

# 2011 Annual Report

## Alternative Energy Portfolio Standards Act of 2004

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







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## **Alternative Energy Portfolio Standards Act of 2004**

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## EXECUTIVE SUMMARY

### INTRODUCTION

The Alternative Energy Portfolio Standards (AEPS) Act of 2004 requires electric distribution companies (EDCs) and electric generation suppliers (EGSs) to supply 18 percent of electricity using alternative energy resources by 2021.<sup>1</sup> The percentage of Tier I, Tier II and solar alternative energy credits that must be included in sales to retail customers gradually increases over this period.<sup>2</sup> The solar photovoltaic requirement is a component of the Tier I obligation. Act 35 of 2007 subsequently adjusted the photovoltaic percentages to smooth out the yearly increments needed to obtain the 2021 goal. EDCs and EGSs meet their AEPS requirements through the purchase of alternative energy credits (AECs) in amounts corresponding to the percentage of electricity that is required from alternative energy sources. One AEC represents one megawatt hour (MWh) of electricity generated from a qualified alternative energy source and can be purchased separate from the electricity.

Section 7(c) of the AEPS Act requires that the Pennsylvania Public Utility Commission (Commission or PUC) and the Department of Environmental Protection (DEP) work cooperatively to monitor the performance of all aspects of the Act and prepare an annual report 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

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<sup>1</sup> See generally 73 P.S. § 1648.1 et seq.

<sup>2</sup> Tier I sources include solar photovoltaic and solar thermal energy, wind power, low-impact hydropower, geothermal energy, biologically derived methane gas, fuel cells, biomass energy (including generation located inside Pennsylvania from by-products of the pulping process and wood manufacturing process including bark, wood chips, sawdust and lignin in spent pulping liquors) and coal mine methane. Tier II sources include waste coal, distributed generation systems, demand-side management, large-scale hydropower, municipal solid waste, generation of electricity outside of Pennsylvania utilizing by-products of the pulping process and wood manufacturing process including bark, wood chips, sawdust and lignin in spent pulping liquors and integrated combined coal gasification technology.

Committee of the House of Representatives. Act 35 of 2007 included an additional reporting requirement at Section 2 F(5).<sup>3</sup>

## OVERVIEW

For the 2011 reporting year (June 1, 2010 – May 31, 2011), all EDCs and EGSs complied with their AEPS obligations by retiring the needed AECs or making alternative compliance payments (ACP). One EDC missed the required number of Tier I AECs needed and made an ACP for one credit. One EGS that served the PPL service territory did not retire three Tier I and five Tier II AECs and made an ACP for the eight AECs. One EGS serving the PPL and PECO service territories did not retire 18 Tier II AECs and made an ACP for those AECs. All EDCs and EGSs retired the required number of solar AECs.

Recent analysis of proposed and existing resources indicates sufficient Tier I resources are available in Pennsylvania through 2014 and Tier II through 2021. Sufficient solar capacity exists and is planned to meet AEPS obligations through 2015. Pennsylvania EDCs are permitted to obtain AECs from within the entire PJM Interconnection, LLC (regional transmission organization) area.

If we consider the entire renewable portfolio standard (RPS) demand and supply from all PJM states rather than just the PA-only market, adequate supply exists for Tier I and Tier II through 2015. Solar supply in the PJM market is also adequate through 2015, assuming that 25 percent of the projects in the PJM construction queues are actually built, which has historically been the case.

In last year's AEPS report, the Commission recommended the program be updated by eliminating the quarterly adjustment requirement imposed by Act 129. The Commission recognizes and greatly appreciates state Rep. Robert W. Godshall's effort in addressing this recommendation by introducing House Bill 1962 on Nov. 3, 2011.

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<sup>3</sup> 73 P.S. § 1648.3(f)(5)

## TABLE OF CONTENTS

Executive Summary .....	i
Introduction.....	i
Overview.....	ii
Table of Contents .....	iii
Section 1 Introduction .....	1
Purpose.....	1
Table 1 – Overview of AEPS Percentage Sales Requirements .....	3
Chronology of Events.....	4
Table 2 – Chronology of Events: 2004-12.....	4
Section 2 Status of Compliance .....	6
2011 Compliance Summary .....	6
Table 3 2011 AEPS Compliance Report by Source.....	6
Table 4 2011 AEPS Compliance Report by EDC Service Territory.....	8
Compliance Start Date for the Electric Distribution Companies .....	10
Table 5 Overview of EDC Obligation Starting Years.....	10
AEPS Generators Certified .....	10
AEPS Certificates/Credits Created .....	11
Table 6 Credits Eligible for use in Pennsylvania and Estimated 2021 Requirements .....	11
Status of Customer-Generator Interconnections .....	12
Table 7 Number of Customer-generators Interconnected: 2010-2012 .....	13
Section 3 Current Costs of Alternative Energy Generation .....	14
Graph 1 Estimated Levelized Cost of New Generation Resources .....	15
Section 4 Costs Associated with the Alternative Energy Credits Program .....	16
Estimated Statewide AEPS Cost of Compliance.....	16
Table 8 Estimated Statewide AEPS Cost of Compliance .....	16

Section 5 Status of Pennsylvania’s AEPS Marketplace .....	18
Renewable Generation Capacity in Pennsylvania and PJM.....	18
Table 9 Existing Capacity in Pennsylvania.....	18
Table 10 Renewable Generation in the PJM Construction Queue for Pennsylvania Only .....	19
Table 11 Installed and Proposed Renewable Capacity in PJM .....	19
Graph 2 – AEPS Estimated PJM Marketplace .....	20
Graph 3 PA Only AEPS Marketplace .....	21
Graph 4 Solar Marketplace in PA Only .....	22
Table 12 Solar Demand for Pennsylvania .....	23
Renewable Economy Benefits - Jobs, Exports, Wages .....	24
Section 6 Recommendations for Program Improvements .....	26
Elimination of the Quarterly Adjustment .....	26
Appendix A Background .....	27
Alternative Energy Credit .....	27
Alternative Energy Credits Registry .....	27
Net Metering .....	27
Virtual Meter Aggregation.....	29
Interconnection Standards .....	29
Appendix B AEPS Registered Generators .....	31
Table 13 – AEPS Resource Summary .....	31
Appendix C PUC Orders .....	33

## SECTION 1 INTRODUCTION

### PURPOSE

Act 213 of 2004 was signed into law on Nov. 30, 2004, establishing an alternative energy portfolio standard for Pennsylvania. The law took effect on Feb. 28, 2005, and required that an annually increasing percentage of electricity sold to retail customers in Pennsylvania by EDCs and EGSs should be derived from alternative energy resources.

The PUC is responsible for carrying out and enforcing the provisions of the law. DEP is charged with rendering determinations of resource eligibility and ensuring compliance with all environmental, health and safety laws and standards relevant to the law's implementation. The PUC and DEP are charged with monitoring compliance with the Act, the development of the alternative energy market and the costs of alternative energy, and to conduct an ongoing alternative energy planning assessment. The PUC and DEP are to report their findings and any recommendations for changes to the Act to the General Assembly via an annual report.

The law establishes a 15-year schedule for complying with its mandates. The percentage of Tier I, Tier II and solar alternative energy resources that must be included in sales to retail customers gradually increases over this period. Compliance is monitored for successive 12-month reporting periods that begin on each June 1 and conclude on the following May 31. The law provides for a true-up period, during which EDCs and EGSs may acquire any additional alternative energy credits needed for compliance, at the conclusion of each reporting period. This three-month true-up period runs from the conclusion of each reporting period until September 1 of the same calendar year. After the conclusion of the true-up period, the PUC verifies compliance and imposes ACPs as appropriate after providing notice and opportunities for hearings for affected parties.

On July 19, 2007, Act 35 of 2007 was signed into law. It amended Act 213 by changing the compliance schedule related to solar photovoltaic (PV) energy. Act 35 also amended other provisions of the law, including definitions for customer-generator and net metering. As a result, on Sept. 13, 2007, the PUC reopened the public comment period to provide interested parties the opportunity to advise the Commission on how these amendments should be reflected in the final form rulemaking at Docket No. L-00060180. On Sept. 25, 2008, the Commission

adopted the final rulemaking. The rules became effective upon publication in the *Pennsylvania Bulletin* on Dec. 20, 2008.

