

Use It Or Lose It

Why Pennsylvania Should Accelerate Solar Projects
to Capture Federal Tax Credits

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Stephen Herzenberg
and Avery Spicka

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Glossary

Behind the meter: Distributed energy resources such as solar panels, battery storage, or generators located on a customer's premises (residential, commercial, or industrial) that generate or store electricity for on-site use. This energy does not need to pass through the utility meter before reaching an end user, hence the name.

Brownouts: A temporary drop in the magnitude of voltage in an electric grid. Unintentional brownouts can be caused by excessive demand, severe weather events, or a malfunction or error impacting electrical grid control systems. Intentional brownouts are used for load reduction in an emergency, or to prevent a total power outage due to high demand. The term *brownout* comes from the dimming of incandescent lighting as a result of low voltage.

Commercial solar: Solar projects for non-residential entities including but not limited to for-profit businesses, schools, municipalities, nonprofits, and religious institutions. Most of the industry defines commercial solar as spanning 15 kW to 3 MW, with residential below that range and utility- or grid-scale above that range.

Elective pay: A provision of the Inflation Reduction Act (IRA) that allows tax-exempt entities such as schools, municipalities, and nonprofits to receive IRA “tax credits.” While still called “tax credits,” since entities eligible for elective pay don’t pay taxes, credits are received as direct payments from the IRS, which leads to widespread use of the term “direct pay” to describe what the IRA statute calls *elective pay*.

Electric distribution companies (EDCs): A regulated utility company that owns and operates the physical infrastructure (e.g., power lines, poles, and substations) required for the delivery of electricity to homes and businesses. EDCs are local monopolies and do not own or operate electric generation plants. While electricity generation also used to be a local monopoly, it has not been in Pennsylvania since the passage of the Electricity Generation Customer Choice and Competition Act of 1996.

Grid-scale solar also known as **utility-scale solar:** These two terms refer to large-scale, ground-mounted solar power plants (typically >1–5 MW; we use ≥ 3 MW in this report) that generate electricity for the wholesale power market rather than on-site use. These are considered “in front of the meter” solar projects and must apply for interconnection through PJM.

Inflation Reduction Act (IRA): 2022 federal climate legislation that offers funding, programs, and incentives to accelerate the transition to a clean economy.

In front of the meter: Power generated that must pass through an electric meter before reaching an end user. Utility-scale solar is considered in front of the meter.

IRA investment tax credit (ITC): An IRA federal tax incentive that provides 30% or more of a qualifying project cost back in the form of a tax credit. This paper focuses on the drawdown of investment tax credits for solar projects.

Interconnection queue: Power generation and transmission projects that have requested to connect to the power grid but have not yet received approval. The 13-state plus District of Columbia electric grid to which Pennsylvania belongs, PJM, maintains one interconnection queue for projects of 3 MW and above. Individual utilities in Pennsylvania maintain (non-public) interconnection queues for projects up to 3 MW (or up to 5 MW

for microgrids and other systems that enhance grid reliability) that seek approval for net metering under the state's Alternative Energy Portfolio Standard law (Act 2013 of 2004).

Megawatts AC: Megawatts (MW) are the standard term of measurements for bulk electricity. AC (alternating current) measures the capacity of a power source after conversion by an inverter, and represents the power actually delivered to the grid. When this paper uses the abbreviation MW, it means MW_{AC} (rather than MW of direct current or MW_{DC}), unless otherwise specified

Merchant Generators: owners of solar projects typically ranging from 2 MW to 3 MW that qualify for net metering in Pennsylvania but serve a de minimus on-site load, with almost all of the electricity they generate sold to the local EDC (electric distribution company). These systems are under the Pennsylvania Public Utility Commission's jurisdiction.

Pennsylvania's Alternative Energy Portfolio Standard (AEPS): This law, also known as Act 2013 of 2004, required a certain percentage of electricity in each utility to come from renewables and from solar energy, as well as from other qualified alternative energy resources.

PA PUC: The Pennsylvania Public Utilities Commission, the regulatory agency that makes sure electric distributors are following state policy.

PJM, which originally stood for Pennsylvania-New Jersey-Maryland, the three states that founded it, is the regional transmission operator (RTO) that services Pennsylvania, 12 other states and Washington, D.C. Its core duties are ensuring reliability, balancing supply and demand in real-time, and operating capacity and energy markets. These energy markets include electricity auctions intended to balance supply and demand over a period of several years.

Power Purchase Agreement: a long-term contract (typically 5-20+ years) between an electricity generator and a buyer (e.g., a utility, manufacturer, commercial enterprise, state or local government, or homeowner) to purchase energy at a pre-negotiated price. It acts as a financial mechanism to enable renewable energy projects (like solar/wind) by providing revenue certainty for developers, while offering buyers stable, often lower-cost power.

Price to Compare: The default price electricity customers pay per kilowatt-hour (kWh) for electricity from their local utility if they do not select a third-party electric supplier under Pennsylvania's competitive (electric choice) system. The price to compare includes generation and transmission charges (the cost of moving electricity longer distances such as from power plants to substations) but not distribution costs (the cost of moving electricity from substations to homes and businesses).

IRA Production Tax Credit (PTC): A federal tax incentive that is an alternative to the IRA ITC that provides a credit based on the amount of electricity generated rather than as a percentage of the total project cost. We focus on the ITC in this report rather than the PTC because the ITC is much more widely used on solar electricity projects.

Residential Solar: Photovoltaic (PV) solar projects installed in homes to generate electricity for that household. These projects are typically under 15 kW in size.

RTO or Regional Transmission Operator is another name for the electric grid that connects individual utility grids into larger, sometimes multi-state systems. PJM is the RTO in Pennsylvania.

Solar photovoltaic (PV) electricity: Electricity generated by photovoltaic (PV) cells made of semi-conductors (most commonly silicon) that transfer solar energy from photons striking the PV cell, freeing electrons from their valence shell that ultimately transfer the energy through the metal contacts in the PV cell to power an electric load.

Solar renewable energy credit (SREC): A credit that represents the “green” value of energy generated. One SREC is generated for every MWh produced, and SRECs can be bought and sold on the SREC market, then “retired” when they are used (which is how utilities or other entities prove they are meeting renewable energy requirements or sustainability goals) and removed from circulation

Wholesale electricity rate: the bulk electricity prices paid by utilities to grid-scale power generators. It is typically similar to the “avoided cost rate” that utilities pay for grid-scale solar energy—the costs that utilities avoid because they do not have to generate the electricity delivered by a solar supplier.

Executive Summary

Solar photovoltaic energy capacity in Pennsylvania has increased more than six-fold since 2019. This report analyzes trends in solar electricity growth by market segment and lays out two ways to sustain that growth. The first way is to maximize drawdown of Inflation Reduction Act (IRA) solar project Investment Tax Credits (ITC) before they expire. The second way is to adopt state policies to maintain the momentum of our solar industry after the tax credits phase out. Electricity price hikes and power outages are expected as electricity demand rises (e.g. for data centers) and because of supply shortfalls. It is imperative that Pennsylvania take action to support the expansion of solar electricity.

The baseline IRA investment tax credit equals 30% of project cost and can go as high as 70%. Moreover, unlike previous solar tax credits, government entities and nonprofits that do not pay taxes can receive the credit via a direct payment from the federal government (the IRA term for this is “elective pay”). By the end of 2025, we estimate that Pennsylvania solar electricity projects had drawn down over half a billion dollars in IRA tax credits.

Last year, however, U.S. Congressional House Resolution (H.R.) 1 (the “One Big Beautiful Bill Act (OBBBA)) shortened deadlines for accessing the ITC and some other IRA tax credits. OBBBA eliminated residential solar tax credits at the end of 2025. Larger-scale solar projects can still access ITC tax credits by beginning construction or spending a portion of their budget by December 31, 2025 or July 4, 2026, after which they have until the end of the year four years after the start of construction to begin operating. Projects that do not meet these deadlines must operate by December 31, 2027 to receive the tax credit.

Given these deadlines, and based on interviews with solar developers and industry experts, we conclude that Pennsylvania can still access significant IRA ITC tax credits for solar projects before they phase out.

- Some grid-scale projects already in the pipeline—i.e., in the queue for approval from PJM (see glossary for a definition), the 13-state electric grid regional transmission organization to which Pennsylvania belongs—have met or will meet the December 31, 2025 or July 4, 2026 deadlines. If half the capacity in the PJM queue gets implemented and receives a 30% tax credit, it will boost the Pennsylvania economy with \$1.8 billion more in tax credits, matched by \$4 billion or more in private investment. This would also add another 4.75 gigawatts (GW) of solar, more than double the 2.2 GW of solar capacity in Pennsylvania as of 2025.
- Some commercial-scale projects under 3 MW which are eligible for net metering and already in the “interconnection queues” of Pennsylvania utilities should be able to meet one of the IRA deadlines. If half of the projects that applied for interconnection from June 1, 2024 to May 31, 2025 get over the finish line and receive a 30% tax credit, it would bring another 1.8 GW of solar on line, yield \$684 million in tax credits and be matched by \$1.6 billion in private investment.
- Some commercial-scale projects under 3 MW, including elective pay projects, which have not yet applied for interconnection may still be able to meet the July 4, 2026 deadline or end of 2027 deadlines.¹ Solar developers interviewed said that smaller projects in which the owner will consume most of the electricity generated have the best chance to start soon or even the first part of next year and still access credits.
- Grid-scale projects not yet in the PJM queue are likely too late to qualify for IRA ITC tax credits.

¹ These projects could include commercially owned residential solar that leases roof- or other space from homeowners. (Residential solar owned by a commercial company can still access tax credits under the same rules as other commercial projects.)

To make accessing tax credits less overwhelming for other projects being contemplated, our report provides **case studies** of municipal and school district projects, commercial, and grid-scale projects that have already received or expect to qualify for credits. These case studies show that recent projects expect to have short payback periods—eight years or less assuming a 30% IRA tax credit.

Our first two recommendations spell out how Pennsylvania can maximize access to IRA tax credits.

1. *Pennsylvania should maximize drawdown of IRA tax credits for solar projects through the following:*
 - PJM should give priority approval to projects that met the December 31, 2025 tax credit deadline and that met or will meet the July 4, 2026 deadline.
 - Pennsylvania lawmakers should require utilities to accelerate interconnection and permissions to operate for projects below 3 MW that qualify for the ITC.
 - Owners and developers considering new projects below grid scale that can still meet either the July 4, 2026 or December 31, 2027 deadlines should move forward quickly and avail themselves of technical assistance, including from Pennsylvania and national nonprofits. Table 1 after this Executive Summary profiles some of the technical assistance available to Pennsylvania projects.
 - Create a “Governor’s Action Team to Maximize Drawdown of IRA Tax Credits,” including by engaging with PJM, utilities, and the PUC to expedite project approvals. The state should also fund technical assistance and low-cost bridge loans to help PA Solar for Schools awardees and other projects to buy equipment by July 4, 2026, giving them until the end of 2030 to become operational.
2. *Congress should restore the original IRA tax credit deadlines.*

Our final recommendations outline state policies that could maintain Pennsylvania solar electricity’s growth beyond the tax credits

3. *Update Pennsylvania’s Alternate Energy Portfolio Standard* to increase the share of electricity provided by “tier 1” sources (primarily renewable energy, including solar) from 8% to 35% by 2035.
4. *Authorize community solar in Pennsylvania.* This could allow residential consumers, small businesses, and small local governments and nonprofits unable to install solar on their own property to access the efficiency of commercial-scale solar, and the associated cost savings.
5. *Enact solar on warehouses* that would require new warehouses to be solar ready on 40% of their roof space and authorize localities to forgive increases in local property taxes when retrofitting existing warehouse roofs for solar. To complement solar on warehouses, *enact net metering legislation that preserves favorable rates for solar electricity on warehouses and in other preferred locations* (such as brownfields or dual use agriculture, with solar acreage also used for growing crops or grazing).
6. *Legalize Balcony Solar.* These small, plug-in, solar systems make solar accessible to those renting or who have homes unsuitable for rooftop solar and are already popular in Europe.

This report focuses on solar electricity because we are fast approaching the OBBBA shortened deadlines for accessing IRA tax credits for solar. The OBBBA did not shorten deadlines for battery storage projects, a powerful complement to solar electricity, and geothermal energy projects, both of which have until **December 31, 2033** to access tax credits. Pennsylvania also needs an action plan to maximize its drawdown of credits for these projects.

