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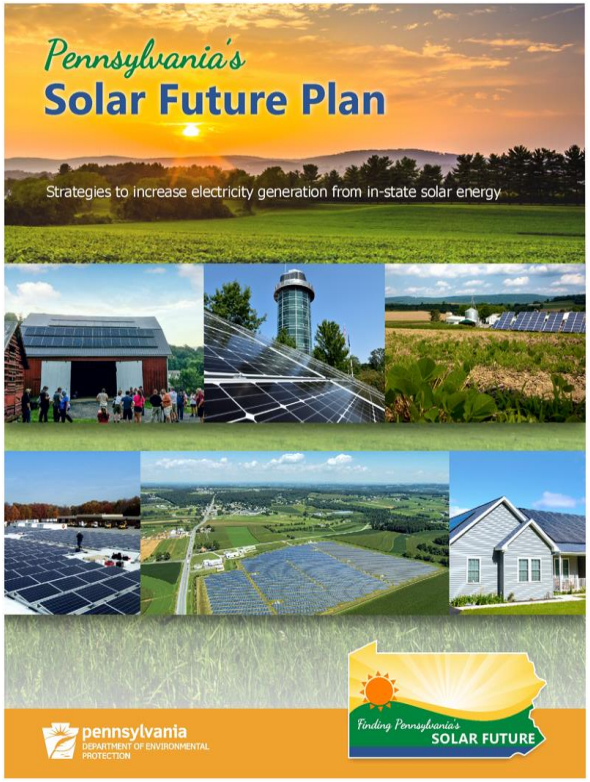
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Energy Programs Office

Finding Pennsylvania's Solar Future



Finding Pennsylvania's SOLAR FUTURE

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Vermont Energy Investment Corporation

PennFuture

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Finding Pennsylvania's Solar Future

A 30-month stakeholder engagement and modeling project to:

- ✓ Identify strategies to increase in-state solar generation in Pennsylvania to 10 percent by 2030.
- ✓ Explore the potential benefits and investments associated with that level of growth.

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Project Team

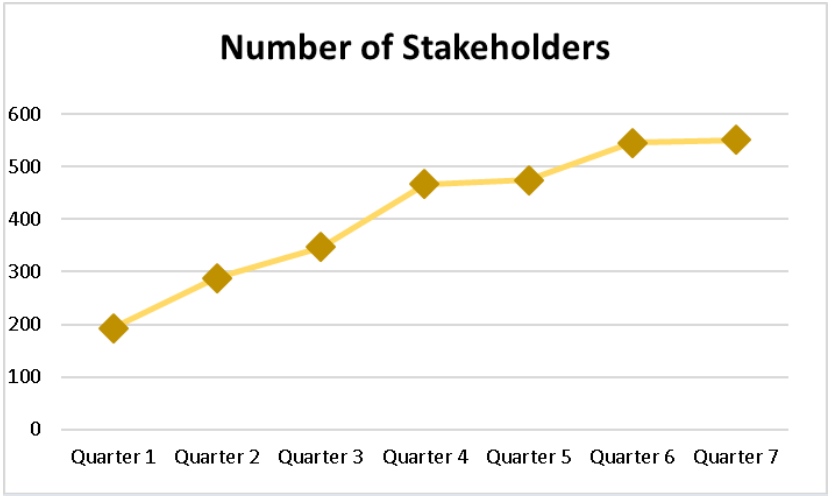
- Pennsylvania Department of Environmental Protection
  - Energy Programs Office
- Citizens for Pennsylvania's Future
- Vermont Energy Investment Corporation
- Pennsylvania Solar Energy Industries Association (PASEIA)
- Penn State University, Solar Ecology Program, EMS Energy Institute
- Solar Unified Network of Western PA (SUNWPA)
- Sustainable Futures Communications, LLC

