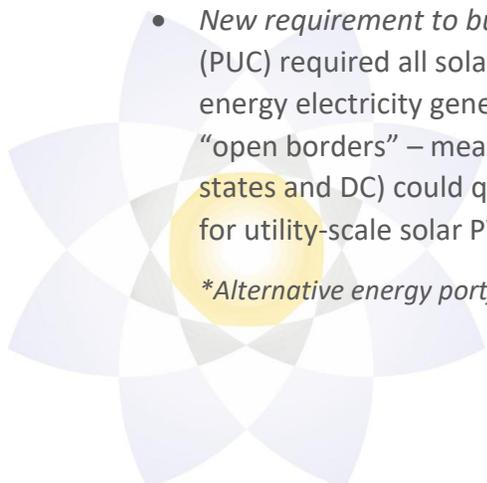
- *Supportive net metering and interconnection policies.* Residential solar installations up to 50 kW, non-residential solar installations up to 3 MW, and microgrid and emergency solar installations up to 5 MW receive compensation for solar power sent back to the grid, and it is credited at the retail rate. There is no limit to the number of systems covered under net metering. These policies have already led to 420 MW of cumulative installed solar capacity in PA.

See:

<https://www.thesolarfoundation.org/solar-jobs-census/factsheet-2018-pa/>

- *New requirement to build solar projects.* Last year (2018), the PA Public Utility Commission (PUC) required all solar projects intended to meet the state's legislatively-mandated clean energy electricity generation targets* to be built in Pennsylvania. Previously, PA PUC allowed "open borders" – meaning solar from anywhere on our electric grid (including 13 surrounding states and DC) could qualify as complying with these targets. This has improved the jobs market for utility-scale solar PV within the state.

*Alternative energy portfolio standards (AEPS)



- *Commercial Property Assessed Clean Energy (C-PACE)*. Launched last year in PA, C-PACE enables commercial property owners to obtain low-cost, long-term financing for renewable energy, energy efficiency, and water conservation projects with much less financial risk. Commercial property owners obtain financing for eligible projects, typically through private capital providers, and repay the financing through a special assessment added to the property tax bill. Because the improvements and their cost remain affixed to the property during the term of the C-PACE Statement of Levy and Lien Agreement, the primary barrier to investing in projects like on-site solar is now eliminated. There is little financial risk even if property owners intend to sell the property in the future. C-PACE programs in 20 other states have provided approximately \$883 million in financing to over 1,934 commercial buildings.

See:

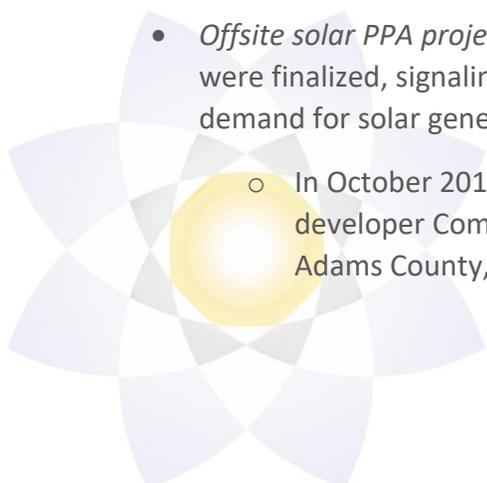
<https://betterbuildingsinitiative.energy.gov/financing-navigator/option/cpace>

- *Community solar legislation is gaining bipartisan steam*. PA lawmakers have introduced legislation allowing customers to participate in community solar projects. The legislation would allow participants to subscribe to a portion of an off-site solar project and receive credit on their electricity bills for the solar power they use, just as if the panels were installed on their own roof. The idea has strong bipartisan support and experts predict it will pass, making solar power accessible to more Pennsylvanians.
- *PA Solar Futures Plan*. In November 2018, after 30 months of work, 550 community, industry, government, economic, academic and policy stakeholders from across the state released the *PA Solar Futures Plan* under the leadership of PA Department of Environmental Protection. They developed a target of *10% electricity from in-state solar by 2030*, with the top-line strategy to accelerate grid-scale solar to 7-10 GW. The plan is a guidepost for policymakers and is supported by the PA Governor.

See:

<http://files.dep.state.pa.us/Energy/Office%20of%20Energy%20and%20Technology/OETDPortalFiles/Pollution%20prevention%20and%20Energy%20assistance/SolarFuture/Plan/PAsolarFuturePlanBookletWebfile.pdf>

- *Offsite solar PPA projects*. In 2019, three large offsite solar power purchase agreements (PPAs) were finalized, signaling a new trend toward using the PPA model to generate substantial demand for solar generation.
 - In October 2019, the City of Philadelphia entered into a contract with local clean energy developer Community Energy for a 70 MW solar power purchase agreement (PPA) in Adams County, PA, to power 22% of the city's municipal buildings by 2020. The project



- is the largest in Pennsylvania by sevenfold. Adams Solar will sell 100% of its power under a 20-year contract to The Philadelphia Energy Authority.
- The Southeastern Pennsylvania Transportation Authority (SEPTA) signed a PPA just this year for the full output from two solar farms of 35 MW planned for construction in Franklin County, Pennsylvania. Lightsource BP's Philadelphia-based office will finance, build, own and operate the two farms. Once online in 2021, the solar parks will generate around 71,765 MWh per year, equivalent to 19% of SEPTA's annual electricity demand. SEPTA is also instituting a solar-powered train signal system and an energy savings project at its Philadelphia headquarters.
 - Penn State University entered into a 25-year solar PPA, also with Lightsource BP. This 70 MW project is a utility-scale ground mounted solar array, using over 150,000 solar panels sited on roughly 500 acres across 3 locations in Franklin County. It will provide 25% of Penn State's state-wide electricity requirements.