The final rule provides clarification of the solar PV obligation and includes the revised 15-year schedule for solar PV requirements. The clarification for 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 provides an overview of the AEPS percentage sales requirements with the revised solar PV schedule.



TABLE 1 – OVERVIEW OF AEPS PERCENTAGE SALES REQUIREMENTS

Year	Period	Tier I			Tier II
		Total	Solar PV	Non-Solar	
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%

On Oct. 15, 2008, Act 129 of 2008 was signed into law, which, among other things, included additional energy sources in the definition of Tier 1 alternative energy sources. To accommodate the newly added Tier I alternative energy sources, Act 129 directed the Commission, on a quarterly basis, to increase the percentage of Tier I requirements for EDCs and EGSs to reflect the amount of generation from the new resources added by the Act. On May 28, 2009, the Commission approved a Final Order that established procedures to increase the non-solar PV Tier I percentage requirement on a quarterly basis to account for the new resources.

## CHRONOLOGY OF EVENTS

Table 2 provides a snapshot of the key chronology of events to date.

TABLE 2 – CHRONOLOGY OF EVENTS: 2004-12

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

Event	Date
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 <i>PA Bulletin</i> (L-00050174)	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. (formerly Allegheny Power Co.)	Jan. 1, 2011
PUC Adopts Policy Statement, Net Metering – Use of Third Party Operators	March 29, 2012

## SECTION 2 STATUS OF COMPLIANCE

### 2011 COMPLIANCE SUMMARY

Table 3 provides a summary of compliance for all EDCs and EGSs subject to AEPS compliance requirements during the 2011 reporting period. Table 3 includes the combined megawatt hours (MWhs) sold, the number of AECs reserved for compliance, the weighted average credit price for each of the tiers, the cost of purchased credits and the number of ACPs made. An ACP is required for each AEC for which an EDC and/or EGS was deficient in meeting its compliance obligation. The solar requirement is a percentage of retail sales and is included in the Tier I requirement. The Tier I requirement is also adjusted as required by the Act 129 quarterly adjustment.

TABLE 3 2011 AEPS COMPLIANCE REPORT BY SOURCE

Reporting Period / MWhs	Alternative Energy Requirement		Number of Credits Reserved	Weighted Average Credit Price*	Cost of Purchased Credits	Alternative Compliance Payments
	Tier	Percent of Total Energy Sold				
2011/94,680,993	Solar	0.0203	19,247	\$247.82	\$4,585,731	none
	I	3	2,833,112	\$3.94	\$7,980,434	4
	II	6.2	5,876,663	\$0.22	\$886,755	23
	Total	9.2	8,729,022	\$2.23**	\$13,452,920	27

\*The Weighted Average Credit Price (ACP) is calculated using data for credits with a known cost. 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. Therefore, dividing the Cost of Purchased Credits by the Number of Credits Reserved will not yield the Weighted Average Credit Price reflected in Table 3. The weighted average credit price is used to calculate the solar ACP. Solar ACP is: the weighted average credit price of solar AECs, sold during the reporting year, plus a calculated value that accounts for non-Pennsylvania solar rebates and that sum is multiplied by 200%. The ACP for Tier I and Tier II is \$45

\*\*This Weighted Average Credit Price was calculated using the cost of all credits (that have a known cost) divided by total number of credits with a known cost.

The quarterly adjustment impact for the 2011 reporting period increased the obligation in the respective quarters by: 0.008132 percent; 0.009303 percent; 0.004763 percent; and 0.005372 percent. A significant decrease in the quarterly adjustment percentage occurred for quarters three and four in comparison to quarters one and two. This reduction is coincidental to when the Met-Ed, PECO, Penelec, and West Penn Power service territories began their AEPS obligation during the third quarter.

Table 4 presents 2011 reporting period data on the number of AECs retired by tier in the EDC territories. All EDCs and EGSs achieved compliance by retiring the requisite number of AECs or by making ACPs for any shortage of AECs. All EDCs and EGSs were in compliance for their solar obligations through the purchase and/or retirement of Solar AECs. One EDC, Pike County, was deficient in purchasing and/or retiring one Tier I credit and made an ACP for that credit. One EGS, Great American Power, serving the PPL service territory did not purchase and/or retire three Tier I credits and five Tier II credits and made an ACP for the eight credits. One EGS serving in both the PPL and PECO service territories, Public Power & Utility of Pennsylvania, did not purchase and/or retire 18 Tier II credits and made an ACP for the 18 credits. Several EGSs retired excess credits beyond the required AEPS obligation and the overage is evident in Table 4. Because specific EGS sales information is considered proprietary, their numbers were combined and are shown with the appropriate EDC.

During the 2011 reporting period, 11 EDCs and 57 EGSs had compliance obligations. The obligation period began Jan. 1, 2011, for the Met-Ed, PECO, Penelec and West Penn Power service territories. Two EDCs, Citizens' and Wellsboro, did not have EGSs providing service in their territories for the 2011 reporting year. Many EGSs provide services in more than one EDC territory, and when an EGS retires too few or too many AECs, the excess or deficiency is not always connected to a specific EDC service area.



TABLE 4 2011 AEPS COMPLIANCE REPORT BY EDC SERVICE TERRITORY

Distribution Service Territory	Total Energy Sold (MWhs)	Alternative Energy Requirement	Credits Required	Credits Retired	Compliance Status
Citizens' Electric	164,239				
Solar		0.02%	33	33	In Compliance
Tier I		2.98%	4,905	4,905	In Compliance
Tier II		6.20%	10,183	10,183	In Compliance
Duquesne Light and EGS	14,153,279				
Solar		0.02%	2,873	2,873	In Compliance
Tier I		2.98%	422,706	422,707	In Compliance
Tier II		6.20%	877,504	877,504	In Compliance
Met Ed and EGS	5,896,993				
Solar		0.02%	1,198	1,198	In Compliance
Tier I		2.98%	176,015	176,015	In Compliance
Tier II		6.20%	365,614	365,614	In Compliance
PECO and EGS	15,216,223				
Solar		0.02%	3,089	3,096	In Compliance
Tier I		2.98%	454,178	455,597	In Compliance
Tier II		6.20%	943,403	945,297	In Compliance
Penelec and EGS	6,148,573				
Solar		0.02%	1,249	1,249	In Compliance
Tier I		2.98%	183,522	183,522	In Compliance
Tier II		6.20%	381,214	381,214	In Compliance
Penn Power and EGS	4,682,100				
Solar		0.02%	951	951	In Compliance
Tier I		2.98%	139,832	139,832	In Compliance
Tier II		6.20%	290,291	290,291	In Compliance

Distribution Service Territory	Total Energy Sold (MWhs)	Alternative Energy Requirement	Credits Required	Credits Retired	Compliance Status
Pike County and EGS	76,980				
Solar		0.02%	16	16	In Compliance
Tier I		2.98%	2,299	2,298	In Compliance after ACP paid
Tier II		6.20%	4,772	4,773	In Compliance
PPL and EGS	38,961,189				
Solar		0.02%	7,906	7,906	In Compliance
Tier I		2.98%	1,163,578	1,163,575	In Compliance after ACP paid
Tier II		6.20%	2,415,595	2,415,572	In Compliance after ACP paid
UGI Electric and EGS	1,009,247				
Solar		0.02%	205	205	In Compliance
Tier I		2.98%	30,140	30,140	In Compliance
Tier II		6.20%	62,574	62,574	In Compliance
Wellsboro Electric	119,162				
Solar		0.02%	24	24	In Compliance
Tier I		2.98%	3,559	3,559	In Compliance
Tier II		6.20%	7,388	7,388	In Compliance
West Penn Power and EGS	8,253,008				
Solar		0.02%	1,676	1,676	In Compliance
Tier I		2.98%	246,337	246,337	In Compliance
Tier II		6.20%	511,687	511,687	In Compliance

#### COMPLIANCE START DATE FOR THE ELECTRIC DISTRIBUTION COMPANIES

Penelec, Met-Ed, West Penn Power and PECO began compliance obligations on Jan. 1, 2011. Therefore, those companies and the EGSs providing service in their territories had an AEPS obligation for the final five months of the 2011 reporting year. The 2012 reporting year will be the first year with a full AEPS obligation for all EDC territories within the Commonwealth.