Table 1: Organizations That Can Help You Access IRA Investment Tax Credits on Solar Electricity Projects

<i>Organization</i>	<i>Contact Info.</i>	<i>Website</i>	<i>Geographic Focus</i>	<i>Customer Focus</i>	<i>Assistance Available</i>
Reinvestment Fund	Elizabeth Friend Director, Clean Energy & Sustainable Finance (Elizabeth.Friend@reinvestment.com)	https://www.reinvestm.com/focus-areas/climate-sustainability/	National, with a strong Pennsylvania focus	Nonprofits, schools, municipalities, community institutions, affordable housing, & mission-aligned commercial & community borrowers.	Solar & other clean-energy financing, including predevelopment, construction, equipment, ITC bridge, & permanent loans. Can work with projects using PPA or ESA structures, & EPC project delivery, & with timing tied to tax credits & other incentives. Through the Sustainable Development Fund (SDF), also offers affordable financing & technical assistance for small projects in Southeast PA.
Philadelphia Green Capital Corp.	Savannah Mudd, Program Manager smudd@phillygreencapital.org	https://phillygreencapital.org/	PA, esp. low-income, disadvantaged communities, rural & SE PA.	For-profit or nonprofit entities or units of local government.	Solar loans for hard and soft costs related to solar array construction. Loan size up to \$2M, with express underwriting for loans of \$100-249K. Technical assistance and connections to vetted installer network through Solarize Greater Philly program, administered in conjunction with the Philadelphia Energy Authority: https://solarizegreaterphl.org/
PA Solar Center Get Solar Program	Complete the intake form on the website	www.pasolarcenter.org/get-solar	Statewide	Businesses, nonprofits, schools, municipalities, faith groups, farms	Full-spectrum solar consulting services at no or low cost: solar feasibility and cash flow analysis, help with bids to find qualified developers, identify financing options, etc.
Lawyers for Good Government (L4GG) Elective Pay Sprint Hub (see also Box 1)	Complete the intake form on the website	https://www.lawyersforgoodgovernment.org/elective-pay-sprint	National, nonprofits & govts eligible for elective pay	Nonprofits and local governments	Help maximize IRA clean energy credits while available. For projects seeking tax credits funded by federal grants or loans, L4GG provides specialized legal guidance on compliance with Build America, Buy America (BABA) through the Elective Pay Assistance pipeline.
Generation 180	shannon.crooker@generation180.org	https://generation180.org/resource/solar-technical-assistance-pennsylvania/	National, with strong PA focus	National, with strong PA focus	Solar feasibility analysis to include cashflow and available incentives, funding, limited bid guidance and grant writing. Meets PA Solar for Schools Grant Program requirements.
Solar developers		https://pasolarcenter.org/qualified-solar-developer-directory/			Includes companies with at least one person on staff who is North American Board of Certified Energy Practitioners-certified as a solar professional. Companies on this list also have a physical presence and offices in PA.
Electrical contractors that can help install solar	Contact info in Excel on KRC website (see next column)	Get Excel below map at https://keystoneresearch.org/riseipa/	PA statewide or regionally; some nearby states	These firms perform a range of electrical work incl. solar in some cases	Unionized electrical contractors often have the scale & access to skilled labor to perform commercial or grid-scale projects quickly. They may be able to facilitate meeting July 4 deadline for “starting construction.”
Laborers-Employers Cooperation & Educ. Trust (LECET) (see Box 5, p. 33)	Marshall Brown, mbrown@maliuna.org ; 703.476.7397	https://www.lecetmidatlantic.com/ ; https://www.liuna.org/why-work-with-liuna	Regional, Mid-Atlantic states including PA	Commercial and grid-scale solar projects performed by unionized contractors	Access to skilled workers; compliance w/prevaling wage & app. utilization required for 30% tax credits on projects 1 MW or above; assist w/local permits and accessing credits—e.g., registering the project with the IRS & filing for credits after the project is operational.
Solar contractors signatory w/International Union of Operating Engineers Local 66	See list of contractors accessible at url in next column	https://keystoneresearch.org/wp-content/uploads/Solar-Contractors-Local-66-PDF.pdf	Western Pennsylvania and sometimes beyond	Commercial and grid-scale solar projects,	
Power Your Community	Michael Gaiser, Int’l Brotherhood of Elec. Wkers (IBEW); 716-863-1952; Mike_Gaiser@ibew.org	https://poweryourcommunity.org/	IBEW, Natural Resources Def. Council (NRDC) national partnership	Large-scale renewable energy projects built by skilled union workers	Collaboration with developers & community leaders to ensure renewable projects are built safely & on time w/local skilled union labor; assistance w/local permits & accessing IRA credits

Sources: Keystone Research Center drawing on resources online and, in most cases, interviews with representatives of the entities listed above or of industry groups that compile lists of developers/installers or contractors.

Box 1: the Lawyers for Good Government Elective Pay Sprint Hub

The national nonprofit group Lawyers for Good Government set up its “Elective Pay Sprint Hub” to help government and nonprofit entities—such as cities, other municipalities, school districts, religious institutions, and other nonprofits, including local development districts—to maximize elective pay tax credits for renewable energy, energy storage, ground-source heat pumps, and other clean energy tax credits.

The website of the Sprint Hub highlights its mission: “We are here to help you navigate the complex landscape of clean energy tax credits in the wake of the ‘One Big Beautiful Bill Act’ (OBBBA, or H.R. 1). As the tax credit requirements grow more elaborate and the timelines for some of the tax credits shrink, L4GG and our network of partners want you to be able to maximize every dollar of IRA clean energy funding while the credits remain available.”

The L4GG hub grasps that many local governments and nonprofits that could access tax credits won’t try to because the process, especially with tighter timelines, seems overwhelming. The hub offers “hand holding”—one-on-one support for applicants on every major component of a project. For projects that seek tax credits and are funded by federal grants or loans, L4GG also provides—through the Sprint Hub—specialized guidance and resources for navigating and ensuring compliance with Build America, Buy America (BABA) requirements for projects using federal grants, loans, or other types of federal financial assistance. L4GG is currently assisting several projects in other parts of Appalachia to obtain BABA waivers.

The Sprint Hub offers assistance of several other kinds as well: winning exceptions to deadlines when interconnection or permitting issues cause delays; making sure projects seek, and get, the maximum elective pay using the domestic content, low-income community, or energy community bonuses; and guiding projects to financing or bridge funding to get them to begin construction by July 4, 2026 and thereby gain four or more years before the project must be in operation.

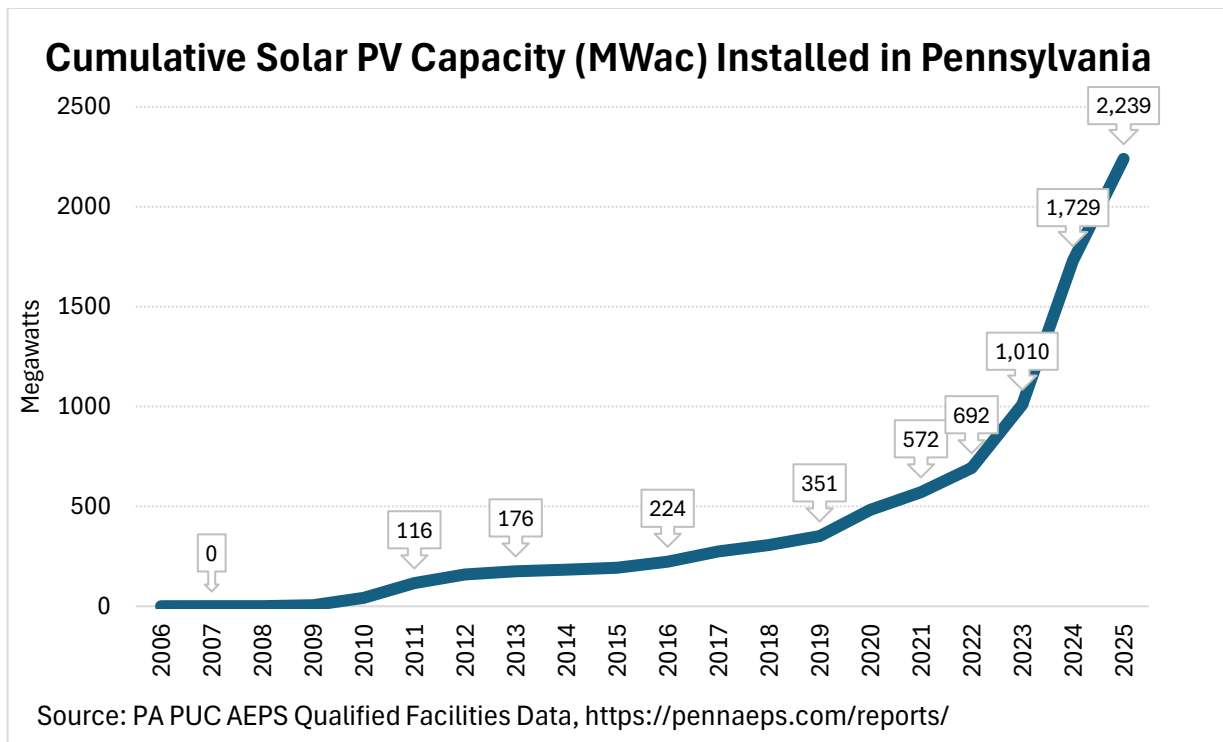
In addition, L4GG provides a comprehensive suite of pro bono legal services to assist clean energy projects from planning (e.g., project readiness evaluation including regulatory compliance check) and predevelopment (e.g., permitting, zoning, project funding or financing) to post-construction (e.g., utility interconnection).

The Commonwealth of Pennsylvania has helped projects access federal tax credits in several ways. For example, it has provided school districts that won Solar for Schools grants with access to an accounting firm that can help file for the tax credit at no cost or low cost, depending on the depth of the assistance. The State of Washington went even further. It provided L4GG with a statewide contract to deliver “hand holding” for individual projects. And Michigan is following suit with a similar effort with L4GG providing legal services as part of a team.

The Recent Growth of Pennsylvania Solar Electricity

Solar photovoltaic (PV) energy generation in Pennsylvania has risen rapidly over the past decade driven primarily by declining costs, rising overall electricity prices, and supportive federal policies. This exponential growth is a welcome bright spot given expectations of further electricity price hikes and fears that future demand will outpace generation, leading to brownouts (voltage reductions to prevent grid collapse) or power outages. Figure 1 shows the increase in cumulative solar PV capacity in Pennsylvania from 2006 to 2025. Since 2022, Pennsylvania’s solar capacity has grown even faster, tripling from 2022 to 2025.

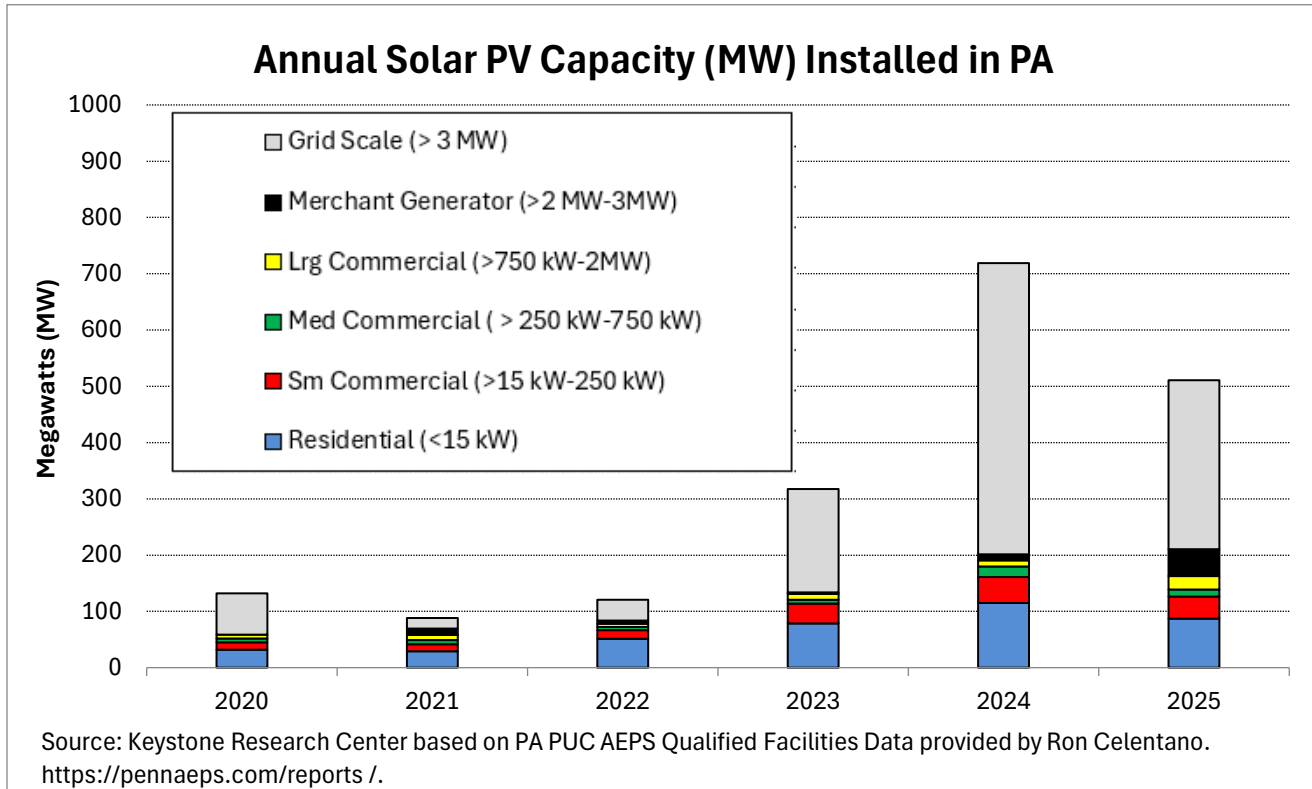
Figure 1



Federal policy reversals in 2025, however, threaten solar electricity’s growth. The phase-out of Inflation Reduction Act (IRA) tax credits for solar energy and new regulations to restrict sourcing of components from prohibited foreign entities will impede further growth.

Figure 2 and Tables 2 and 3 break down the increase in solar capacity by market segment for 2020 through the first part of 2026. In this period, the industry added 1.94 GW of solar capacity, 87% of the total amount now in place.

Figure 2



Year	Total	Residential (< 15 kw)	Small Commercial (> 15 kw - 250 kw)	Medium Commercial (> 250 kw - 750 kw)	Large Commercial (> 750 kw - 2 MW)	Merchant Generator (> 2 MW - 3MW MW)	Grid Scale (> 3 MW)
2020	132 MW	32 MW	13 MW	7 MW	7 MW	0 MW	74 MW
2021	88 MW	29 MW	12 MW	8 MW	9 MW	11 MW	19 MW
2022	121 MW	51 MW	16 MW	6 MW	6 MW	5 MW	37 MW
2023	318 MW	78 MW	35 MW	7 MW	10 MW	3 MW	184 MW
2024	719 MW	115 MW	46 MW	19 MW	11 MW	10 MW	518 MW
2025	511 MW	87 MW	39 MW	13 MW	24 MW	48 MW	300 MW
Total	1,888 MW	393 MW	161 MW	59 MW	66 MW	78 MW	1,131 MW

Source: Keystone Research Center based on PA PUC AEPS Qualified Facilities Data provided by Ron Celentano. <https://pennaeps.com/reports/>.

