



Alternative Energy Portfolio  
Standards Act of 2004



# Compliance for Reporting Year 2024-25



Prepared by the PA Public Utility Commission in cooperation  
with the PA Department of Environmental Protection

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# ***Executive Summary***

# Alternative Energy Portfolio Standards Act

## Compliance for Reporting Year 2024-2025

### Tier I Solar Compliance

- **All Electric Distribution Companies (EDCs) and all but one Electric Generation Suppliers (EGSs)** met their requirements. Two EGSs paid the required ACPs to achieve compliance. One EGS filed for bankruptcy and failed to meet their compliance obligations.
- **Cost of Purchased Credits: \$22,665,654**
- **ACP Assessments: \$4,050**

### Tier II Compliance

- **All EDCs and all but one EGS** met their requirements. Three EGS paid the required ACPs to achieve compliance. One EGS filed for bankruptcy and failed to meet their compliance obligations.
- **Cost of Purchased Credits: \$367,594,667**
- **ACP Assessments: \$55,125**

### Tier I Compliance

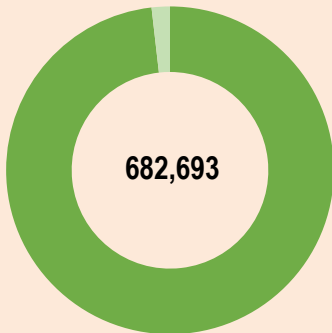
- **All EDCs and all but one EGSs** met their requirements. Three EGSs paid the required ACPs to achieve compliance. One EGS filed for bankruptcy and failed to meet their compliance obligations.
- **Cost of Purchased Credits: \$311,614,125**
- **ACP Assessments: \$39,285**

### Total Number of Credits Retired

- **24,975,510** credits were retired by **all** EDCs and **109** EGSs. Three EGS paid ACPs to achieve compliance. One EGS filed for bankruptcy and consequently did not retire a combined total of 359 credits and did not pay ACPs.
- **Cost of Purchased Credits: \$701,874,446**
- **ACP Assessments: \$98,460**

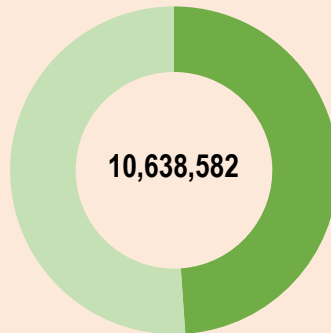
#### Source of Tier I Solar AECs Retired

- **Pennsylvania – 98.8%**
- **Other States – 1.2%**



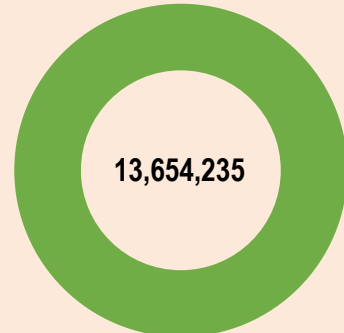
#### Source of Tier I AECs Retired

- **Pennsylvania – 48.9%**
- **Other States – 51.1%**



#### Source of Tier II AECs Retired

- **Pennsylvania – 100%**
- **Other States – 0%**



This report was prepared in coordination with the Pennsylvania Department of Environmental Protection (DEP) and as further required by statute, is being provided to the Chairman and Minority Chairman of the Environmental Resources and Energy Committee of the Senate and the Chairman and Minority Chairman of the Environmental Resources and Energy Committee of the House of Representatives.

The Alternative Energy Portfolio Standards Act of 2004 (AEPS Act) identifies the energy resources that are eligible for consideration in the program. These resources are classified into two groups, Tier I and Tier II resources. Additionally, although solar photovoltaic is a Tier I resource, it has a standalone requirement. For each reporting period, the Electric Distribution Companies (EDCs) and Electric Generation Suppliers (EGSs) are required to acquire and retire Alternative Energy Credits (AECs) in quantities equal to a percentage of their total retail sales of electricity in Pennsylvania. This percentage gradually increased each year, through 2021. Each successive 12-month reporting year begins on June 1 and concludes on the following May 31, and compliance is monitored during this period. Throughout this report, the terms “reporting year” and “compliance year” are synonymous and used interchangeably.

For the 2025 reporting year June 1, 2024, through May 31, 2025, the Tier I requirement was 8% of all retail sales, of which at least 0.5% of all retail sales was to come from solar photovoltaic (PV) sources. The requirement for Tier II resources was 10% of all retail sales. As required by Act 129 of 2008, additional alternative energy resources, as identified in the table in Appendix C of this report, were added to the Tier I group in 2009. To account for these additional resources, an annual adjustment to the broader Tier I, excluding the solar carveout, requirement was added. For this reporting year that adjustment is 0.2914% for a total Tier I requirement of 7.7914%.

At the close of the 2025 reporting year, all the EDCs and all but four EGSs met their requirements by acquiring and retiring sufficient AECs. Three EGSs came into compliance through the submission of alternative compliance payments. One EGS, in bankruptcy since the previous year, continued to serve customers for part of the 2025 reporting year. Of the total number of AECs retired, 78.2% of AECs were generated within Pennsylvania. A more detailed breakdown of the retired AECs is provided in Chart 1, located in Section 1 of this report.

Analysis of existing and prospective resources indicates that sufficient Solar, Tier I, and Tier II AECs are available to meet the AEPS Act requirements through the

2026 reporting year. The AEPS Act was amended by Act 40 of 2017, which was signed into law on October 30, 2017. This amendment prohibits the use of AECs generated by solar facilities outside of Pennsylvania's borders to be used to satisfy Tier I Solar obligations, though there are exceptions for certain existing contracts that have been reviewed and approved for use by the Pennsylvania Public Utility Commission (Commission).<sup>1</sup> Similarly, the AEPS Act was amended by Act 114 of 2020, which was signed into law on November 23, 2020. Act 114 modified Section 4 of the AEPS Act to effectively restrict the eligibility of Tier II alternative energy sources to facilities located within Pennsylvania. However, similar to the passage of Act 40 of 2017, Act 114 allows exceptions for existing contracts for AECs from out-of-state Tier II facilities.<sup>2</sup>

On Dec. 7, 2023, the Commission approved at Docket A-2023-3038771 et al., the consolidation of First Energy Corp's Pennsylvania electric distribution subsidiaries, MetEd, Penelec, Penn Power, and West Penn Power into a single operating company, First Energy Pennsylvania Electric Company or FE PA. This consolidation became effective beginning Jan. 1, 2024. The four entities will operate as four rate districts under the existing brand names. For the purposes of this report and for continuity, these four subsidiaries are shown as four separate EDCs.

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<sup>1</sup> *Implementation of Act 40 of 2017*, Final Implementation Order at Docket No. M-2017-2631527.

<sup>2</sup> *Implementation of Act 114 of 2020*, Final Implementation Order at Docket No. M-2020-3023323.



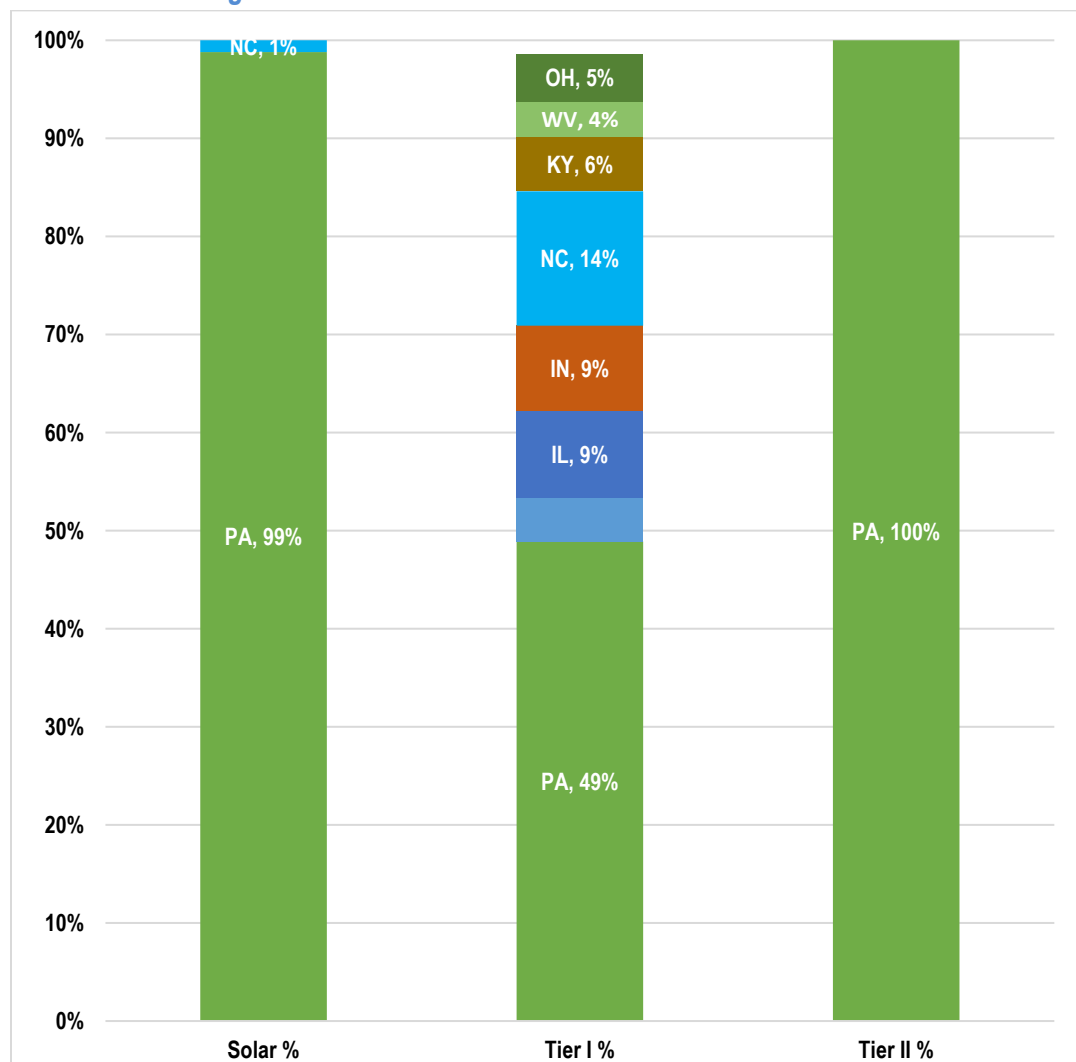
# ***1. Compliance Summary***

**A**s of May 31, 2025, a little more than 18% of electricity sold to retail customers was generated by qualifying alternative energy resources.

Of all the AECs retired for compliance, 78.2% were generated in Pennsylvania and the remaining 21.8% were generated from other states in the PJM service territory.

Chart 1 shows the percentage of AECs that were retired in Pennsylvania in the 2025 reporting year and their states of origin. As can be seen, Pennsylvania-sourced AECs accounted for 99% of the Solar PV, 49% of the Tier I, and 100% of the Tier II requirements, respectively.

**Chart 1: Percentage of AECs Retired in 2025**



*Note: Total may not add up to 100% because states supplying less than 2% of credits in any category are not shown and due to rounding.*

Chart 2: Percentage of Retired AECs that Originated in Pennsylvania

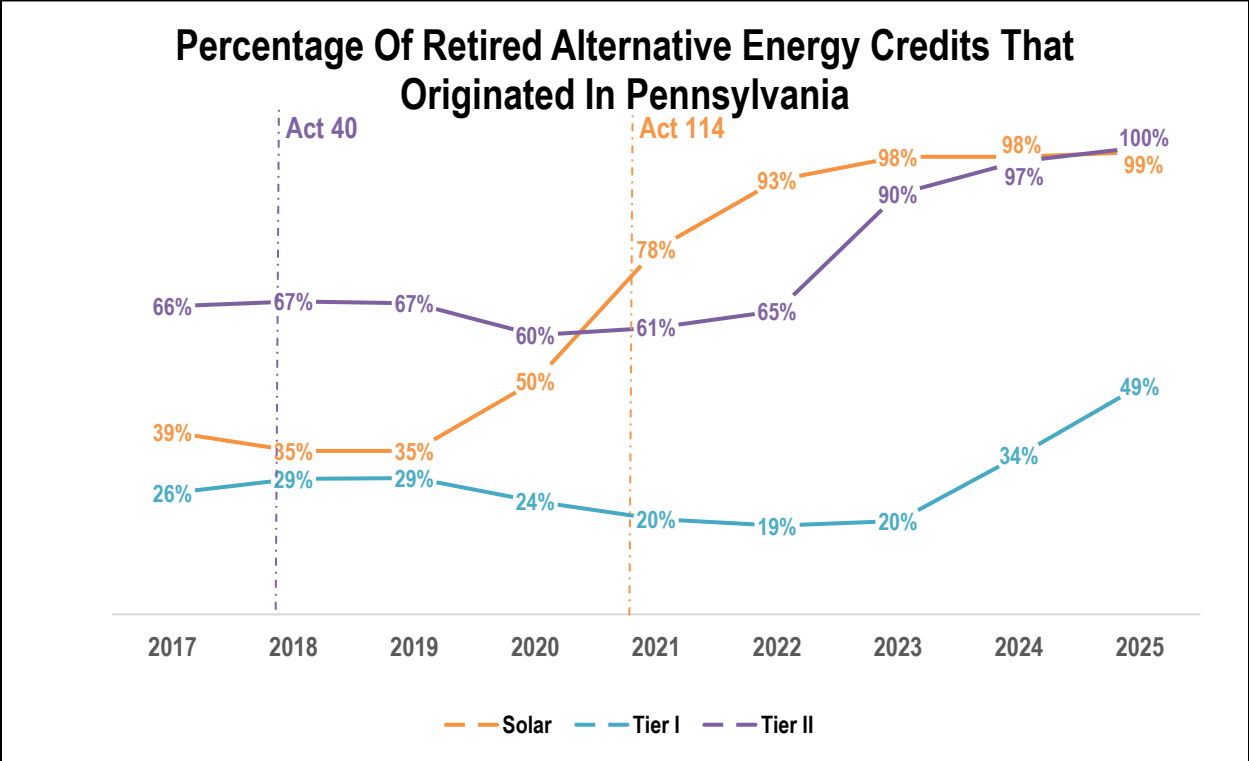


Chart 2 reflects the most recent trend in the percentage of retired AECs that originated in Pennsylvania. Since the passage of Act 40 of 2017, the trend of retiring fewer Solar AECs generated in Pennsylvania has reversed sharply and soon will reach 100%. The same outcome is evident for Tier II, via the passage of Act 114 of 2020, as 100% of retired Tier II credits originated in Pennsylvania.

For additional compliance details, turn to Appendix A of this report. For example, Table 2 of Appendix A provides a compliance summary for each tier for the current reporting year. Table 3 provides detailed compliance information for each tier and EDC service territory for the current reporting year. Table 4 shows the actual quantity of AECs, by state of origin, used for compliance in each of the three tiers.

During the 2025 reporting year, all EDCs and 109 EGSs had compliance obligations. All EDCs achieved compliance in the reporting year by retiring the requisite number of AECs by the statutory deadline of September 1. Four EGSs failed to comply by the statutory deadline by retiring sufficient AECs. Three<sup>3</sup> of the four EGSs have subsequently met their AEPS obligations by making alternative

<sup>3</sup> The three EGSs making ACPs to meet their obligations were: Catalyst Power & Gas LLC, First Point Power LLC, and Park Power LLC.

compliance payments (ACPs). One EGS, Great American Power LLC, did not pay the required ACPs as they are no longer in business and have filed for bankruptcy.

As previously mentioned, Table 3 of Appendix A presents details of the compliance obligations in each EDC territory and the compliance status for the reporting year. The extent of geographic breadth of service provided by Great American Power can be seen in the two far-right columns of Table 3; this EGS represents the reason for compliance being unmet in three of the EDC service territories. EGS compliance via ACP, securitization of bond assets or bankruptcy proceedings bares no reflection on EDC compliance but rather indicates the manner in which EGSs may have complied within those EDC service territories. EGS sales information is considered proprietary, therefore, their AEPS credit retirement data are combined and shown in the appropriate EDC service territory. When an EGS retires too few or too many AECs, the excess or deficiency is not always connected to a specific EDC service area. Therefore, Table 3 shows many EDC service territories as having a deficiency of credits.

## **A. Tier I Compliance**

### **a. Solar Compliance**

For the 2025 reporting year, the Solar PV obligation was 0.5%. All EDCs and all but three EGSs retired the requisite number of Solar AECs. One EGS, Great American Power, did not pay the required ACPs as they are no longer in business and have filed for bankruptcy. The Commission was unsuccessful in recovering funds from the financial assurances of Great American Power equal to the ACPs owed for 2024 and 2025. The number of Solar AECs not retired by Great American Power represented approximately 0.001% of the total Solar AEC obligation, with an equivalent ACP value of \$664 not recovered due Great American Power's bankruptcy.

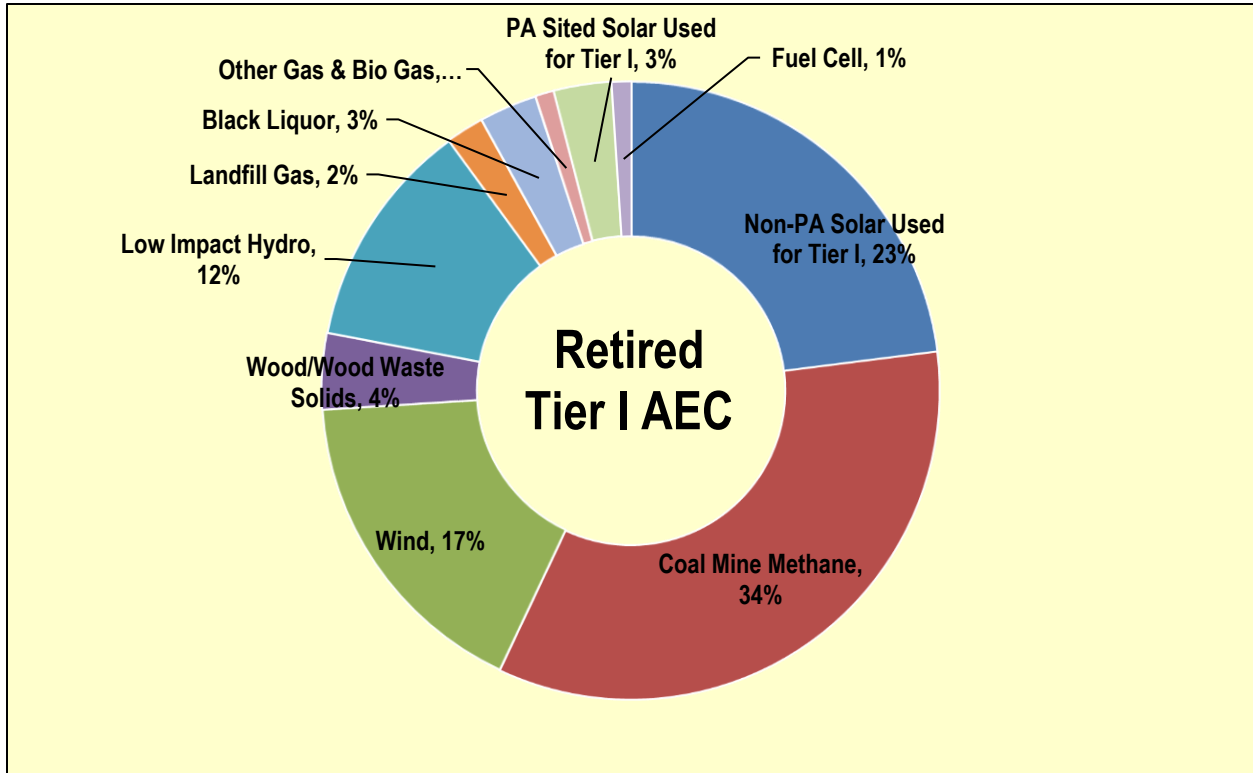
### **b. Tier I Compliance**

For the 2025 reporting year, the base obligation for Tier I, without the solar carveout was 7.5%. The Tier I quarterly adjustment, impacting this broader Tier I requirement, added a quarterly increase of 0.1585%, 0.2816%, 0.3223%, and 0.4276%, for quarters one through four, respectively. This resulted in 397,856 AECs added to the base obligation of 10,241,598. All EDCs and all but four EGSs achieved compliance by retiring the requisite number of Tier I AECs. Great American Power did not pay the required ACPs as they are no longer in business and have filed for bankruptcy. The number of Tier I AECs that were not retired by Great American Power represented less than 0.001% of the total Tier I AEC

obligation, with an equivalent ACP value of \$6,885 that the Commission was unable to recover due to the bankruptcy of Great American Power.