TABLE 5 OVERVIEW OF EDC OBLIGATION STARTING YEARS

Electric Distribution Companies	Year Obligation Began
Penn Power	2007
UGI Electric	2007
Duquesne	2008
Citizens'	2008
Pike County	2008
Wellsboro	2008
PPL	2010
West Penn Power	2011
Met-Ed	2011
Penelec	2011
PECO	2011

#### AEPS GENERATORS CERTIFIED

The Pennsylvania AEPS website (<http://paaeps.com/credit/>) maintains a summary of qualified generation facilities and qualified energy efficiency and demand-side management (EE/DSM) resources. There were 8,240 qualified generation facilities and 12 EE/DSM resources listed on May 31, 2011. Of the 8,240 qualified generation facilities, 6,235 (76 percent) facilities are located in Pennsylvania and 2,005 facilities are located outside of Pennsylvania.

For the 2011 reporting period, 62 percent of solar AECs, 53 percent of Tier I AECs and 70 percent of Tier II AECs retired by EDCs and EGSs originated from generation facilities located in Pennsylvania.

## AEPS CERTIFICATES/CREDITS CREATED

Table 6 shows the number of AECs by tier and eligible for use in Pennsylvania, created in PJM-EIS<sup>4</sup> for reporting years 2005 through 2011. Notably the availability of this information on a reporting year basis was changed from prior years. Previously, the information was provided on a calendar year basis. The data in Table 6 reveals a trend whereby the total number of AECs created has increased each year. While the number of solar and Tier I credits have shown an increase each year, the number of Tier II credits has fluctuated.

When comparing the number of credits created to the estimated number of credits needed in 2021, Table 6 shows that more Tier II credits were created in each of the years from 2005 through 2011 than will be needed in 2021. Based on past results, it is anticipated that Tier II credits will continue to be over-subscribed and there will likely be more of these credits created in any given year than are needed to meet the annual requirements to and including the 2021 reporting year.

It should be noted that AECs eligible for use in Pennsylvania may also be eligible to meet alternative energy requirements in other states. However, provisions are in place to ensure that credits are used only once.

The data provided in Table 6 is based on information available from PJM-EIS on July 22, 2012, and as noted above includes changes to data reported in previous AEPS reports.

TABLE 6 CREDITS ELIGIBLE FOR USE IN PENNSYLVANIA AND ESTIMATED 2021 REQUIREMENTS

	Solar	Tier I	Tier II
2005	33	555,563	11,092,421
2006	132	1,936,120	29,559,094
2007	428	3,329,693	33,230,598
2008	933	4,884,342	32,418,756
2009	5,102	7,331,547	29,810,548
2010	19,973	9,296,693	31,675,042
2011	87,766	12,629,317	30,514,281
Estimated 2021 Requirement	818,418	13,094,364	16,367,953

<sup>4</sup> The PJM-EIS database is available at <http://www.pjm-eis.com>.

## STATUS OF CUSTOMER-GENERATOR INTERCONNECTIONS

The regulations at 52 Pa. Code §75.34 require EDCs to review interconnection requests using one or more of four review procedures.

Level 1 is used for inverter-based small generator facilities with a nameplate capacity of 10 kilowatts (kW) or less. The customer's interconnection equipment is certified.

Level 2 is used for small generation facilities with a nameplate capacity 3 megawatts (MW) or less. The small generator facility uses an inverter for interconnection. The customer's interconnection equipment is certified. The proposed interconnection is to a radial distribution circuit, or a spot network limited to serving one customer. The small generator facility was reviewed under Level 1 review procedures but not approved.

Level 3 is used for evaluating interconnection requests to connect small generation facilities with an electric nameplate capacity of 3 MW or less which do not qualify under Level 1 or Level 2 interconnection review procedures or which were reviewed under Level 1 or Level 2 review procedures, but were not approved for interconnection.

Level 4 is used for interconnection customers that do not qualify for Level 1 or Level 2 review and do not export power beyond the point of common coupling. These customers may request to be evaluated under Level 4 review procedures, which provide for a potentially expedited review process.

PUC regulations for net metering and interconnection require EDCs to submit annual reports to the Commission on June 30. The reports contain the number of customer-generators interconnected to the distribution system as well as the status of interconnection requests processed by the EDCs within the past year.

As of May 31, 2012, Pennsylvania's EDCs reported that 6,953 Tier I and 18 Tier II customer-generators were interconnected to the distribution system. Those customer-generators represented 167,491 kW of generation capacity. Solar PV accounted for 96 percent of the Tier I customer-generators and 96 percent of Tier I generation capacity.

Of the 6,971 customer-generators, the EDCs processed 1,935 of those interconnection requests during the June 1, 2011 to May 31, 2012 period. There were no denials. The average number of days for EDCs to complete an interconnection request/approval was: Level I – 19 days; Level II – 38 days; Level III – five days; and Level IV – five days.



Table 7 provides a summary of the interconnection data.

TABLE 7 NUMBER OF CUSTOMER-GENERATORS INTERCONNECTED: 2010-2012

	Data as of May 31, 2010 (2008/2009 AEPS Annual Report)				Data as of May 31, 2011 (2010 AEPS Annual Report)				Data as of May 31, 2012 (2011 AEPS Annual Report)			
EDC	Tier I	Tier II	Solar PV	Total	Tier I	Tier II	Solar PV	Total	Tier I	Tier II	Solar PV	Total
Number of Customer Generators	1,512	3	1,351	1,515	4,435	7	4,201	4,442	6,953	18	6,667	6,971
Estimated Generation Capacity in kW	17,274	465	14,076	17,739	75,397	8,481	71,780	83,878	152,293	15,198	146,156	167,491

\* Solar PV is a Tier I resource. The Solar PV column separately identifies the Solar PV component of Tier I.