Year	Residential (< 15 kw)	Small Commercial (> 15 kw - 250 kw)	Med Commercial (> 250 kw - 750 kw)	Large Commercial (> 750 kw - 2 MW)	Merchant Generator (> 2 MW - 3MW)	Grid Scale (> 3 MW)
2020	24%	10%	5%	5%	0%	56%
2021	33%	14%	9%	10%	13%	21%
2022	42%	13%	5%	5%	4%	31%
2023	25%	11%	2%	3%	1%	58%
2024	16%	6%	3%	2%	1%	72%
2025	17%	8%	2%	5%	9%	59%
Total	21%	9%	3%	4%	4%	60%

Source: Keystone Research Center based on PA PUC AEPS Qualified Facilities Data provided by Ron Celentano. <https://pennaeps.com/reports/>.

Grid-scale solar accounted for about 60% of the increase in Pennsylvania’s solar capacity from 2020 to 2025. Annual capacity added by grid-scale solar reached its highest level to date in 2024 but remained eight times above the 2022 level in 2025.

With 21%, *residential solar* accounts for the second largest share of the increase in solar capacity from 2020 to 2025, and *small commercial* the third most at 9%. “Commercial” solar—as we use the term—includes solar for nonprofits, schools, municipalities and religious institutions, not just for-profit businesses. Like grid-scale solar, additions to residential and small commercial solar capacity dipped in 2024 but remained well above 2022 levels.

Projects in the 2-3 MW range account for 4% of the increase in capacity in 2020-2025, with most of the capacity in this range added in just the year 2025 (48 MW of 78 MW) (Table 2). We label this range “*merchant generators*”—in current Pennsylvania electricity sector jargon, merchant generators install solar projects up to (and usually close to) 3 MW, and then sell almost all of the electricity to the grid under the state’s “net metering” provision (more on merchant generators below). “Customer generators,” by contrast, use a significant amount of the energy they create and only sell to the grid when solar generation exceeds their own energy needs. According to the Pennsylvania Utility Commission, almost all the projects in 2-3 MW range are merchant generators.²

Large commercial solar, 750 kw to 2 MW, just below the merchant generator category, also reached its highest level of added capacity to date in 2025. Some of this capacity, especially at the top end of the range, likely consists of merchant generator projects.

Over the entire 2006 to 2025 period, utility scale projects account for half of the additional solar capacity installed and residential and commercial solar for about a quarter each.

How can we explain these trends, and what do they suggest about the near-term outlook, especially within the window when some projects may still qualify for the tax credits? Two general factors driving increased solar photovoltaic demand are the falling cost of installing and generating solar electricity—

² The PUC also says that most of roughly 2,000 projects that applied for interconnection in the wider 0.5 to 3 MW range in calendar years 2024 and 2025 are merchant generators. Personal communication with Joe Sherrick.

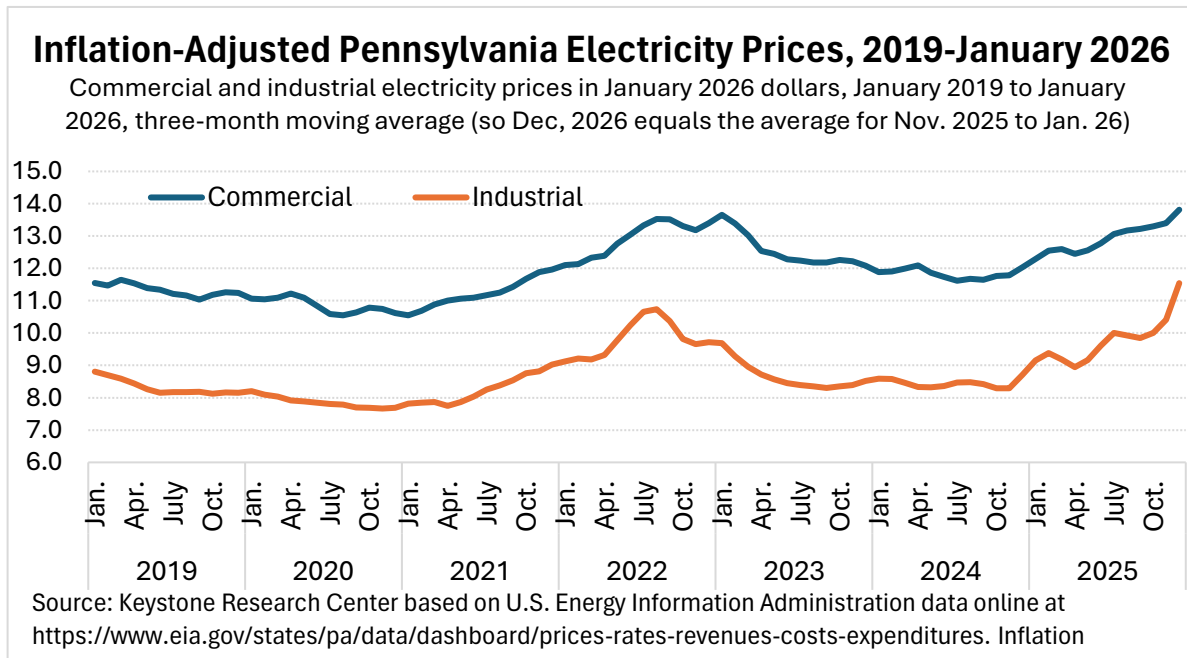
because of increased economies of scale and improvements in the efficiency of solar PV cells—and the rising cost of other forms of electricity (see Box 2).³

Much recent growth of utility scale solar has been the result of a handful of large projects, the start of which likely pre-dated passage of the IRA. Two utility-scale solar projects driven by a Power Purchase Agreement (PPA) between the University of Pennsylvania and AES Corporation account for over 40% of utility scale capacity added in 2024: Great Cove Solar LLC a 70 MW (AC) array in Fulton County and Great Cove Solar II, a 150 MW array in Snyder County. Great Cove Solar I and II are expected to supply 70% of the electricity demand for Penn and its health system in the Greater Philadelphia area. Adams Solar, an 80 MW (AC) array in Adams County projected to supply 25% of the City of Philadelphia’s energy needs, also began operating in 2024.⁴

Box 2: Rising Electricity Prices in Pennsylvania

One factor driving the growth of solar electricity in Pennsylvania is the increase in overall electricity prices. From 2001 to 2010 in Pennsylvania, inflation-adjusted (real) electricity prices remained essentially unchanged. In the next decade, they fell. Around the time President Biden took office in January 2021, inflation-adjusted electricity prices for all PA consumers reached their lowest point in two decades, about 20% below levels in 2001. For residential customers in PA, inflation-adjusted electricity prices in early 2021 were about 10% below 2001 levels. Commercial and especially industrial electricity prices—the markets in which potential still exists to draw down IRA ITC tax credits for solar projects—prices have risen even more (Figure 3). As of the three-month average from November 2025 to January 2026, industrial electricity prices equaled nearly 50% more than their level five years earlier.

Figure 3



³ The price of solar modules has declined 80% in the past 15 years and by 99.6% from 1976 to 2019. This is due to the mass production of solar; as more solar panels were produced scientists found more efficient ways to manufacture them. See Max Rosner, “Why did renewables become so cheap so fast?” Our World in Data, December 1st 2020 (Updated in April 2025); <https://ourworldindata.org/cheap-renewables-growth#article-citation>.

⁴ “Great Cove Solar Project ,” AES. <https://www.aes.com/sustainability-impact/people-communities/projects/great-cove-solar>.

Electricity prices in Pennsylvania could increase further because of rising demand and uncertainty regarding the adequacy of supply. The August 2025, PA PUC forecasting report predicts “significant demand and peak load growth due to industrial customers, primarily data centers.”⁵ On the supply side, the decommissioning of base load electricity plants (including some coal plants that may now remain open for longer) and the time it takes new plants to go online (e.g., three to five years for utility scale solar, eight for natural gas, longer for nuclear) increase the chances of shortfalls.

One leading indicator of potential future price increases—which also itself contributes to price increases—is the price of electricity PJM purchases at its annual, three-year forward (“base residual”) capacity auction. At these auctions, PJM locks in contingent contracts to ensure enough electricity supply to meet demand. In the past 20 years, prices have fluctuated between less than \$50/MW-day and over \$150/MW-day. The 2025/2026 auction price equaled \$270/MW-day and the 2026-2027 energy market saw prices increase to \$329/MW-day.⁶ If needed to meet peak demand, PJM accesses capacity contracted through accepted auction bids, starting with the cheapest auction bid, then the next cheapest, and so on until demand has been satisfied.

Thus, when auction prices go up, consumers ultimately see higher rates, albeit much lower increases than the highest-cost accepted bids (which only satisfy a small part of demand). As a result of the increase in prices from the 2026-2027 auction, PJM expects “year-over-year increase of 1.5–5% in some customers’ bills, depending on how load serving entities and states pass on wholesale costs to consumers.”⁷

The increased price of electricity generation at capacity auctions is only part of the equation. Alongside paying for the electricity consumed, customers also pay distribution fees to utilities that maintain and upgrade the electric grid. These fees have increased recently, and utilities have come under fire for earning high profits while increasing customer rates.⁸ A 2024 report also finds that utilities focus their efforts on local upgrades, which have lower levels of oversight, increasing opportunities to boost profits compared to grid upgrades linked with grid-scale projects.⁹

PJM has also come under fire for its slow interconnection process and hesitance to connect more renewable energy to the grid, even as demand continues to increase.¹⁰ Increase in demand, including from data centers, stagnation of supply, and high utility profits create a potential perfect storm for energy prices to increase dramatically in Pennsylvania over the coming years. Facilitating continuing growth of solar PV electricity can contribute to forestalling such increases.

⁵ Paul T. Diskin, “Electric Power Outlook for Pennsylvania 2024-2029,” Pennsylvania Public Utilities Commission, August 2025. <https://www.puc.pa.gov/media/3586/final-draft-2025-epo-2024-2029-8-2025.pdf>.

⁶ “PJM Auction Procures 134,311 MW of Generation Resources; Supply Responds to Price Signal,” *Inside PJM Lines*, July 22nd 2025. <https://insidelines.pjm.com/pjm-auction-procures-134311-mw-of-generation-resources-supply-responds-to-price-signal/>.

⁷ “PJM Auction Procures 134,311 MW of Generation Resources; Supply Responds to Price Signal,” *Inside PJM Lines*, July 22nd 2025. <https://insidelines.pjm.com/pjm-auction-procures-134311-mw-of-generation-resources-supply-responds-to-price-signal/>.

⁸ Kristina Zagame, Emily Walker, “U.S. electricity rates are rising, and utilities are making more money than ever,” *Energy Sage*, May 29th 2025. <https://www.energysage.com/news/utilities-profiting-higher-electricity-rates/>. and Susan Phillips, “PECO’s profits skyrocket almost 50% after 2025 rate hikes,” *WHYY*, February 26th 2026. <https://whyy.org/articles/peco-rate-hikes-profits/>.

⁹ Claire Wayner, Kaja Rebane, and Chaz Teplin, *Mind the Regulatory Gap: How to Enhance Local Transmission Oversight*, RMI, 2024, <https://rmi.org/insight/mind-the-regulatory-gap> and Kristina Zagame, Emily Walker, “U.S. electricity rates are rising, and utilities are making more money than ever,” *Energy Sage*, May 29th 2025. <https://www.energysage.com/news/utilities-profiting-higher-electricity-rates/>.

¹⁰ Jeff St. John, “Why won’t PJM let batteries and clean power bolster a stressed-out grid?,” *Canary Media*, October 3rd 2024. <https://www.canarymedia.com/articles/transmission/why-wont-pjm-let-batteries-and-clean-power-bolster-a-stressed-out-grid/>.

We can use the information on solar capacity additions in Table 2 to estimate how much Pennsylvania solar projects received in tax credits in the period 2023-25. In that period, excluding residential solar, Pennsylvania added 1,659 MW of commercial plus grid-scale capacity. Assuming a cost of \$1.26 per watt, adding this amount of capacity would have cost \$2.09 billion.¹¹ If 100% of this solar construction received a tax credit of 40% on average, Pennsylvania non-residential solar projects that became operational in 2023-25 have already received \$836 million in IRA ITC tax credits. If 75% of these projects received a 30% tax credit on average, they have received \$470 million in tax credits.

Based on utility scale renewable energy in the PJM queue, solar capacity could grow further in the next few years. As of March 2026, there were approximately 175 solar projects in PJM’s queue in Pennsylvania, with over 9.5 GW of potential capacity.¹² Even if half of this capacity does not materialize, it will triple utility scale solar in Pennsylvania.

Assuming once again an average solar installation cost of \$1.26 per watt, another 9,532 MW of solar (and solar plus storage) capacity from projects in the PJM queue as of March 2026 translates into about \$12 billion in additional investments. Using that number, we can estimate the potential value of ITC tax credits Pennsylvania entities could still receive. Table 4 shows the potential value of the tax credits based on the share of the potential 9,532 MW of added capacity that receives the credits. Since many projects are also eligible for bonuses on top of the 30% tax credit, the table also shows the potential value if these projects receive a 40% tax credit. If half of the capacity in the PJM queue gets implemented and accesses 30% tax credits before they expire, Pennsylvania solar projects will receive almost two billion dollars more in federal incentives.

Table 4: Value of Potential Tax Credits for Solar Electricity Projects in the PJM Queue (millions of dollars)		
Percent of projects that will receive the tax credit	30% Tax Credit*	40% Tax Credit: 30% base credit plus 10% bonus credit**
100%	\$3,617	\$4,823
75%	\$2,713	\$3,617
50%	\$1,809	\$2,412
33%	\$1,194	\$1,592
25%	\$904	\$1,206
10%	\$362	\$482
*As detailed in Table 6, projects under 1 MW automatically qualify for a 30% tax credit. Projects at or above that level must meet prevailing wage and apprenticeship utilization requirements to access a 30% tax credit.		
**Table 5 details the various bonus credits available with the IRA investment tax credit.		
Source: Solar electricity projects in the PJM queue were downloaded from https://www.pjm.com/planning/service-requests/serial-service-request-status on March 19 th 2026. As of that date, the projects shown had an aggregate 9,432 GW. We assumed that installation of this electricity costs \$1.26 per watt based on SEIA/ Wood Mackenzie US Solar Market Insight®		

¹¹ The \$1.26 per watt estimate is from SEIA/ Wood Mackenzie US Solar Market Insight® “Executive Summary- 2025 Year in Review,” March 2026. We averaged the price for fixed-tilt (\$1.18) and tracking (\$1.35) utility-scale arrays.