Chart 3 shows the resource percentage of Tier I AECs retired in the 2025 reporting year. Among the notable changes for 2025, out-of-state solar energy produced 23% of the retired Tier I AECs, down from 31% in the previous year. Coal mine methane increased from 21% previously to 34% in 2025.

**Chart 3: Percentage of Sources of Tier I AECs Retired for the 2025 Reporting Year**



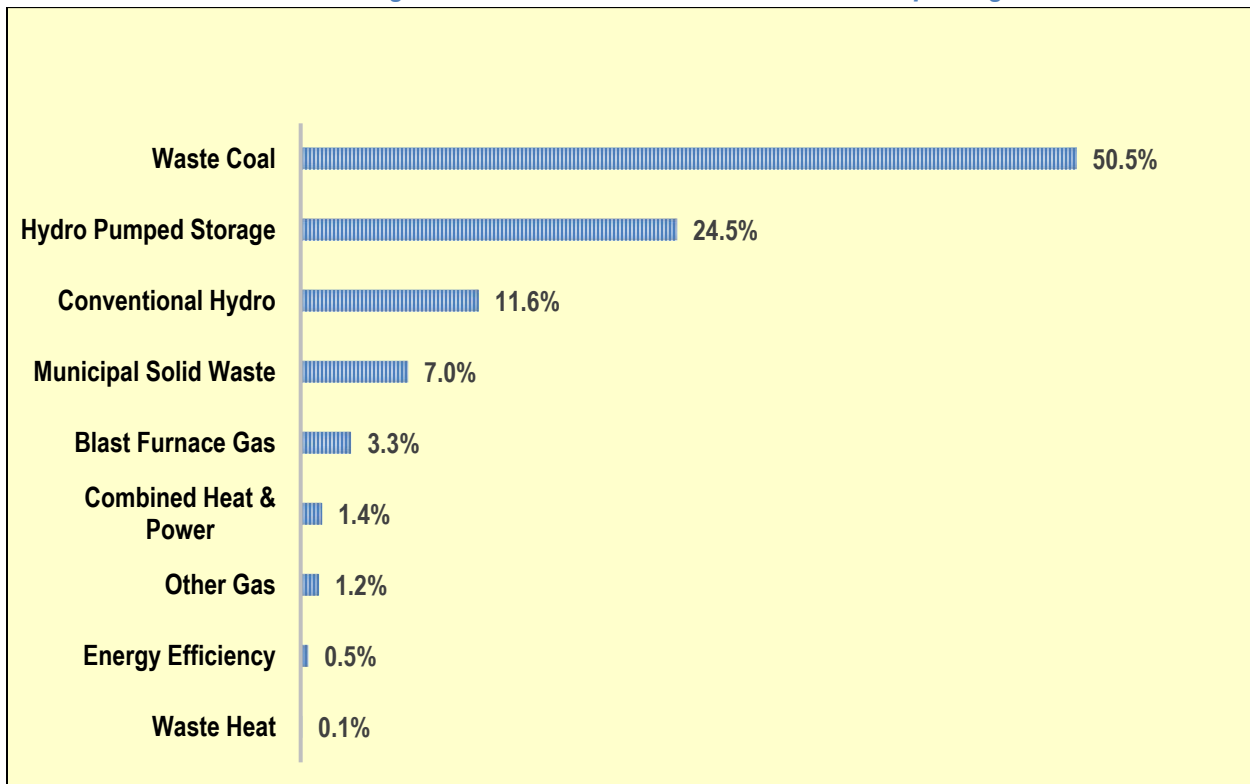
**Note:** The total may not add up to 100% because of rounding.

## **B. Tier II Compliance**

For the 2025 reporting year, the base obligation for Tier II was 10%. All EDCs and all but three EGSs achieved compliance in the reporting year by retiring the requisite number of AECs. Great American Power did not pay the required ACPs as they are no longer in business and have filed for bankruptcy. The number of Tier II AECs not retired by Great American Power represented 0.001% of the total Tier II AEC obligation, representing an ACP value of \$8,820 that the Commission could not recover due to the bankruptcy of Great American Power.

Chart 4 shows sources and percentages of Tier II AECs retired in the 2025 reporting year.

**Chart 4: Sources and Percentages of Tier II AECs Retired for the 2025 Reporting Year**



### C. Compliance Costs

Table 2 of Appendix A provides the compliance details for each of the AEPS tiers, including the costs of alternative energy credits purchased by EDCs and EGSs to meet their compliance obligations for the 2025 reporting year. As shown in the summary table below, total compliance costs were approximately \$702 million. The costs are calculated using data for credits that have a known cost. However, some credits that are retired to meet obligations are self-generated or purchased bundled with the electricity and a cost for those credits is not available. Table 2 also includes the total number of credits, for each tier, that EGSs did not retire to meet their obligations. For the 2025 reporting year, EGSs did not retire 61 Solar credits, 873 Tier I credits, and 1,225 Tier II credits needed to meet the AEPS obligations.

*Summary of AEPS Compliance Costs*

Tier	Credits Retired	Weighted Average Credit Price	Cost of Purchased Credits
Solar	682,693	\$33.20	\$22,665,654.17
I	10,638,582	\$29.29	\$311,614,124.87
II	13,654,235	\$26.92	\$367,594,667.10
<b>Total</b>	<b>24,975,510</b>	<b>N/A</b>	<b>\$701,874,446.14</b>



## ***2. Costs and Benefits of Pennsylvania Alternative Energy Generation***

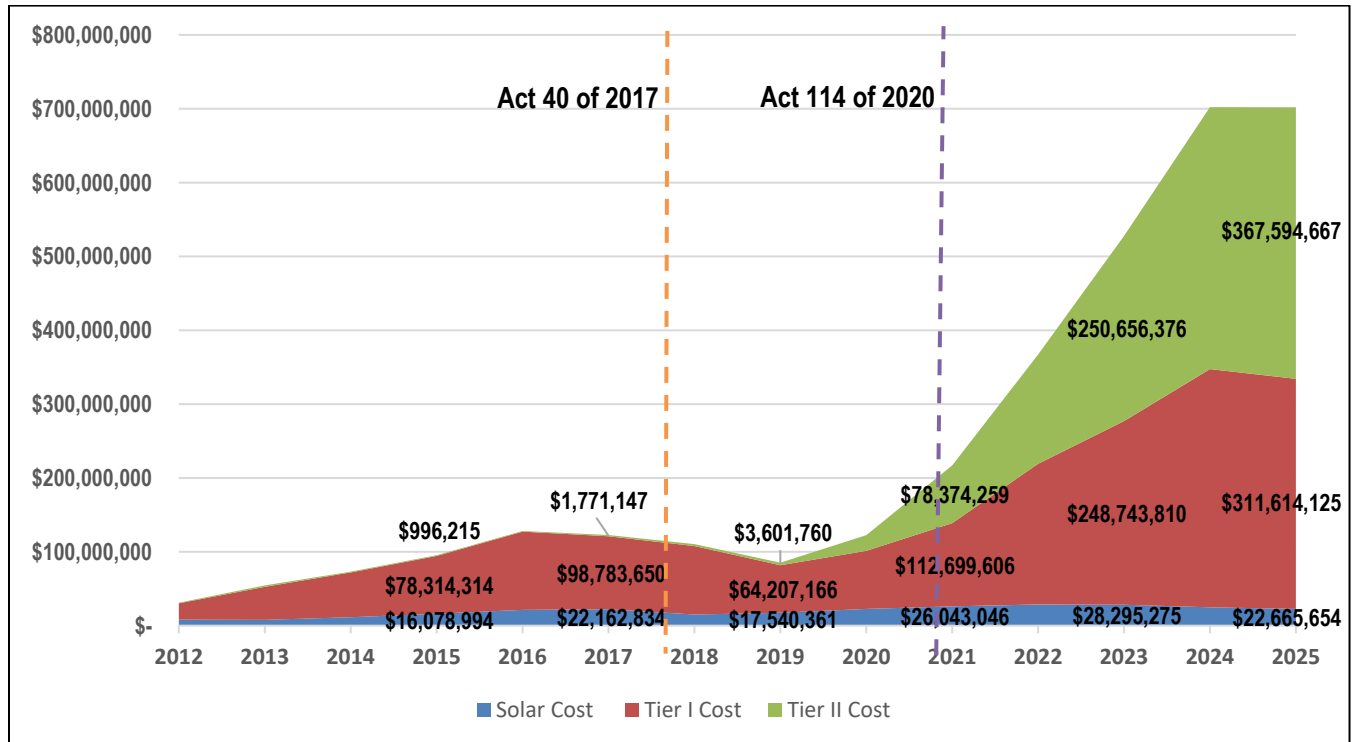
## Reported Cost of AECs by Reporting Year

Chart 5 shows the cost of AECs retired in each compliance year, since 2012. While it is normal to expect increases in compliance costs as AEPS obligation percentages increase, a significant driver of recent increased compliance costs has been due to the increases in Tier I and Tier II AEC prices. After the passage of Act 40 of 2017, Solar AEC prices increased for a short period. Since then, there have been significant gains in in-state solar development, leading to downward pressure on Solar AEC pricing. This downward trend will continue as the Solar AEPS marketplace is oversupplied.

Tier I compliance costs have increased significantly due to an increase in these AEC prices since 2020.

The largest source of AEPS compliance costs is being driven by increases in Tier II. With the passage of the Act 114 of 2020, the weighted average credit prices used for Tier II compliance have risen from an historic low of roughly \$0.10 to more than \$26. The fact that most of the AEPS compliance obligation must be sourced from Tier II resources, coupled with this meteoric increase in Tier II AEC pricing, has resulted in substantial compliance costs for the AEPS.

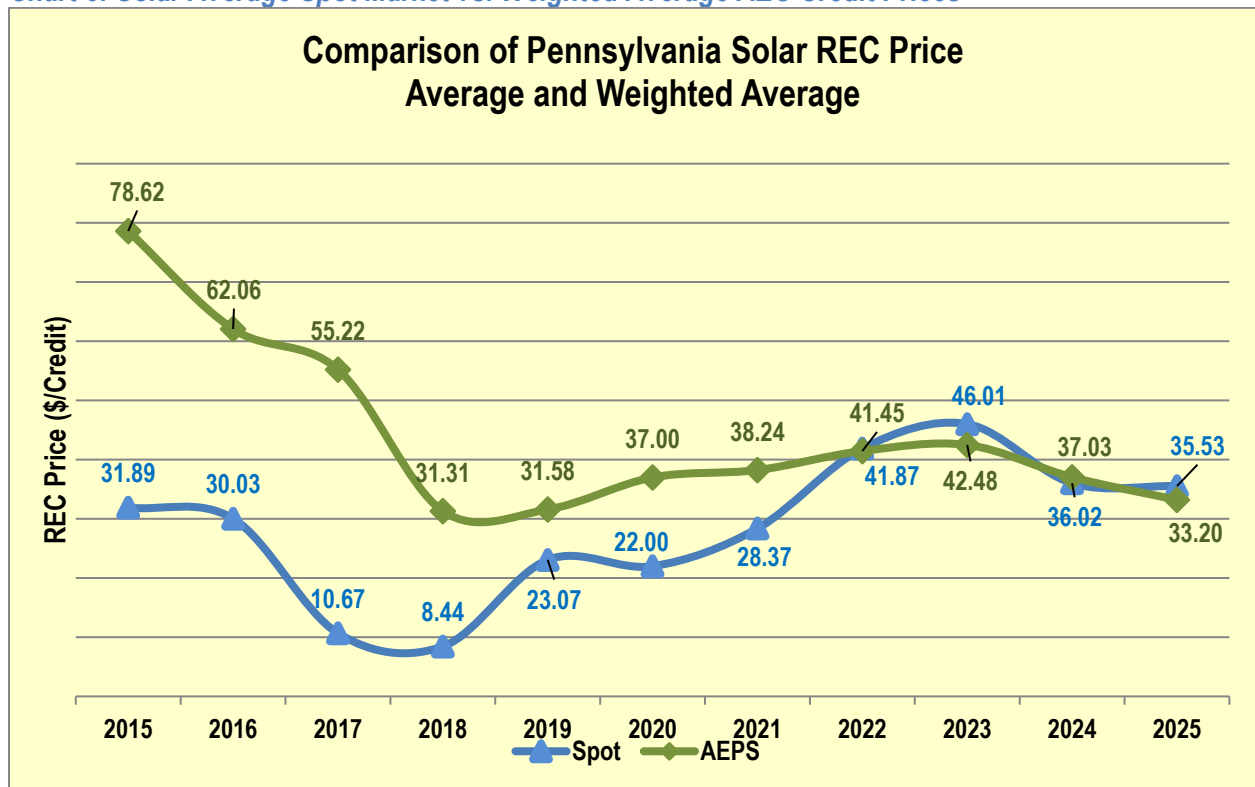
Chart 5: Reported Cost of AECs by Reporting Year (ending in)



## A. Statewide AEPS Credit Price Trend

Charts 6, 7 and 8, on the following pages, provide a comparison of the average compliance year spot market prices,<sup>4</sup> for the given AEPS tiers, as compared to the weighted average credit prices that have been retired for AEPS compliance. These graphs illustrate the differences between average spot market prices that most readers may be accustomed to seeing and the weighted average price of credits retired for AEPS compliance. This difference is due to the relatively significant volume of credits retired for AEPS compliance that are purchased as part of multi-year procurement processes.

Chart 6: Solar Average Spot Market vs. Weighted Average AEC Credit Prices



<sup>4</sup> Spot prices from S&P Global Market Intelligence.

Chart 7: Tier I Average Spot Market vs. Weighted Average AEC Credit Prices

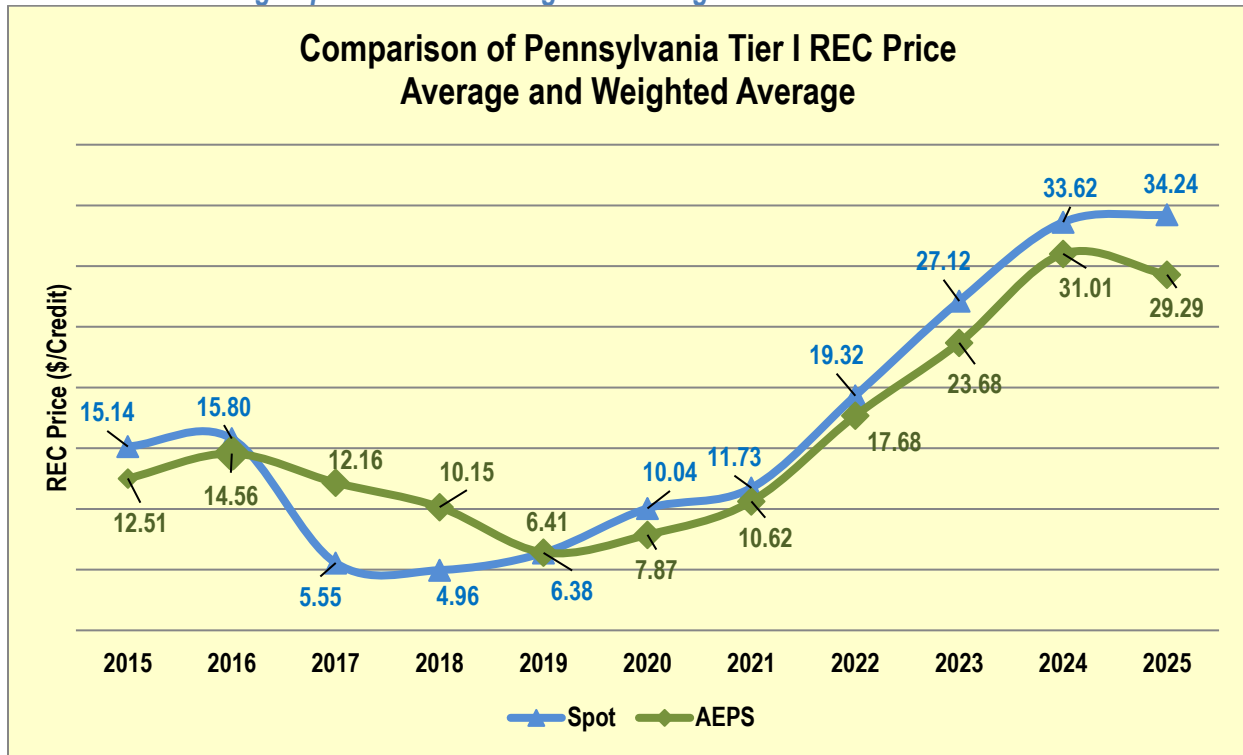
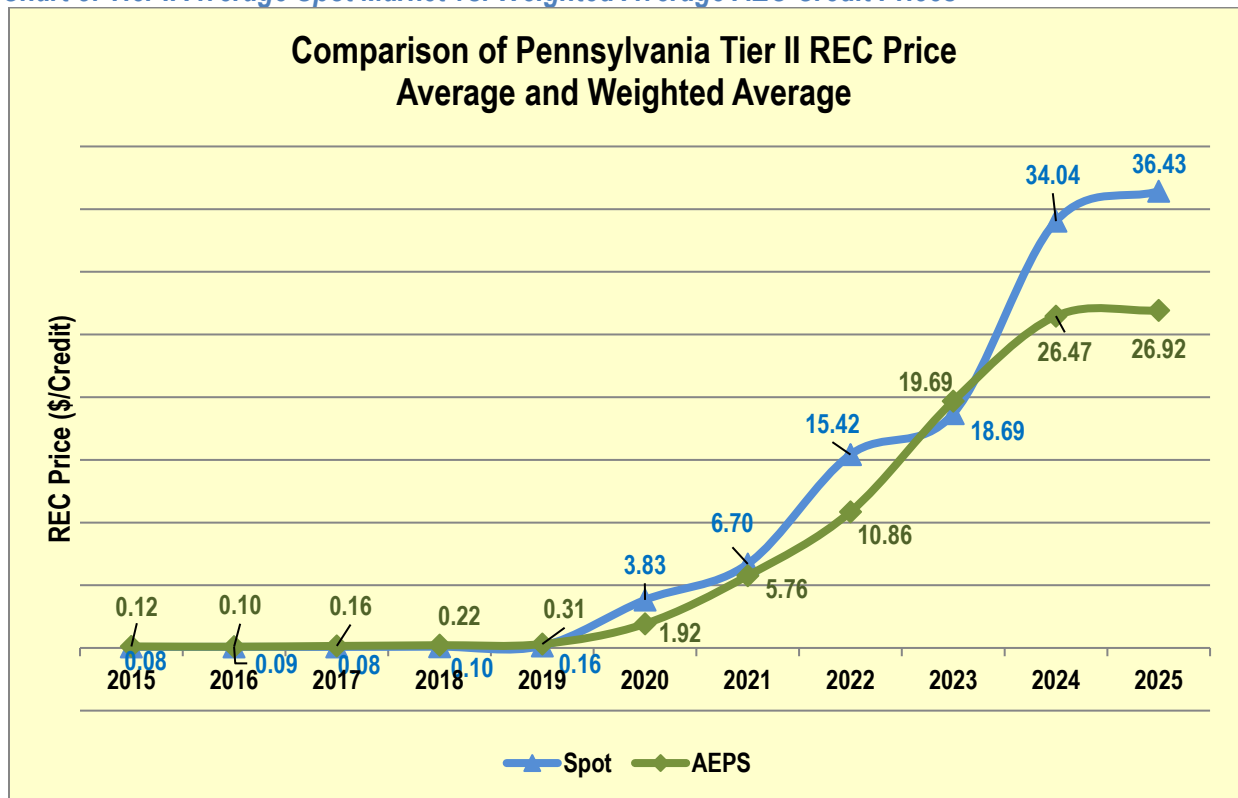


Chart 8: Tier II Average Spot Market vs. Weighted Average AEC Credit Prices



## ***B. Renewable Energy Economic Benefit – Jobs, Exports, Wages***

Economic benefits associated with the development and deployment of renewable and alternative energy sources were a significant consideration in the passage of the AEPS Act. Since its inception, the AEPS Act has been instrumental in sustaining and creating thousands of jobs and business ventures associated with all aspects of renewable and alternative energy generation.

