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# Jobs and Economic Development Assessment of 10% Solar in Pennsylvania by 2030

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To understand the benefits associated with meeting 10% of Pennsylvania's electric generation with in-state solar by 2030 in accordance to 2019 Senate Bill 600 (SB600), Community Energy used the Jobs and Economic Development Impact (JEDI) Model developed by the National Renewable Energy Laboratory (NREL) to reasonably estimate the employment, earnings and economic impacts from the construction and operation of new Pennsylvania solar resources. NREL's Solar Photovoltaic JEDI model has been used extensively by decision makers to assess the expected impacts of solar energy projects, proposed programs and policy decisions.

The JEDI model was used in Governor Wolf's 2018 Pennsylvania Solar Future Plan by the Pennsylvania Department of Environmental Protection to understand the benefits associated with various 10% solar scenarios<sup>1</sup>. The PA Solar Future Plan estimated 60,000-100,000+ jobs would result from 10% in state solar by 2030 depending on the ratio of smaller systems to larger systems. This report brought together over 500 stakeholders across the state to investigate pathways to advance solar development in Pennsylvania. Community Energy used the same key assumptions and methodology as the PA Solar Future Plan to assess the 10% solar carve out proposed in SB600.

### Key Assumptions and Methods

The JEDI model was run for each solar market sector for nine solar investment years (2022-2030). The residential, commercial, and grid scale results were then aggregated. An analysis to assess the impact of grid scale projects on local farmers was completed by calculating the local benefit of land lease payments from grid scale solar.

For each investment year it was assumed that the capacity of solar required to comply with SB600 was installed. This bill mandates a 2.5% carve-out for behind-the-meter PV solar (DG) and 7.5% carve-out for grid scale PV solar, with 2/3 of grid scale solar acquired by bundled long-term contracts for energy and Alternative Energy Credits (AECs, otherwise known as Renewable Energy Credits or Recs). A 0.4% load growth rate was assumed based on PJM load forecast assumptions to project Pennsylvania electricity consumption out to 2030.<sup>2,3</sup>

Ramp from current 0.5% to 2.5% is as follows<sup>4</sup>:

- 0.65% for June 1, 2021, through May 31, 2022.
- 0.82% for June 1, 2022, through May 31, 2023.
- 0.98% for June 1, 2023, through May 31, 2024.
- 1.13% for June 1, 2024, through May 31, 2025.
- 1.30% for June 1, 2025, through May 31, 2026.
- 1.5% for June 1, 2026, through May 31, 2027.
- 1.78% for June 1, 2027, through May 31, 2028
- 2.11% for June 1, 2028, through May 31, 2029.
- 2.5% for June 1, 2029, through May 31, 2030.

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<sup>1</sup> PA Department of Environmental Protection, "Pennsylvania's Solar Future Plan," Pennsylvania, Harrisburg, 2018.

<sup>2</sup> U.S. Energy Information Administration, "Retail sales of electricity, Monthly: Pennsylvania," March 2019. [Online].

<sup>3</sup> PJM Resource Adequacy Planning Department, "2019 Load Forecast Report," PJM Interconnection, 2019.

<sup>4</sup> The General Assembly of Pennsylvania, "Senate Bill No. 600 Session of 2019," Harrisburg, 2019.

Ramp to 7.5% as follows<sup>5</sup>:

- 0.94% for June 1, 2021, through May 31, 2022.
- 1.88% for June 1, 2022, through May 31, 2023.
- 2.81% for June 1, 2023, through May 31, 2024.
- 3.75% for June 1, 2024, through May 31, 2025.
- 4.50% for June 1, 2025, through May 31, 2026.
- 5.25% for June 1, 2026, through May 31, 2027.
- 6.00% for June 1, 2027, through May 31, 2028
- 6.75% for June 1, 2028, through May 31, 2029.
- 7.5% for June 1, 2029, through May 31, 2030.

Current and forecasted solar costs were based on the National Renewable Energy Lab's 2018 Annual Technology Baseline (ATB), Berkeley Lab's 2018 Tracking the Sun Annual Report and Pennsylvania data in The Open PV Project.<sup>5,6,7</sup> Capital costs and O&M costs were assumed from the ATB's Mid Technology Cost Scenario as these projections best aligned with the current Pennsylvania market. Capital cost assumptions were used for each investment year of the policy period to accurately capture continuing solar cost declines.

## Key Findings

The JEDI model assesses the job, earnings and economic impacts expected from grid scale solar and distributed solar (commercial and residential). Direct, indirect, and induced impacts to employment, earnings and economic impacts were calculated. Employment impact figures represent full-time equivalents, or 2080-hour units of labor (job years). Economic benefit refers to economic activity or the value of production in a state or local economy. All results are reported in 2019 dollars.

The Community Energy results are in alignment with the results found by the PA Solar Future Plan. A significant increase in solar deployment will result in substantial investment and job creation throughout Pennsylvania. Community Energy found that 10% of Pennsylvania's consumption satisfied by in-state generation of solar PV by 2030 would result in the following:



**\$9.2 Billion** in Private Capital Investment



**\$5.3 Billion** in Local Economic Benefit



**66,507 Jobs** and **\$4.1B Billion** in Wages



**\$2.3 Billion** in Farmer Lease Payments

- Keeps farms in family ownership
- Stabilizes local farm economy



**\$228 Million** in Local Tax Revenue from Grid Scale Projects



**1.5+ Million** customers served by solar

<sup>5</sup> National Renewable Energy Laboratory (NREL), "2018 Annual Technology Baseline," NREL, Golden, 2019.

<sup>6</sup> Lawrence Berkeley National Laboratory (LBNL), "Tracking the Sun: Installed Price Trends for Distributed Photovoltaic Systems in the United States – 2018 Edition", LBNL, Berkeley, 2018.

<sup>7</sup> The National Renewable Energy Laboratory (NREL), "The Open PV Project," 2019. [Online].