¹² Solar electricity projects in the PJM queue were downloaded from <https://www.pjm.com/planning/service-requests/serial-service-request-status> on March 19th 2026. We used the “Maximum Facility Output” as the potential capacity of each project, based on guidance from industry experts. Spot checking of online press reports on projects confirmed that projects usually report their megawatts as the same as the MFO.

What explains recent trends in solar capacity *below* grid scale and what are the prospects for near-term growth? In residential solar, recent increases reflect fluctuations in federal tax credits, as well as falling costs for solar and rising costs for other forms of electricity. After pre-existing 30% tax credits for residential solar phased down to 26% in 2020 and 22% in 2021, the IRA in 2022 reinstated a 30% credit for projects installed through 2032, while also covering battery storage.¹³ The “One Big Beautiful Bill Act” then ended the residential solar and storage credit on December 31, 2025. Residential projects had to be operational by that date to receive the credit. Solar developers report a late rush of demand aimed at meeting the December 31, 2025 deadline for accessing IRA tax credits for residential systems.

Absent new financial incentives, we expect a dip in residential solar capacity growth. Residential solar systems owned by a commercial company that has a contract with the homeowner can still access the tax credits under the same timelines and conditions as other commercial projects. While owners of these commercial systems pay homeowners to lease the roof or other area, homeowners may not benefit as much as when they own the array themselves.

In the 2-3 MW merchant generator category, industry experts say the 2021 Pennsylvania Supreme Court case, *Hommrich v Commonwealth of Pennsylvania, Pennsylvania Public Utility Commission* explains most of the growth in capacity installed since 2022 and the continuing growth in 2025. Pennsylvania’s Alternative Energy Portfolio Standard (AEPS), Act 213 of 2004, require electric utilities to offer net metering to customers generating their own power up to 3 MW (or 5 MW if a microgrid or other system potentially enhances grid reliability), including from solar PV systems. Under net metering, “customer generators” receive the “price to compare” for excess electricity (above the amount of electricity consumer by the customer generator) that they supply to the grid—roughly the rate these customers pay for electricity from their local utility.¹⁴ The price to compare is ordinarily far above the lower wholesale rate that utility-scale generators receive.¹⁵

¹³ Federal solar electricity tax credits, primarily the Investment Tax Credit (ITC), began with a 10% tax credit in 1978. After expiring in the 1980s, the Energy Policy Act of 2005 established a 30% credit, significantly expanding under the 2008 Emergency Economic Stabilization Act and then beginning to phase out before their reinstatement and extension in the 2022 Inflation Reduction Act. For more detail, see Brian Lips, “The Past, Present, and Future of Federal Tax Credits for Renewable Energy,” North Carolina Clean Energy Policy Center blog, November 19, 2024; <https://nccleantech.ncsu.edu/2024/11/19/the-past-present-and-future-of-federal-tax-credits-for-renewable-energy/>.

¹⁴ The PUC defines the price to compare as “...the price that utilities charge non-shopping customers for electric generation supply...” See Pennsylvania Utility Commission, “As Electric Prices Are Rising – PUC Offers Tips to Help You Take Control of Your Summer Bill,” June 2, 2025; <https://www.puc.pa.gov/press-release/2025/as-electric-prices-are-rising-puc-offers-tips-to-help-you-take-control-of-your-summer-bill-06022025>. The price to compare includes the generation and transmission portion of the consumer’s bill. It does not include the distribution charge for delivering electricity from the grid to the consumer. Overall average retail rates, whether for residential customers or all customers, also include the cost of energy for consumers that select the energy provider they want (under Pennsylvania’s competitive generation sector) as well as consumers that pay the price to compare plus a distribution charge.

¹⁵ Wholesale energy prices can fluctuate wildly based on short-term demand and weather conditions that reduce supply from natural gas power plants. Winter Storm Fern from January 23 to January 27 led to a spike in the PJM wholesale electricity price. As a result, the average PJM wholesale price for the entire month, 19.9 cents per kWh, exceeded the Pennsylvania retail rate in the same month. The average PJM wholesale price for 2026 through March 18 equaled 11.9 cents per kWh; and the rate from February 10 to March 18, excluding the period in which Fern temporarily spiked prices, equaled 5.7 cents per kWh. Keystone Research Center calculations based on PJM “current year” wholesale price data downloaded from <https://www.eia.gov/electricity/wholesale/>.

The Pennsylvania Supreme Court case ruled that “customers” do not have to use any of the electricity they generate to qualify for net metering. This triggered the proliferation of “merchant generators” building solar projects up to 3 (or 5) MW to sell energy back to the grid at the retail rate.

Data on the number of interconnection requests Pennsylvania utilities received over time for projects from 500 kW to 3 MW (or 5 MW for microgrids and emergency systems) or less show the impact of the 2021 court decision.¹⁶ From 2017 to 2021, utilities in Pennsylvania received a total of 103 requests for solar projects to access net metering. In 2022, that jumped to 72, tripling again to 216 in 2023, and reaching about 1,000 in 2024 and 2025 (986 and 1,053 to be exact).

Looking forward, we estimate that the projects in utility company interconnection queues could generate an additional half billion dollars in tax credits or more (see Box 3 for the basis of this estimate).

Box 3: How Much More in Investment Tax Credits (ITC) Could Projects in PA Utility Interconnection Queues Receive?

No itemized list exists of projects below 3 MW (or up to 5 MW for microgrids or other projects that add to grid reliability) in the interconnection queues of Pennsylvania utilities. The PUC’s annual interconnection report, however, contains information that makes it possible to estimate the aggregate solar capacity of these projects.¹⁷ From that aggregate, we can estimate the cost of these projects and the amount in tax credits the projects could potentially receive if they get over the finish line in time.

Methodology: Table 4A of the interconnection report lists the number of interconnection requests received in different size ranges from June 1, 2024 to May 31, 2025. The smallest size range (“Level 1”) includes projects of 10kW or less. Since these are mostly residential projects, we exclude these projects from our estimates. (Keep in mind that some residential solar projects owned by commercial companies that lease roof or other space from homeowners can still get tax credits for projects in this range. Excluding this whole category makes our estimate conservative.)

For the other categories the PUC reports, we know the number of projects and that those projects fall in a specific size range. For example, the PUC reports projects ≤ 500 kW. In this size range we assume that projects have average capacity of midway between 0 and 500 kW—i.e., 250 kW. The PUC also reports projects with capacity > 500 kW and ≤ 5 MW. While the mid-point of this range is 2.75 MW, projects from 3 MW to 5 MW are not common, so we instead assume the average capacity of projects with capacity from 500 kW to 5 MW is 2 MW. This could be an underestimate given that merchant generator projects in this range may cluster close to 3 MW.

Given these assumptions, the projects that made interconnection requests from June 1 2024 to May 31 2025 total 3.6 GW. If we assume that half of this amount of capacity gets over the finish line (1.8 GW) and costs \$1.26 per watt to build, that’s \$2.28 billion in total production cost. A 30% tax credit for that amount equals \$684 million, which would be match by \$1.6 billion in private investment. These are rough guesses—an order of magnitude. They could be too high. They could also be too low: some projects that made interconnection requests in the year before this (June 1, 2023 to May 31, 2024) may still not be operational but have started construction in time to meet the December 31, 2025 or July 4, 2026 tax credit deadlines. Whether the accurate tax credit amount is hundreds of millions or over a billion, it’s a significant amount of money. Capturing more of that money would be a big win for the Pennsylvania economy and adding these additional electrons to the grid would somewhat ameliorate the potential for energy shortfalls and brownouts in the future.

¹⁶ Personal communication with Joe Sherrick, Pennsylvania Utility Commission. While the interconnection report for 2025 shows the breakdown of requests in the 500 kW to 3 MW, the earlier reports do not, hence our reliance on personal communication with the PUC.

¹⁷ Bureau of Technical Utility Services Policy & Planning Section, “Net Metering & Interconnection Report 2023-2025,” Pennsylvania PUC.

IRA tax credits may have reinforced increases in the number of merchant generators driven primarily by the court ruling. Whether commercial scale “merchant generator” projects will continue to grow is uncertain, only partly because of the phase-out of federal tax credits. In rate cases and via net metering legislation, Pennsylvania utilities have been seeking to lower the rate received by merchant generators for electricity they sell to the grid.¹⁸ Instead of receiving an amount close to the retail rate, these facilities would now receive a rate close to the (usually) much lower wholesale rate.

Another boost to Pennsylvania solar projects has been the state’s “Solar for Schools” program. This program distributed \$22.6 million in May 2025 to 73 projects, one third of them in the five-county southeast PA area.¹⁹ Solar for Schools received another \$25 million in the 2025-26 state budget (with awards expected again in May 2026).

What Projects Can Still Qualify for Tax Credits?

The 2022 Inflation Reduction Act significantly altered the federal tax incentive landscape for electricity sources that reduce carbon emission, including solar electricity, our focus in this paper. Moreover, it is still possible for some solar projects to qualify for the tax credits despite the cuts in the OBBBA. This section explains in more detail the IRA Investment Tax Credit, the changes to that credit in the OBBBA, and what categories of projects have a good chance of accessing credits before they phase out.²⁰

The IRA Investment Tax Credit (ITC) offers owners up to 30% or more of the cost of new solar photovoltaic installation back as a tax credit. A novel feature of the IRA ITC, “elective” (or “direct”) pay, allows nonprofits and local governments that do not pay taxes to receive the value of the credit. Thus, municipalities and school districts that cannot access traditional tax credits targeting only for-profit corporations can benefit from the IRA ITC.

Projects under 1 megawatt (MW), the standard term of measurement for bulk electricity, automatically receive the full 30% credit. Projects above 1 MW receive a 6% base credit, which increases to 30% if projects meet prevailing wage standards and utilize apprentices for at least 15% of the labor hours on a project. Projects can also qualify for bonuses that bring the maximum tax credit up to 70% of project costs (Table 5).

¹⁸ Andrew Kinross & Andrew Bracken, Pennsylvania Net Metering Update: PPL Enters the Fray with Rate Case Filing October 16, 2025; <https://www.linkedin.com/pulse/pennsylvania-net-metering-update-ppl-enters-fray-rate-andrew-kinross-vwhhc/>.

¹⁹ This map shows the three regions used by Solar For Schools to distribute funds: <https://dced.pa.gov/download/solar-for-schools-regional-funding-map/?wpdmdl=125193#:~:text=Funding%20will%20be%20distributed%20evenly,Regional%20Funding%20Map.>

²⁰ Alongside the investment tax credit, electricity projects have the option of seeking a “production tax credit” (PTC) based on the amount of electricity generated—\$0.0275/kWh for projects under 1MW or projects meeting the prevailing wage and apprenticeship standards. We focus here on the investment tax credit (ITC) because it is simpler to explain & more widely used on commercial projects presented as case studies. As with the ITC, 100% of the PTC was available under the IRA until 2033, phasing out by the end of 2036. Projects utilizing the PRC could also take advantage of 10% domestic content & energy community bonuses, but not the low-income community bonus.

Table 5: Additional Bonuses Available with the Solar Investment Tax Credit		
Credit Name	Amount	Qualifications
Energy Community	10%	<p>“Energy Community” is defined as:</p> <ul style="list-style-type: none"> • A brownfield site, or • A census tract with a closed coal mine or closed coal power plant, or • A metropolitan statistical area (MSA) or non-MSA: <ul style="list-style-type: none"> ○ with an economic dependence on coal, oil, or natural gas, and ○ a higher than average unemployment rate, or • An immediately adjoining census tract
Domestic Content	10%	<ul style="list-style-type: none"> • 100% of steel and iron used in the project is made in the United States • At least 45% (2026) or 55% (2027) of manufactured components are made in the United States
Low Income Community	10%	<ul style="list-style-type: none"> • Community has a poverty rate of at least 20% • Nonmetropolitan areas: Median income does not exceed 80% of state’s median income • Metropolitan areas: median income does not exceed 80% of the state’s median family income or the metropolitan area’s median family income
Low Income Economic Benefit Project	20% (replaces 10% low-income community bonus)	<p>Must provide at least 50% of the financial benefits of the electricity produced to:</p> <ul style="list-style-type: none"> • Households with incomes less than 200% of the poverty line • Households making less than 80% of the area’s median gross income
<p>Source: Andy Schell, “How The Federal Solar Tax Credit Works In 2026,” Paradise Energy Solutions https://www.paradisolarenergy.com/blog/how-does-the-solar-tax-credit-work/.</p>		

The OBBBA shortened the timelines to access the IRA ITC on solar PV projects and imposed prohibited foreign entity (PFE) restrictions at the beginning of 2026. Under the new PFE restrictions, all eligible projects or entities that are involved with adversary countries, particularly China, North Korea, Russia, or Iran, can lose access to the ITC as well as other IRA tax credits. The OBBBA also shortened the timelines for some other IRA tax credits, especially consumer tax credits.²¹ The deadline for homeowners to access residential solar tax credits passed at the end of 2025 (see the first column of Table 6). Residential solar systems owned by a commercial company that leases the rooftop (or other area) from the homeowner can still access the tax credits.

²¹ For an overview of all the changes to the IRA in the OBBBA, see Blue-Green Alliance, “What Survived? An Update on Inflation Reduction Act Programs August 2025;” <https://www.bluegreenalliance.org/wp-content/uploads/2025/08/OBBBA-user-guide.pdf>. See also the table in Appendix B in Diana Polson, Rike Rothenstein and Dana Kuhnline, “Tracking the Appalachian Impacts: What’s on the Line as Federal Funding Flatlines By,” ReImagine Appalachia and Keystone Research Center, December 18, 2025; https://reimagineappalachia.org/wp-content/uploads/2026/01/Tracking-the-Appalachian-Impacts_2026.pdf.