Jobs in the clean energy sector are numerous, varied in discipline, and well paying. As documented in the “Clean Jobs Pennsylvania - 2024 Report,” released by the E2.org, nearly 100,704 Pennsylvanians are employed in the five broad areas defined as clean energy jobs: renewable generation, storage and grid modernization, energy efficiency, clean vehicles, and clean fuels. The report highlights job growth in clean energy jobs is outpacing other jobs in PA.<sup>5</sup>

### **Energy Efficiency – A Tier II Resource**

Building on previous energy employment reports, the DEP recently released the *2023 Pennsylvania Energy Efficiency Workforce Needs* report.<sup>6</sup> According to the report, an annual increased demand of 2,045 Heating, Air Conditioning, and Refrigeration (HVAC/R) mechanics and installers is expected throughout the next ten years, which is nearly four and a half times the current average number of employees entering the efficiency workforce each year. This is currently the fastest-growing employment sector among those studied, followed by construction/building inspectors, insulation workers, electricians, and plumbers. A hiring difficulty exists due to a general lack of applicants and a lack of prior work experience, despite that all of the occupations highlighted have median hourly wages that exceed the living wage for a single adult and for a family of four with two working adults. Roughly 72% of Pennsylvania’s clean energy jobs pertain to energy efficiency, which is an AEPS Tier II resource, including manufacturing, construction, installation of high efficiency appliances and products, high efficiency lighting, energy efficient buildings and associated building materials.

### **Solar**

In reporting year 2025, approximately 468.6 megawatts AC (MWac) of solar-electric generating capacity was installed in Pennsylvania, which brought the in-state total capacity to 2,013.4 MWac. It should be noted that the above values include only

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<sup>5</sup> [Clean Jobs Pennsylvania 2024 | E2](#)

<sup>6</sup> [PA EE Workforce Needs Report Final.pdf \(state.pa.us\)](#)

AEPS-certified systems and do not account for other installed systems in Pennsylvania that are not certified in a timely fashion and systems owned by owners who do not seek certification under AEPS. Solar installations at private residences, businesses, institutions, and utility-scale solar sites across Pennsylvania, help sustain a workforce of almost 4,300<sup>7</sup> that are engaged in all aspects of the solar industry, including manufacturing, sales, distribution, and installation of solar power components and systems and related support services. Nationally, compensation within the solar industry is comparable with similar occupations in other energy industries.<sup>8</sup> Beyond rooftop solar, Pennsylvania has abundant opportunities for solar development beyond productive or high value green spaces, including locations such as marginal use properties, abandoned mine lands, closed landfills, industrial and commercial warehouses, and parking lot/garage canopies.

## **Wind**

At the end of 2024, Pennsylvania ranked 21<sup>st</sup> in the country for installed wind capacity at 1,551.4 MW (1,510.1 MW).<sup>9</sup> Additionally, Pennsylvania supports a number of wind energy jobs. Through Q4 2023, the total number of direct and indirect jobs supporting the wind industry in Pennsylvania was approximately 3,255.<sup>10</sup> Additionally, wind farm development employs hundreds of people, and each wind farm typically requires a small, permanent crew of up to 15 people to oversee the maintenance and continued operation of the turbines.

## **Hydropower**

Supporting the growth of hydropower in Pennsylvania and globally are two of the world's largest turbine manufacturers, Voith Hydro and American Hydro, both headquartered in Pennsylvania. Data from the Pennsylvania Department of Community and Economic Development indicates that Voith Hydro and American Hydro employ approximately 440 and 165 people, respectively. Additionally, the U.S. Department of Energy's report, "Hydropower Supply Chain Deep Dive

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<sup>7</sup> STATE SOLAR spotlight Pennsylvania, available at: [Pennsylvania.pdf \(seia.org\)](#)

<sup>8</sup> National Solar Jobs Census 2023, Workforce Development, available at: [Census Workforce Development 2023 - Interstate Renewable Energy Council \(IREC\)](#).

<sup>9</sup> The wind capacity installed in Pennsylvania reported by US DOE (1,551.4 MW) differs from the capacity of certified wind reported by Pennsylvania's AEPS Administrator (1,510.1 MW). See the State Wind Deployment tab of the Data File for the [Land-Based Wind Energy Technology Update: 2025 Edition | Energy Markets & Policy](#).

<sup>10</sup> [Clean Jobs Pennsylvania 2024 | E2](#)

Assessment” touts Pennsylvania as leading the nation with 324 companies engaged in the hydropower supply chain.<sup>11</sup>

Given the attention to large-scale hydropower, it is important to note that there is interest in the significant potential to develop low-impact hydropower resources, many of which can take advantage of existing infrastructure. The passage of the federal Hydropower Regulatory Efficiency Act of 2013 helps to streamline some of the Federal Energy Regulatory Commission (FERC) permitting/licensing requirements for smaller hydropower projects and may help facilitate the development of smaller projects in Pennsylvania.

### **Energy Development Authority**

Since 2019, the Pennsylvania Energy Development Authority (PEDA) has been exploring opportunities to create a state financing and incentive entity focused on financing clean energy projects, or what is commonly referred to as “Green Bank”. This entity became known as the Energy Accelerator Program (EAP). The PEDA Board of Directors has confirmed PEDA’s future focus on creating and offering new clean energy financial products, producing opportunities for clean energy market facilitation in Pennsylvania, and developing opportunities to raise additional third-party capital to leverage federal incentive funds and/or attract additional incentive funds to PEDA. In 2023, PEDA developed a solicitation to hire a third-party loan program administrator and PEDA’s Board also approved the use of up to approximately \$1.75 million from the Energy Development Fund to provide capital for the first financing product to be developed and deployed by PEDA. In July 2023, the National Energy Improvement Fund (NEIF) was selected to administer up to two financing products. NEIF launched the Keystone Energy Efficiency Program (KEEP) Home Energy Loan as an EAP product on April 8, 2024. It is an energy efficiency financing program for Pennsylvania homeowners. For the second product, the DEP developed the Municipal Opportunities for Retrofits and Energy Efficiency (MORE) Program. It is a grant and loan program that braids funding from the Bipartisan Infrastructure Law from the Energy Efficiency Revolving Loan Fund (EE RLF) and Energy Efficiency and Conservation Block Grant (EECBG). The MORE Grant Program is administered by the DEP. It can be used to pay for level 2 energy audits, energy conservation measure project design, and the buydown the interest rate on a MORE Loan. It closed Dec. 6, 2024, after awarding its entire

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<sup>11</sup> *Hydropower Supply Chain Deep Dive Assessment 2022* <https://www.energy.gov/sites/default/files/2022-02/Hydropower%20Supply%20Chain%20Report%20-%20Final.pdf>

budget to eligible local governments. NEIF administers the MORE Loan program as its second product under the EAP and is now open for applications.

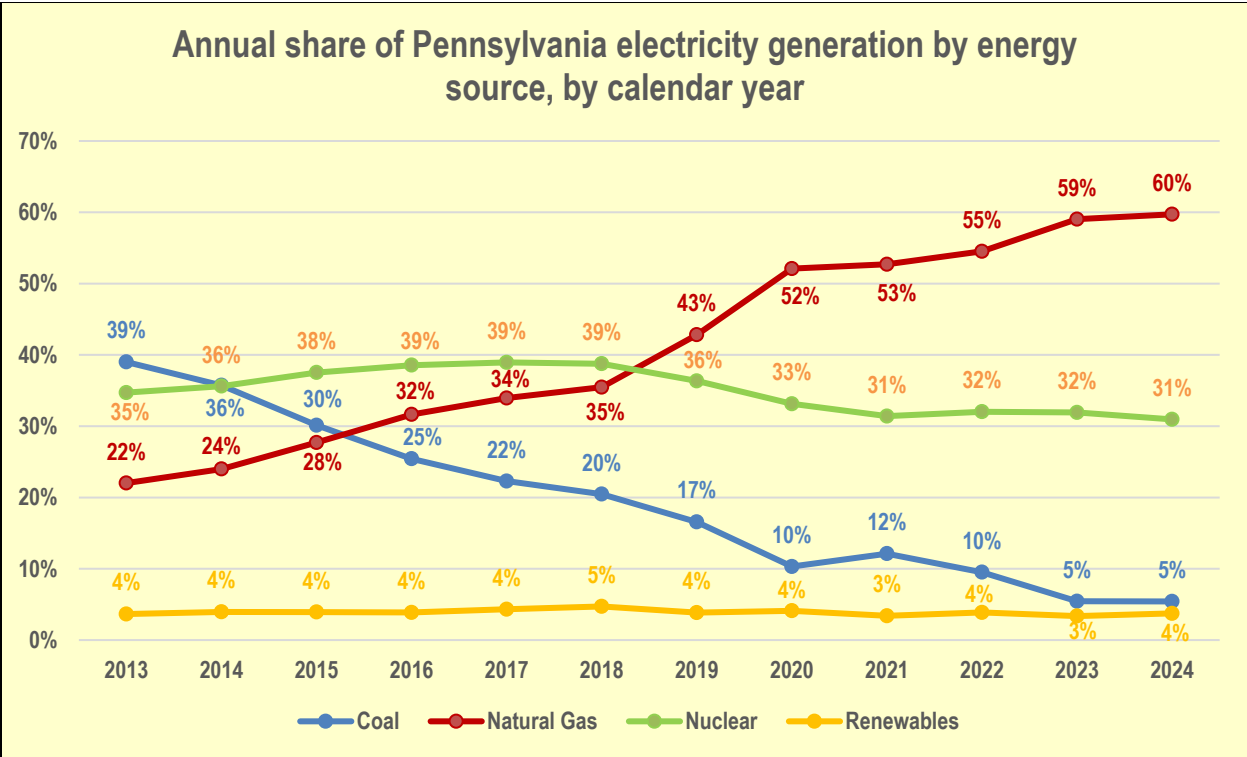


### ***3. Status of Pennsylvania's Alternative Energy Marketplace***

The renewable energy industry is becoming one of the most transformative sectors of the global economy. Through technology improvements, cost declines, new financing structures, and regulatory policy, the sector has driven economic growth around the world including in the United States.

Pennsylvania’s AEPS Act required that, by 2021, alternative energy credits equivalent to 18% of all electric power sold in the Commonwealth be obtained from qualifying resources and retired. This has helped the growth of Pennsylvania’s renewable energy generating capacity and has provided cleaner energy options to the Commonwealth’s businesses and homeowners.

Chart 9: Pennsylvania Annual Electric Generation by Energy Source



Source: Energy Information Administration Electricity Data Browser

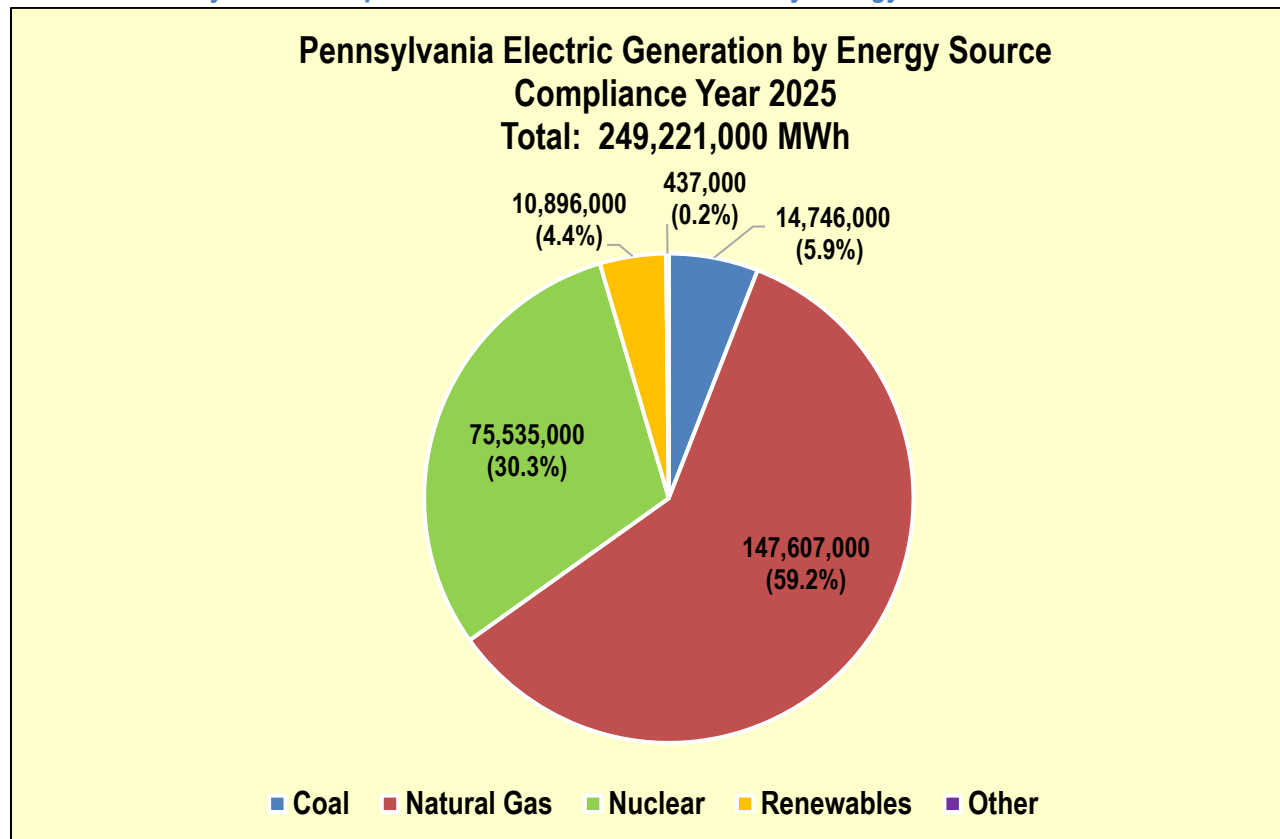
Chart 9 shows annual Pennsylvania electric generation by energy source. In 2024, approximately 4% of the state’s electricity generation was from renewable energy sources.<sup>12</sup> The chart mimics the general trend in U.S. electricity generation where electricity generation from coal is steadily decreasing and natural gas electricity generation is steadily increasing. While U.S. electricity generation from renewable

<sup>12</sup> Energy Information Administration Electricity Data Browser.

sources has grown, Pennsylvania’s electricity generation from renewable sources has not kept pace with the U.S. growth. While there are many differences among the various state renewable and alternative energy portfolio standards, almost all of these standards are based on in-state consumption or sales of electric energy. This is an important consideration to understand because many states are net importers of electricity whereas Pennsylvania is among the largest net exporters of electricity in the country. Pennsylvania’s AEPS requirements, which are broader than renewables-only requirements, have not kept pace as compared to the requirements of other states with portfolio standards. Additionally, the broad geographic scope of the AEPS Act allows compliance to come from credits generated from out-of-state resources for Tier I obligations.

Chart 10 shows the breakdown of total electricity generation in Pennsylvania by source for compliance year 2025. This information is obtained from EIA using its Electricity Data Browser tool.

**Chart 10: Pennsylvania Compliance Year Electric Generation by Energy Source**



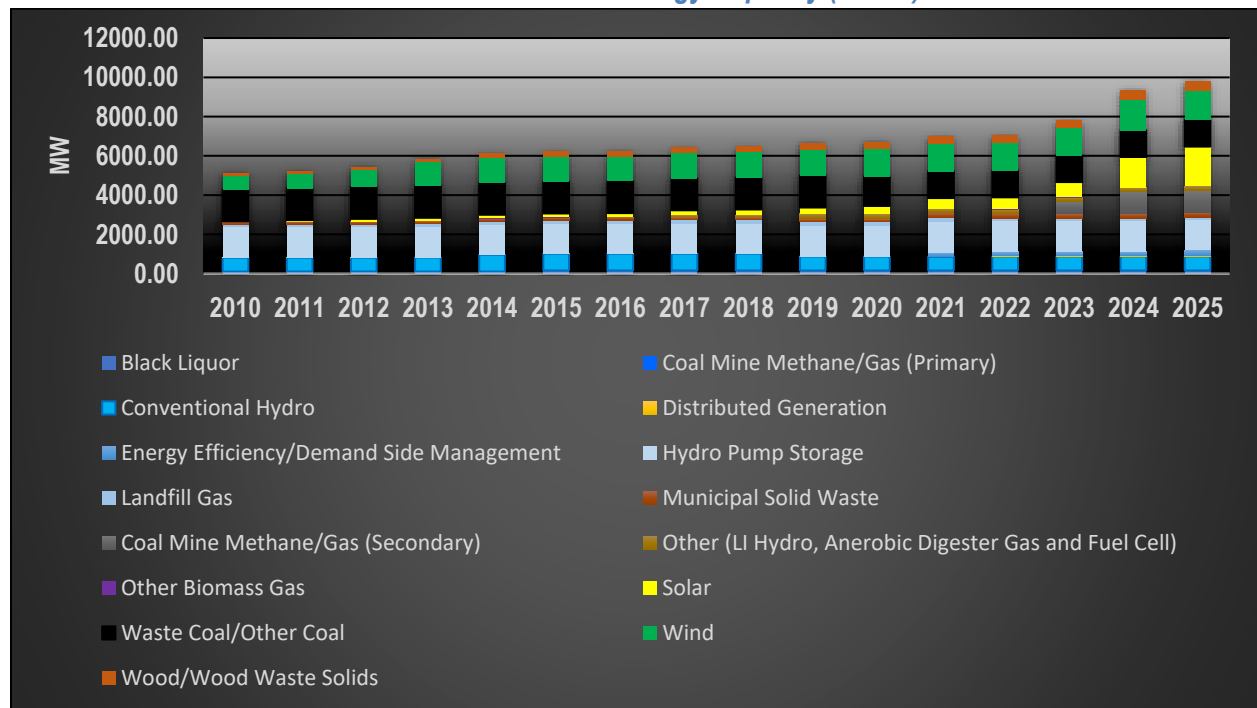
Source: Energy Information Administration Electricity Data Browser

Action at the federal level, such as the Business Energy Investment Tax Credit (ITC) and the Renewable Electricity Production Tax Credit (PTC) helped accelerate

renewable energy investments and developments in the United States. The One Big Beautiful Bill Act of 2025, while preserving certain aspects of the Inflation Reduction Act of 2022, significantly modified the requirements to qualify for tax credits. These changes are likely to reshape the renewable energy landscape for the near future.