PHILADELPHIA DATA

Solar PV installer is a high-priority occupation. Philadelphia Works, the workforce development board for the City of Philadelphia, has identified solar PV installer as a high-priority occupation for Philadelphia County. Philadelphia Works recognizes that solar PV installers can be trained with basic courses and on-the-job training, and the organization provides services to connect job seekers with jobs. Philadelphia Works provides career services such as coaching and workshops for job-seekers, support services to businesses such as access to worker training funds, networking and partnering, and programs to help women enter nontraditional careers.

See:

<https://www.philaworks.org/2018-high-priority-occupations/>

The Philadelphia-Camden-Wilmington metro area is the largest market for renewable energy jobs in PA. Twenty-seven percent of all renewable energy jobs in PA are in this Philadelphia metro area. A full 60% of all solar jobs, in particular, are in this same area. A quick search on Indeed.com – a popular job search site – shows that 132 of the 155 solar jobs posted in Pennsylvania (85%) are in Philadelphia (as of October 31, 2019).

See:

<https://www.e2.org/reports/clean-jobs-pennsylvania-2019/>

<https://www.thesolarfoundation.org/solar-jobs-census/factsheet-2018-pa/>



Market and legislative forces point to future solar growth in the Philadelphia region. These include:

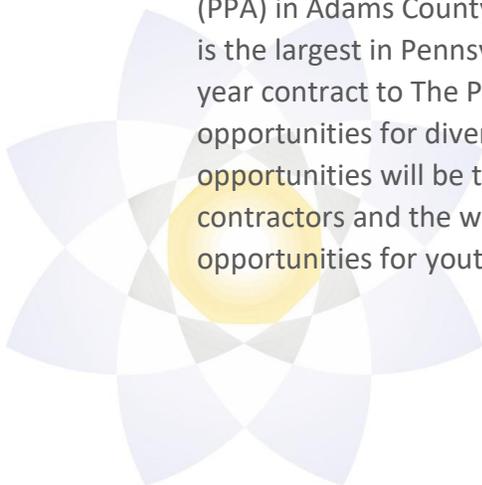
- *Citywide commitment to go 100% renewable.* The City of Philadelphia has established a goal of sourcing 100% of its electricity from renewables by 2030, resulting in ongoing and aggressive solar PV programs, including:
- *Solarize Philly.* Solarize Philly is a group buying program that brings down the price of solar PV and engages customers to buy and install solar. Solarize Philly is particularly innovative when compared with other Solarize programs across the country, as it is building in revenue streams to expand job training programs and offer deeper discounts for low- and moderate-income households. The program started with seed funding from the U.S. Department of Energy's (DOE) [Solar in Your Community Challenge](#) and is run by the Philadelphia Energy Authority. Since its launch in April 2017, 6,270 households have signed up to receive a free solar assessment and 553 have signed solar contracts at a discount through the program.

See:

<https://philaenergy.org/programs-initiatives/solarize-philly/>

<http://solarizephilly.org/>

- *Solar Panel Incentive Program.* In August 2019, a bill was signed into law to make solar even more affordable for home and business owners in Philadelphia. The bill established a rebate program to offset solar PV installation costs by \$0.20/watt on residential properties and \$0.10/watt on commercial properties. For a typical Philadelphia rowhouse with a 5 kW solar system, this means a rebate of \$1,000. The City will allocated \$500,000 in funds for the Solar Panel Incentive Program per year through 2024. No other city in Pennsylvania has a grant program like this one.
- *C-PACE.* Philadelphia stepped up as an early adopter of C-PACE, which started accepting applications for clean energy projects, including commercial solar, in October 2019.
- *City of Philadelphia offsite PPA project.* The City of Philadelphia entered into a contract with local clean energy developer Community Energy for a 70 MW solar power purchase agreement (PPA) in Adams County, PA, to power 22% of the city's municipal buildings by 2020. The project is the largest in Pennsylvania by sevenfold. Adams Solar will sell 100% of its power under a 20-year contract to The Philadelphia Energy Authority. An Economic Opportunity Plan will create opportunities for diverse workforce participation in the Adams Solar project, and job opportunities will be targeted to the Philadelphia and Adams County markets. Job fairs for sub-contractors and the workforce will be held in Philadelphia and Adams County, and there will be opportunities for youth trainees from Philadelphia to participate in the installation project.



- *Regional municipal commitments.* Across the entire Philadelphia region, constituents are calling on local governments to commit to 100% renewable energy for their communities. In three Counties surrounding Philadelphia (Chester, Delaware, Montgomery), 25 municipalities have formally committed to 100% renewable energy goals over the next 15-20 years through the Sierra Club Ready for 100 initiative. The region is a center of activity, as these resolutions represent nearly 20% of all Ready for 100 resolutions passed across the entire country. Several municipalities (West Chester area, e.g.) are currently engaged in the planning process, and solar PV is a cornerstone of these draft plans.