Table 6: Deadlines and Policies for Solar Projects in Pennsylvania

	Residential	Small Commercial	Large Commercial	Grid/Utility Scale
Power Range (AC)	<= 15 kW	➤ 15 – 250 kW	➤ 250kW	➤ 3 MW
Prevailing Wage & Apprenticeship Utilization Requirements to Receive 30% Tax Credit	No	No	Not up to 1 MW, yes above that level	Yes
Can Sell Electricity Back to the Grid at Retail Rate	Yes	Yes—unless Hommrich case is undercut by PPL rate case, leading to similar challenges by other utilities		No
OBBBA Tax Credit Deadlines and Conditions (these deadlines compare with the original IRA deadlines, which extended credits to 2034)	Had to be fully operational by December 31 st 2025, Residential solar can still access tax credits if owned by a commercial company that leases rooftops (or other area) from homeowners	<ul style="list-style-type: none"> • "Under construction" by 12/31/25 by spending 5% of project costs or passing a Physical Work Test & in service by 12/31/29; or • Under construction" by 7/4/26 by spending 5% of project costs or passing a Physical Work Test & in service by 12/31/30; or • In service by 12/31/27 	<ul style="list-style-type: none"> • Up to 1.5 MW same as previous column • Above 1.5 MW, same as previous bullet except the 5% of total project costs option for being “under construction” was eliminated (so projects must pass the “Physical Work Test”) 	Same as the second bullet in the previous column
	Not applicable	Projects “under construction” (i.e., “safe harbored”) by December 31, 2025 are exempt from Prohibited Foreign Entity regulations; projects “safe harbored” by July 4, 2026 or operational by December 31, 2027 must comply with PFE regulations.		
Potential to access ITC for projects under development but not yet operational	(1) Potential exists if owned by a commercial company; residential solar installation has short timelines	(2) Potential exists for some of roughly 2,000 projects over 500 kw that already applied for interconnection from Pennsylvania utilities in the past two years**		(3) Potential exists for some of 176 projects already in the PJM queue with up to 8 GW
Potential to access ITC for new projects		(4) Potential exists especially for customer generator projects where the customer has an established relationship with the utility and there is little need for interconnection upgrades	(5) Same as previous column up to roughly 500 kW to 750 kW. From 750 kW up, utility timelines for interconnection studies and approval, and permission to operate pose challenges.	Unlikely: new projects unlikely to meet either of the deadline options
* The physical work test requires that work has been performed on-site (e.g., racking installation, pouring foundations) or off-site (e.g., manufacturing custom components); plus the work must be “significant; (nor just planning, research, and obtaining permit); work performed by a contractor under a binding written contract also counts but work to produce items normally kept in a supplier’s inventory does not count.				
**Pennsylvania utilities received 1,153 interconnection requests of 500 kw or higher in the 12-month period from June 1, 2024 to May 31, 2025: see Bureau of Technical Utility Services, <i>Net Metering and Interconnection Report 2023-2025</i> , Pennsylvania Utility Commission, no date; https://www.puc.pa.gov/media/3770/net-metering-interconnection-report-2023-2025_final.pdf . Pennsylvania utilities receive 1,054 applications of 500 kw or more in calendar year 2025 and 983 in calendar year 2024; personal communication with Joe Sherrick, PA PUC< January 27, 2026.				
Source: Keystone Research Center based on review of the IRA and OBBBA; on interviews with industry experts; and on Andy Schell, “ How The Federal Solar Tax Credit Works In 2026 ,” Paradise Energy Solutions, https://www.paradisepolarenergy.com/blog/how-does-the-solar-tax-credit-work/ .				

The OBBBA provides several ways that projects not yet operational by the end of 2025 could qualify for the ITC before the solar and wind credits expire (Table 6).²² One way is for projects to be “under construction” (see Table 6 for how “under construction” is defined for projects of different sizes) by either the end of 2025 or by July 4th 2026, and operational by four years after the end of the year in which they began construction. Small solar projects (under 1.5MW) could meet the “under construction” condition by spending 5% or more of the total project costs before either December 31, 2025 or July 4th 2026 or by passing a physical work test on the project. Solar projects above 1.5MW and all wind projects could only meet the under construction requirement by passing the physical work test to be exempt from the December 31st 2027 deadline.²³ This physical work must be “of a significant nature;” it can be either on or off-site construction, but must include project-specific work and cannot include planning.²⁴

Projects not “under construction” by the end of 2025 must comply with the prohibited foreign entity restrictions introduced in the OBBBA.²⁵ At least 40% of the value of their manufactured products used must not come from prohibited foreign entities, including businesses owned or affiliated with China, Iran, Russia and North Korea. The Trump administration released guidance regarding prohibited foreign entity restrictions in February 2026 clarifying how to calculate the percentage of the manufactured products from a prohibited foreign entity (PFE) (i.e., the “material assistance cost ratio”).²⁶

The revised timelines and conditions associated with qualifying for the IRA investment tax credit intersect with the time required to satisfy regulations and requirements in Pennsylvania for solar projects, and with time required for construction, to determine whether projects still have a realistic chance to access credits. These Pennsylvania regulations and requirements include permitting, interconnection applications and approvals, permissions to operate (PTOs) required for startup once construction is complete, and, for grid-scale projects, approval by PJM, the electric grid.

We conclude that there are potentially five categories of solar projects not yet operating that might still access the ITC. While the last two rows of Table 6 summarize this conclusion, we run through these categories in the text as well, for the sake of clarity and to help readers who are trying to figure out whether a project they are contemplating might still qualify. In rough order of the probability projects have of accessing the ITC, from most likely to least likely, these categories are:

- 1) **Some new small residential projects** owned by commercial companies that lease roof space or land from homeowners could likely meet timelines to access credits.
- 2) **Medium or large commercial projects** (including nonprofit and municipal) **that applied for interconnection in the last year or two** (but are not yet operational) and in which the owner will

²² Andy Schell, “How The Federal Solar Tax Credit Works In 2026 ,” Paradise Energy Solutions, March 20th 2026. <https://www.paradisepolarenergy.com/blog/how-does-the-solar-tax-credit-work/>.

²³ A project over 1.5 MW could qualify for the earlier (December 31st 2025) deadline and not be required to follow prohibited foreign entity (PFE) requirements by spending 5% or more on construction costs but still be required to pass the physical work test for the December 31st 2027 deadline.

²⁴ Notice 2025-42, “Beginning of Construction Requirements for Purposes of the Termination of Clean Electricity Production Credits and Clean Electricity Investment Credits for Applicable Wind and Solar Facilities,” IRS. <https://www.irs.gov/pub/irs-drop/n-25-42.pdf>.

²⁵ Andy Schell, “ How The Federal Solar Tax Credit Works In 2026 ,” Paradise Energy Solutions <https://www.paradisepolarenergy.com/blog/how-does-the-solar-tax-credit-work/>.

²⁶ “New IRS Guidance Clarifies Material Assistance FEOC Requirements ,” Foley Hoag, February 19th 2026. <https://foleyhoag.com/news-and-insights/publications/alerts-and-updates/2026/february/new-irs-guidance-clarifies-material-assistance-feoc-requirements/>.

consume a significant portion of the electricity generated (i.e., these are **customer generators**, not merchant generators). This includes a portion of the 1,153 projects over 500 MW reported by the PUC to have requested net metering interconnections from June 1, 2024 to May 31, 2025 and may include some projects that requested interconnection in the prior year or two (but are not yet operational) or request it between June 1, 2025 and May 31, 2026.²⁷ Industry experts say interconnection approval times for customer generators, especially commercial (including nonprofit) customers with longstanding relationships with their utility, tend to be shorter than for merchant generators.

- 3) **Grid-scale solar projects in the PJM queue** that have already begun construction or plan to begin construction early enough to meet either the July 4, 2026 or December 31, 2027 deadlines.
- 4) **Medium or large commercial projects that applied for interconnection approval** recently and in which the owner will sell virtually all of the electricity generation back to the grid (i.e., these are **merchant generators**). This includes the rest of the 1,053 projects requesting interconnection from June 1, 2024 to May 31, 2025 and some other projects not operating who requested interconnection earlier or who requested interconnection in the subsequent year.
- 5) **New commercial projects under about 750 kW** that have not yet applied for interconnection and in which the owners will consume a significant portion of the electricity generated (i.e., these are customer generator projects).²⁸ Projects that don't require significant interconnection upgrades are particularly likely to meet IRA timelines. Some larger customer generator projects that don't require major interconnection investments may also have a chance to get under the wire although that is less certain and varies by utility and based on the specifics of the project and the customer-utility relationship.

Potentially, some new merchant generator projects in the 500kW to 3 MW range could qualify for investment tax credits if the state launched a team effort to expedite permitting, interconnection approval, and permission to operate approval. As discussed below, however, a further hurdle for these projects is posed by utility rate cases and possible legislative action that would lower the price merchant generators receive for the electricity they transmit to the grid. While projects that have already applied for interconnection may benefit from “grandfathering” the higher rates merchant generators have received based on the 2021 court case, new projects may be less likely to benefit from grandfathering.

We conclude, tentatively, that new grid scale projects not yet in the PJM queue could not meet either the July 4, 2026 or December 31, 2027 deadlines and conditions required to qualify for investment tax credits.

²⁷ The figure 1,153 is based on Table 4A in Bureau of Technical Utility Services, *Net Metering and Interconnection Report 2023-2025*, PUC; see the second note in Table 6 for a fuller citation.

²⁸ Pennsylvania's Final Rulemaking Order (Docket No. L-2014-2404361) requires utilities to submit interconnection applications for systems with a nameplate capacity of 500 kW or greater to the PA Public Utility Commission for review. According to the PUC this (administrative) review of applications takes only a day or two and thus does not cause delays. Projects below 500 kW (including residential, which are often under 50 kW, and small commercial) also benefit from a simpler, shorter review process by utilities. Projects from 500 kW to 3MW reportedly take varied times to secure interconnection approval and permission to operate. Projects from longstanding utility customers that plan to consume much of the energy generated reportedly receive faster approval. Pure “merchant generator” projects that plan to sell all their electricity to the grid can reportedly take up to two years for approval, making operation before December 31, 2027 unlikely. These projects would thus need to “begin construction” or pass the “physical work test” by July 4, 2026 to access tax credits and secure four more years within which to become operational.

Another key point to keep in mind: across all segments of the market, the phaseout of federal clean energy tax credits may only cause a pause in the growth of solar capacity in Pennsylvania. If electricity prices grow substantially in the next few years, they could offset the phaseout of tax credits and reduce the payback times for projects back to a few years in many cases. Having identified types of projects that might still be eligible for investment tax credits, the next section profiles case studies of successful recent project examples that might still have time to qualify for tax credits.

Case Studies

In this section, we profile Pennsylvania solar projects that have received or expect to receive investment tax credits. Our examples span market segments and include both projects owned by for-profit entities (which would have been eligible for earlier investment tax credits for solar energy) and public entities eligible for the innovative “elective pay” provision of the IRA. The range of cases aims to provide diverse entities and projects still pursuing or considering pursuing tax credits with one or more examples “like them” or “like their project.”

Small (< 1.5 MW) Publicly Owned Projects

Table 7 profiles solar projects at Springfield Township, Haverford School District, and two elementary schools in Phoenixville School District.²⁹ Feasibility studies show that, with the IRA 30% investment tax credit in place, these projects have payback periods of under a decade and save millions.

Table 7: Financial Analysis of Small, Publicly Owned Solar Projects				
	Phoenixville School District- Schuylkill Elementary School	Phoenixville School District- Manavon Elementary School	Springfield Township	Haverford Township, Chatham Elementary School
Project Size	539kW	1,057 kW (i.e., 1.05MW)	453kW	430kW
Full Installation Cost (\$thousands)	\$1,193	\$2,110	\$1,041	\$989
Assumed Installation Cost	\$2.22 per watt	\$1.95 per watt	\$2.30 per watt	\$2.30 per watt
IRA Investment Tax Credit (\$thousands)	\$269	\$463	\$312	\$297
10% Energy Community Bonus (\$thousands)	\$89	\$155	N/A	N/A

²⁹ Springfield Township: Ron Celentano, “Summary Solar Assessment Prepared For: Springfield Township Administration (MontCo), Celentano Energy Services, June 28th 2024.

Chatham Elementary School: Ron Celentano, Celentano Energy Services, January 20th 2025.

Schuylkill Elementary School: Cat Price, “PA Solar Center Solar Feasibility Analysis for Schuylkill Elementary School ,” PA Solar Center.

Manavon Elementary School: Cat Price, “PA Solar Center Feasibility Analysis for Manavon Elementary School ,” PA Solar Center.

Act 129 Incentive (\$thousands)	\$71	\$137	\$58	\$47
Solar for Schools grant (\$thousands)	\$300	\$300		\$297
Payback Period	6-8 years	6-8 years	9.2 years	5.6 years
*SRECs Generated (Year 1) (\$thousands)	\$21,3	\$41.1	\$21.6	\$18.5
Maintenance Costs (\$thousands/yr)	\$5.4	\$10.6	\$4.9	\$4.7
Energy Generated as Percentage of Usage	99%	106%	112%	101%
**Net Present Value			\$217,902	\$460,045
Net Installation Cost	\$345,045.20	\$849,272	\$671,383	\$349,506
Savings over time (\$thousands)	\$1,214 over 25 years	\$2,154 over 25 years	\$703 over 30 years	\$955 over 30 years

***SRECs (Solar Renewable Energy Certificates):** A financial credit that represents the “market value” of the contribution of the project to meeting the requirement under Pennsylvania’s Advanced Energy Portfolio Standard that 0.5% of electricity come from solar energy. One SREC is generated for every MWh produced, and SRECs can be bought and sold on the SREC market.