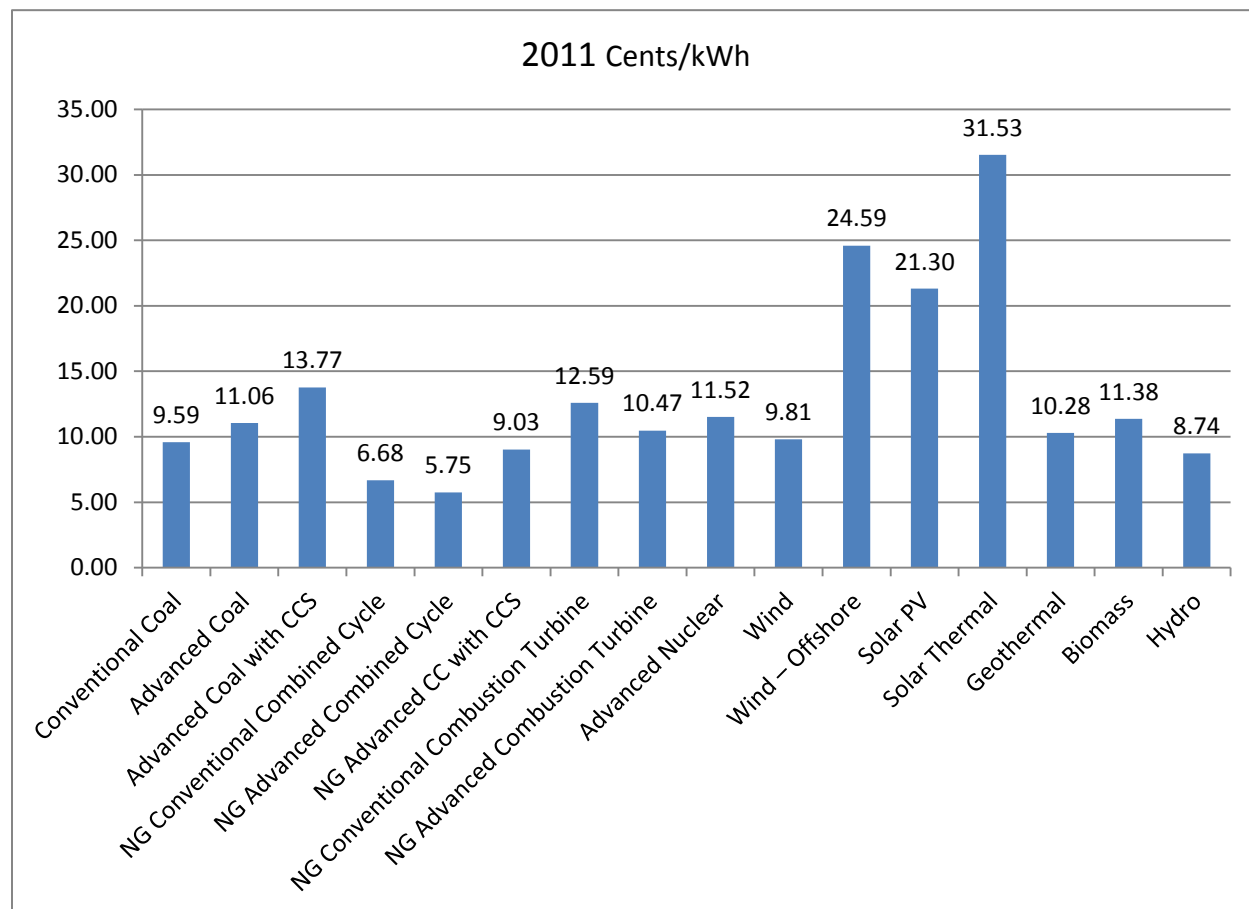
### SECTION 3 CURRENT COSTS OF ALTERNATIVE ENERGY GENERATION

The Energy Information Administration (EIA) provided cost estimate data for the construction and operation of utility scale electric generation plants. Graph 1 allows comparison of annual levelized costs for electric generation plants that would come online if orders had been placed in 2011.<sup>5</sup> These costs include overnight construction costs and annual operating and maintenance costs. Overnight construction costs are an estimate of the costs of construction if the process is completed in one day, thus avoiding interest payments on the investment to construct. Operating costs include items such as fuel costs, maintenance, insurance and taxes. The annual levelized costs in Graph 1 indicate the competitiveness of different technologies for electricity generation. Levelized cost is the present value of the annual costs, which can be variable. Those costs are only one tool in the decision of what type of generation is most cost-effective. Fuel costs and future tax benefits can be variable and would impact the choice of generation. The existing resource types and projected plant utilization rates would also impact which type of generation would be suited for a particular load control area.

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<sup>5</sup> See EIA document titled *Levelized Cost of New Generation Resources in the Annual Energy Outlook 2011* from EIA *Annual Energy Outlook 2011*, April 2011, DOE/EIA-0383(2011). Available at <http://www.eia.gov/forecasts/archive/aeo11/>

GRAPH 1 ESTIMATED LEVELIZED COST OF NEW GENERATION RESOURCES



## SECTION 4 COSTS ASSOCIATED WITH THE ALTERNATIVE ENERGY CREDITS PROGRAM

### ESTIMATED STATEWIDE AEPS COST OF COMPLIANCE

For analytical purposes, the Commission provided estimates of the statewide costs of AEPS for the 2014 and 2021 compliance years. These cost projections are presented in 2011 dollars, using a 6 percent discount rate. Holding projected credit costs flat, the projected total compliance costs will increase each year as the percentage requirements of alternative energy increase. As shown in the charts below, the estimated cost of AEPS compliance is approximately \$25 million for AEPS year 2014 and \$55 million for AEPS year 2021. To put these figures in perspective, the average annual statewide expenditures on electric service total approximately \$15 billion.<sup>6</sup> The cost estimates were broken down by the types of AECs, namely Solar, Tier I and Tier II. The AEC prices used in this analysis are based on historical pricing as reported by the AEPS Program Manager<sup>7</sup> as well as the results of EDC default service solicitations, with preferential weighting given to more recent solicitation results.

TABLE 8 ESTIMATED STATEWIDE AEPS COST OF COMPLIANCE

Projected 2014 AEPS Year Cost of Compliance in 2011 Dollars						
EDC	Solar Credits		Tier I Credits		Tier II Credits	
	Number of Required Credits	Cost with Credits Priced \$75.00	Number of Required Credits	Cost with Credits Priced \$3.00	Number of Required Credits	Cost with Credits Priced \$0.25
Duquesne	12,467	740,627	667,901	1,587,120	920,219	182,225
Met Ed	12,273	729,102	657,950	1,563,474	905,875	179,384
Penelec	13,557	805,381	726,242	1,725,755	1,000,600	198,142
Penn Power	3,855	229,014	206,520	490,750	284,538	56,345
PECO	33,964	2,017,700	1,819,481	4,323,598	2,506,841	496,413
PPL	31,166	1,851,479	1,669,581	3,967,394	2,300,312	455,516
UGI	820	48,714	43,927	104,383	60,522	11,985
West Penn	18,329	1,088,871	981,901	2,333,273	1,352,841	267,894
Citizens	145	8,614	7,794	18,521	10,738	2,126
Pike	64	3,802	3,448	8,193	4,750	941
Wellsboro	105	6,238	5,612	13,336	7,732	1,531
<b>Aggregate</b>	<b>126,745</b>	<b>\$7,529,543</b>	<b>6,790,357</b>	<b>\$16,135,796</b>	<b>9,354,968</b>	<b>\$1,852,503</b>

<sup>6</sup> See U.S. Energy Information Association - [http://www.eia.gov/electricity/sales\\_revenue\\_price/pdf/table3.pdf](http://www.eia.gov/electricity/sales_revenue_price/pdf/table3.pdf)

<sup>7</sup> See AEPS Program Manager- <http://paaeps.com/credit/pricing.do>

**Projected 2021 AEPS Year Cost of Compliance in 2011 Dollars**

EDC	Solar Credits		Tier I Credits		Tier II Credits	
	Number of Required Credits	Cost with Credits Priced \$75.00	Number of Required Credits	Cost with Credits Priced \$3.00	Number of Required Credits	Cost with Credits Priced \$0.25
Duquesne	78,982	3,120,505	1,263,717	1,997,131	1,579,647	208,035
Met Ed	79,361	3,135,479	1,269,771	2,006,699	1,587,213	209,031
Penelec	89,773	3,546,847	1,436,373	2,269,990	1,795,466	236,457
Penn Power	23,775	939,328	380,406	601,179	475,507	62,623
PECO	221,239	8,740,946	3,539,819	5,594,197	4,424,774	582,729
PPL	200,160	7,908,134	3,202,554	5,061,196	4,003,192	527,208
UGI	5,221	206,277	83,534	132,014	104,417	13,751
West Penn	117,853	4,656,262	1,885,655	2,980,019	2,357,069	310,419
Citizens	929	36,704	14,869	23,498	18,586	2,448
Pike	424	16,752	6,782	10,718	8,477	1,116
Wellsboro	701	27,696	10,884	17,201	13,605	1,792
<b>Aggregate</b>	<b>818,418</b>	<b>\$32,334,929</b>	<b>13,094,364</b>	<b>\$20,693,843</b>	<b>16,367,953</b>	<b>\$2,155,608</b>



## SECTION 5 STATUS OF PA'S ALTERNATIVE ENERGY PORTFOLIO STANDARDS MARKETPLACE

This section discusses renewable generation capacity both in Pennsylvania and in the area controlled by PJM, the regional transmission organization. The amount of renewable generation available and that which will be needed to meet the AEPS requirements are compared.