Chart 11 shows a historical view of the certified alternative electricity generation capacity available in Pennsylvania. As of the end of the 2024 compliance year, Pennsylvania had approximately 9,365 MWac of installed alternative electricity generation capacity.

**Chart 11: PA In-State AEPS-Certified Alternative Energy Capacity (MWac)**



Refer to Table 5 in the Appendix for compliance year specifics.

## A. Solar

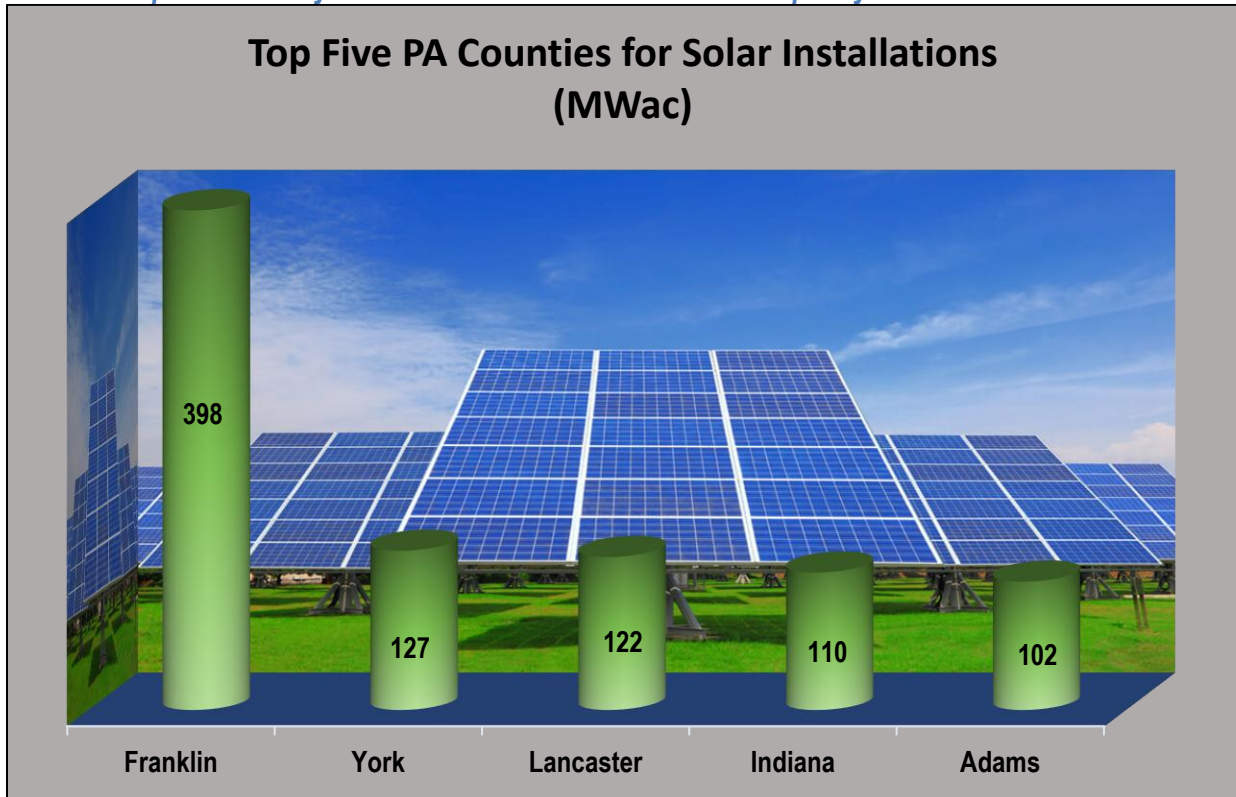
In Pennsylvania, approximately 2,013.4 MWac (2,464.2 MWdc) of solar electric capacity had been installed through the end of the 2025 compliance year, enough to power approximately 282,198 homes.<sup>13</sup> It should be noted that the above number includes only AEPS-certified systems. According to the Solar Energy Industries Association (SEIA), the solar industry has invested 6.3 billion in Pennsylvania, including \$993 million in 2024.<sup>14</sup>

<sup>13</sup> Based on average annual electricity consumption of approximately 10,000 kWh and an average solar capacity factor of 16%.

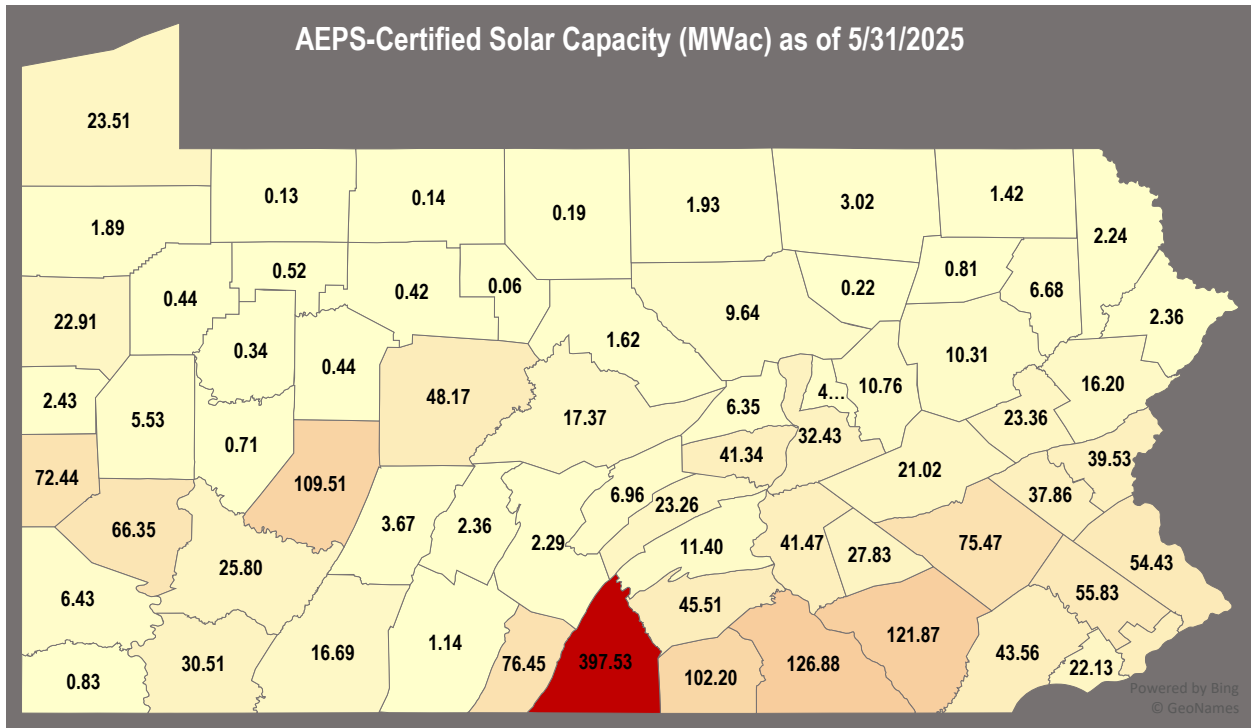
<sup>14</sup> STATE SOLAR spotlight Pennsylvania, available at: [Pennsylvania.pdf \(seia.org\)](https://www.seia.org/pennsylvania)

Chart 12 shows the top five Pennsylvania counties for installed solar capacity, as of the end of the compliance year.

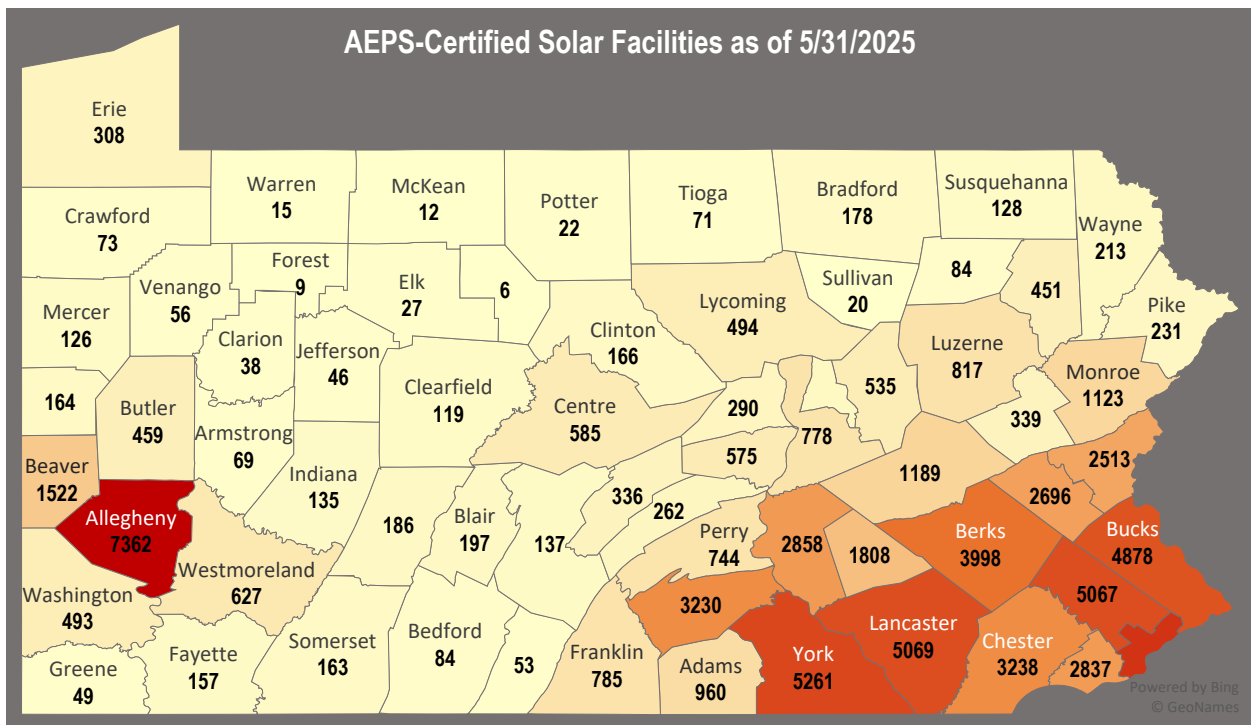
*Chart 12: Top Five Pennsylvania Counties for Installed Solar Capacity*



The following two maps show the AEPS certified solar PV electric generating capacity and the number of facilities, by county, in Pennsylvania, as of the end of the compliance year.



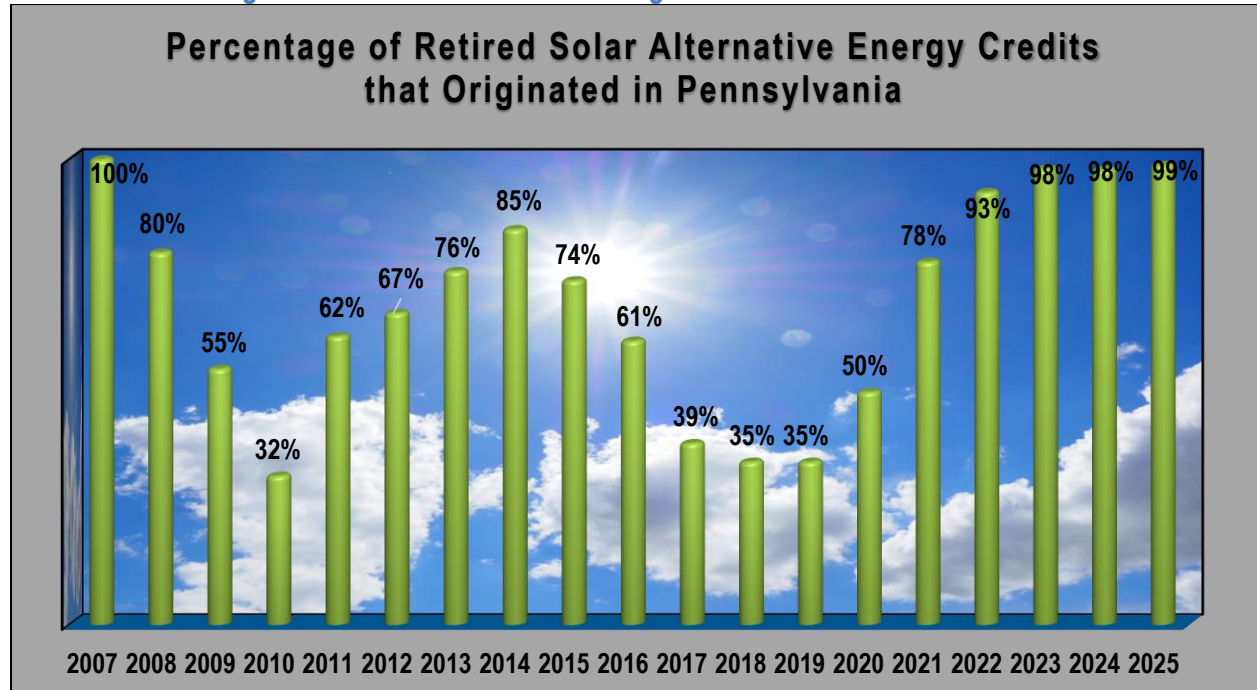
**Note:** As of May 31, 2025, the AEPS certified solar generation capacity was 4.44 MWac in Montour County and 43.78 MWac in Philadelphia County.



**Note:** As of May 31, 2025, Montour and Philadelphia Counties had 213 and 5,873 AEPS certified solar generation facilities, respectively.

Chart 13 shows the percentage of retired in-state Solar AECs used for AEPS Act Tier I Solar compliance. 2025 data shows a significant increase in the number of retired in-state Solar AECs since 2019. This is due to the implementation of Act 40 of 2017, which requires compliance with the Tier I Solar PV requirements of the AEPS Act to be met by using in-state Solar AECs, with an exception for previously issued contracts for out-of-state Solar AECs (now tagged as Non-Solar Tier I (NSTI) credits).

**Chart 13: Percentage of Retired Solar AECs that originated in PA**



In January 2017, the DEP began a 30-month stakeholder engagement and modeling initiative, “Finding Pennsylvania’s Solar Future.” The resultant plan identifies that, to meet a goal of 10% in-state solar by 2030, approximately 11 gigawatts (GW) of solar generation capacity needs to be installed. The final plan: *Pennsylvania’s Solar Future Plan* was released in November 2018.<sup>15</sup> The plan includes several recommendations and was provided to the public, the legislature, and the Governor to be used as a guide for policy making. One strategy in the plan recommends increasing the AEPS Solar PV carve-out to between 4% and 8% by 2030.

Additionally, the Comprehensive Pennsylvania Climate Action Plan, authored by the DEP, offers two recommendations for the power sector to meet the Commonwealth’s greenhouse gas reduction goal of net zero emissions by 2050. One strategy is to build a net zero carbon electricity grid; this can be achieved in part by

<sup>15</sup> <https://www.dep.pa.gov/Business/Energy/OfficeofPollutionPrevention/SolarFuture/Pages/Pennsylvania's-Solar-Future-Plan.aspx>

changing the AEPS to increase the share of renewable and/or low-carbon energy supplying the grid. The second strategy is to ensure that the electricity grid is ready for electrification related to peak load impacts and reliability. Distributed resources such as onsite solar, especially paired with distributed storage, can help reduce the demand on the centralized power grid. Additionally, actions to support electricity efficiency, such as deploying electricity efficiency in existing buildings, are also key to reducing the strain on the power grid by reducing average end-user demand. In response to a multi-GW increase in the PJM planning queue for solar, the DEP developed a website for solar resources. The website includes information for residential, commercial and grid-scale solar installations.<sup>16</sup> Grid-scale solar installations are being developed within Pennsylvania, yet many local governments have not established zoning ordinances that specifically address this relatively new form of land use. Since 2021, the DEP has worked with partners to provide outreach and technical assistance to local governments to better assist them in understanding the various aspects associated with these larger solar projects. A partnership with the Penn State Cooperative Extension led to the development of the *Municipal Officials' Guide to Grid-Scale Solar Development in Pennsylvania*<sup>17</sup> in 2022, an online resource to provide detailed information to local officials regarding physical and environmental impacts, land conversion issues, localized economic impacts, tax implications, and ordinance consideration for grid-scale solar development. In 2023, the DEP partnered with the Pennsylvania State Association of Township Supervisors (PSATS) to conduct in-person educational sessions about grid-scale development for local government officials as well as provide one-on-one support to review and offer non-legal comments on new and revised ordinances governing grid-scale solar development. In 2025, DEP was awarded a grant from the U.S. Department of Energy Office of Energy Efficiency and Renewable Energy (EERE) for the Reliable Energy Siting through Technical Engagement and Planning (R-STEP) Program. This grant will expand and enhance ongoing partnerships with PSATS and Penn State to provide outreach and technical assistance to local governments and communities around the topics of ordinance development and benefits agreements governing large-scale renewable energy projects (including, but not limited to solar, wind, storage and geothermal) in Pennsylvania. Assistance will be provided through in-person and on-line informational sessions, one-on-one technical and legal review of ordinance documents, and the development of guidance resources and Pennsylvania specific research. The R-STEP program also provides access to best practices from DOE

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<sup>16</sup> <https://www.pa.gov/agencies/dep/residents/solar-energy-resource-hub.html>

<sup>17</sup> <https://marcellus.psu.edu/solar-energy/>

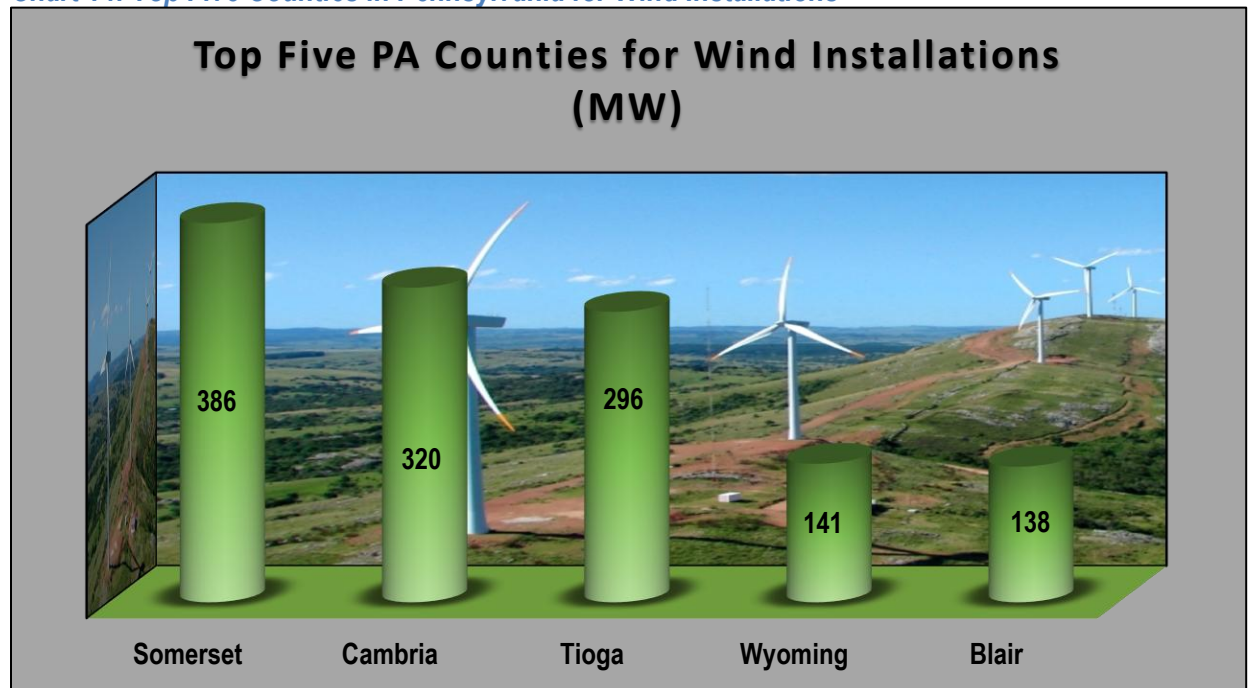
and the nine other states participating in the program. This three-year program will continue through the end of 2028.

