Pennsylvania Update

MSSIA – 3rd Qrtly Mtg - 2019
Current in-state solar PV capacity in PA is 415.0 MW, from a total of 22,424 systems (404 MW since August 14, 2019).

PJM Queue for PA – 4.7 GW (180 applications: Active, Engineering/Procurement, or Under Construction)

RGGI in PA - Governor Wolf signed an executive order for implementing a form of RGGI; Some legislators oppose this and are trying to shut it down. DEP will draft the rules; ideally some of the RGGI $ should go to funding EE and RE projects or utility credit requirements, but its more likely to land in the State's General Fund.

Philadelphia Energy Authority Solar Incentive Program – About to Launch: $0.10/watt for commercial and $0.20/watt for residential systems; anywhere in Philly; first come-first serve; Program total $500,000. Also Solarize Philly still going strong!

C-PACE (Act 30) – To date, the C-PACE program has been adopted in Chester County, Northampton County, Allegheny County, Wayne County, and Philadelphia County. The Philadelphia County program is administered by Philadelphia Energy Authority, and is open for business as of 10/22/2019.

AEPS-2 – SB600 & HB1195 were introduced in April, 2019: 30% renewable energy by 2030, which includes 10% in-state solar by 2030. Have had several lobby days, and education seminars for legislators staff and government officials on the benefits of this (partly based on PowerGem PJM study and NRDC study). Considering an AEPS 2 Lite version: 18% Tier 1, 5% In-State Solar (1.5% DG / 3.75% Grid Scale) by 2025. Next lobby tentatively set for Nov. 12, 2019.

PPL’s Petition for DER Management Plan – PPL submitted a tariff petition to the PUC on Distributed Energy Resources (DER) Management Plan in late May, 2019 (to modify their tariffs to monitor and control solar production via a DER management device and smart inverters. DCNR, Sunrun, SEF (PPL) and PA Office of Consumer Affairs, intervening or challenging PPL’s petition.

Community Solar – HB531 Introduced in February, 2019, then SB705 was introduced on June 11, 2019. Much bipartisan support, however now getting pushback from utilities regarding net metering issues. The PA Farm Bureau just endorsed these two bills. On October 21, 2019, HB1970 introduced – Utility version of community solar (Duquesne Power); no solar industry input on this bill; opposed by most of the solar industry.

PECO Proposal – Will be engaging with PECO soon regarding their draft proposal on community solar, AEPS 2, and phasing out net metering……

PECO and Other EDC Interconnection Issues – Still problems…….
PV Systems Installed in PA vs Solar AEPS

PA AEPS SREC (~MW) Supply vs Demand
Total PV Systems Installed in PA

Installed In PA

SREC Requirement

~ 1,139 SRECs/Yr per MW Equivalent (AEPS)
Breakdown Of PV Installations in PA & PJM Queue for PA Solar Applications

### Cumulative PV Installed in PA

<table>
<thead>
<tr>
<th>Capacity (DC)</th>
<th># of Systems</th>
<th>Total MW</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 15 kW</td>
<td>19,492</td>
<td>150</td>
</tr>
<tr>
<td>&gt; 15 kW to ≤ 250 kW</td>
<td>2,752</td>
<td>104</td>
</tr>
<tr>
<td>&gt; 250 kW to ≤ 1 MW</td>
<td>131</td>
<td>60</td>
</tr>
<tr>
<td>&gt; 1 MW to ≤ 3 MW</td>
<td>35</td>
<td>54</td>
</tr>
<tr>
<td>&gt; 3 MW to ≤ 5 MW</td>
<td>8</td>
<td>30</td>
</tr>
<tr>
<td>&gt; 5 MW to ≤ 10 MW</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>&gt; 10 MW</td>
<td>1</td>
<td>12</td>
</tr>
<tr>
<td>Total</td>
<td>22,420</td>
<td>415</td>
</tr>
</tbody>
</table>

*as of 10/23/2019 as per PA AEPS (PUC)*

### PJM Queue for PA

<table>
<thead>
<tr>
<th>Status</th>
<th># of Apps</th>
<th>Total Cap AC MW</th>
<th>Capacity Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active</td>
<td>171</td>
<td>4,657</td>
<td>0.4 to 150.0</td>
</tr>
<tr>
<td>Engineering/Procurement</td>
<td>8</td>
<td>40</td>
<td>3.0 to 7.6</td>
</tr>
<tr>
<td>Under Construction</td>
<td>1</td>
<td>5</td>
<td>5.1 to 5.1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>180</strong></td>
<td><strong>4,702</strong></td>
<td></td>
</tr>
</tbody>
</table>

*As of 10/24/2019*
Current PA SACP = $62.62/SREC

Current PA SREC Prices

Latest Bid Price: $35.00

This graph is protected by copyright laws and contains material proprietary to SRECTrade, Inc. All bid pricing and notes included are indicative and subject to change. Please contact us for most current markets. If a market is not quoted herein, please contact us directly for further information.
Modernize Pennsylvania’s Outdated Renewable Energy Goals

1. **Expand the AEPS Tier I requirement to 30% by 2030**
   - 20% from any resource in Tier 1 (solar, wind, low-impact hydro and others from in-state or out-of-state)
   - 7.5%: In-state grid-scale solar (ACP penalty price capped at $45)
   - 2.5%: In-state distributed solar (ACP penalty price capped at $125 with a 15-year lifetime on the credit)

2. **Long-term contracting** for grid-scale renewables, which provides financial security to investors and increases access to capital that is essential to developers. Also produces stable energy prices for electric customers and a hedge against volatile price spikes from other energy resources (coal, gas, uranium) that rely on extraction market forces vs. renewable energy resources that are free (wind, solar, small-impact hydro).