****Net present value:** A financial measurement that determines whether an investment is profitable taking into account that money in hand today is worth more than money in the future because it could be invested and earn interest. If net present value is positive a project has overall financial benefits relative to investing the funds for the project in financial assets that bear a reasonable (and risk-free) rate of return.

Source: Springfield Township: Ron Celentano, “Summary Solar Assessment Prepared For: Springfield Township Administration (MontCo), Celentano Energy Services, June 28th 2024.

Chatham Elementary School: Ron Celentano, Celentano Energy Services, January 20th 2025.

Schuylkill Elementary School: Cat Price, “PA Solar Center Solar Feasibility Analysis for Schuylkill Elementary School ,” PA Solar Center.

Manavon Elementary School: Cat Price, “PA Solar Center Feasibility Analysis for Manavon Elementary School ,” PA Solar Center.

The feasibility studies each rely on actual electricity usage by the project owner for the most recent year and on key assumptions about project costs and incentives. One critical assumption cost relates to “installation cost.” The Springfield and Haverford studies each assumed a \$2.30/watt installation cost. The projects then received bids with lower costs: \$1.62/watt for Springfield and \$1.73/watt for Haverford. On the incentives side, all the projects assumed they would receive the IRA base 30% investment tax credit. Phoenixville also assumed receipt of an additional IRA 10% “Energy Community” bonus. All these projects also built in Solar Renewable Energy Certificates (SRECs)—typically one SREC per 1,000 kWh (1 MWh) generated—which represent the “market value” of the project (which is set on the SREC market) to helping local utilities meet their 0.5% solar energy generation requirement under Pennsylvania’s Alternative Energy Portfolio Standard (AEPS).³⁰

³⁰ Celentano valued these valued at \$35/SREC at the time of the feasibility study (May 2024), which translated to first year revenue of \$21,585. The current market price of SRECs is \$22/SREC according to Flett Exchange, which would lower the revenue in year to about \$13,568 . A helpful guide to SRECs can be found here: <https://www.greenlancer.com/post/srecs>.

The Springfield and Haverford studies also assumed incentives from a Commercial Solar Incentive Program established by the SE Pennsylvania utility, PECO (formerly the Philadelphia Electric Company) as part of its compliance with Pennsylvania's Act 129 energy efficiency law. This one-time subsidy currently equals \$0.10/kWh of gross solar generation in the first year a solar project operates. The three school district projects, including both Phoenixville schools, each received a "Solar for Schools" grant for about \$300,000.

The **Springfield Township Project** in Montgomery County Pennsylvania will install solar photovoltaic arrays on the rooftops of the Township's Administration/Police building, Public Works Main building, and Public Works Department "East Shed." The project expects to generate enough electricity to meet the total annual usage of all three buildings plus the township library.³¹ The project technically began construction in 2025 (i.e., before December 31, 2025), giving it until December 31, 2029 to become operational and receive IRA investment tax credits. "Beginning construction" entailed purchasing the inverters and other equipment that totaled 10% of the total cost of the project (giving it a margin above the 5% legal requirement). This solar project is expected to be in operation by late Spring of 2026.

Haverford Township's Chatham Elementary School will be installing a roof-mounted solar photovoltaic system with the capacity of 394.71 kW to offset a majority of the school's projected annual electric usage. This project also "began construction" via procurement of equipment before December 31, 2025. The solar PV system is expected to be in operation by mid-Summer, 2026.

Phoenixville Area School District, in Chester County Pennsylvania, is planning to install four solar arrays total at two elementary schools, Schuylkill Elementary School and Manavon Elementary School. This project is part of the Phoenixville Borough's plan to rely on completely sustainable energy by 2035. The project is currently accepting bids and aims to have a contractor before July 4th, giving it until December 31, 2030 to become operational. This gives the project ample margin since it expects to be operational by mid-2027.

Lawyers For Good Government Elective Pay Sprint Hub

At this point, 6 of the 196 eligible projects seeking assistance from the L4GG Elective Pay Sprint Hub to claim tax credits are in Pennsylvania. These are solar or solar plus storage projects in the eastern and western counties (Montgomery, Monroe, Allegheny, Erie), driven by 2 religious institutions, 3 municipalities, and a school.

The projects vary in size, from small rooftops to a 500 kW distributed solar system. All of these projects are well-positioned for tax credits that would offset 30% of the project costs, given that some have already completed, and the rest are already in construction with estimated completion dates before 2027. The motivations range from building a municipal resilience hub to reducing their electric bill.

For most rooftop projects, the new completion ("placed-in-service") deadline of December 31, 2027 may provide more than sufficient time, even for those projects beginning in 2027, as long as they can avoid delays in the utility interconnection or building permit process. However, for utility-scale solar electricity projects (typically 1 MW or larger), which typically take a much longer time to complete, they should

³¹ "Pennsylvania SREC Market Prices," FlettExchange, <https://www.flettexchange.com/markets/pennsylvania/market-prices>.

begin construction by July 4, 2026 to be well-positioned to successfully claim solar tax credits under the longer original IRA phase-out schedule.

Large, Utility-Scale Power Purchase Agreement: Abes Run Solar

In support of its Municipal Energy Master Plan, the City of Philadelphia signed a power purchase agreement (PPA) with solar contractor Oriden, a subsidiary of Mitsubishi, to buy the electricity generated by a 20 MW solar array in Clearfield County, PA.³² This solar array will produce 5% of Philadelphia's municipal electricity needs, and follows the City of Philadelphia's first power purchase agreement, Adams Solar (located in Adams County, Pennsylvania), that currently supplies 25% of the city's electricity needs.³³ The City of Philadelphia will purchase the power at a fixed rate, alongside the solar renewable energy credits (SRECs). Philadelphia will then retire the SRECs, gaining credit for using renewable energy and making progress towards the City's goal of generating or purchasing 100% renewable electricity for the municipal built environment by 2030.³⁴

This power purchase agreement allows Philadelphia to utilize renewable energy even though it does not have space for a grid-scale array on City property. It also allows the City to "lock in" a fixed price for energy, protecting the city from the volatility of the energy market and providing greater predictability when developing the City budget.³⁵ Oriden locked in federal tax credits (and avoided prohibited foreign entity requirements) by spending 5% of project costs on equipment before the end of 2025. After a renegotiation of the price to reflect the direct impact of tariffs, the City now expects to break even in 11 years—less if market electricity prices increase. Before it found a customer for the electricity, Oriden got the project listed on the PJM interconnection queue. This made the project more attractive vendor for the city. Construction is estimated to take around a year, and the project anticipates being online as soon as the end of 2026.

To meet the City's 100% renewable electricity by 2030 goal, the Philadelphia Energy Authority in partnership with the City of Philadelphia currently has four additional new renewable energy projects planned, some of which may be able to meet the deadlines for federal tax credits. These projects will become public once approved by the Philadelphia City Council.

Commercial Projects

Greenfield Manufacturing, a manufacturing and warehouse facility in Philadelphia, was an early adopter of warehouse rooftop solar, installing its 300 kW array in 2021. The company added a second 60 kW array in 2023 and a third 960 kW array in 2025, bringing its total capacity to above 1.3 MW, the second largest in

³² Information on Philadelphia's Municipal Energy Master Plan and Abes Run Solar can both be found here: "Municipal Energy Master Plan for the Built Environment- 2025 Progress Update ," City of Philadelphia Office of Sustainability, February 10th 2026 <https://www.phila.gov/media/20260210132149/OOS-municipal-energy-master-plan-update-2025.pdf>.

³³ "Philadelphia Reaches for the Sun, Finalizes Agreement for City's Second Utility-Scale Solar Project ," City of Philadelphia, December 2nd 2025. <https://www.phila.gov/2025-12-02-philadelphia-reaches-for-the-sun-finalizes-agreement-for-citys-second-utility-scale-solar-project/>.

³⁴ When SRECs are retired by an entity with sustainability goals, that entity foregoes the market value of that SREC and the project doesn't contribute to the local utility's requirement of using solar to generate 0.5% of electricity in its region.

³⁵ KRC Interview with Grace Hancock, Senior Manager of Policy & Strategic Partnerships, Philadelphia Energy Authority, March 4th 2026.

Philadelphia. These solar arrays generate more than Greenfield Manufacturing's 450 MWh/yr energy needs. The company sells excess electricity back to the grid through net metering while also generating SRECs that the company can also sell. Lenny Greenfield (VP Engineering) encourages other warehouses and manufacturing companies to pursue solar. "We [pursued solar] because it financially made sense. I don't get why more manufacturing companies don't do this. It's not particularly hard or expensive, and it makes us money. It's also something we have to do as a society."

In total, Greenfield's three arrays cost around \$3.1 million to build and capitalized on substantial investment tax credits that, along with other financial incentives (e.g., accelerated depreciation), resulted in a payback period of about five years. The first solar array predated the IRA and received a 30% ITC as did the second array. The third (the largest and most expensive) solar array took advantage of 10% domestic content and energy community bonuses, bringing the total ITC credit to 50%. Since the company could not find inverters and panels that met domestic content requirements, Greenfield Manufacturing met the domestic content requirements by sourcing domestically the materials for its ballasted roof system, wires, and conduits, and manufacturing some "racking components" itself (Greenfield performs metal stamping for plumbing and electrical components in its manufacturing facility).

As a result of its solar arrays, Greenfield Manufacturing has eliminated their electricity costs and produces a surplus of power to sell back to PECO, and is sent back to the grid to other utility customers. This effectively puts other businesses and residences in the immediate area on solar power by displacing traditional thermal generation sources. Before it installed solar, it paid about \$50,000 per year in electrical costs, an amount which would have increased to over \$75,000 by now because of significant electricity and distribution price hikes. Including revenue generated from the sale of SRECs, Greenfield Manufacturing now earns almost \$97,000 from its solar array annually.

In part because of its relatively early adoption of solar, Greenfield Manufacturing experienced significant challenges upgrading its interconnection with the local utility.

Many of the rules and regulations in PECO's "gray book" that spells out net metering and interconnection requirements for solar were still being clarified and refined. (PECO's "yellow book" spells out interconnection requirements for traditional electricity sources.) The company also benefited from existing high-capacity industrial transformers that step down high utility voltages to usable levels for its facility. To eliminate a safety hazard to line workers, PECO ordinarily requires solar projects over 750 kW to install a "direct transfer trip" (DTT) high-speed communication system that prevents a solar installation from continuing to feed electricity into a de-energized part of the grid. This would have required Greenfield to install four miles of fiber optic cable at a cost of \$2 million. Greenfield was able to piggyback on to an existing fiber installation to reduce the cost to \$85,000 to be allowed to exceed the 750kW cap imposed by PECO.

Reflecting the company's commitment to sustainability, **Berner Air Curtains**, located in New Castle, Pennsylvania, installed a large 844 kW solar array on its manufacturing facility in 2024. The solar array generates around 160% of the company's total electricity usage, with the excess above the company's needs sold back to the grid.

Berner Air Curtains received a \$537,000 Rural Energy for America (REAP) program grant, which made the project even more financially attractive.³⁶ The energy savings, SRECs generated, and REAP grant combined made the payback period for the solar array less than a year.

The Berner project, the first of its size in Lawrence County, inspired a neighboring company to also go solar according to Denise Grady, Chief Financial Officer (CFO) of Berner Air Curtains. Berner Air Curtains is also considering a second solar project in conjunction with a future expansion of its manufacturing plant. With a federal investment tax credit, this second, 888 kW, system would pay for itself in six to eight years; without the ITC the payback period would be around 15 years.

TerraSol Energies has installed a variety of commercial solar projects in Southeast PA that have accessed IRA ITC to shorten payback periods below five years and increase cost savings over the 30-year useful life of the solar energy system. These include two projects at auto dealerships. Faulkner Buick in West Chester installed a 341 kW solar rooftop array that will reduce its carbon footprint by 290 tons annually and will generate energy savings equal to selling an additional two to three cars per month. Team Toyota, another auto dealership, installed a 646 kW rooftop solar array that will lower its carbon footprint by 717 tons per year. This dealership also notes that combining its solar arrays with energy storage protects it from the growing unreliability of the electric grid.

TerraSol Energies also installed solar panels for two educational institutions. A 120 kW project at Williamson College of the Trades created opportunities for students to learn about the solar industry as a career path. At Millersville University, a TerraSol 204kW solar array created the first zero-energy building in Pennsylvania. The Lombardo Welcome Center produces 75% more electricity than it uses, allowing it to share excess electricity with other buildings on campus.³⁷

TerraSol completed a 170 kW array for York PB Truss Inc., a manufacturer of prefabricated frames to support roofs and floors, a 144 kW array for Strata Marketing Company, and a 489 kW array for a third company. These projects illustrate that a broad spectrum of businesses across the economy now recognize the benefits of utilizing solar energy to reduce energy costs and their carbon footprints.

Box 4: Aggregating Assistance for Small Projects to Help Them Qualify for Tax Credits³⁸

A collaboration between the PA Solar Center, two community development financial institutions (The Reinvestment Fund in Philadelphia and the Capital Good Fund), and Philadelphia Green Bank affiliated with the Philadelphia Energy Authority illustrates one way to encourage solar development and the drawdown of IRA investment tax credits before they expire. This collaboration will develop about \$40 million worth of solar projects for small businesses, nonprofits and municipalities at no initial cost, and save them an average of 25% on their energy bills. The nearly 70 projects represent an additional 19.4 MW of solar capacity.