### ***B. Wind***

Per the U.S. Department of Energy’s Wind Vision projections, Pennsylvania has the potential to generate enough wind electricity to power the equivalent of 1.6 million average American homes. The report estimates an electricity generation potential of 43,565 MW at a hub height of approximately 360 feet (110 meters). The most recent wind turbines to come online in Pennsylvania have a hub height of roughly 430 feet. As of May 31, 2025, the AEPs-certified installed wind capacity in Pennsylvania is 1,510 MW. Additionally, the Rogue’s Wind project in Cambria and Clearfield Counties is currently under construction and when completed in 2026, will bring online 114 MW of new, emissions-free energy. In addition to increased revenue for the local municipalities, this project will result in the repurposing and development of former coal mine reclamation acreage.

Chart 14 shows the top five counties for wind installations in Pennsylvania.

***Chart 14: Top Five Counties in Pennsylvania for Wind Installations***



## **C. Hydropower**

Conventional hydropower accounted for 29% of Pennsylvania's renewable generation in 2024<sup>18</sup>. The state's conventional hydroelectric facilities are, on average, about 60 years old, but some of them have been updated and expanded. With over 83,000 miles of rivers and streams and numerous non-powered dams, Pennsylvania has the potential to add more than 600 MW of hydropower generation capacity. At the end of 2023, Pennsylvania had almost 2,500 MW of hydroelectric generating capacity. About 84 MW of new hydropower generating capacity is expected to come online by the end of 2028. Pennsylvania has two pumped storage hydropower plants, one with 412 MW of generating capacity and another with 1,072 MW of capacity<sup>19</sup>.

Since the 1960s, major hydropower development has essentially stopped. Most future domestic capacity growth is expected to occur in the form of incremental efficiency improvements at existing dams and the installation of power generating equipment at existing locks and dams that were constructed for other purposes, *i.e.*, river navigation, flood control, etc.<sup>20</sup>

Pennsylvania's existing non-powered dams have a very significant untapped hydropower potential, ranking 6th in the nation, with a total estimated energy capacity of up to 520 MW. Effectively utilizing this capacity would allow Pennsylvania to increase renewable energy production while decreasing GHG emissions by more than 1 million tons of CO<sub>2</sub> equivalent<sup>21</sup>.

As of the end of the 2025 AEPS Act compliance year, Pennsylvania had approximately 2,458 MW of certified hydropower generating capacity of which, 1,540 MW is from pumped storage hydropower projects. Given appropriate regulatory support, baseload hydropower generation, at existing water control facilities, has the potential to boost Pennsylvania's renewable energy generation while doing so from resources other than wind and solar.

## **D. Demand Side Management/Energy Efficiency**

Subsequent to the implementation of Act 114 of 2020, Tier II credit pricing has increased from lows of \$0.25 to current prices over \$30. This rapid increase has also been driven by a constrained marketplace. Previously, many eligible Tier II project types, such as energy efficiency, have been overlooked due to the historically weak

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<sup>18</sup> [EIA Electricity Data Browser](#)

<sup>19</sup> [U.S. Energy Information Administration - EIA - Independent Statistics and Analysis](#)

<sup>20</sup> 2016 International Trade Administration (ITA) Energy Top Markets Report. [Renewable Energy Top Markets Report.pdf \(trade.gov\)](#)

<sup>21</sup> [Unlocking Hydropower Potential of Pennsylvania](#)

credit market. Demand side management and efficiency projects can provide significant benefits to the electric grid, such as by reducing peak loads and reducing loads during critical reliability hours that are not necessarily always during peak hours. There are, however, relatively few such projects that have sought AEPS certification, presumably due to a lack of awareness of recent market changes. A concerted marketing effort by aggregators and project installers, similar to what exists for small solar projects, could dramatically benefit the marketplace by providing a greater supply of credits.

### ***E. Growth of AEPS Resources within Pennsylvania***

This section discusses renewable and alternative energy data trends and generation capacity within Pennsylvania and throughout the PJM region. Specifically, this section compares the amount of renewable and alternative energy generation currently available to the amount of generation which will be needed to meet future AEPS Act requirements.

The Pennsylvania AEPS website<sup>22</sup> maintains a summary of all AEPS-certified generation facilities and certified energy efficiency and demand-side management (EE/DSM) resources. There were 88,288 certified generation facilities as of May 31, 2025.

Statistics for AEPS-certified generators, as of May 31, 2025, include:

- 74,283 generators (84%) are located in Pennsylvania with a total nameplate generating capacity of 10,444 MWac
- 14,005 generators are located outside of Pennsylvania with a total nameplate generating capacity of 19,998 MWac
- 73,607 solar facilities are located in Pennsylvania with a total nameplate generating capacity of 2,013.4 MWac. This represents 99.1% of all certified systems located in Pennsylvania and 19% of the nameplate generating capacity of Pennsylvania-sited AEPS-certified generators.

Table 5 in Appendix A summarizes the active, AEPS-certified, alternative energy resources by type, as defined within the AEPS Act, and the capacity of each type inside and outside of Pennsylvania. Generation facilities using biomass are further disaggregated by those using cellulosic or woody biomass and those using black liquor, a by-product of the wood pulping industry. Similarly, biologically derived methane gas is separated into anaerobic digester gas and landfill gas. In some instances, a qualifying AEPS fuel may not be the primary fuel used at a facility for

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<sup>22</sup> <http://www.pennaeps.com/reports/>

generating electricity. In such cases, attempting to make any conclusive statements by reviewing only the nameplate capacity of the generation facility can cause confusion so we have indicated if an AEPS fuel resource is not the primary fuel used in electricity generation.

The following graphs illustrate the growth of AEPS resources within Pennsylvania. Chart 15 provides the cumulative number of AEPS-certified Tier I systems, inclusive of solar PV, located in Pennsylvania. Chart 16 provides the cumulative number of AEPS-certified Tier II systems located in Pennsylvania. Charts 17 and 18 show the cumulative nameplate electric generating capacities for Solar, Tier I, and Tier II installations.

**Chart 15: Cumulative Number of In-State Tier I and Solar PV Systems, by Year**

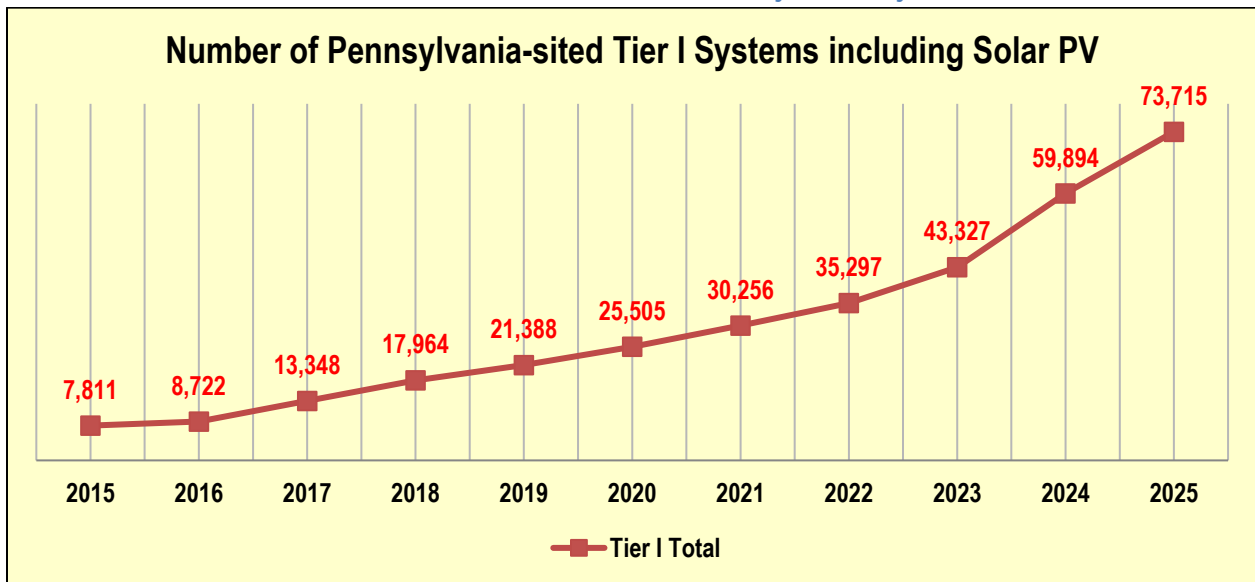
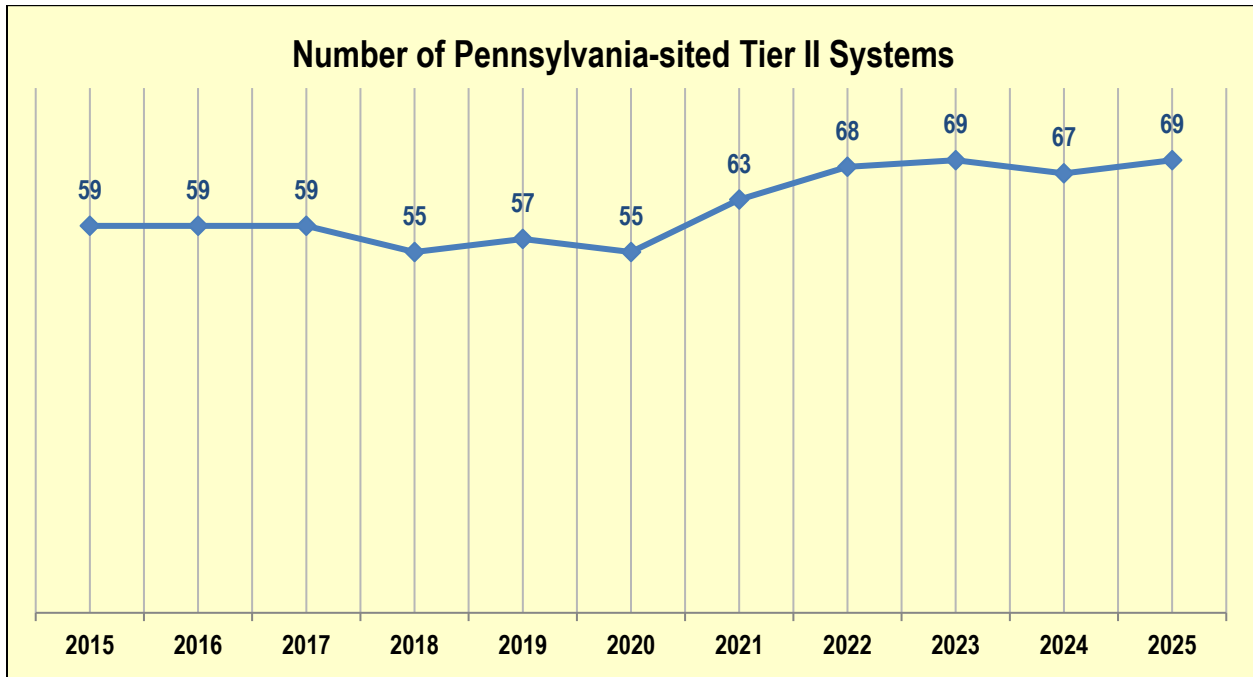


Chart 16: Cumulative Number of In-State Tier II Systems, by Year



**Note:** This chart only shows Tier II certified electric generation facilities. It does not include Energy Efficiency and Demand Response certified resources.

Chart 17: Cumulative In-State Tier I and Solar Nameplate Capacity Installed by Reporting Year

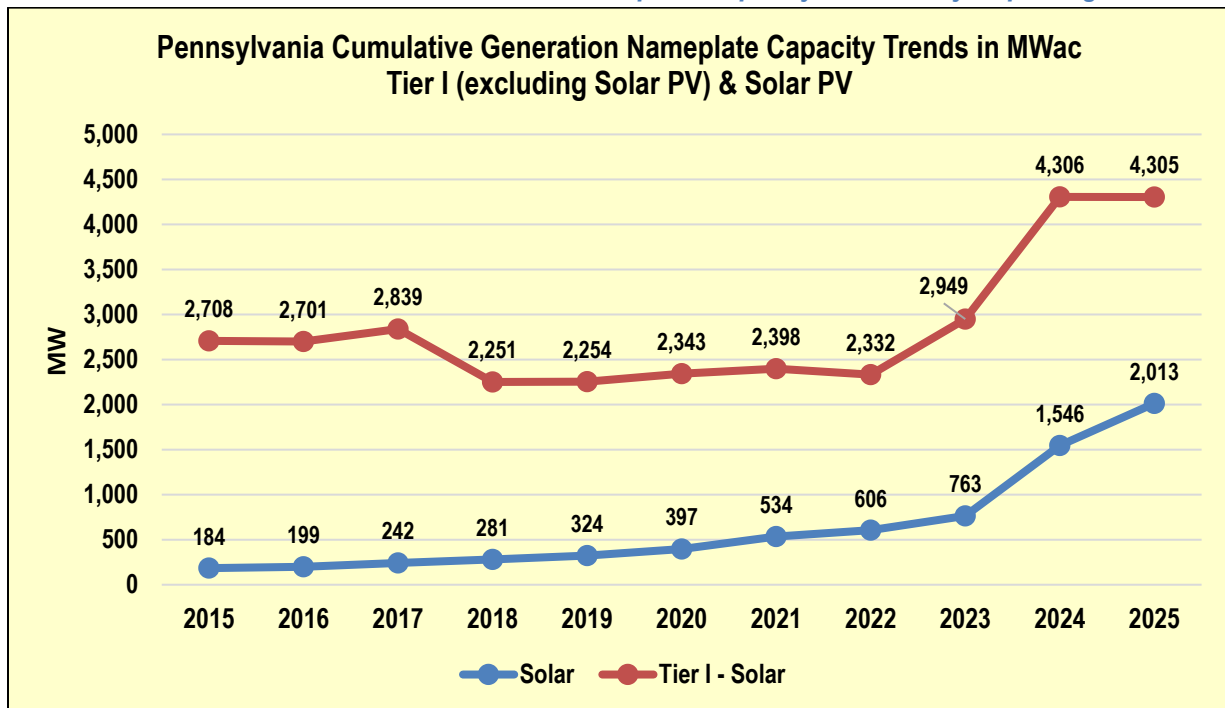
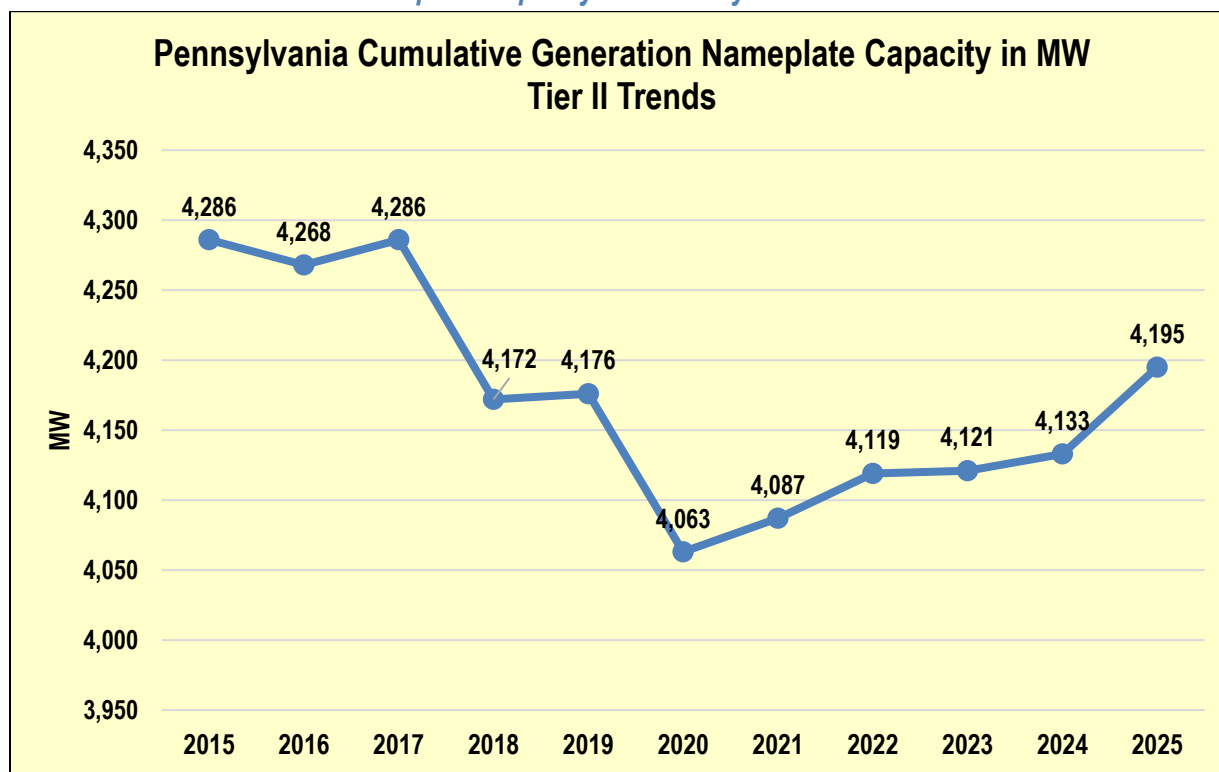


Chart 18: Cumulative Tier II Nameplate Capacity Installed by Year



### ***F. Impact of Act 40 and Act 114 Implementation***

The AEPS marketplace for Pennsylvania is quite complex due to numerous factors which must be considered. Since the implementation of Act 40 of 2017, the AEPS Act allows Pennsylvania EDCs and EGSs to purchase Tier I Solar AECs only from in-state facilities, unless the contracts for NSTI credits from out-of-state facilities have been approved by the Commission. To meet the Tier I Solar AEPS obligations, EDCs and EGSs must purchase in-state Solar AECs, with the exception of NSTI credits from pre-existing contracts that the PUC has subsequently reviewed and approved.

