

## NEW MODELS FOR SOLAR DEVELOPMENT

# The **LANDSCAPE** Is Changing in Pennsylvania: More, **SMALLER INSTALLATIONS** Are Likely

New business models are emerging for large-scale solar, meaning that more municipalities are seeing proposals for different sizes and scales of solar installations. No matter the business model of the solar operator, however, the community impacts will be similar. Municipal officials can get a jump on this development by considering whether a solar zoning ordinance is appropriate for their township.

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**Construction of large-scale solar energy systems continues to grow in Pennsylvania.**

**Editor's note:** This is the sixth article in a series designed to inform municipal officials and employees about grid-scale solar projects. PSATS has partnered with the state Department of Environmental Protection (DEP) to provide these educational opportunities.

A few years ago, the prevailing thought was that most future large-scale solar facilities in Pennsylvania would stretch across 100 acres or more. However, a Pennsylvania Supreme Court case in 2021 changed the game. Now “merchant generator” systems of 15 to 20 acres are springing up, enabled by that court ruling.

Several characteristics of merchant generator systems have increased the likelihood that more municipalities will see applications to permit them. Let's consider the three types of large-scale solar developments producing energy for off-site use and how municipalities can prepare for them.

### Grid-scale solar development

Grid-scale solar energy systems are also called “utility-scale solar” or “solar facilities.” They normally consist of dozens to several hundred acres of ground-mounted solar panels that produce electricity for transmission to the power grid for use off-site. A grid-scale solar development typically generates more than 5 megawatts of electricity.

They are usually sited near a substation with unused capacity to transmit power because laying new electrical lines, upgrading current lines, or installing a new substation is expensive. This location constraint has driven up the value of land near high-voltage transmission lines and substations.

### Merchant generator sites

Net metering occurs when a utility customer receives credit for electricity it generates beyond what it uses on its own site. This extra electricity powers other properties. Normally, with net metering, credits earned for electricity generation are used to offset electricity usage at the site when the panels produce less electricity than is needed on-site.

A new kind of large-scale net metering solar project appeared in Pennsylv-

ania in 2010. According to a 2014 Pittsburgh *Post-Gazette* article, Pittsburgh-based Sunrise Energy, LLC built a solar facility that had a small on-site load, meaning that almost no electricity was being used on-site. The system was producing less than 3 megawatts of electricity, almost all of which was sold back to the grid through net metering. Such merchant generator sites are built entirely to sell power to the grid. (Read the *Post-Gazette* article at [www.post-gazette.com/business/powersource/2014/08/26/Sunrise-Energy-takes-on-another-utility/stories/201408250010](http://www.post-gazette.com/business/powersource/2014/08/26/Sunrise-Energy-takes-on-another-utility/stories/201408250010).)

Distribution companies normally buy power at a wholesale rate. Merchant generators, however, are reimbursed at a retail rate for the power they generate beyond their usage. This rate varies throughout the year and even within a distribution company's area but is generally at least twice as high as the wholesale rate.

The legality of the Sunrise Energy operation was challenged in 2014, and after a long court struggle, the Pennsylvania Supreme Court in 2021 found that there was nothing in the law to prevent merchant generator

systems. The maximum allowable size is 3 megawatts, which would sit on 15 to 20 acres of land. (Read a summary of the legal challenge at [www.peirceland.com/blog/2021/march/robert-peirce-associates-p-c-obtains-pennsylvania/](http://www.peirceland.com/blog/2021/march/robert-peirce-associates-p-c-obtains-pennsylvania/).)

The Pennsylvania Public Utility Commission (PUC) predicts that allowing merchant generators will drive up the price of electricity for nonresidential customers. Changing net metering policies would require action by the legislature, however.

Following the Supreme Court decision validating the merchant generator business model, there has been a significant increase in the number of these projects proposed across the commonwealth. The Mid-Atlantic Solar and Storage Industries Association reported in February 2024 that large system (500 kilowatts to 3-plus megawatts) merchant generator interconnection requests grew from one in 2021 to 38 in 2022 and 168 in 2023.

Joseph Sherrick, supervisor of policy and planning at the PUC's Bureau of Technical Utility Services, reported that by late May 2024, more than 400 merchant generator sites had been proposed in Pennsylvania so far this year. The total merchant generator electricity output proposed since December 2021 is 1,267 megawatts. Not all of that will end up being developed, though, for various reasons.

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**Unlike grid-scale solar energy systems, the smaller merchant generator solar installations provide power that flows directly into local distribution lines.**



**Solar panels**



# NEW SOLAR MODELS

## Community solar

“Community solar” systems are a proposed business model with solar facilities also smaller than grid-scale solar. If implemented, these projects would likely be capped at 5 megawatts — typically 20 to 30 acres. They allow people who live in apartments or don’t have a yard or a roof on which to install solar panels to subscribe to such systems to purchase their electricity.

Community solar is not currently legal in Pennsylvania, although it is in several neighboring states. Because Pennsylvania has a deregulated electricity market, passage of legislation is required to allow it. Bills to authorize community solar have been introduced in the state legislature each year for the past several years but have failed to pass. However, House Bill 1842 passed the House in March 2024 and is currently under consideration by the Senate.

## Merchant generator sites versus grid-scale and community solar

Absent the passage of community solar legislation, merchant generator systems have filled the gap of providing an economically viable business model for the deployment of solar energy facilities larger than distributed systems that provide on-site energy, but smaller than the necessary scale for grid-scale systems to operate. Because they require smaller parcels of land — typically about 15 acres — they are easier to site and may face less community opposition.

Merchant generator systems are also attractive to developers because they do not need to be located near high-voltage transmission lines. The electricity produced from these systems is interconnected to the local utility distribution system.

Legislation that changes the way



Grid-scale solar installations typically generate more than 5 megawatts of power, can cover up to 100 acres of land, and must be located near high-voltage transmission lines or substations. These constraints make the smaller merchant generator model of solar energy systems more attractive to developers.

Municipalities that address large-scale solar in their zoning ordinance are **ahead of the game because they have predetermined their requirements** for solar energy generating sites.

merchant generators are reimbursed for net metering could change the economics of these facilities, however.

## All large-scale facilities raise similar concerns

From the viewpoint of municipal officials, any size commercial solar energy system would need to meet the same sorts of requirements to reduce disruption to the community: visual screening, setbacks, fencing, noise mitigation, and a stormwater management plan, among others. The business model of the company that owns the panels doesn’t matter much.

Municipalities that address large-scale solar in their zoning ordinance are ahead of the game because they have predetermined their requirements for solar energy generating sites. If a municipality does not have zoning or a solar ordinance, it will likely be at the mercy of the developer and unable to put specific requirements on the project to make it more palatable to the community.

Municipal officials who have been through this planning process advise others to not just copy another municipality’s solar zoning ordinance, but to listen to their residents’ concerns, consider their community’s issues, and tailor the ordinance to their specific needs. ♦

## Here’s where to find more information

To learn more about grid-scale solar and related ordinance review and development, email Tom Murphy, PSATS’ solar program educator, at [tmurphy-054@gmail.com](mailto:tmurphy-054@gmail.com) or call the PSATS office at (717) 763-0930. Additional resources on grid-scale solar development can be found in the *Municipal Officials’ Guide to Grid-Scale Solar Development in Pennsylvania* at [www.marcellus.psu.edu/solar](http://www.marcellus.psu.edu/solar).

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