Partners

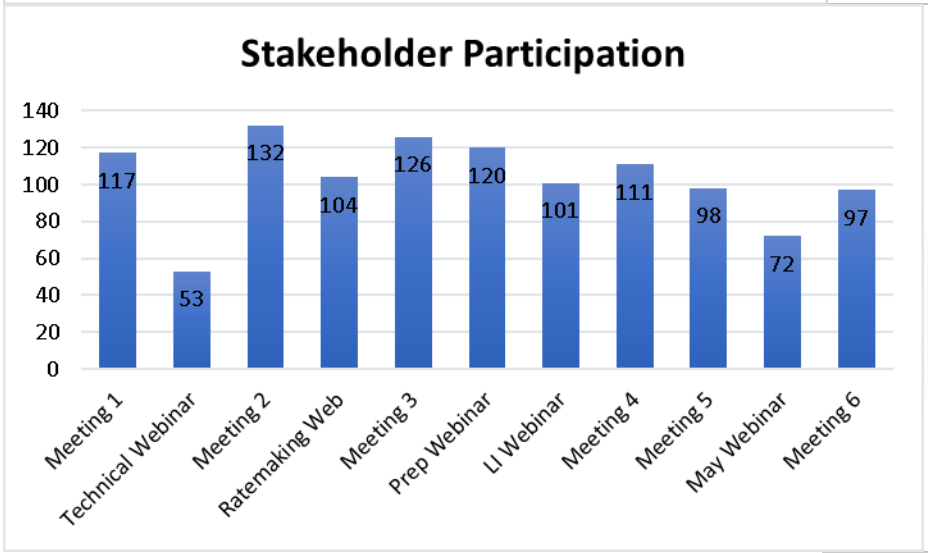
- Energy Association of Pennsylvania
- PA Public Utility Commission
- PA Office of Consumer Advocate
- Mid-Atlantic Renewable Energy Association
- Tesla/Solar City
- Community Energy
- University Of Pennsylvania
- Business Council for Sustainable Energy
- West Penn Power Sustainable Energy Fund
- Met Ed/Penelec Sustainable Energy Fund
- Sustainable Energy Fund
- Reinvestment Fund
- The Nature Conservancy
- SEDA COG
- PJM