3. **Include a renewable energy storage study** to evaluate the potential benefits of coupling storage with renewable energy to meet expensive peak demand, to provide other benefits to the grid and to save customers money.

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In 2004, Pennsylvania enacted the Alternative Energy Portfolio Standard (AEPS) – 15 years ago. Act 213 is a market-based approach that requires retail electricity suppliers to purchase 18 percent of wholesale electricity from “alternative” generation sources by 2021:

- Only 8 percent coming from Tier I renewable energy resources
- One-half (0.5) percent from photovoltaic solar

The other 10 percent comes from Tier II sources (non-renewable). PA is on schedule to meet these goals.

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**Current Percent Renewable Energy Generation**

18% United States
5% Pennsylvania

**Pennsylvania Rankings (2017)**

- 26th Installed Solar Capacity
- 19th Solar Jobs Ranking
- 18th Installed Wind Capacity

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Renewables Work for PA is a coalition comprised of almost 70 renewable businesses advocating for Pennsylvania to modernize its Alternative Energy Portfolio Standards by increasing the percentages of renewable energy to 30% by 2030 with 10% in-state solar and energy storage study and goal setting. For more information, visit www.RenewablesWorkforPa.com.
Update Pennsylvania’s renewable energy goals to 30 percent by 2030
A reasonable approach to keep Pennsylvania competitive

Community and Economic Development
Renewable development can benefit farmers and other land owners as well as local municipalities and counties with millions of dollars through land leases, increased property and wage taxes and development fees.

HECTOR TWP, POTTER COUNTY - 90MW Wind Project
- Pre-construction payment to municipality: $133,000
- Annual municipal payment: $202,500
- Lifetime to municipality: $6.5 million
- On site employees during construction: 160 in 2019
- Corporate Purchaser of Energy: Microsoft Corp.

Photo credit: Walden Renewables: https://www.waldenrenewables.com/

RENEWABLE ENERGY IS A JOBS INCUBATOR

168% Solar job growth increase in U.S. since 2010: 93,000 to 250,000+ jobs.ii

Top Two Fastest Growing Jobs in U.S.
- Solar Installer
- Wind Technician

9,209 # of PA Renewable Energy Jobs in 2019 iii

PA. DEP Finding Pennsylvania’s Solar Future Plan

Moving PA to 10 percent solar by 2030 would create about 30,000 direct solar jobs and upwards of 100,000 jobs throughout the supply chain and could result in a net economic benefit of $1.4 billion annually from 2018 through 2030.1


RENEWABLES WORK FOR PA
Alternative Compliance Payment

Proposed ACP/SACP (i.e., SB600/HB 1195)

The alternative compliance payment (ACP)/solar alternative compliance payment (SACP) are essentially ceiling price caps designed for customer protection.

Tier 1:

- Non-solar resources: $45/REC through 2030
- In-state Solar Requirement:
  - $125/SREC Until 5/31/2026
  - $100/SREC Until 5/31/2030
  - $5/SREC per Year Thereafter, Limited to $45/SREC

Currently: 200% of average market value of solar renewable energy credits sold during the reporting period within the service region of PJM
Solar in Other East Coast States Compared to PA

Solar in Pennsylvania Ranks 18th in the Nation
ICF/NRDC Pennsylvania Electric Power Sector Study

Business as Usual Scenario (in PA) shows Natural Gas Becomes Dominant Energy Source
All Energy is Subsidized

Energy subsidy: Any government action that lowers the cost of energy production, raises the price received by energy producers, or lowers the price paid by energy consumers.

Role of subsidies: To remove some type of burden and to promote a social good or an economic policy that is in the overall interest of the public.

Every coal, gas, nuclear and hydroelectric plant built before the Pennsylvania Electricity Generation Customer Choice and Competition Act in 1996 was paid in full by Pennsylvania ratepayers.
Energy Subsidies

• Between 2012-2013: $3.2 billion in fossil fuel subsidies—majority from tax breaks:
  - $256 per Pennsylvanian
  - $794 per PA taxpayer

  **NOTE**: Does NOT include $1.6 billion tax deal for Royal Dutch Shell ethane cracker in Beaver County in 2012

• June 2019: General Assembly doubled Coal Refuse Energy and Reclamation Tax Credit from $10 million to $20 million annually to subsidize coal waste-to-energy electricity generation plants and extended the tax credit for the next 17 years from 2026 to 2036.

• Renewable energy has no Pennsylvania tax credits
• Solar companies still pay sales and use tax when purchasing renewable equipment
• Approximately $0.007 (seven-tenths of one cent) of every dollar was spent on AEPS compliance in 2017 or about $9.50 per Pennsylvanian, which also includes waste coal in Tier II.
Transitioning 10% of Pennsylvania’s energy generation to solar would significantly reduce the state’s wholesale energy costs. Decrease wholesale energy costs: Solar would lower Pennsylvania’s wholesale energy costs by $819 million.

Costs to deploy solar and maintain grid reliability: $294 million in transmission upgrades would be allocated to new solar projects and funded through private investment.