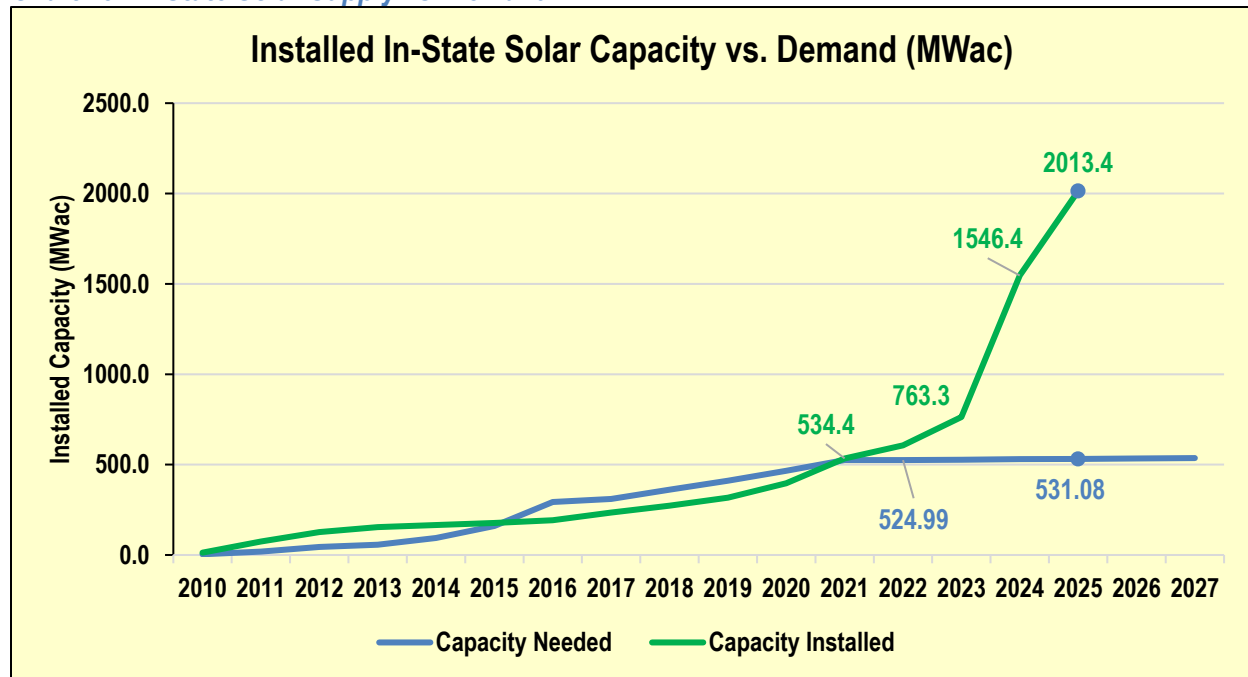
As noted in previous AEPS annual reports, a significant volume of out-of-state credits had been used for solar compliance, which had a notable impact on the price of in-state Solar AECs, and the associated economic viability to develop in-state solar capacity. Since the implementation of Act 40, credit prices have risen, and significant investments have built up in-state solar electricity generation capacity to meet the demand. Chart 19 shows the impact Act 40 had on increasing the build-out of in-state solar capacity. Chart 20 shows an estimate of the approved NSTI credits available for use in each compliance year. Only 7,972 NSTI credits were

retired for 2025 obligations. EDCs and EGSs may continue to obtain Tier I AECs from anywhere within the PJM region to use for their respective AEPS obligations.

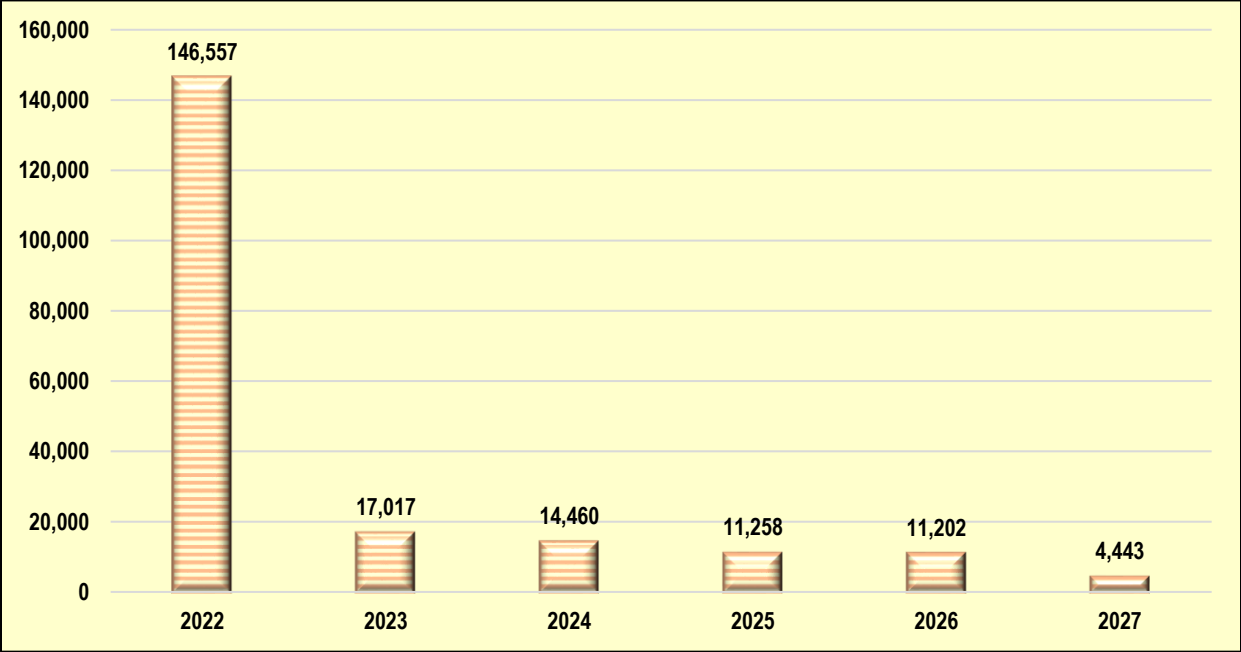
Up to and through the compliance year 2020, EDCs and EGSs were permitted to obtain Tier II AECs from anywhere within the PJM region to use for their respective AEPS obligations. With the passage of Act 114 of 2020, EDCs and EGSs are required to meet their Tier II obligations by using AECs from Tier II resources located within Pennsylvania. Tier II AECs generated prior to December 2020 from out-of-state resources maintain eligibility for the AEC’s life. The eligibility of AECs from out-of-state Tier II resources with pre-existing contracts was determined based on the Commission’s Act 114 Final Implementation Order, issued May 6, 2021.

Based on existing resources within PJM, and in consideration of other state requirements, the Commission estimates that adequate Solar, Tier I, and Tier II supply exists to meet compliance obligations through 2027. The Commission is projecting a likely shortfall in the supply of available Tier II credits beginning in 2028. Shortly after the passage of Act 40, there was some speculation about the availability of in-state solar available to meet AEPS compliance requirements. As Chart 19 shows, there should not be any concerns for solar credit availability for AEPS compliance purposes through 2027 and beyond.

**Chart 19: In-State Solar Supply vs. Demand**



**Chart 20: Estimated Approved NSTI Credits by AEPS Compliance Year**



*Due to nuances associated with the multitude of contracts, the numbers shown in the chart above are approximate.*

**G. Transmission and Distribution Interconnection Queues**

**PJM Interconnection Planning Queues**

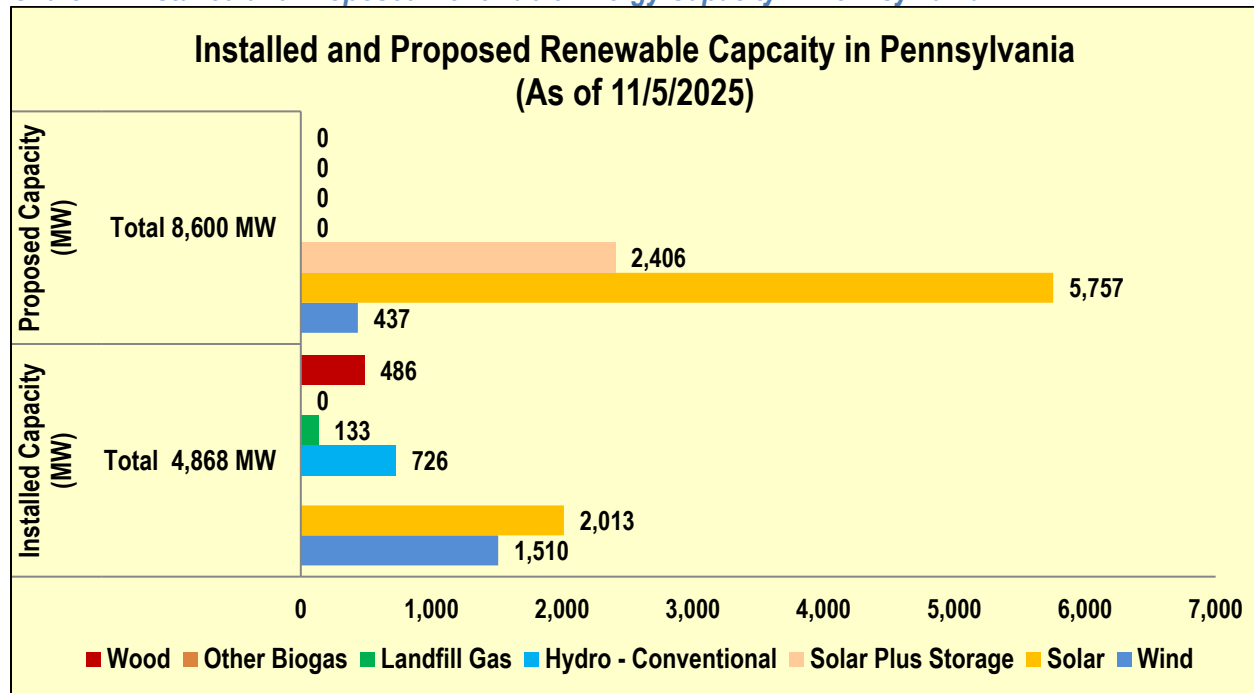
PJM manages transmission interconnection requests. Not all projects submitted to PJM for interconnection are constructed. Chart 21 summarizes the proposed renewable energy generation projects in the queue for Pennsylvania, as of November 5, 2025, with expected completion dates through the third quarter of 2031.<sup>23</sup> Only active projects, projects in the engineering and procurement phase, projects partially in service, and projects under construction are included in this analysis, totaling 8,600 MW of generating capacity. It is also worth noting that among these projects in the PJM queue, there are several signed solar Power Purchase Agreements (PPAs) totaling more than 1,600 MWac from several Pennsylvania institutions and businesses. The most significant PPA involves a 400 MW solar project being built in Clearfield County with the energy and credits flowing to the state of New York. Other PPAs for in-state solar generation have been signed by several academic institutions, such as the University of

<sup>23</sup> [PJM - Serial Service Request Status](#)

Pennsylvania, The Pennsylvania State University, and The University of Pittsburgh. Similarly, the City of Philadelphia, the Southeastern Pennsylvania Transportation Authority (SEPTA), and the Commonwealth of Pennsylvania have all signed long-term PPAs as part of their ongoing commitments to reducing greenhouse gas emissions, thereby lessening their contribution to climate change. In doing so, however, the solar credits associated with these projects must be kept and retired by each of these entities and therefore are not expected to be available for use by the EDCs and EGSs for AEPS compliance.

As noted above, Act 40 of 2017, and Act 114 of 2020, require Pennsylvania EDCs and EGSs to purchase Tier I Solar AECs and Tier II AECs only from in-state facilities. AECs for the broader Tier I requirement, excluding the solar carveout, may be purchased from anywhere within the PJM region. The PJM planning queue is used primarily to track the development of generation projects that will enter the wholesale electricity market, rather than the smaller projects being interconnected on distribution circuits managed by the EDCs. Chart 21 shows proposed renewable generation capacity in PJM’s queue, to be built in Pennsylvania, and existing certified renewable generation capacity installed in Pennsylvania.<sup>24</sup>

**Chart 21: Installed and Proposed Renewable Energy Capacity in Pennsylvania**



**Note:** PJM data does not account for small, behind the meter, distributed generation systems.

<sup>24</sup> PJM Serial Service Request Status - Includes "Active", "Projects in Engineering and Procurement", projects "Partially in Service", and projects "Under Construction".

## **EDC Interconnection Planning Queues**

The smaller distributed energy projects, typically 3,000 kW or smaller (up to 5,000 kW for projects meeting specific requirements), are being interconnected on distribution circuits managed by the EDCs. In 2025, the EDCs received 20,202 interconnection requests, which was a 9% increase over the previous year, and the total capacity of these requests received amounted to more than 4 GW. As in the case of the larger systems, some of these planned systems may not come to fruition. Details of these interconnection requests received by the various EDCs can be found in the annual Net Metering and Interconnection Report<sup>25</sup>. Chart 22 shows the annual interconnection requests received over the last 10 years.

EDCs are required to submit requests for net metering for systems with a nameplate capacity of 500 kW or greater along with the EDC's recommendation. The Commission's Bureau of Technical Utility Services (TUS) reviews each of these submittals and renders a decision to approve or not approve the EDCs recommendation for net metering.<sup>26</sup> In 2025, TUS reviewed 921 of these large net metering requests and recommendations, with a combined total nameplate capacity of 2.33 GW.

Chart 23 shows the cumulative growth of interconnected DERs over the same period. However, this growth is likely to slow down in the coming years due to the changes in the federal incentives that were a catalyst for this growth.

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<sup>25</sup> <https://www.puc.pa.gov/filing-resources/reports/alternative-energy-portfolio-standards-aeps-reports/>

<sup>26</sup> 52 Pa. Code § 75.17(e)

Chart 22: Annual Interconnection Requests

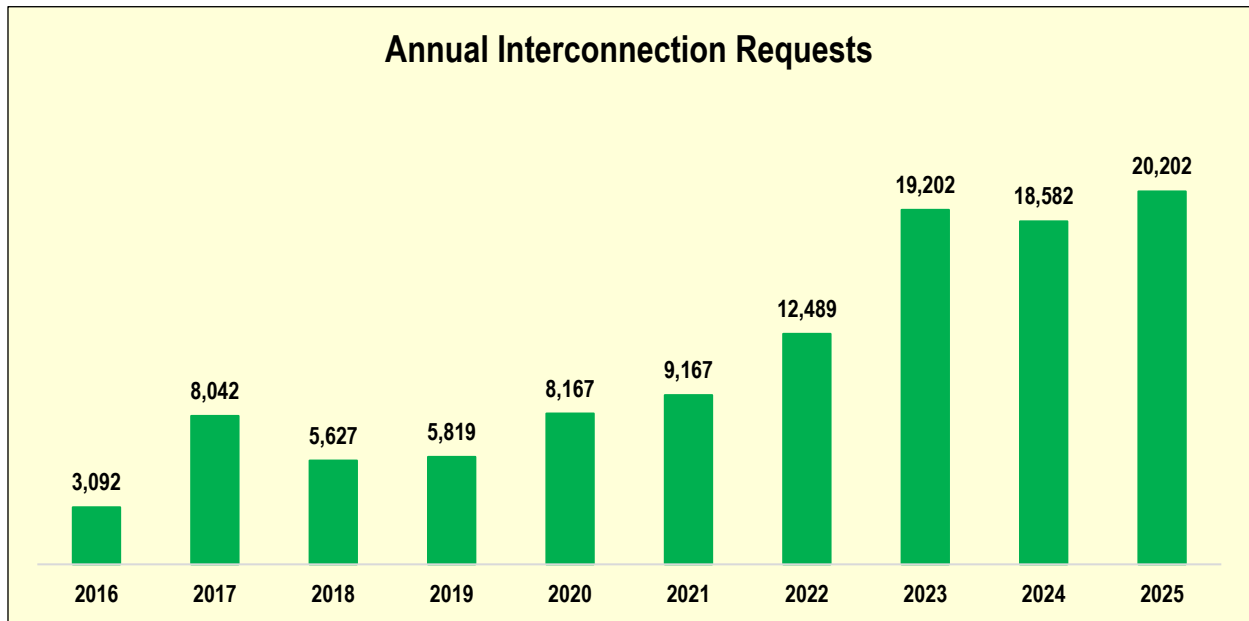
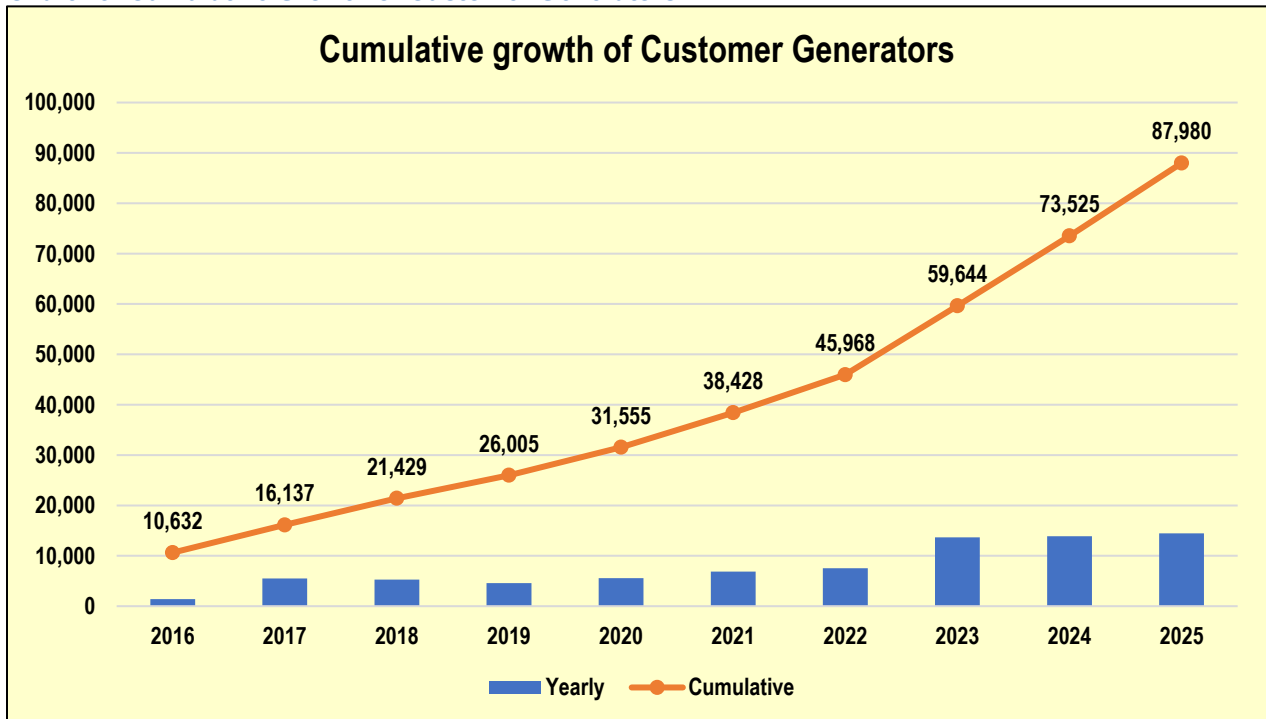


Chart 23: Cumulative Growth of Customer Generators





## ***4. Recommendations for Program Improvements***

Pennsylvania achieved its goal of the AEPS program. As required by statute 73 P.S. § 1648.7(c), the Commission and the DEP developed recommendations for consideration by the Chairman and Minority Chairman of the Environmental Resources and Energy Committee of the Pennsylvania Senate and the Chairman and Minority Chairman of the Environmental Resources and Energy Committee of the Pennsylvania House of Representatives. The DEP's recommendations in the following section do not represent the recommendations of the PUC nor do the PUC's recommendations represent those of the DEP.

## **DEP Recommendations for the Legislature:**

### **A. Support efforts to build a net zero carbon electricity grid:**

This effort is aimed at leveraging clean and renewable resources in the region to achieve a net zero electricity generation sector in the state. Pennsylvania has already seen significant reductions in emissions from electricity generation, with carbon dioxide emissions declining 38% from 1990 to 2021, largely due to a shift from coal fired to natural gas-fired electricity generation. While grid-scale renewable capacity has also increased in recent years, the state has a long way to go to reach a reliable and clean electricity generating portfolio.

To support realization of a net zero grid, the state will need to consider policy changes to regulate carbon emissions in the state or require an increasing share of electricity sales to come from clean energy resources within the state and surrounding region. This strategy assumes realization of a net zero electricity grid by 2050, which could be met through a combination of resources including existing nuclear, new small modular reactor nuclear, solar, wind, hydroelectric power, storage, biomass, coal- or gas-fired power plants with carbon capture technology or gas-fired power plants utilizing low-carbon fuels such as biomethane or hydrogen.