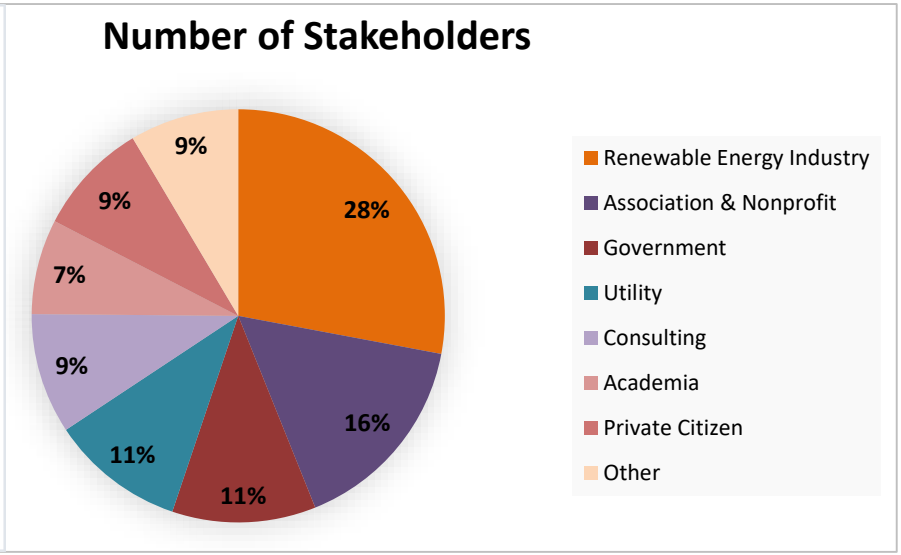
Finding Pennsylvania's Solar Future

Stakeholders



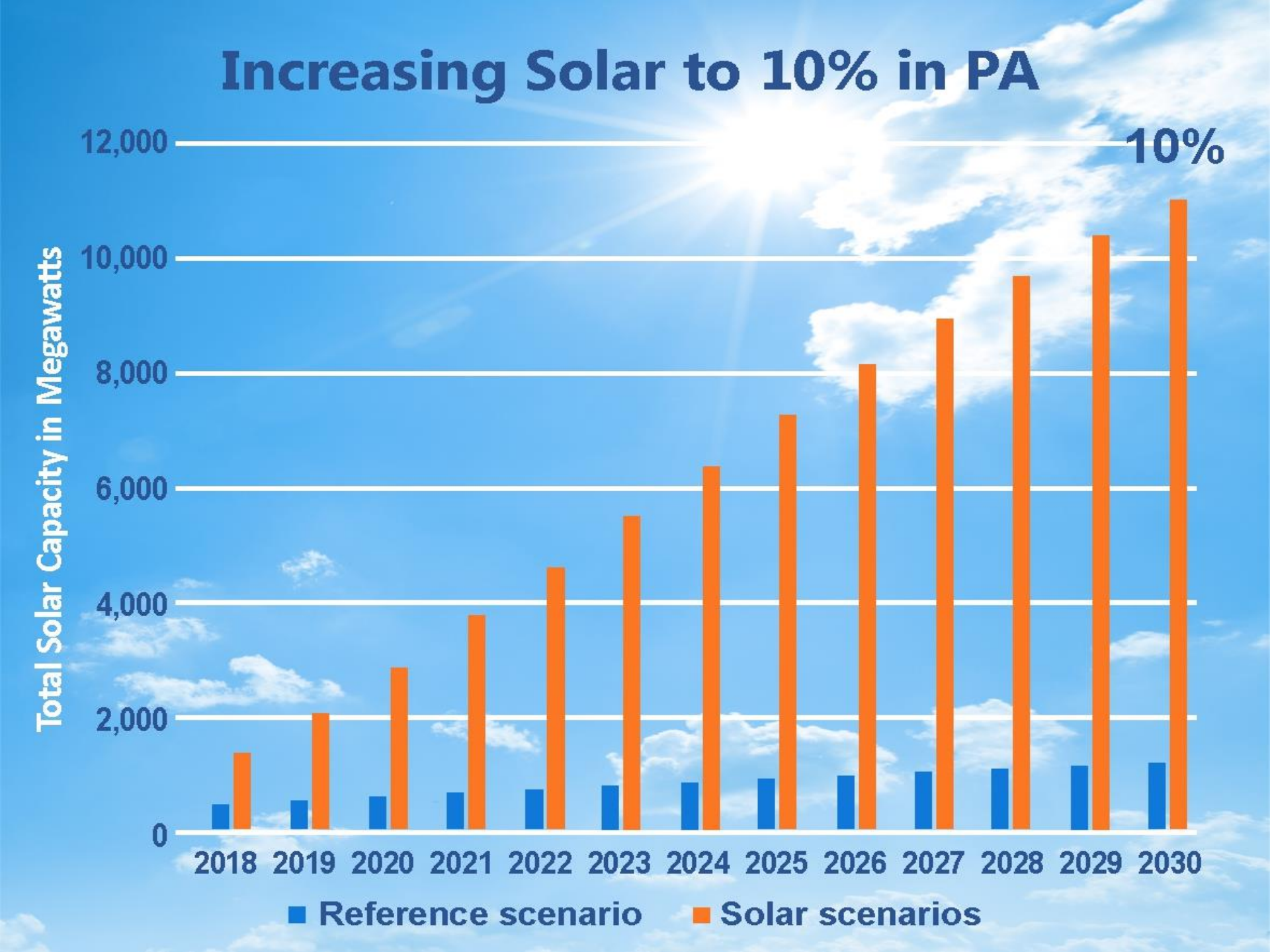
Total Number of Stakeholders per Quarter	
Quarter	Number of Stakeholders
Quarter 1	193
Quarter 2	288
Quarter 3	347
Quarter 4	467
Quarter 5	475
Quarter 6	546
Quarter 7	551