³⁶ “Berner Air Curtains gets \$537k Grant to Install Solar Panels ,” Pennsylvania Solar Center, September 7th 2023. <https://pasolarcenter.org/berner-air-curtains-gets-537k-grant-to-install-solar-panels/>

³⁷ “Lombardo Welcome Center: Pennsylvania’s First Certified Zero Energy Building ,” Millersville University. <https://www.millersville.edu/sustainability/sustainable-campus/buildings-and-energy/nzeb.php>

³⁸ This box draws from Billy Ludt, “PA Solar Center program initiates 70 new projects in Pennsylvania ,” Solar Power World, March 3rd 2026, <https://www.solarpowerworldonline.com/2026/03/pa-solar-center-program-initiates-70-new-projects-in-pennsylvania/>; and “Nonprofits partner to deliver \$40M in Pa. solar projects ,” NorthCentralPA.Com, March 4th 2026. https://www.northcentralpa.com/business/nonprofits-partner-to-deliver-40m-in-pa-solar-projects/article_91bf3c11-99cf-41ab-9cd9-2c97d4664ac0.html.

Many of these projects, which range from 20 kW to 1.5 MW in size, were too small to solicit bids from solar generation companies on their own. Grouping the projects gave them collective access to power purchase agreements (PPAs), locking in demand and a firm price for the electricity generated. PPAs normally get negotiated only for projects 500 kW and above.

The PA Solar Center supports these projects with technical assistance. The Capital Good Fund will own and maintain the solar arrays and oversee the power purchase agreements and construction. The Fund also purchased equipment to meet IRA ITC definitions for having begun construction by December 31, 2025. The Reinvestment Fund, Philadelphia Green Bank, and Kresge Foundation provided some of the funds for the purchase of equipment.

Policy Recommendations

This report documents and explains the exponential growth of solar electricity in Pennsylvania in the past seven years and especially since 2022. We attribute that growth partly to the renewal of investment tax credits in the Inflation Reduction Act and the extension of credits through direct/elective pay to nonprofits and governments that cannot access traditional tax credits available only to for-profit corporations. The shortening of the timelines for the IRA tax credits in the OBBBA will slow down the growth of solar electricity but need not reverse it. To limit this impact and sustain the momentum of the solar and renewable energy industries in Pennsylvania, we recommend that Pennsylvania take steps to maximize the drawdown of clean energy tax credits and also that Pennsylvania's Congressional delegation seek to restore the original IRA deadlines. We also recommend that the state enact four pieces of state-level legislation that would boost the growth of solar electricity.

1. Take Five Actions to Maximize the Drawdown of IRA Tax Credits

As discussed above, there is still time for some projects, especially commercial projects below 3 MW (see Table 6 and the accompanying text), to meet the requirements to qualify for the ITC and save 30% or more on the cost of installation. Commercial and grid-scale projects already in the pipeline that have already "started construction" or will soon (by July 4, 2026) have until December 31st of the calendar year four years after they begin construction (e.g. a project that began construction on January 1st 2025 will have until December 31st 2029) to complete construction without documenting delays. If construction takes longer, these projects may still be able to receive the tax credits, but they must document why. Alongside projects started before July 4th 2026, some new commercial projects could still qualify by becoming operational by the end of 2027. These new projects could be at for-profit businesses, large nonprofit anchor institutions, municipalities or school districts. To enable the maximum number of Pennsylvania projects in the pipeline, and new projects, to access these tax credits, we make five recommendations.

a. PJM Should Give Priority to Projects in Its Queue That Have Until 2029 or 2030 to Operate

PJM should give priority approval to grid-scale projects that met the December 31, 2025 clean energy tax credit deadline or that met or will meet the July 4, 2026 deadline, and have four years after the end of the year in which they began construction (usually December 31, 2029 or 2030) to begin operating. Getting these projects approved and operating is the key to Pennsylvania projects accessing \$1.8 billion or more in additional tax credits. Pennsylvania Governor Shapiro and 11 of the other 12 governors in PJM states have already advocated for PJM reforms that shorten the time it takes for projects in the PJM queue to

obtain approvals and become operational.³⁹ In response to criticism and advocacy, PJM has initiated some reforms that may deliver improvements.⁴⁰ Despite these reforms, it is now past the point that new grid scale projects (i.e., starting in spring 2026 or later) can begin construction by July 4, 2026 (securing four more years to begin operating) or begin operating by the end of 2027. Hence, there is the need for PJM to focus on projects already in the queue.

One way to enhance the prospects for the priority projects would be for Governor Shapiro to spearhead a second letter to PJM that acknowledges PJM's recent initiative on grid reform but that urges particular attention to solar (and other) net-zero emission projects that need timely approvals from PJM to secure their clean energy tax credits. Highest priority of all should go to projects in the PJM queue that have also obtained required local permits or have at least worked with municipalities so that permitting can be expedited.⁴¹

b. Require PA Utilities to Accelerate Interconnection and Permissions to Operate for ITC Eligible Projects

According to a grading of states' interconnection policies related to distributed renewable energy, Pennsylvania earns a D for interconnection and ranks 32nd of the 50 states.⁴² Pennsylvania lawmakers should require utilities to accelerate interconnection and permissions to operate for solar projects eligible for the investment tax credit before it expires. This is the key to entities in the state receiving up to a billion dollars in additional tax credits. In December, the Pennsylvania PUC announced a "Notice of Proposed Rulemaking" aimed at "modernizing" (i.e., accelerating) its interconnection process, including

³⁹ Governor Shapiro was one of 12 (of 13) PJM governors that wrote an open letter last year to PJM to drive home the importance of it streamlining its approvals of new generation capacity: see <https://www.pjm.com/-/media/DotCom/about-pjm/who-we-are/public-disclosures/2025/20250717-nine-governors-letter-regarding-board-vacancies.pdf>.

⁴⁰ As one industry expert explained, PJM historically dealt with the approval a small number of large electricity generation projects. The growth of distributed commercial scale renewable energy, led by solar, created a need to process a much larger number of smaller projects. Recognizing that "first-come, first-served" and one project at a time approvals had created a long queue and big delays, PJM has instituted plans to shift to a "cluster-based" approach that seeks to process multiple, similar projects and also plans to give priority to bigger projects with more potential to avoid gaps in generation capacity in the last two years. PJM has sought to process projects already on the queue in two cycles: the studies related to cycle one completed in December 2025 (<https://insidelines.pjm.com/pjm-completes-interconnection-reform-transition-cycle-1-studies/>); this include 128 new generation service requests with a combined 8.4 GW of capacity, 56% of them solar. For an overview of PJM reforms, see <https://insidelines.pjm.com/2025-year-in-review-planning-prepares-for-burgeoning-electricity-demand/>. For background on the transition at PJM, see <https://modoenergy.com/research/en/pjm-interconnection-reform-and-transition-period-buildout-battery-energy-storage-queue-cycle-forecast>.

⁴¹ According to Robert Young, Pennsylvania Department of Environmental Protection, local SALDO (Subdivision and Land Development Ordinances) requirements can pose major hurdles and big delays on projects. The implication of that observation is that projects that have already met those requirements, or at least received positive guidance regarding how a particular project can meet those requirements, should be a priority for PJM because they are well placed to become operational within ITC timelines.

⁴² See the Pennsylvania fact sheet uploaded by the Interstate Renewable Energy Council (IRC) and Vote Solar at <https://freeingthegrid.org/pennsylvania/>. See also Shay Banton of IREC: "GRID UNLOCKED Yesterday's Learnings, Today's Challenges, & Tomorrow's Intentional Solutions," Power Point presentation delivered at the 12th Renewable Energy Summit, March 8, 2026; <https://pasolarcenter.org/wp-content/uploads/2026/03/8.1-PA-Summit-Slides-Shay-Banton-IREC-FINAL.pdf>.

for solar electricity projects.⁴³ Without action by the Pennsylvania legislature, this effort will not conclude in time to allow new (i.e., launching in Spring 2026 or later) projects to access the federal IRA investment tax credit. Some new customer-generator projects with favorable characteristics (e.g., smaller and/or expansions of projects for which customers already achieved interconnection and operation) might get under the wire by the end of 2027 but there are no guarantees. Moreover, owners and developers have little leverage if their local utility moves too slowly on a project. Furthermore, although four years should be sufficient time, there are also no guarantees that projects which began construction before the end of 2025 or by July 4, 2026 will get through the interconnection process and obtain their permission to operate.

In recognition of these realities, and in line with the increasing bipartisan emphasis on affordability, we recommend that the legislature move with urgency to require utilities to complete interconnection studies within 30-60 days, to be more transparent with developers about costs of upgrades, and to complete upgrades in a timely fashion. Such legislation could require utilities to move projects that face tight IRA tax credit deadlines to the front of their queues. At a time of rising electricity prices, the drawdown of federal investment tax credits for solar could lower costs directly for customer generators and indirectly for other consumers because tax credits lower the cost of grid-scale projects.

In addition, the legislature could consider, similar to the order that the District of Columbia Public Service Commission (DC PSC) issued, requiring the utilities to provide interconnection approval within 20 days for solar systems that do not export generation (i.e. self-consumption) or have limited export capacity.⁴⁴ Specifically for the smaller solar projects seeking to access ITCs, the DC PSC directed the incumbent utility to “complete the engineering review and issue an Authorization to Operate for all non-export and limited-export applications submitted under the Temporary Conditional Interconnection Program within (20) business days of the application being deemed complete.” This order has been applauded by the regional solar association and the Interstate Renewable Energy Council.

c. Owners and Developers That Can Move Quickly on Promising New Projects, Should

Owners and developers considering new projects below grid scale that can still meet the July 4, 2026 or December 31, 2027 investment tax credit deadlines should move forward quickly. Not all developers and owners can move quickly because of internal procedures for capital outlays, board approval timelines, the time it takes to contract with installers or, for local governments, to meet requirements for public notice and hearings and formalized and transparent bidding procedures. Such organizations won't be able to launch new projects this spring or later and meet ITC deadlines. But some other organizations such as commercial businesses and some nonprofits can move quickly. Some organizations in this second category also have sustainability goals and a willingness to accept longer payback periods that new solar projects can meet even without investment tax credits. For agile owners that don't need tax credits for projects to have acceptable economics, moving forward quickly now makes particular sense. If they can access credits, that could free up capital for future projects including more solar electricity.

⁴³ “PUC Votes to Advance Rulemaking to Modernize Electric Interconnection Regulations ,” Pennsylvania Public Utilities Commission, December 18th 2025. <https://www.puc.pa.gov/press-release/2025/puc-votes-to-advance-rulemaking-to-modernize-electric-interconnection-regulations-12182025>.

⁴⁴ Public Service Commission of the District of Columbia, “Order No. 22745: Formal Case No. 1050, in the Matter of the Investigation of the Implementation of Interconnection Standards,” November 26, 2025; <https://edocket.dcpsc.org/apis/api/Filing/download?attachId=233680&guidFileName=b4d7ea0e-33bf-4a9c-9f84-b5d30e8ec3ec.pdf>. The quoted language is on page 20, paragraph 58.

d. Create a Governor’s Action Team to Maximize IRA Tax Credits

The Commonwealth should create a “Governor’s Action Team to Maximize IRA Tax Credits,” building on actions the Shapiro Administration has already taken. While utilities and PJM have the most authority to get new electricity projects online, approval of projects large and small remains diffuse: no one is fully in charge. Localities oversee local zoning ordinances and permits. Utilities control the interconnection process. The PUC has regulatory authority. The gubernatorial administration has some permitting responsibilities and the ability to convene parties. Given diffuse responsibility, an exercise of “soft power” and intergovernmental cooperation should accompany legislative action to accelerate utility approvals and gubernatorial advocacy to speed utility interconnection and PJM approvals: hence our proposal to create this Governor’s Action Team. This mission of this team overlaps that of the Governor’s Office of Critical Investments created by Governor Shapiro early in his term to maximize drawdown from the IJJA, IRA, and CHIPS+ Act. While it should focus immediately on solar, it could then address battery storage and geothermal projects.

This action team would build on Governor Shapiro’s prior efforts. For the initial round of IRA incentive filings, for example, Governor Shapiro organized an elective pay team through the Office of Critical Investments. By coordinating with the Department of General Services, Transportation, and Conservation and Natural Resources, Pennsylvania filed for elective pay for 37 vehicles, seven solar projects and seven vehicle charging stations.⁴⁵ Governor Shapiro could build on these efforts to coordinate the drawdown of the ITC for nonprofit and nimble local government elective pay projects and for private for-profit (e.g. not elective pay) projects.

As is widely known, Governor Shapiro has made streamlining permit approvals a general priority. The Shapiro Administration also met with about 50-60 developers late in 2025 to discuss how to maximize drawdown of federal tax credits under OBBBA. One consequence of that: permitting on solar projects in Pennsylvania no longer requires application of a PNDI (Pennsylvania Natural Diversity Inventory) rule linked with federal law and protection of endangered species. The PUC and each major utility should designate a point of contact to the action team who also has responsibility of getting timely information on how the utility will address any bottlenecks. The action team could benefit from a small budget that allows it to engage assistance to break through bottlenecks on projects—e.g., solar developers, non-profit solar technical assistance organizations, other consultants, and contractors and unions that build solar projects (e.g., the IBEW, the IUOE, and LIUNA and their employer association partners). One target for “fire drill” technical assistance could be Pennsylvania Solar for Schools grantees—the 73 awarded in May 2025 (three of which we profiled earlier in this report) and a similar number expected to be announced May 2026. For Solar for Schools projects that have not already qualified for four more years to complete their projects, and that have not been cancelled, technical assistance could include bridge loans to meet the July 4, 2026 requirements for having started construction. In conjunction with its May announcement of the 2026 Solar for Schools awardees, the Commonwealth should announce turnkey

⁴⁵ “Opportunities for State Agencies to Cut Costs with Federal Elective Pay Clean Energy Tax Credits ,” Lawyers for Good Government, June 20th 2025.

<https://static1.squarespace.com/static/664393f059027215298bcf39/t/6859d226c1259c7ad358b503/1750716979154/Elective+Pay+of+Clean+Energy+Tax+Credits+-+State+as+Owner-Filed>.

technical assistance including such bridge loans.⁴⁶ The funds for the turnkey technical assistance could come from projects awarded grants in 2025 that were ultimately cancelled.