### RENEWABLE GENERATION CAPACITY IN PENNSYLVANIA AND PJM

Table 9 provides a summary of the existing installed capacity by fuel type in Pennsylvania as of Jan. 1, 2012, and solar capacity as of May 31, 2012.<sup>8</sup>

TABLE 9 EXISTING CAPACITY IN PENNSYLVANIA

Fuel Type	MW	% of Total Capacity
Coal (non-waste)	16,002	35.6%
Waste Coal	1,474	3.3%
Nuclear	9,593	21.3%
Natural Gas	9,994	22.2%
Hydro	2,220	4.9%
Diesel	1,697	3.8%
Oil	2,695	6.0%
Municipal-Solid Waste	335	0.7%
Wind	789	1.8%
Solar	160	0.4%
Total	44,958	100.0%

PJM manages grid interconnection requests in construction queues. Not all of the projects submitted to PJM for interconnection are constructed. Approximately 25 percent of the interconnection requests from 2005 to 2009 led to projects that were actually built.<sup>9</sup> The renewable generation in the queue (up to and including queue X4) for Pennsylvania as of Jan. 31, 2012, is summarized in Table 10.<sup>10</sup> Withdrawn projects and projects that are in service are not included.

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<sup>8</sup> See PJM 2011 Regional Transmission Expansion Plan, Monitoring Analytics 2011 State of the Market Report, American Wind Energy Association and Solar MW info from Clean Power Markets.

<sup>9</sup> See PJM 2009 Regional Transmission Expansion Plan.

<sup>10</sup> See PJM 2011 Regional Transmission Expansion Plan

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TABLE 10 RENEWABLE GENERATION IN THE PJM CONSTRUCTION QUEUE FOR PENNSYLVANIA ONLY

Fuel Type	Name Plate MW
Wind	2,783
Solar	562
Biomass	18
Hydro	149
Landfill Gas	40
Total	3,552

AEPS allows Pennsylvania EDCs and EGSs to purchase AECs from the entire PJM region and not just those generated in Pennsylvania. PJM has substantial existing and proposed renewable generation capacity as detailed in Table 11.

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TABLE 11 INSTALLED AND PROPOSED RENEWABLE CAPACITY IN PJM

Fuel Type	Installed Capacity Name Plate MW <sup>11</sup>	Proposed Capacity Name Plate MW <sup>12</sup>
Wind	5,848	41,584
Solar	768	3,634
Hydro	8332	1,185
Landfill Gas	816	476
Total	15,764	46,879

Each of the states in PJM has different renewable portfolio standards (RPS) and obligations. Some states limit the use of AECs to only those generated within their states.

PJM states with renewable portfolio standards include Pennsylvania, Michigan, Ohio, Virginia, North Carolina, Illinois, Delaware, District of Columbia, Maryland, West Virginia, New Jersey and Indiana. Tennessee and Kentucky do not yet have a final RPS. The RPS requirements in states with an RPS range from 12.5 percent of retail sales of electricity in North Carolina and Ohio to 25 percent in Illinois and West Virginia by 2025.

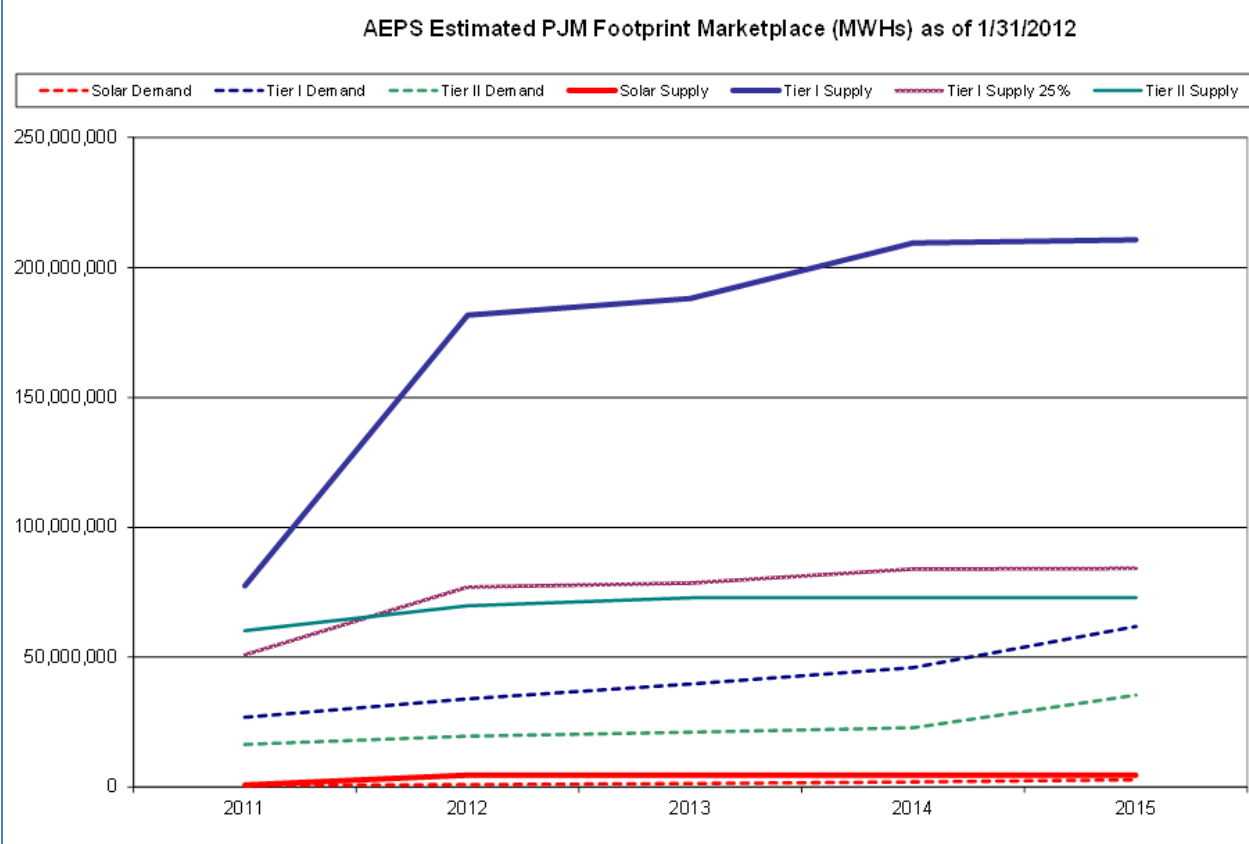
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<sup>11</sup> See 2011 State of the Market Report for PJM, Detailed Analysis, Volume II, Monitoring Analytics, LLC., 2012.

<sup>12</sup> See PJM 2011 Regional Transmission Expansion Plan, 2012.