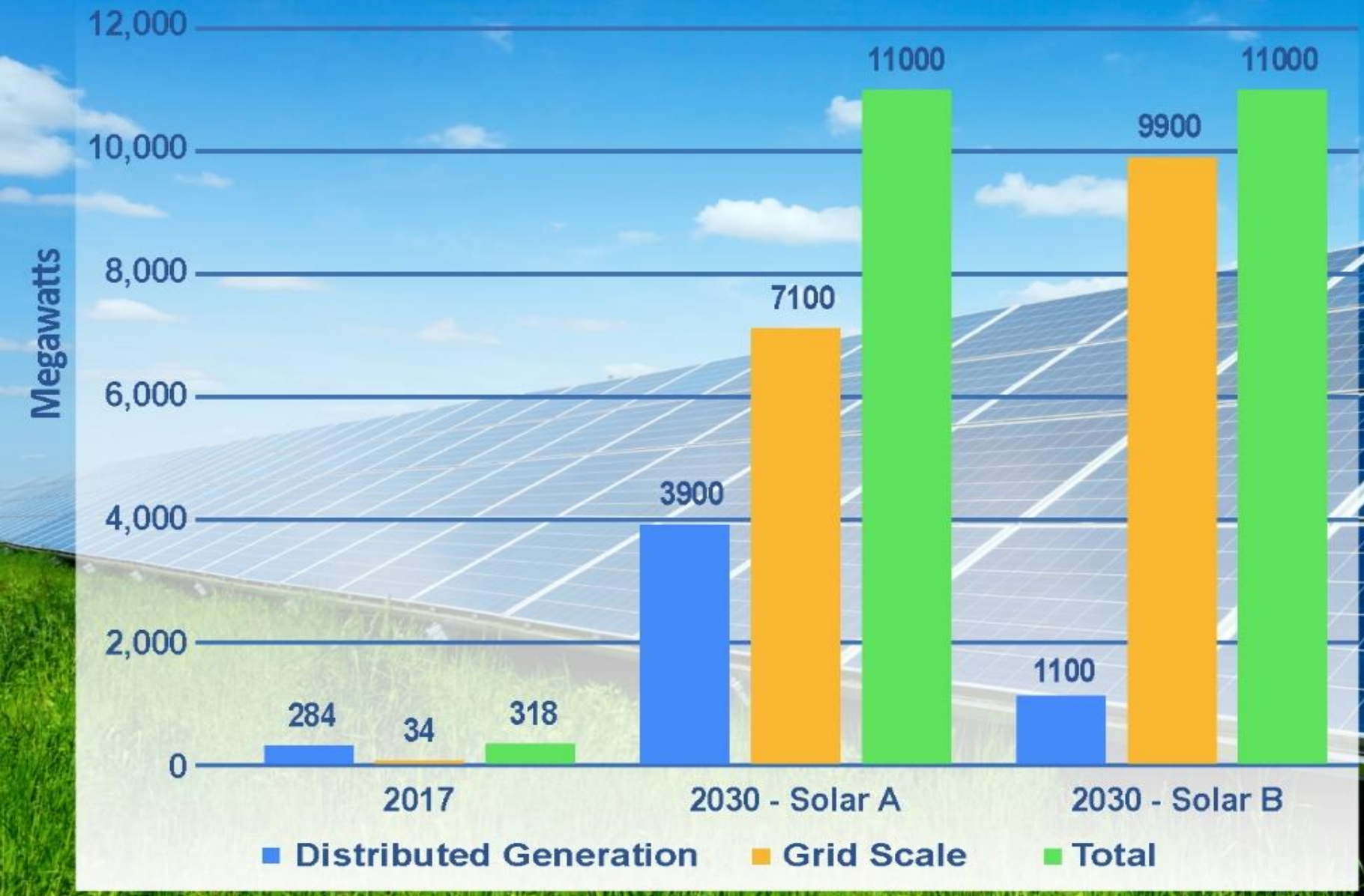


PA Solar Future Actions

- ✓ Create a shared vision and develop an effective strategies which describe a clear and detailed path for Pennsylvania
- ✓ Plan to exceed the current (0.5%) 2021 solar goal
- ✓ Review and discuss elements of the strategies, revise or modify
- ✓ Identify further opportunities for solar market development
- ✓ Document accomplishments, issues, barriers


Increasing Solar to 10% in PA
12,000
10,000
8,000
6,000
4,000
2,000
0
10%
Total Solar Capacity in Megawatts
2018
2019
2020
2021
2022
2023
2024
2025
2026
2027
2028
2029
2030
Reference scenario
Solar scenarios

Current & Projected Solar Projects in PA



Finding Pennsylvania's Solar Future

Cross-Cutting Strategies: Grid-scale and Distributed

Alternative Energy Portfolio Standards	**1.** Increase the AEPS solar photovoltaic (PV) carve-out to between 4 and 8 percent by 2030, and ensure creditable Solar Renewable Energy Credits are limited to those generated in Pennsylvania wherever possible.
Access to Capital	**2.** Increase access to capital by expanding availability of solar lending products to residential and commercial projects to enable solar ownership. **3.** Provide loan guarantees to lower interest rates and incentivize deployment of solar generation.
Carbon Pricing	**4.** Implement a carbon pricing program and invest the proceeds in renewable energy and energy efficiency measures.
Siting and Land Use	**5.** Support the creation and adoption of uniform policies to streamline siting and land-use issues while encouraging conservation.
Tax Incentives	**6.** Evaluate the state tax policy and consider exemptions that encourage the development of solar PV systems. **7.** Assist solar project sponsors in identifying investors and/or companies that have sufficient tax equity appetite to take full advantage of the federal solar Investment Tax Credit and Modified Accelerated Cost Recovery System depreciation, if sponsors can't do so themselves.