While it may be too late, the Commonwealth should also consider using existing economic development programs or raising emergency funds from philanthropy so that it can provide low-interest loans that help projects meet the July 4, 2026 requirements for beginning construction. Emulating the approach of the PA Solar Center and its financial partners described in Box 4, the state should also consider purchasing equipment that both counts as beginning construction (i.e., is specific for solar electricity projects), is prohibited foreign entity-certified, and is also portable across projects. Lawyers for Good Government and its financial partners could also provide guidance and/or help implement such a loan program combined with purchasing of equipment that qualifies for the July 4, 2026 deadline.

e. Get Some Expert Help

Connecting with industry experts is a critical first step for projects not already in the pipeline. Consultants, pro-solar non-profits and technical assistance entities, or solar developers, can evaluate the potential of solar for your organization. This evaluation should include the potential for you to access IRA tax credits and whether to seek to qualify under the impending July 4 2026 deadline (with the advantage that operation is only required by the end of 2031) or to complete construction and begin operating by December 31, 2027. Table 1 at the beginning of the report profiles some potential sources of initial advice and referrals. The Commonwealth and/or philanthropy could facilitate support for owners and developers prepared for rapid response to advance additional solar electricity projects able to access tax credits by creating a pool of funds that would cover technical assistance.

Box 5: Technical Assistance Available from the Laborers-Employers Cooperation Education Trust

The Laborers-Employers Cooperation Education Trust (LECET) is affiliated with the Laborers International Union of North America (LIUNA) and its signatory contractors. LECET helps owners access Inflation Reduction Act (IRA) solar tax credits in a variety of ways.

- **Ensuring compliance to secure the 30% base credit:** By promoting the use of qualified union contractors, LECET helps projects satisfy the strict IRS prevailing wage and apprenticeship requirements needed on projects of 1 MW or above to boost the tax credit from 6% to 30%.
- **Support for obtaining local permits:** LECET and its affiliated local union partners can engage with local officials and zoning boards to highlight the community benefits of projects including creation of well-paid local jobs.
- **Bonus credit qualification:** LECET helps owners identify projects in "energy communities" that meet domestic content requirements, which can add an extra 10% bonus for each.
- **Streamlining the process:** LECET can assist with the steps required to access credits, including registering the project with the IRS and filing for credits after the project is operational.

⁴⁶ For the announcement of the May 2024 awardees, see Pennsylvania Department of Community Development, "Shapiro Administration Invests More Than \$22.6 Million to Help Schools Across Pennsylvania Lower Electricity Costs and Create Jobs by Installing Solar Panels May 20, 2025; <https://dced.pa.gov/newsroom/shapiro-administration-invests-more-than-22-6-million-to-help-schools-across-pennsylvania-lower-electricity-costs-and-create-jobs-by-installing-solar-panels/>.

- **Referrals for assistance with bonding resources and capital:** LECET and LIUNA can also refer projects to sources of bond financing or bridge loans or to union friendly investment firms.

LIUNA is also one of three unions signatory to the National Tri-Trade Solar Agreement, the other two unions being the International Brotherhood of Electrical Workers (IBEW) and the International Union of Operating Engineers. The agreement aims to streamline the construction process for grid-scale solar in the United States. An overview of the agreement also highlights its value in achieving IRA compliance and notes that “as active members of our communities, LIUNA, IUOE and IBEW have the relationships with community leaders, lawmakers and large utility customers to assist developers with all aspects of project planning, permitting, siting, and more.”⁴⁷

2. Advocate That Congress Renew IRA Credits

The Commonwealth, industry, and solar supporters should combine maximizing the drawdown of investment tax credits under OBBBA rules and timelines with advocacy for extending 2022 Inflation Reduction Act tax credits deadlines back to the original dates. While the original IRA passed with the votes of every single U.S. House and Senate Democrat and not a single House or Senate Republican, some bipartisan support exists for reversing renewable energy cuts in the OBBBA. Advocating for what they called “common-sense energy policy,” Southeast Pennsylvania Republican Congressman Brian Fitzpatrick (PA-01) wrote a letter with 12 other U.S. House Republicans expressing concerns that the OBBBA, because of the tax credit changes and inclusion of the restrictive prohibited foreign entity requirements, “jeopardizes ongoing development, discourages long-term investment, and could significantly delay or cancel energy infrastructure projects across the country.”⁴⁸ Several Republican senators also expressed concerns about revoking the IRA tax credits in June 2025.⁴⁹

Given the potential for the makeup of the U.S. Congress to change in 2026, a second reversal for federal clean energy tax credits is not out of the question. The potential for legislation restoring incentives, including the hard hit solar and wind technologies, may grow if the economy stalls.

We now turn to our four recommendations aimed at maintaining solar electricity’s momentum in Pennsylvania even if the IRA tax credits phase out on the OBBBA timelines.

3. Update Pennsylvania’s Alternative Energy Portfolio Standard to Grow Solar

In 2004, Pennsylvania’s Alternate Energy Portfolio Standard (AEPS) was cutting edge. Now, its requirement that renewables generate 8% of electricity and solar generates 0.5%, which was achieved in 2021, are woefully behind other states. California gets 37% of its electricity from solar, Arizona 15%, and New York, to our north, nearly 5%.⁵⁰ To provide a new boost to renewables, delivering critical climate

⁴⁷ “National Tri-Trade Solar Agreement: Key Benefits to Mitigate Risk,” https://ibew.org/wp-content/uploads/2025/03/Tri-Trade-Solar-Agreement_onepage_rev1205.pdf

⁴⁸ “Fitzpatrick Continues Fighting for Key Reforms in Reconciliation Bill: Calls on Senate to Adopt Smart, Pro-Growth Energy Policy,” Brian Fitzpatrick- United States Representative, June 6th 2025. <https://fitzpatrick.house.gov/2025/6/fitzpatrick-continues-fighting-for-key-reforms-in-reconciliation-bill-calls-on-senate-to-adopt-smart-pro-growth-energy-policy>.

⁴⁹ Barbara Sprunt, “House GOP plan to gut green energy tax credits meets resistance in Senate,” NPR, June 12th 2025; <https://www.npr.org/2025/06/12/g-s1-72209/senate-republican-green-energy-tax-credits>

⁵⁰ Caitline Ritchie, “Electricity Generation by State,” Choose Energy, April 3, 2026, scroll down to table showing “Top 10 solar-producing states;” <https://www.chooseenergy.com/data-center/electricity-sources-by-state/>.

benefits, long-term reductions in energy costs, and stimulate further job creation in solar and other renewables, the Pennsylvania legislature needs to modernize its AEPS. For example, it could require an increase in the share of electricity produced from so-called “tier 1” sources which included solar energy and other renewables, to 35% by 2035.⁵¹

4. Encourage the Pennsylvania Legislature to Legalize Community Solar

Pennsylvanians renting, living in apartments, and who own homes unsuitable for solar currently do not have any way to take advantage of the benefits of solar energy. Community solar provides a solution. It allows people to buy a share in or subscription to a solar array in exchange for credits on their electric bills (virtual net metering). The array would deliver electricity to the grid. Legislation allowing community solar has passed in 24 states but is currently illegal in Pennsylvania. Community solar is recommended for Pennsylvania in both the 2025 Pennsylvania Public Utilities Commission’s Alternative Energy Portfolio Standards (AEPS) report and the 2024 Pennsylvania Climate Action Plan by the Department of Environmental Protection.⁵²

House Bill 504 would legalize community energy, including community solar, in Pennsylvania.⁵³ Third party community solar entities could operate solar arrays up to 5MW for non-brownfield or rooftop projects and up to 20 MW for brownfield or rooftop projects. The electricity generated must be distributed to subscribers, and 50% or more must be distributed to subscriptions of 25 kw or less (i.e., primarily to residential customers). Subscribers to the community solar—i.e., the residences, non-profits, municipalities, or businesses that purchase the electricity—must pay less in subscription costs than the credits they receive from their utility. This provision guarantees that subscribers save money. Any excess energy not distributed to subscribers must be sold back to the electric distribution company at the wholesale rate. Structured this way, community solar has some of the benefits of merchant generator projects. It achieves scale economies and credits subscribers for their share of community solar electricity (on their bills) at the same retail rate they would otherwise pay for electricity without the community solar offset. Any excess energy from community solar over and above what subscribers use, however, would be sold to the grid at the wholesale rate, which should reduce opposition from utilities and grid-scale electricity generators.

5. Enact Solar on Warehouses and Net Metering That Provides Favorable Rates for Solar on Warehouses and Other Preferred Sites

Pennsylvania is home to over 1,100 warehouse establishments with more than 16,000 buildings on site, and the prominence of e-commerce means the number will continue to grow. Warehouse roofs provide a great opportunity for solar installations, and KRC estimates show that warehouses have the potential to generate 9,391 GWh of electricity.

House Bill 1260 mandates that new “large scale warehouse or distribution centers” (defined as centers with over 100,000 square feet) must be designed with at least 40% of the roof suitable for solar

⁵¹ For the current text of the House bill that would update Pennsylvania’s advanced energy portfolio standard, including the definition of all tier 1 sources, go to <https://www.palegis.us/legislation/bills/text/PDF/2025/0/HB0501/PN1478>.

⁵² “Alternative Energy Portfolio Standards Compliance for Reporting Year 2024-2025 ,” Pennsylvania Public Utilities Commission, https://www.puc.pa.gov/media/3805/aeps-2025-report_2-5-25_final_.pdf and “Pennsylvania Climate Action Plan Update 2024 ,” Pennsylvania Department of Environmental Protection. <https://www.pa.gov/agencies/dep/residents/climate-change/pa-climate-action-plan>

⁵³ “Community Energy Act,” House Bill 504, <https://www.palegis.us/legislation/bills/2025/hb504>.

photovoltaic installation.⁵⁴ The construction must also pay prevailing wage standards. HB 1260 also authorizes local taxing authorities (e.g., municipalities, counties, and school districts) to offer a tax exemption up to the amount of the increase in the property value of a warehouse associated with solar panel renovations. For example, if a warehouse worth \$1 million installed solar panels, raising the property value to \$1.1 million, the local taxing authority could choose only to charge property tax on anywhere between \$1 million and \$1.1 million.

Net metering legislation currently under consideration in the Pennsylvania House contains another provision that could expand solar on warehouses.⁵⁵ One part of the bill would end the so-called “merchant generator loophole” created by the 2021 Supreme Court case: new merchant generators (between 50 kW to 3 MW) placed in service after the bill passes, and that had not applied for interconnection by September 2025, would receive roughly the wholesale rate (“avoided cost”) in the future not the retail rate. Warehouse or commercial rooftop solar, however, would receive the full retail rate for excess electricity sold to the grid. The bill also provides favorable rates for solar on other preferred sites, including brownfields, abandoned mine lands, and parking lot canopies.

The net metering bill would also grandfather existing merchant generators in operation by the time the bill passes (until 2050 or replacement of equipment that extends the life of the system or changes its capacity) or that applied for interconnection by September 2025. If enacted quickly, the bill’s provision would give most merchant generator projects currently in utility interconnection queues the predictability they need to move to completion and operation.

The net metering and community solar proposals would also give merchant generators options for modifying their business model and continuing to expand solar in Pennsylvania in the future. Merchant generators could pivot to building solar mostly on warehouses or other preferred sites. If community solar passes, merchant generators could also couple their existing business model building projects up to 3 MW, including on warehouses and other preferred sites, with marketing the energy generated to community solar subscribers (including nearby residences and businesses).

6. *Legalize balcony solar*

Balcony, or plug-in solar, provides another avenue for people renting or living in homes unsuitable for traditional rooftop solar to utilize solar and save on their energy bills while supporting renewable energy. Plug in solar systems, which range in size from 200 watts to up to a kilowatt, function like an appliance. Customers plug their solar arrays directly into a standard outlet and the electricity generated offsets the household’s electricity usage. These sorts of systems are popular in Europe but have yet to take off in the United States, in large part because legislation has not caught up with this technology and customers are still required to apply for interconnection, which can take months and cost fees.⁵⁶

Plug in solar is currently in a regulatory and legal grey area, but state legislatures have been active on the issue. So far, Utah and Maryland have legalized plug in solar, with bills being introduced in over half of US

⁵⁴ “Solar-Ready Warehouse and Distribution Center Act ,” House Bill 1260, <https://www.palegis.us/legislation/bills/2025/hb1260>.

⁵⁵ See House Bill 2348 amending Pennsylvania’s Advanced Energy Portfolio Standards Act (Act 213 of 2004); <https://www.palegis.us/legislation/bills/2025/hb2348>. While the bill does not use the term “merchant generator” but rather “customer generator,” we use merchant generators as in the rest of this report to solar projects up to 3 MW which distribute almost all of their electricity to the grid.

⁵⁶ Alison F. Takemura, “Balcony solar is taking state legislatures by storm,” Canary Media, February 26th 2026. <https://www.canarymedia.com/articles/solar/balcony-solar-taking-state-legislatures-by-storm>.

states.⁵⁷ In Pennsylvania, HB 1971 would legalize “portable solar generation systems” up to 1.2kw, while clarifying that customers would not be required to apply for interconnection for their plug in solar systems.⁵⁸ Pennsylvania may also need to enact a “right to solar” or “solar access” bill to prevent homeowner associations from impeding balcony solar.⁵⁹ By legalizing balcony solar, the Pennsylvania legislature could ensure even more Pennsylvanians have access to solar technology to help reduce their energy bills while utilizing renewable energy sources.

⁵⁷ Sarah Shemkus, “Where does balcony solar stand in your state? ,” Canary Media, April 7th 2026. <https://www.canarymedia.com/articles/solar/states-passing-balcony-solar-laws>.

⁵⁸ Pennsylvania House Bill 1971, 2025. <https://www.palegis.us/legislation/bills/text/PDF/2025/0/HB1971/PN2530>

⁵⁹ Personal communication with Lenny Greenfield. See also Andrew Blok, “Solar Access Laws by State: Can Your HOA Stop Your Solar Panels?” Palmetto, March 5, 2026; <https://palmetto.com/policy/solar-access-laws-by-state>.