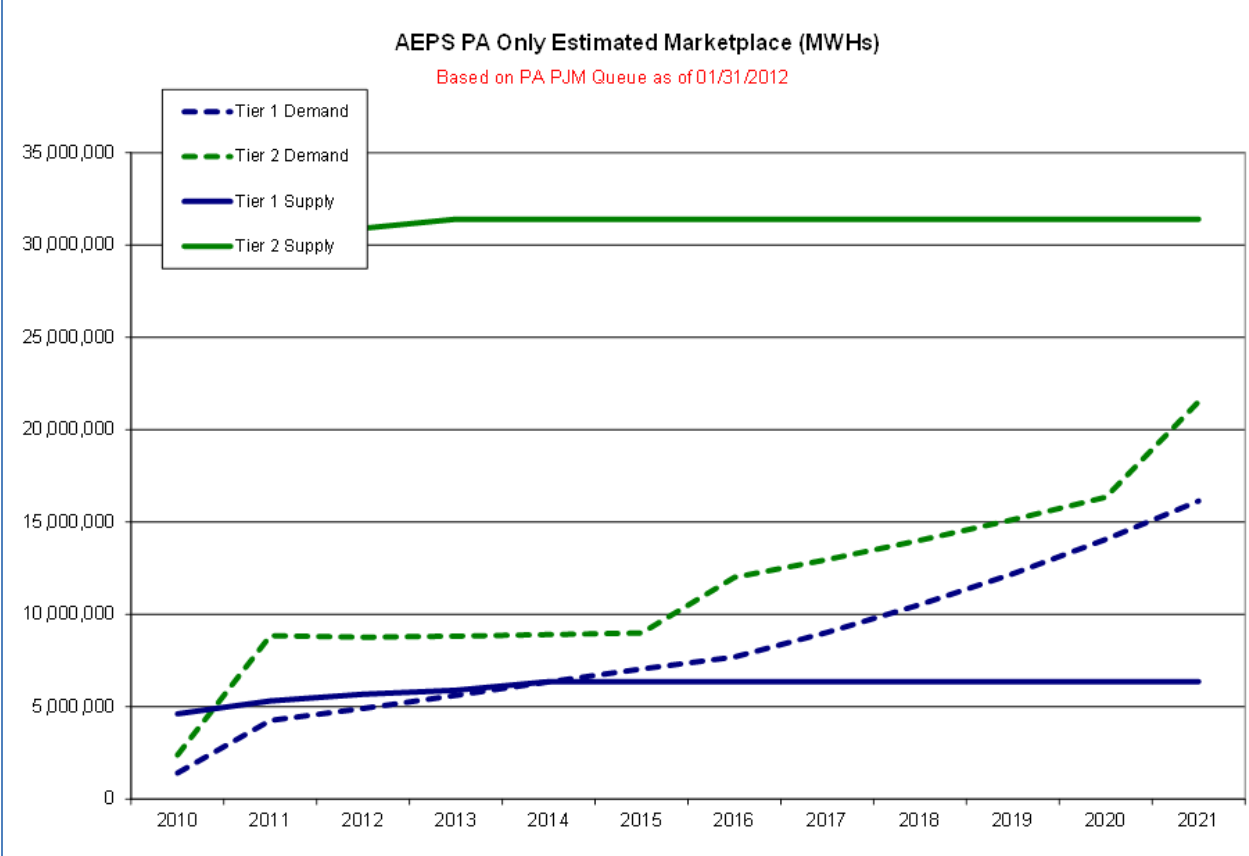
The overall adequacy of the marketplace for alternative energy resources in PJM can be estimated using sales data from EIA and the summary of RPS requirements for each state in PJM. As can be seen in Graph 2, adequate supply of Tier I, Tier II and Solar exists in PJM through 2015. Graph 2 includes a Tier I Supply at 25 percent delineation, illustrating what supply would look like if only 25 percent of projects in the PJM queue are built. Even at 25 percent, Tier I supply is adequate through 2015. Not all states in the PJM service area currently have renewable requirements, so this excess capacity may be diminished if more PJM member states adopt renewable requirements. However, the adoption of new state-specific RPS policies would reasonably be expected to spur the increased development of qualifying renewable/alternative resources within and around those states entering the RPS marketplace.

GRAPH 2 – AEPS ESTIMATED PJM MARKETPLACE



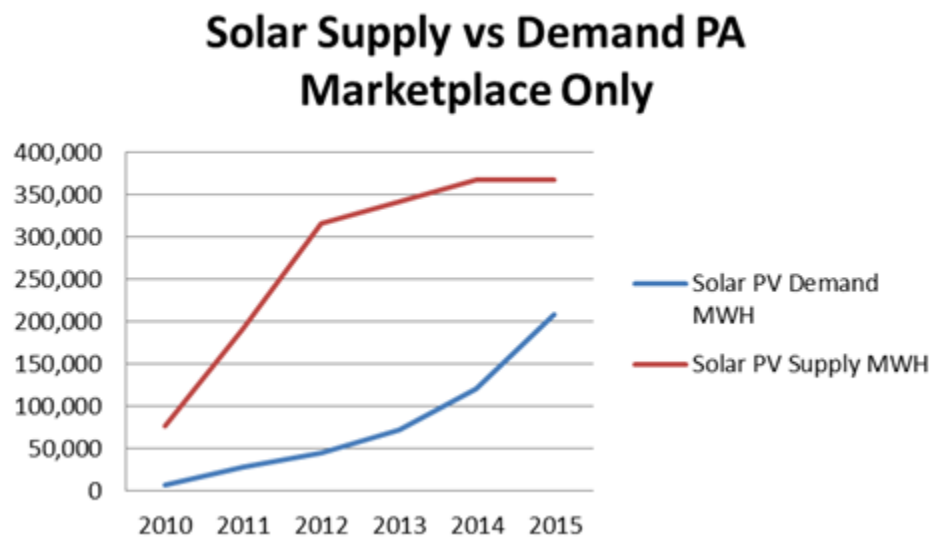
The AEPS Marketplace for Pennsylvania is quite complex. To meet the RPS requirements, Pennsylvania EDCs and EGSs can purchase AECs from sources outside of Pennsylvania but within the PJM region. PJM will need to do planning to incorporate the new generation required to meet the RPS program requirements and to ensure grid reliability with the new renewable resources. From Graph 3, there appears to be adequate Tier I supply in the Pennsylvania-only market area into 2014 and Tier II supply through 2021.

GRAPH 3 PA ONLY AEPS MARKETPLACE



Graph 4 indicates that sufficient solar PV supply is likely to exist for Pennsylvania within the Pennsylvania-only marketplace through 2015. This includes the existing 160 MWs of Pennsylvania solar PV and the Pennsylvania solar PV in the PJM construction queues. The data is based on the assumption that 25 percent of what is in the PJM queues actually is constructed. The PJM queue does not include planned solar projects beyond 2015 and consequently limits the scope of the graph. The PJM queue is also not a good indicator of future solar PV installations, since many installations are very small, behind the meter systems.

GRAPH 4 SOLAR MARKETPLACE IN PA ONLY



Note: Solar PV supply in Graph 4 includes existing supply and 25% of the new capacity in the PJM construction queues.



Projected solar demand for Pennsylvania is summarized below in Table 12. (Please note that a capacity factor of 12 percent was used for this table)

TABLE 12 SOLAR DEMAND FOR PENNSYLVANIA

Year	Generation Requirement (MWh)	Estimated Needed Capacity (MW)
2011	29,870	28.42
2012	48,125	45.78
2013	76,187	72.48
2014	126,745	120.57
2015	219,105	208.43
2016	384,466	365.74
2017	456,560	434.32
2018	535,582	509.50
2019	624,264	593.86
2020	717,222	682.29
2021	818,418	778.56

The AEPS is an important part of the policies helping to shape Pennsylvania's economy through goods and services related to renewable and alternative energy production. The Federal Bureau of Labor Statistics (BLS) initiated a Green Jobs Initiative to develop information on: (1) the number of and trend over time in green jobs; (2) the industrial, occupational, and geographic distribution of the jobs; and (3) the wages of the workers in these jobs. BLS has defined green jobs as either: (1) jobs in businesses that produce goods or provide services that benefit the environment or conserve natural resources and (2) jobs in which workers' duties involve making their establishment's production processes more environmentally friendly or use fewer natural resources. Third quarter data for 2011,<sup>13</sup> the most recently available data at the time of this report, indicated that Pennsylvania was home to about 185,500 green goods and services jobs, making up about 3.4 percent of total employment in Pennsylvania. The majority of these green goods and services jobs (about 154,500) were in the private sector. Approximately 37.4 percent of all private sector Pennsylvania green goods and services jobs were in the utilities sector, 15.6 percent in the transportation and warehousing sector, 9.1 percent in the professional, scientific and technical services, 6.6 percent in construction, 5.3 percent in manufacturing, 5 percent in the administrative and waste services sector, and the remainder spread among several other categories.

According to data from the American Wind Energy Association,<sup>14</sup> in 2011, Pennsylvania's wind energy industry supported 3000-4000 direct and indirect jobs. In 2011, there were at least 15 facilities manufacturing components for the wind energy industry. Annual property tax payments made by wind project owners was approximately \$1.4 million and annual land lease payments exceeded \$2.3 million.

