

# Baseline Assessment, Development Process, and Regulatory Context of Solar Power in Rural Pennsylvania

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Solar energy generation has expanded dramatically in the U.S.—roughly 30,000% since 2001, based on megawatt (MW)-hours generated. Many states in the Mid-Atlantic region have seen significant development of utility-scale solar energy capacity (defined here as a solar generating facility with at least 1 MW of generating capacity). Pennsylvania lags far behind its neighbors in solar development, despite having comparable solar energy potential. To better understand this discrepancy and support solar policy development in the Commonwealth, we conducted a three-pronged analysis of solar energy development in Pennsylvania.

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## Methods

First, the researchers conducted a geographic analysis of existing and proposed solar development to date in order to determine the factors that contribute to the current distribution of solar development and which regions are most likely to see development in the future. To carry out this analysis, the researchers compiled a database of environmental and socio-economic factors found to be important to the siting of utility-scale solar energy by government agencies, research scientists, and the solar industry. They utilized geographic information systems (GIS) to identify factors favored by solar development in Pennsylvania and develop a weighted model that identifies regions most likely to see solar development pressure in the coming years. This analysis found that, to date, utility-scale solar favors agricultural land that is near population centers and transmission infrastructure, with relatively lower property values compared to neighboring parcels.

Second, the researchers conducted a comparative solar policy audit for Pennsylvania with New York and North Carolina, two similar states with significantly higher rates of solar development. This process involved cataloging and reviewing all state-level policies relating to solar energy in each state, as well as state offices and agencies specifically tasked with managing solar energy development. The analysis found that these three states have a gradient of state-level solar policy, with New York having the most initiatives and Pennsylvania having almost none. While New York has far more policy and state offices addressing solar energy than North Carolina, the study found that both states have robust renewable energy portfolio standards and policies that streamline the interconnection process and ensure buyers for new solar energy projects.

Lastly, these researchers conducted semi-structured interviews with key stakeholders across Pennsylvania, including state, county, and local officials, solar developers, rural land-

owners, and academic experts with significant experience working with Pennsylvania landowners on solar energy development. This qualitative analysis was conducted to provide a better understanding of how the current process of utility-scale solar development is experienced by rural residents in the Commonwealth. Interview analysis indicated that there is great uncertainty surrounding the solar development process across all stakeholder groups. Participants expressed a strong desire for state-level guidance and support to help rural municipalities and communities better manage the solar development process. Interviews also indicated that there is significant rural support for solar energy development if guidelines are developed to ensure that rural interests are protected in the process.

### Key Findings

- Much of the territory of Pennsylvania is suitable for solar development, with numerous regions of the state likely to see concentrated development pressure in the coming years. Most operational utility-scale solar facilities in Pennsylvania are in the populous Southeastern region, and this trend is likely to continue, with spillover into adjacent rural counties.

- The tendency for utility-scale solar to favor land in closer proximity to population centers and infrastructure sug-

gests that solar development will become one of numerous competing drivers of land use change, which could drive up the costs of development and ultimately make solar energy more expensive in Pennsylvania.

- Given that much of Pennsylvania is likely attractive to utility-scale solar development, it seems likely that state-level policy, or the lack thereof, helps explain the stark differences between the Commonwealth and the two other states included in this comparative policy analysis.

- The significant lag in the grid interconnection process is likely a significant factor in the low rate of solar buildout in Pennsylvania.

- The most common sentiment among county and local officials was that they lacked the resources or capacity to develop utility-scale ordinances on their own, or to efficiently handle the siting and permitting process.

### Policy Considerations

- Update the Alternative Energy Portfolio Standards Act.
- Develop policy to streamline the interconnection process and ensure power purchasing from new utility-scale solar energy facilities.
- Enact policy enabling community solar.
- Develop state-level guidance on solar siting and leasing to better support rural counties and municipalities.

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