Finding Pennsylvania's Solar Future

Grid Scale Strategies

Long-Term Contracts	**1.** Develop guidelines for limited use of long term contracts (LTCs) for a period of 10 or more years to ensure Pennsylvania benefits from grid scale solar energy. **2.** Evaluate and consider utility ownership of solar generation especially in cases where market-driven deployment may be insufficient to achieve public goals and/or reliability concerns. This may include solar for low income and Customer Assistance Programs in particular.
Grid Modernization	**3.** Investigate opportunities for grid modernization to enable increased solar generation.

Distributed Generation Strategies

Virtual Net Metering	**1.** Expand customers' ability to use net metering.
Community Solar	**2.** Identify and remove the barriers to the deployment of community solar systems in Pennsylvania.
Alternative Ratemaking	**3.** Ensure alternative ratemaking is addressed in a manner that does not create a disincentive for solar deployment.
Property Assessed Clean Energy (PACE)	**4.** Enable and encourage municipalities to offer PACE programs that include solar projects.
Addressing Interconnection Issues	**5.** Accelerate use of smart inverters to manage over-voltage concerns on low voltage distribution lines and avoid unnecessarily adding costs on small solar distributed generation projects.

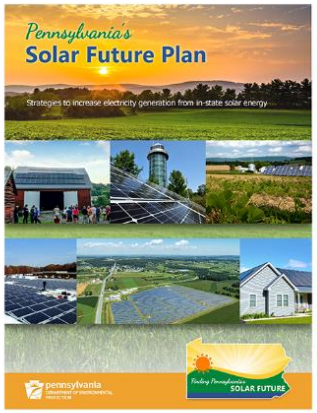
Finding Pennsylvania's Solar Future

https://www.dep.pa.gov/Business/Energy/OfficeofPollutionPrevention/SolarFuture/Pages/Pennsylvania's-Solar-Future-Plan.aspx

Pennsylvania's Solar Future ...

DEP > Businesses > Energy > Energy Programs Office > Finding Pennsylvania's Solar Future > Pennsylvania's Solar Future Plan

"PENNSYLVANIA'S SOLAR FUTURE" PLAN



As the source of nearly 33 percent of greenhouse gas emissions in Pennsylvania, electricity generation is a key area for renewable energy innovations to reduce these pollutants and the challenges they create for public health and our environment.

Solar energy is growing in Pennsylvania, as it is across the United States. However, while the number of states that get at least 5 percent or even 10 percent of electricity from solar continues to climb, solar energy provides less than 1 percent of Pennsylvania's electricity. Significant potential remains for solar energy development to transform our electricity generation sector.

What are the best ways for Pennsylvania to realize this potential? The Department of Environmental Protection Energy Programs Office assembled a statewide partnership of experts who've collaborated for more than a year to identify 15 strategies, including grid-scale solar and smaller, distributed systems (such as rooftop installations), that can achieve a 10 percent increase in solar-powered electricity. They've also detailed the associated benefits and required investments, to create a set of strategy recommendations ready for implementation.

For Pennsylvania to achieve leadership in renewable energy generation from solar, we'll require more intensive leadership, investment, and recognition of the long-range economic and environmental benefits.

If you'd like to see a viable future of cleaner energy in Pennsylvania, I invite you to read the plan materials below. Further, I encourage you to consider how this valuable work might inform your energy decisions.

Secretary Patrick McDonnell
November 2018

- Pennsylvania's Solar Future booklet (Nov 2018) – Gives an overview of main findings and recommendations
- Pennsylvania's Solar Future plan (November 2018) – The complete plan document
- Pennsylvania's Solar Future plan public discussion – Public comments on the draft plan issued in July 2018, along with responses
- Pennsylvania's Solar Future plan educational graphics – Goal, Scenarios, Cross-Cutting Strategies,

RELATED INFORMATION

- PENNSYLVANIA'S SOLAR FUTURE PLAN
- NEWS AND FEATURES
- MEETINGS
- SUNSHOT INITIATIVE PROJECTS IN PA

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