In 2011, Pennsylvania's solar industry supported over 4,700 jobs, making it fourth in the nation with respect to the number of solar jobs.<sup>15</sup> In 2011, approximately 47 percent of solar jobs were in the installation sector, 25 percent in sales, 12 percent in manufacturing, 10 percent in research and development and 6 percent in the other category.<sup>16</sup> According to DEP, the PA Sunshine Program provided approximately \$46M in incentives for the installation of 47 MW of solar PV capacity. This financial

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<sup>13</sup> See U.S. Bureau of Labor and Statistics, Green Goods and Services Supplemental Tables, third quarter 2011 [http://www.bls.gov/ggs/ggqcew\\_supple\\_2011Q3.pdf](http://www.bls.gov/ggs/ggqcew_supple_2011Q3.pdf)

<sup>14</sup> See Pennsylvania Wind Energy Factsheets, December 2011 and August 2012

<sup>15</sup> See The Solar Foundation. "2011 National Solar Census", October 2011

<sup>16</sup> See *id.*

incentive leveraged more than \$262M in private capital, most of which supported Pennsylvania companies engaged in the installation of these systems.

Also in 2011, the Commonwealth Financing Authority (CFA) announced financing totaling nearly \$29 million to several projects and project types that are estimated to generate more than 600,000 MWh of electricity per year from qualifying AEPS resources. For these projects the CFA was able to leverage nearly \$311 million in private investment; \$10.76 in private investment for every \$1 in public funding. Project types included biogas, wind, solar PV, combined heat and power and one fuel cell project.

## SECTION 6 RECOMMENDATIONS FOR PROGRAM IMPROVEMENTS

### ELIMINATION OF THE QUARTERLY ADJUSTMENT

In the 2010 Annual Report, the Commission recommended that the Act 129 quarterly adjustment applied to non-solar Tier I AEC obligations be eliminated. Act 129 of 2008 added additional energy sources in the definition of Tier I alternative energy sources. To accommodate the newly added Tier I alternative energy sources, Act 129 directed the Commission on a quarterly basis to increase the percentage of Tier I requirements for EDCs and EGSs to reflect the amount of generation from the new resources added by the Act. At Public Meeting on May 28, 2009, the Commission approved a Final Order that established procedures to increase the non-solar PV Tier I percentage requirement on a quarterly basis to account for the new resources.

The Commission recognizes and appreciates state Rep. Robert W. Godshall's effort in addressing this recommendation by introducing House Bill 1962 on Nov. 3, 2011. The Commission continues to advocate for elimination the Act 129 quarterly adjustment through the passage of H.B. 1962. The continued recommendation for elimination of the quarterly adjustment is made for the purpose of removing an administrative burden, on EDCs, EGSs and the AEPS Program Administrator, that results in an insignificant increase of Tier I non-solar AECs. During the 2011 reporting year, the quarterly adjustment added only 5,544 AECs to the 4,957,733 credits that were retired without the adjustment.

## APPENDIX A BACKGROUND

### ALTERNATIVE ENERGY CREDIT

One AEC represents one megawatt hour (MWh) of qualified alternative electric generation from within the PJM footprint, whether self-generated, purchased along with the electric commodity, or purchased separately through a tradable instrument. The AEC does not represent the purchase of renewable energy, only the confirmation of the generation of renewable energy. The generators are permitted to use generation on site or sell the energy by contract or participate in net metering if the facility is a customer-generator.

Generation output is confirmed by the PJM market settlement process or by metering of the generation system except for some small solar PV (<15 kW). AECs for solar PV systems that are not based on meter recordings of the generation output are calculated via the use of the National Renewable Energy Laboratory's (NREL's) PVWattsTM software to determine the energy production from the system. The PVWattsTM calculator works by creating hour-by-hour performance simulations that provide estimated monthly and annual energy production in kilowatt hours (kWh) and energy value. Users can select a location and choose to use default values or their own system parameters for size, electric cost, array type, tilt angle and azimuth angle. In addition, the PVWattsTM calculator can provide hourly performance data for the selected location. There are two versions of PVWattsTM available. Pennsylvania uses Version 1 for the purposes of calculating estimates for solar generators participating in the PA AEPS program.

### ALTERNATIVE ENERGY CREDITS REGISTRY

On Jan. 27, 2006, the PUC designated PJM Environmental Information Services Inc.'s (PJM-EIS) Generation Attribute Tracking System (GATS) as the alternative energy credits registry<sup>17</sup>. GATS provide an unbundled, certificate-based tracking system for use by electricity suppliers and other energy market participants to comply with state policies and regulatory programs. The GATS database contains information about each megawatt hour of electricity generated, including megawatt hours produced, emissions data, fuel source, location, state program qualification and ownership of attributes. Each certificate is given a unique serial number for tracking purposes. Varying levels of information in the registry are available to EDCs, EGSs, state regulators and the public.

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<sup>17</sup> [www.pjm-eis.com](http://www.pjm-eis.com)

GATS is not an online trading platform where potential buyers can bid for and purchase AECs. The actual sale of alternative energy certificates or credits, and any of its associated attributes, such as the emissions' attributes associated with carbon dioxide, nitrogen oxides and sulfur dioxides, takes place outside of GATS between a buyer and seller. GATS simply records, after the fact, the ownership transfer of certificates representing certain attributes between two GATS subscribers.

In April 2007, the PUC contracted with Clean Power Markets (CPM), a subsidiary of Enerwise Global Technologies<sup>18</sup>, to be the AEC Program Administrator in Pennsylvania. On June 3, 2010, the Commission entered into a new contract with the company until Dec. 31, 2013, with the option for two one-year contract extensions.

During the three-year contract, CPM verified and will continue to verify EGS and EDC compliance with requirements of the AEPS Act.

CPM works with DEP to administer the process of reviewing and qualifying alternative energy systems. CPM also tracks alternative energy credit prices, calculates ACP amounts, verifies data from behind-the-meter and energy efficiency/demand-side management, and confirms that the same alternative energy is not being claimed for compliance with another state's portfolio requirements. The company provides regular reports to the PUC and maintains a public Internet site at <http://paaeps.com>.

## NET METERING

On June 22, 2001, the PUC finalized a rulemaking to establish regulations governing net metering for customer-generators. The regulations became effective Dec. 16, 2006, upon publication in the *Pennsylvania Bulletin*.<sup>19</sup>

Net metering is defined as “the means of measuring the difference between the electricity supplied by an electric utility and the electricity generated by a customer-generator when any portion of the electricity generated by the alternative energy generating system is used to offset part or all of the customer-generator's requirements for electricity.”<sup>20</sup> The net-metering requirements apply to EDCs which have customer-generators intending to pursue net metering opportunities in accordance with the AEPS Act. EGSs may offer net metering to customer-generators under terms established in

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<sup>18</sup> [www.cleanpowermarkets.com](http://www.cleanpowermarkets.com), [www.enerwise.com](http://www.enerwise.com)

<sup>19</sup> See 36 Pa. Bull. 7562 and 52 Pa. Code Ch. 75

<sup>20</sup> 73 P.S. §1648.2

agreements between the EGS and the customer-generator taking service from the EGS.<sup>21</sup>

On July 17, 2007, Act 35 of 2007 was signed into law and amended a number of provisions of the AEPS Act, including revising the definition of net metering to include a restriction on virtual meter aggregation.

#### VIRTUAL METER AGGREGATION

Virtual meter aggregation involves the combination of readings and billings for all meters, regardless of rate class, on properties owned or leased and operated by a single customer-generator, by means of the EDC's billing process, rather than through physical rewiring of the customer-generator's property for a physical, single point of contact. Virtual meter aggregation on properties owned or leased, and operated by a customer-generator, shall be allowed for purposes of net metering. Virtual meter aggregation shall be limited to meters located within two miles of the customer-generator's property and within a single EDCs territory.