The Pennsylvania Comprehensive Climate Action Plan 2024 (Climate Action Plan or CCAP) includes a recommendation to enable community energy in the Commonwealth. As stated in the Climate Action Plan:

*“Many Pennsylvania utility customers currently do not have access to distributed energy generation systems because they rent, live in multi-tenant buildings, or have physical restrictions that make them unable to host a system. Community solar programs can help these utility customers access solar by allowing households and businesses within a geographic area to*

*subscribe to and share electricity from a solar project. Utility customers that participate receive a credit on their electricity bill for the power produced by the project. This recommendation would authorize community solar in the Commonwealth.*

The CCAP also includes a strategy to adopt Pennsylvania Reliable Energy Sustainability Standard (PRESS), a proposed plan to modernize PA’s renewable energy standards while building upon the existing AEPS Act. PRESS aims to continue all of the successful elements of AEPS while making it more inclusive, such as adding nuclear power and next generation technologies like fusion, as well as incentivizing lower emissions for gas-fired power plants. As stated in the CAP: “PRESS requires Pennsylvania to get 50% of its electricity from a diverse range of energy resources by 2035, including 35% from current and future clean energy sources, like solar, wind, small modular reactors, and fusion, 10% from sustainable sources like large hydropower and battery storage, and 5% from low emission forms of natural gas and other alternative fuels.”

Additionally, the CCAP recommends implementation of the Pennsylvania Climate Emissions Reduction Act (PACER) is a cap-and-invest program that allows Pennsylvania to develop and implement an annual declining cap on the electric generation sector’s CO<sub>2</sub> emissions. Through PACER, the DEP would be directed to run its own credit auction for carbon emissions independent of any other state. This would help to move toward a net zero grid by reducing annual climate emissions.

***B. Support efforts to ensure that the electricity grid is ready for electrification related to peak load impacts and reliability:***

This effort ties in with a net zero carbon electricity grid by ensuring the grid is not only providing clean electricity, but reliable electricity to end users in the state. Increasing electrification in the building and transportation sectors paired with a shifting electricity generation supply and a rise in distributed energy resources like rooftop solar means the transmission and distribution grid infrastructure in the state and broader region will require investment to expand and modernize grid systems and technologies to operate efficiently, effectively, and reliably.

There are multiple facets to ensure reliability of electricity, including balancing the supply of intermittent resources to ensure consistent levels of power generation, in addition to reliably delivering that power and adjusting to real-time changes in demand and end-use conditions, such as availability of distributed resources. The transmission and distribution grid infrastructure in the region will require significant investment to be able to handle the influx of new grid-scale and distributed clean energy projects.

Both PRESS and PACER will aid in helping to support a reliable low-carbon grid. PRESS is more inclusive than the current AEPS to ensure reliability, and 30% of PACER's proceeds will, in part, go towards investments in new clean energy projects — such as CCS, geothermal deployment, and clean hydrogen—in energy communities that have previously hosted coal, oil or gas infrastructure.

## ***PUC Recommendations for the Legislature:***

### ***A. Community Solar:***

Community solar is recognized as a way to provide customers greater access to solar-powered electricity. Community solar should be structured in a manner that does not allow costs to be shared or subsidized by non-participants and should avoid providing excess compensation to developers for installing equipment, such as smart inverters, that is already required under current interconnection practices.

### ***B. Modify the structure of net metering:***

On Feb. 17, 2021, the PA Supreme Court invalidated the Commission's regulations at 52 Pa. Code Sections 75.12 which defined virtual meter aggregation in relation to the independent load of virtual-metered facilities. Further, the Court found the definitions of "customer-generator" and "utility" in 52 Pa. Code § 75.1 to be invalid and unenforceable pertaining virtual meter aggregation.<sup>27</sup>

The Court's decision encourages the development of net metered systems up to three MW that have no electric load but for the project's parasitic load. This presents an enticing ratepayer-subsidized business model, whereby the developer

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<sup>27</sup> *Hommrich v. Pa. Pub. Util. Comm'n*, 231 A.3d 1027 (Pa. Cmwlth. 2020), *aff'd sub nom. Hommrich v. Commonwealth*, 245 A.3d 637 (Pa. 2021)

can reap retail compensation for what is otherwise wholesale merchant generation. The overturned regulations largely avoided that type of subsidy from occurring at the expense of increased costs to non-residential customer rate classes. Commission staff have thus far reviewed more than 2,000 such project proposals, with an average size of about 2.5 MW of nameplate generating capacity. These systems or projects would produce tens of thousands, even hundreds of thousands of times the electricity as compared to what they would require for their own operations. EDCs are obligated by the AEPS Act to purchase the net production of this electricity at full retail value, currently set as the price-to-compare (PTC), rather than the wholesale rate at which the EDC purchases bulk power. The net impact of this will result in a rate increase that will be initially passed along to non-residential rate class customers but may eventually be spread across all rate classes as this practice continues and unless the General Assembly takes action to modify the terms of net metering in Pennsylvania.

In our previous report, none of these systems or projects had yet come online so we provided an example for illustration, noting that the difference between a PTC of \$0.105 per kWh and a wholesale (locational marginal price) price of \$0.04 per kWh is an increase of 62%. As of the end of the AEPS compliance year (May 31, 2025) 16 of these merchant generator net metering projects had recently come online and had only been operating for a couple of months. The collective annual cash payout to these newly operational systems was \$1.06M whereas, if these generators had been compensated at the wholesale rate like normal generators, the payout would've been approximately \$404,000. It's estimated that in aggregate, these generators will receive approximately \$4.7M in payment for a full year of generation, as compared to a wholesale payment that would approximate \$2.5M. This cost differential will be passed onto the small commercial and industrial rate class customers and recovered in their rates. Between May 31, 2025, and Nov. 1, 2025, seven additional merchant net metering projects have come online and by May 31, 2026, Commission staff estimate that the cost burden to the small commercial and industrial rate class customers will be at least \$4M. This number will only increase as more merchant net metering generators continue to come online between now and May 31, 2025. Based on data provided by the EDCs, Commission staff estimate that 68 merchant net metering projects may be online by May 31, 2026.

The Commission therefore recommends that the General Assembly consider modifying the structure of net metering by placing reasonable bounds on net metering to curb the economic harms of subsidizing excessive wholesale generation

that the EDCs are obligated to purchase at retail, rather than at wholesale rates. Alternatively, the General Assembly could authorize the Commission to evaluate and create those reasonable bounds. The need is immediate to avoid harm to the default service market product for small commercial and industrial customers.

### ***C. Increase support and utilization of energy storage:***

With increases in the amount of generation from variable resources such as solar and wind, balancing the grid becomes more complicated. Additionally, increased deployment of electric vehicles and electric heat pumps are anticipated to increase the demands on the grid. Therefore, implementing appropriate solutions now may help minimize the negative impacts on the distribution system as this growth continues.

For example, combining roof-top-solar with behind-the-meter battery storage can mitigate impacts on the distribution system, particularly on circuits with higher concentrations of solar electricity generating systems.

Pooling the storage capacities of electric vehicles with bi-directional charging capabilities and allowing them to operate as a virtual power plant may help with load balancing and help mitigate the negative impacts on the grid. The average residential customer in Pennsylvania uses about 23 kWh per day on average.<sup>28</sup> Popular electric vehicle battery capacities range from about 40 kWh to 130 kWh. The relatively large size of electric vehicle batteries allows them to provide both grid services and potentially many hours of resilience to residential customers without substantially impacting their utility as a vehicle.

Also, Pennsylvania should not overlook the potential to develop its hydropower generation resources. In addition to a supply of non-powered water management facilities, Pennsylvania is the home to two of the world's largest hydropower turbine manufacturers, Voith Hydro and American Hydro. In addition to its renewable aspects, hydropower can provide ancillary grid services to support the development of a portfolio of renewable generation resources. These include black start capability, demand response, voltage and frequency regulation, and generation reserves that work hand-in-glove with intermittent generation like solar and wind.

Taking a holistic approach of focusing not just on expanding the electricity generation capacity of intermittent resources, but also focusing on implementing

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<sup>28</sup> Data derived from Table 2, Electric Power Outlook Report, available at [https://www.puc.pa.gov/media/3124/2024-epo-2023-2028-7-2024\\_final.pdf](https://www.puc.pa.gov/media/3124/2024-epo-2023-2028-7-2024_final.pdf).

risk mitigation technologies may help to mitigate negative impacts on the grid and maintain the availability of reliable power.

#### ***D. Eliminate the Quarterly Adjustment Provision:***

Act 129 of 2008 amended the AEPS Act. Specifically, Sections 2814(a) and (b) of Act 129 added a limited few biomass and municipally-owned hydropower resources as qualifying Tier I facilities. So as not to negatively impact the existing Tier I marketplace, Section 2814(c) requires the Commission to make a quarterly adjustment to the AEPS Tier I requirements to reflect the addition of these new biomass energy or low-impact hydropower resources that now qualify as a Tier I source. This adjustment is no longer needed, and the small percentage of credits that are added because of this requirement, predominately originate from resources outside of Pennsylvania. There are no indications that the quarterly adjustment has a material impact on the marketplace, however, the administrative aspects associated with this task adds undue complexities for the Commission and regulated compliance entities. This requirement no longer adds value, is no longer necessary, and should be eliminated.

#### ***E. Amend Tier II Provisions of AEPS:***

Act 114 of 2020 amended the Alternative Energy Portfolio Standards (AEPS) Act by requiring EDCs and electric generation suppliers (EGSs) to purchase Tier II alternative energy credits (AECs) only from in-state facilities. This revision has significantly altered the supply and demand outlook for Tier II AECs, resulting in an increase in compliance costs.

The average price for Tier II credits in 2020 was \$1.92 per credit, resulting in a total Tier II compliance cost of \$3.6 million. In comparison, in 2025, the average price per Tier II credit was \$26.92, resulting in a total Tier II compliance cost of over \$367 million.

With electric demand increasing, the number of necessary AECs for Tier II compliance will increase in response. This will likely tighten the supply and demand profile for Tier II credits, resulting in even further price increases.

Given this increase in demand and other factors affecting wholesale prices, a reassessment of Act 114 is appropriate. The Commission believes this issue could be addressed by revising Tier II resource qualification criteria, such as adding new resources or amending geographic qualifications.



## ***5. Administrative and Legislative Actions***

## ***Policy Initiatives and Legislation:***

### ***A. Policy Initiatives***

Policy initiatives, such as Governor Shapiro’s PRESS, announced on March 13, 2024, could dramatically reshape energy policy in the Commonwealth.<sup>29</sup> PRESS, which stands for Pennsylvania Reliable Energy Sustainability Standard, was introduced as a means of increasing electric reliability, lowering electricity-related carbon emissions, and job creation by capitalizing on a mix of existing and new Pennsylvania resources.

Separately, but related, Governor Shapiro’s Pennsylvania Climate Emissions Reduction Act (PACER) plans to address carbon emissions from the power sector and would help direct revenues from a Pennsylvania-specific cap-and-invest program to assist in lowering bills for electric ratepayers while also investing in lower carbon emitting power generation. Together, PRESS and PACER are projected to save ratepayers approximately \$250 million, create an estimated 14,500 energy jobs, and create over \$5 billion of investments in cleaner, reliable energy generation.

### ***B. Legislative Action***

SB 372 and HB 501 propose several changes expanding the AEPS Act. The AEPS Act of 2004 laid the groundwork for alternative energy in Pennsylvania, achieving its goals by 2021. SB 372 and HB 501 of 2025 seek to modernize this framework by integrating zero-emission incentives, enhancing solar requirements, and prioritizing decarbonization, reflecting a more progressive stance on climate change. While sharing a common foundation, SB 372 and HB 501’s innovations signal a shift from diversification to a comprehensive clean energy strategy. If enacted, it could significantly reshape Pennsylvania’s energy landscape beyond the AEPS Act’s original scope.

At the time of issuance of this report, none of these bills had been voted out by Pennsylvania General Assembly for the Governor’s consideration.

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<sup>29</sup> [Governor Josh Shapiro Press Release, March 13, 2024](#)



## ***6. Appendix***

## Appendix A

Table 1: Overview of AEPS Percentage Sales Requirements





















Year	Period	Tier I			Tier II
		Total	Solar PV	Tier I (general)	
1	June 1, 2006 – May 31, 2007	1.50%	0.0013%	1.4987%	4.20%
2	June 1, 2007 – May 31, 2008	1.50%	0.0030%	1.4970%	4.20%
3	June 1, 2008 – May 31, 2009	2.00%	0.0063%	1.9937%	4.20%
4	June 1, 2009 – May 31, 2010	2.50%	0.0120%	2.4880%	4.20%
5	June 1, 2010 – May 31, 2011	3.00%	0.0203%	2.9797%	6.20%
6	June 1, 2011 – May 31, 2012	3.50%	0.0325%	3.4675%	6.20%
7	June 1, 2012 – May 31, 2013	4.00%	0.0510%	3.9490%	6.20%
8	June 1, 2013 – May 31, 2014	4.50%	0.0840%	4.4160%	6.20%
9	June 1, 2014 – May 31, 2015	5.00%	0.1440%	4.8560%	6.20%
10	June 1, 2015 – May 31, 2016	5.50%	0.2500%	5.2500%	8.20%
11	June 1, 2016 – May 31, 2017	6.00%	0.2933%	5.7067%	8.20%
12	June 1, 2017 – May 31, 2018	6.50%	0.3400%	6.1600%	8.20%
13	June 1, 2018 – May 31, 2019	7.00%	0.3900%	6.6100%	8.20%
14	June 1, 2019 – May 31, 2020	7.50%	0.4433%	7.0567%	8.20%
15	June 1, 2020 – May 31, 2021	8.00%	0.5000%	7.5000%	10.00%
16	Each reporting year after May 31, 2021	8.00%	0.5000%	7.5000%	10.00%

**Table 2: 2025 AEPS Compliance Report by Tier**

MWhs	Alternative Energy Requirement		Number of Credits Reserved	Weighted Average Credit Price	Cost of Purchased Credits	Credit Deficit Requiring Alternative Compliance Payments
	Tier	Percent of Total Energy Sold				
136,554,641	Solar	0.5	682,693	\$33.20	\$22,665,654.17	61
	I	7.5	10,638,582	\$29.29	\$311,614,124.87	873
	II	10.0	13,654,235	\$26.92	\$367,594,667.10	1,225
	Total	18.0	24,975,510	N/A	\$701,874,446.14	2,159

The weighted average credit prices reflected above are calculated using data for credits that have a known cost. Some credits that are retired to meet obligations are self-generated or purchased bundled with the electricity and the cost for those credits is not available. Therefore, dividing the cost of purchased credits by the number of credits reserved will not yield the weighted average credit price reflected in the table. The weighted average credit price is used to calculate the solar ACP. The solar ACP, as established in statute, is 200% of the sum of the weighted average credit price of Solar AECs sold during the reporting year plus the value of any in-state and out-of-state solar rebates. The statutorily established ACP for Tier I and Tier II is \$45.

**Table 3: 2025 AEPS Compliance Report by EDC Service Territory<sup>30,31</sup>**


















Distribution Service Territory	Total Energy Sold (MWhs)	Alternative Energy Requirement	Credits Required	Credits Retired <sup>32</sup>	Compliance Status <sup>33</sup>	
					ACPs Required	Met  / Unmet 
Citizens' Electric and EGS	156,771					
Solar		0.500%	784	784		
Tier I		7.791%	12,215	12,215		
Tier II		10.000%	15,677	15,677		
Duquesne Light and EGSs	12,597,313					
Solar		0.500%	62,987	62,980	✓	
Tier I		7.791%	981,501	981,418	✓	
Tier II		10.000%	1,259,731	1,259,669	✓	
Met Ed and EGSs	14,087,385					
Solar		0.500%	70,437	70,435	✓	
Tier I		7.791%	1,097,598	1,097,563	✓	
Tier II		10.000%	1,408,738	1,408,690	✓	
PECO and EGSs	35,460,046					
Solar		0.500%	177,300	177,278	✓	
Tier I		7.791%	2,762,817	2,762,521	✓	
Tier II		10.000%	3,546,005	3,545,624	✓	
Penelec and EGSs	13,237,582					
Solar		0.500%	66,188	66,179	✓	
Tier I		7.791%	1,031,387	1,031,334	✓	
Tier II		10.000%	1,323,758	1,323,685	✓	
Penn Power and EGSs	4,400,175					
Solar		0.500%	22,001	22,001		
Tier I		7.791%	342,833	342,834		
Tier II		10.000%	440,018	440,018		

<sup>30</sup> The data reported for each Distribution Service Territory is aggregated for the EDC and all EGSs that served customers in that territory.

<sup>31</sup> The Tier I percentage requirement, excluding the solar carveout, includes the quarterly adjustment.

<sup>32</sup> The Credits Retired column shows an overage in some instances because some EGSs retired credits in excess of their required AEPS obligations. A few apparent shortages in the Credits Retired column occurred when EGSs retired AECs in another EDC territory. While these AEPS obligations show as a shortage in the Credit Retired column, these EGSs did meet their obligations on a statewide basis.

<sup>33</sup> One EGS, Great American Power LLC, failed to meet their 2025 AEPS obligations.

Distribution Service Territory	Total Energy Sold (MWhs)	Alternative Energy Requirement	Credits Required	Credits Retired <sup>32</sup>	Compliance Status <sup>33</sup>	
					ACPs Required	Met  / Unmet 
Pike County and EGSs	82,629					
Solar		0.500%	413	413		
Tier I		7.791%	6,438	6,438		
Tier II		10.000%	8,263	8,263		
PPL and EGSs	36,500,170					
Solar		0.500%	182,501	182,464	✓	
Tier I		7.791%	2,843,857	2,843,470	✓	
Tier II		10.000%	3,650,017	3,649,380	✓	
UGI Electric and EGSs	993,796					
Solar		0.500%	4,969	4,968		
Tier I		7.791%	77,430	77,430		
Tier II		10.000%	99,380	99,381		
Wellsboro Electric and EGSs	99,385					
Solar		0.500%	497	497		
Tier I		7.791%	7,743	7,743		
Tier II		10.000%	9,939	9,939		
West Penn Power and EGSs	18,939,390					
Solar		0.500%	94,697	94,694	✓	
Tier I		7.791%	1,475,635	1,475,616	✓	
Tier II		10.000%	1,893,939	1,893,909	✓	

**Table 4: AEC State of Origin – Retired for Compliance in 2025**

State	Solar		Tier I		Tier II		Total Credits Retired	% of Total Credits Retired
	Credits Retired	%	Credits Retired	%	Credits Retired	%		
PA	674,721	98.8%	5,207,558	48.9%	13,654,235	100.0%	19,536,514	78.22%
NC	7,891	1.2%	1,455,808	13.7%			1,463,699	5.86%
IL			933,036	8.8%			933,036	3.74%
IN			927,888	8.7%			927,888	3.72%
KY	81	<1%	600,173	5.6%			600,173	2.40%
OH			513,050	4.8%			513,131	2.05%
VA			480,314	4.5%			480,314	1.92%
WV			380,228	3.6%			380,228	1.52%
DC			54,943	<1%			54,943	<1%
NJ			46,925	<1%			46,925	<1%
MD			22,720	<1%			22,720	<1%
DE			8,958	<1%			8,958	<1%
MI			6,958	<1%			6,958	<1%
TN			23	<1%			23	<1%
<b>Total</b>	<b>682,693</b>	<b>100.0%</b>	<b>10,638,582</b>	<b>100.0%</b>	<b>13,654,235</b>	<b>100.0%</b>	<b>24,975,510</b>	<b>100.0%</b>

**Table 5: AEPS Existing Capacities of Certified, Active Facilities**

AEPS Tier	Alternative Energy Resource Types	Nameplate Capacity of PA Facilities (MWac)	Nameplate Capacity of Out-of-State Facilities (MWac)	Total Nameplate Capacity (MWac)
I	Biomass Energy			
	Cellulosic (woody) Biomass	485.8	1,172.3	1,658.1
	Black Liquor	163.7	0.0	163.7
I	Coal Mine Methane* (primary fuel source)	0.0	0.0	0.0
I	Coal Mine Methane (secondary fuel source)	1,105.0**	88.0	1,193.0
I	Fuel Cell	10.1	1.4	11.5
I	Low-Impact Hydropower	192.7	151.2	343.9
I	Biologically Derived Methane Gas			
	Other Biomass Gas	0.0*	0.0	0.0
	Anaerobic Digester Gas (primary fuel source)	15.0	17.1*	32.1
	Anaerobic Digester Gas (secondary fuel source)	0.0	0.0	0.0
	Landfill Gas (primary fuel source)	133.0	299.8*	432.8
	Landfill Gas (secondary fuel source)	0.0**	0.0	0.0
I	Solar PV	2,013.4	8,549.4	10,562.6
I	Wind***	1,510.1	9,719.4	11,229.5
I	<b>TOTAL of Tier I</b>	<b>5,628.8</b>	<b>19,998.5</b>	<b>25,627.3</b>
II	Biomass Energy			
	Cellulosic (woody) Biomass	0.0		0.0
II	Distributed Generation	44.4		44.4
II	Hydropower			
	Conventional, Non-Low Impact	725.5		725.5
	Pumped Storage	1,540.0		1,540.0
II	Municipal Solid Waste	256.8		256.8
II	Demand Side Management			
	Blast Furnace Gas	55.5		55.5
	Demand Side Management	41.9		41.9
	Energy Efficiency	20.0		20.0
	Industrial By-product	6.8		6.8
	Other Gases	85.5**		85.5
	Waste Heat	62.6		62.6
II	Waste Coal	1356.4		1,356.4
II	<b>TOTAL of Tier II</b>	<b>4,195.5</b>		<b>4,195.5</b>
I & II	<b>TOTAL of Tiers I &amp; II</b>	<b>9,824.3</b>	<b>19,998.5</b>	<b>29,822.7</b>

\* Nameplate capacity for some alternative energy resource types have decreased due to system decertification in the compliance year.

\*\* Several facilities have the capability of utilizing multiple fuel sources that may include a combination of Tier I, Tier II, or even non-eligible AEPS fuels to generate electricity. For example, a facility may co-fire coal and biomass or blend landfill gas and natural gas. Methodologies are in place to ensure that only AEPS-certified generation is awarded AECs, but it is not possible to designate a single, static AEPS nameplate capacity associated with these generators.

\*\*\* The 2024 report incorrectly indicated a total in-state nameplate capacity for wind of 1,580.1 MW. This was due to an existing wind farm being re-powered and the old nameplate capacity not being removed from the system, resulting in an over-calculation.

**Table 6: Snapshot of the key chronology of events to date**

Event	Date
Act 213 of 2004	Nov. 30, 2004
Act 213 of 2004 Effective Date	Feb.28, 2005
PUC Adopts Implementation Order I (M-00051865)	March 23, 2005
PUC Adopts Implementation Order II (M-00051865)	July 14, 2005
PUC Adopts Order: Standards for DSM Resources (M-00051865)	Sept. 25, 2005
PUC Adopts Order: Designates PJM GATS Registry (M-00051865)	Jan. 27, 2006
Final Net Metering/Interconnection Regulations in the <i>Pennsylvania Bulletin</i>	Dec. 16, 2006
PUC Contracts with Clean Power Markets as Program Administrator	March 28, 2007
Compliance Required for Pennsylvania Power Co. & UGI Utilities Inc.	May 31, 2007
Act 35 of 2007	July 19, 2007
Compliance Required for Citizens' Electric Co., Duquesne Light Co., Pike County Light & Power, and Wellsboro Electric Co.	Jan. 1, 2008
PUC Adopts Final Rulemaking Implementation Order (L-00060180)	Sept. 25, 2008
Act 129 of 2008	Oct. 15, 2008
Final Omitted Rulemaking Order (Net Metering) – Published in PA Bulletin (L00050174)	Nov. 29, 2008
PUC Adopts Act 129 Implementation Order – Relating to AEPS	May 28, 2009
Compliance Required for PPL Electric Utilities	Jan.1, 2010
PUC Adopts Solar Policy Statement	Sept. 16, 2010
Compliance Required for PECO Energy Co., Pennsylvania Electric Co., Metropolitan Edison Co., and West Penn Power Co.	Jan. 1, 2011
PUC Adopts Policy Statement, Net Metering – Use of Third-Party Operators	March 29, 2012
PUC Approves Selection of InClimate as Program Administrator	Sept.3 2015
PUC Adopts Second Amended Final Rulemaking Order (L-2014-2404361)	Oct. 27, 2016
Act 40 of 2017	Oct. 30, 2017
Final Implementation Order - Implementation of Act 40 of 2017 (Entered May 3, 2019)	April 19, 2019
Act 114 of 2020	Nov. 23, 2020
Final Implementation Order – Implementation of Act 114 of 2020	May 6, 2021

## **Appendix B**

### **Tier I Resources**

#### **Biologically Derived Methane Gas**

Biologically derived methane gas is produced from the anaerobic digestion of organic materials from yard waste such as grass clippings and leaves, food waste, animal waste and sewage sludge. It also includes landfill methane gas. Biologically derived methane gas is used as fuel to power engines that drive generators to generate electricity.

#### **Biomass Energy**

Biomass energy electricity that is generated utilizing the following:

- A. Organic material from a plant that is grown for the purpose of being used to produce electricity or is protected by the Federal Conservation Reserve Program (CRP) and provided further that crop production on CRP lands does not prevent the achievement of the water quality protection, soil erosion prevention or wildlife enhancement purposes for which the land was primarily set aside.
- B. Solid nonhazardous, cellulosic waste material that is segregated from other waste materials, such as waste pallets, crates and landscape or right-of-way tree trimmings or agricultural sources, including orchard tree crops, vineyards, grain, legumes, sugar and other byproducts or residues.
- C. Generation of electricity utilizing by-products of the pulping process and wood manufacturing process, including bark, wood chips, sawdust and lignin in spent pulping liquors from alternative energy systems located in this Commonwealth.

#### **Coal Mine Methane**

Generation utilizing methane gas emitted and collected from abandoned or working coal mines.

#### **Fuel Cells**

Fuel cells are electrochemical devices that convert chemical energy in a hydrogen-rich fuel directly into electricity, heat, and water without combustion.

## Geothermal Energy

Geothermal electricity generation extracts hot water or steam from geothermal reserves in the earth's crust and supplies it to steam turbines that drive generators to produce electricity. The three commercial types of conventional geothermal power plants are flash, dry steam, and binary.

In a geothermal flash power plant, high pressure geothermal water and steam are extracted, and the steam is separated and delivered to a turbine that drives a generator.

In a dry steam geothermal power plant, steam alone is extracted from a geothermal reservoir and is used to drive the turbine and generator.<sup>34</sup>

In a binary plant, the geothermal fluid heats and vaporizes a separate working fluid with a lower boiling point than water, which drives a turbine for power generation. Each fluid cycle is closed, and the geothermal fluid is re-injected into the heat reservoir. The binary cycle allows an effective and efficient extraction of heat for power generation from relatively low-temperature geothermal fluids.<sup>35</sup>

## Low-Impact Hydropower

Low-impact hydropower consists of any technology that produces electric power and that harnesses the hydroelectric potential of moving water impoundments if one of the following applies:

- A. The hydropower source has a Federal Energy Regulatory Commission (FERC) licensed capacity of 21 MW or less and was issued its license by Jan. 1, 1984, and was held on July 1, 2007, in whole or in part, by a municipality located wholly within this Commonwealth or by an electric cooperative incorporated in this Commonwealth.
- B. The incremental hydroelectric development:
  - i. Does not adversely change existing impacts to aquatic systems;
  - ii. Meets the certification standards established by the Low Impact Hydropower Institute and American Rivers, Inc., or their successors;
  - iii. Provides an adequate water flow for protection of aquatic life and for safe and effective fish passage;
  - iv. Protects against erosion;
  - v. Protects cultural and historic resources; and

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<sup>34</sup> Geothermal Energy Association – Geothermal Basics Q&A, 2012

<sup>35</sup> Renewable Energy Policy Network (REN21) – Renewables 2016 Global Status Report

vi. Was completed after Feb. 28, 2005.

### **Solar Photovoltaic (PV)**

A Solar PV System<sup>36</sup> generates electricity from sunlight. A solar photovoltaic cell is made of semiconductor material and can generate 1 to 2 watts of power. To increase the power output, multiple cells are connected together to form modules or panels. These modules or panels may be connected together to form arrays. A solar photovoltaic system consists of the PV panels, mounting structures, and an inverter that converts the direct current (DC) generated by the system to alternating current (AC).

### **Solar Thermal**

Solar thermal power plant<sup>37</sup> technology uses heat from the sun's rays to generate electricity. The heat from the sun's rays is collected and used to heat a fluid to high temperatures. This high temperature fluid is used to heat water and generate steam. The steam is then used to spin a turbine that turns a generator attached to its drive shaft and generate electricity.

### **Wind Power**

Wind power generation technology uses energy from the wind to turn large blades of a wind turbine which are connected to a drive shaft that turns a generator to generate electricity.

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<sup>36</sup> Solar Photovoltaic Technology Basics at [www.energy.gov](http://www.energy.gov).

<sup>37</sup> Solar Thermal Power Plants at [www.eia.gov](http://www.eia.gov).

## **Tier II Resources**

Act 114 of 2020 signed into law Nov. 23, 2020, modified Section 4 of the AEPS Act, effectively limiting eligibility of Tier II alternative energy sources to facilities located in Pennsylvania.

### **Distributed generation systems**

Distributed generation systems are small-scale and generate electricity and useful thermal energy (*i.e.*, combined heat and power plants) from systems with a nameplate capacity not greater than 5 MW.

### **Demand-side management**

Demand-side management consisting of the management of customer consumption of electricity or the demand for electricity through the implementation of:

- A. Energy efficient technologies, management practices or other strategies in residential, commercial, industrial, institutional and government customers that shift electric load from periods of higher demand to periods of lower demand.
- B. Load management or demand response technologies, management practices or other strategies in residential, commercial, industrial, institutional and government customers that shift electric load from periods of higher demand to periods of lower demand.
- C. Industrial by-product technologies consisting of the use of a by-product from an industrial process, including reuse of energy from exhaust gases or other manufacturing by-products that are used in the direct production of electricity at the facility of a customer.

### **Large-scale hydropower**

Large-scale hydropower plants produce electricity by harnessing the hydroelectric potential of moving water impoundments that do not meet the requirements of low-impact hydropower. The term also applies to pumped storage hydropower which is electricity produced by the force of rushing water released from an upper reservoir. That water is temporarily stored in a lower elevation reservoir and later returned to the upper reservoir when electricity is least expensive.

### **Municipal solid waste**

Municipal solid waste is burned at special waste-to-energy plants that use the heat to make steam to generate electricity or to heat buildings.

## Waste Coal

Waste coal facilities generate electricity by combusting waste coal that was disposed or abandoned prior to July 31, 1982, or disposed of thereafter in permitted coal refuse disposal sites or other waste coal combustion meeting alternate eligibility requirements established by regulation.

## Appendix C - AEPS Program

The AEPS Act requires that EDCs and EGSs obtain a prescribed percentage of their retail electric sales from qualifying alternative energy resources. This is accomplished by procuring and retiring an equivalent number of AECs. AECs are tradable instruments created as the AEPS-certified alternative energy resources generate electricity. EDCs and EGSs must acquire sufficient AECs from qualifying resources corresponding to the percentage of electricity sold to meet their AEPS requirement.

AECs are used to track and verify generation of electricity from AEPS-certified alternative energy resources. ***When a qualified and registered alternative energy resource, located within the PJM footprint, generates one megawatt hour (MWh) of electricity, one AEC is created. Similarly, qualified and registered energy efficiency projects can create AECs for each MWh of electricity saved.*** The AECs are created, serialized, tracked, and verified via creation of certificates. The credit certificates are serialized for tracking purposes. The AECs can be used and retired by the generating entity itself, sold, or traded to another entity in the marketplace. PJM Environmental Information Services Inc.'s (PJM-EIS) Generation Attribute Tracking System (GATS) is the Commission-designated AEC registry used to track generation, ownership and retirement of AECs. An EDC or EGS may acquire AECs from the marketplace and retire them. Retirement of AECs is necessary to ensure that the same AECs are not used again anywhere, by any other entity, for any other purpose. Retirement of AECs removes them from the marketplace. Pennsylvania EDCs and EGSs were permitted to obtain AECs from resources located within the entire PJM Interconnection, LLC<sup>38</sup> (regional transmission organization) area, except as limited by Act 40 of 2017 and Act 114 of 2020.

AECs are eligible for use during the reporting year in which they were created. If unused, these AECs may be banked for later use during either of the following two reporting years.

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<sup>38</sup> PJM Interconnection, LLC is the regional transmission organization for all or parts of Delaware, Illinois, Indiana, Kentucky, Maryland, Michigan, New Jersey, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia and the District of Columbia. <http://www.pjm.com/about-pjm/who-we-are/territory-served.aspx>.

The Commission and the DEP work cooperatively to monitor the performance of the AEPS program and prepare an annual report, which is provided to the Chairman and Minority Chairman of the Pennsylvania Senate Environmental Resources and Energy Committee and the Chairman and Minority Chairman of the Pennsylvania House Environmental Resources and Energy Committee.

The law provides for a three-month true-up period that runs from the conclusion of each reporting year, May 31, until September 1, of the same calendar year. During the true-up period, EDCs and EGSs may acquire any additional alternative energy credits needed for compliance. After the conclusion of the true-up period, the Commission verifies compliance and imposes alternative compliance payments (ACPs), as appropriate, by providing notice of the payment due as well as an opportunity to challenge whether the ACP was appropriately applied.

The Commission is responsible for carrying out and enforcing the provisions of the law. The DEP is charged with rendering determinations of resource eligibility and ensuring that AEPS-certified generating entities are following applicable environmental laws and standards. The Commission and the DEP are charged with monitoring compliance with the Act and monitoring the alternative energy market and its associated costs of energy generation, as well as conducting an ongoing alternative energy planning assessment. The Commission and the DEP are to report their findings and any recommendations for changes to the Act to the Pennsylvania General Assembly via an annual report.

On July 19, 2007, Act 35 of 2007 was signed into law, amending the AEPS Act by changing the compliance schedule for the Solar PV requirement. Act 35 also amended other provisions of the law, including definitions for customer-generator and net metering. On Dec. 20, 2008, a Commission rulemaking based on the Act 35 changes became effective.<sup>39</sup>

The 2008 final rule provides clarification of the Solar PV obligation and includes the revised 15-year schedule for Solar PV requirements. The clarification of the Solar PV obligation affirms that the percentage requirement is a percentage of all retail sales, and that the solar percentage is a part of the total Tier I obligation. Table 1 in Appendix A provides an overview of the AEPS percentage sales requirements with the revised Solar PV schedule.

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<sup>39</sup> See, 38 Pa. B. 6908 at <https://www.pabulletin.com/secure/data/vol38/38-51/2286.html>.

Table 1 in Appendix A shows the AEPS percentage sales requirements for each of the 15 compliance years mandated by the law. Appendix B provides general information about the Tier I and Tier II resources.

## **AEPS Resources**

Qualifying alternative energy resources are grouped into two categories, Tier I and Tier II, as described in the following table.

<b>Alternative Energy Portfolio Standards Resources</b>		
<b>Tier I</b>		<b>Tier II</b>
<ul style="list-style-type: none"> <li>Solar Photovoltaic (PV) (Solar PV is a Tier I resource but also has a stand-alone requirement)</li> </ul>	<ul style="list-style-type: none"> <li>Wind power</li> <li>Low-impact hydropower</li> <li>Geothermal energy</li> <li>Biologically derived methane gas</li> <li>Fuel cells</li> <li>Biomass energy</li> <li>Solar thermal</li> <li>Generation of electricity inside of Pennsylvania utilizing by-products of the pulping process and wood manufacturing process<sup>#</sup></li> <li>Certain muni and coop-owned hydropower<sup>#</sup></li> </ul>	<ul style="list-style-type: none"> <li>Waste coal</li> <li>Distributed generation systems</li> <li>Demand-side management*</li> <li>Large-scale hydropower</li> <li>Municipal solid waste</li> </ul>

<sup>#</sup>These were added to Tier I in 2009. To account for these additional resources, an annual adjustment is added to the broader Tier I requirement that excludes the solar carveout.

\*Includes energy efficiency, demand response and use of industrial by-products and technologies such as waste heat.

Although Solar PV is a Tier I resource, it also has a standalone requirement for each reporting year.

The AEPS Act established a 15-year phased-in schedule to reach the final goal of 18%, after which, the requirements are maintained at this level in perpetuity or until the AEPS Act is amended. May 31, 2021, was the end of the 15-year schedule to reach the goal of 18%.



## ***6. Glossary***

***Alternative Compliance Payments (ACP):*** A payment made by non-complying EDCs and EGSs. These payments are made available to the sustainable energy funds established through the Commission's orders and are utilized solely for projects that increase the amount of electric energy generated from alternative energy resources.

***Business Energy Investment Tax Credit (ITC):*** The Investment Tax Credit (ITC) reduces federal income taxes for qualified tax-paying owners based on capital investment in renewable energy projects.

***Capacity Factor:*** A ratio of the actual power output for a time period to the maximum possible power output if the plant was operating at full name plate capacity for the same time period.

***Demand Side Management:*** The process of managing the consumption of energy, generally to optimize available and planned generation resources.

***Dispatchable Sources of Electricity:*** Power plants that can be turned on or off as needed; adjust their output supplied to the electrical grid based on demand. Conventional power plants using coal and natural gas can adjust their output to meet the always changing electricity demands of the consumers.

***Non-Dispatchable Sources of Electricity:*** Power plants that use some renewable energy sources such as wind and solar cannot be turned on or off as needed or adjust their output supplied to the electrical grid based on demand.

***Non-Solar Tier I (NSTI):*** Alternative energy credits originating from out-of-state solar generating facilities. All solar PV credits generated by out-of-state solar facilities on or after Nov. 1, 2017, are designated as NSTI credits.

***Renewable Electricity Production Tax Credit (PTC):*** The Production Tax Credit (PTC) reduces the federal income taxes of qualified tax-paying owners of renewable energy projects based on the electrical output, measured in kilowatt-hours, of grid-connected renewable energy facilities.

***Utility-scale Wind Turbines:*** Individual turbines that exceed 100 kW in size.

***Utility-scale Solar Plants:*** EIA defines utility scale solar plants as plants with a capacity of at least one megawatt.



Front Cover: John S. Clarke Elementary School, Pottsville School District. Installed Summer 2020.  
System Size: 1.01MW DC / 0.9MW AC. Annualized Solar Generation of 1,150,000 kWh.

Back Cover: D.H.H. Lengel Middle School, Pottsville School District. Installed Summer 2020.  
System Size: 0.46MW DC / 0.38MW AC. Annualized Solar Generation of 550,000 kWh

The project has been operational for 5 years and averaged an annualized savings of \$100,000 per year for the School District.

Photos provided by Solar Renewable Energy LLC.



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