#### INTERCONNECTION STANDARDS

On Aug. 17, 2006, the Commission finalized a rulemaking establishing interconnection standards for customer-generators. The regulations promote onsite generation by customer-generators using alternative energy systems and eliminate barriers which may have previously existed regarding interconnection. The regulations became effective on Dec. 16, 2006, upon publication in the *Pennsylvania Bulletin*.<sup>22</sup>

The interconnection regulations govern the process by which a customer-generator may interconnect onsite generation equipment to an electric utility's distribution lines. The regulations set forth specific levels of, and criteria for, review depending on the rated generation capacity of the generation equipment. The regulations also provide for a dispute resolution process to manage disputes which may arise during the interconnection process. The application forms and associated fees were not included in the regulations, but were developed through a stakeholder process. The Commission's Interconnection Standards Working Group developed a set of standard application forms for use by customer-generators that wish to interconnect to an EDC's distribution network pursuant to 52 Pa. Code Sections 75.21-75.5. The application forms cover Level 1 through Level 4 projects. On Feb. 26, 2009, the forms were

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<sup>21</sup> 52 Pa. Code § 75.13

<sup>22</sup> See 36 Pa. Bull. 7574, and 52 Pa. Code Ch. 75

adopted by Commission Order and the associated application fees were adopted by Policy Statement.<sup>23</sup>

The Policy Statement establishes various fees by type of project. Simple Level 1 application reviews require a flat fee of \$100 per application. Level 2 applications establish a base fee of \$250 plus \$1 per kW of nameplate capacity rating of the customer-generator's facility, plus other review costs that may not exceed \$100 per hour. Level 3 applications specify a base fee of \$350 plus \$2 per kW of the nameplate capacity rating of the customer-generator's facility, plus other review costs that may not exceed \$100 per hour. For a Level 4 application, when the Level 4 application is processed using the Level 1, Level 2 or Level 3 review process, the fees set forth for those particular review levels should apply. No fee shall be assessed for an area network impact study conducted under Section 75.40. A Level 4 application reviewed under Section 75.40(d) is subject to a base fee of \$350 plus \$2 per KW of nameplate capacity rating of the customer-generator's facility.

Act 35 amended a number of provisions of the AEPS Act, including revising the definition of "customer-generator" to increase the capacity limit on non-residential projects from 1 to 3 MW and from 2 to 5 MW for those projects that operate in parallel with the grid during emergencies or where a micro grid is in place for maintaining critical infrastructure.

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<sup>23</sup> See 52 Pa. Code §§69.2101-69.2104.



## APPENDIX B AEPS REGISTERED GENERATORS

Alternative Energy Portfolio Standards Generators Registered for Pennsylvania Certification Summary Information as of May 31, 2012:

- 8,240 certified generators
- 6,235 certified generators located in Pennsylvania
- 2,005 certified generators located outside of Pennsylvania
- 6,133 certified solar facilities in Pennsylvania with a capacity of 160.2 MW
- 1,840 certified solar facilities outside of Pennsylvania with a capacity of 62.6 MW

Table 13 summarizes the Alternative Energy Resources by type and the capacity of each type in and outside of Pennsylvania. Facilities located in the MISO area that were formerly included in this table have been removed since the credits from those facilities are no longer eligible. Though the table does not include biomass as an alternative energy resource type, generator facilities using biomass are included within the Tier I Wood/Wood Wastes Solids resource type.

TABLE 13 – AEPS RESOURCE SUMMARY

AEPS Tier	Alternative Energy Resource Types (s)	Nameplate Capacity of Facilities in PA (MWs)	Nameplate Capacity of Facilities Outside of PA (MWs)	Total Nameplate Capacity (MWs)
I	Black Liquor	54.0	0.0	54.0
I	Coal Mine Methane	0.8	88.0	88.8
I	Hydro	42.2	0.0	42.2
I	Landfill Gas	1,520.9	993.2	2,514.1
I	Other Biomass Gas	1.6	1.8	3.4
I	Solar	160.2	64.7	224.9
I	Wind	925.4	3,382.3	4,307.7
I	Wood/Wood Waste Solids	18.0	684.5	702.5
I	Wood/Wood Waste Solids & Black Liquor	109.5	0.0	109.5
I	<b>TOTAL of Tier I</b>	<b>2,832.5</b>	<b>5,214.4</b>	<b>8,047.0</b>
II	Black Liquor	0.0	65.0	65.0
II	Blast Furnace Gas	0.0	67.0	67.0
II	Blast Furnace & Other Gases	52.5	0.0	52.5

AEPS Tier	Alternative Energy Resource Types (s)	Nameplate Capacity of Facilities in PA (MWs)	Nameplate Capacity of Facilities Outside of PA (MWs)	Total Nameplate Capacity (MWs)
II	Distributed Generation	5.0	0.0	5.0
II	Hydro	2,185.1	4,282.7	6,467.8
II	Municipal Solid Waste	252.4	464.2	716.7
II	Other Gases	31.0	0.0	31.0
II	Waste Coal	1,613.9	244.6	1,858.5
II	Waste Heat	5.0	0.0	5.0
II	Wood/Wood Waste Solids	12.5	63.0	75.5
II	Wood/Wood Waste Solids & Black Liquor*	0.0	438.9	438.9
II	<b>TOTAL of Tier II</b>	<b>4,157.4</b>	<b>5,625.4</b>	<b>9,782.9</b>

\* Several facilities have the capability of generating electricity utilizing multiple fuel sources that include both Tier I and Tier II resource types, those facilities are accounted for as Tier II Wood/Wood Waste Solids & Black Liquor.

## APPENDIX C PUC ORDERS

Orders are available on the PUC website at [www.puc.pa.gov](http://www.puc.pa.gov) under the tab Electricity, Alternative Energy. Information is also available at <http://paaeps.com>.

Implementation of the Alternative Energy Portfolio Standards Act of 2004 (Implementation Order I), PUC Docket No. M-00051865, PUC Public Meeting on March 23, 2005, entered March 25, 2005

Implementation of the Alternative Energy Portfolio Standards Act of 2004 (Implementation Order II), PUC Docket No. M-00051865, PUC Public Meeting on July 14, 2005, entered July 18, 2005

Implementation of the Alternative Energy Portfolio Standards Act of 2004: Standards for the Participation of Demand Side Management Resources, PUC Docket No. M-00051865, PUC Public Meeting on Sept. 29, 2005, entered Oct. 3, 2005.

Implementation of the Alternative Energy Portfolio Standards Act of 2004: Designation of the Alternative Energy Credits Registry, PUC Docket No. M-00051865, PUC Public Meeting on Jan. 27, 2006, entered Jan. 31, 2006.

Final Rulemaking regarding Net Metering for Customer-generators pursuant to Section 5 of the Alternative Energy Portfolio Standards Act, 73 P.S. §1648.5, Docket No. L-00050174, and Implementation of the Alternative Energy Portfolio Standards Act of 2004: Net Metering, Docket No. L-00050175, PUC Public Meeting on June 22, 2006, entered June 23, 2006.

Implementation of the Alternative Energy Portfolio Standards Act of 2004, Docket No. L-00060180, PUC Public Meeting on July 20, 2006, entered July 25, 2006.

Final Rulemaking regarding Interconnection Standards for Customer-generators pursuant to Section 5 of the Alternative Energy Portfolio Standards Act, 73 P.S. §1648.5, Docket No. L-00050175, and Implementation of the Alternative Energy Portfolio Standards Act of 2004: Interconnection Standards, Docket No. M-00051865, PUC Public Meeting on Sept. 15, 2006, entered Sept. 19, 2006.

Implementation of the Alternative Energy Portfolio Standards Act of 2004, Docket No. M-00051865, PUC Public Meeting on Nov. 30, 2006, entered Dec. 5, 2006.

Petition for Declaratory Order Regarding Ownership of Alternative Energy Credits Associated with Non-Utility Generating Facilities Under Contract to Pennsylvania Electric Company and Metropolitan Edison Company, Docket No. P-00052149, PUC Public Meeting on Dec. 21, 2006, entered Feb. 12, 2007.

Petition for Declaratory Order Regarding Ownership of Alternative Energy Credits Associated with Non-Utility Generating Facilities Under Contract to Pennsylvania Electric Company and

Metropolitan Edison Company, Petition for Reconsideration of Viking Energy of Northumberland, Docket No. P-00052149, PUC Public Meeting on May 30, 2007, entered May 31, 2007.

Implementation of Act 35 of 2007; Net Metering and Interconnection, Docket No. L-00050174, PUC Public Meeting on May 22, 2008, entered July 2, 2008.

Implementation of the Alternative Energy Portfolio Standards Act of 2004, Docket No. L-00060180, PUC Public Meeting on Sept. 25, 2008, entered Sept. 29, 2008.

Implementation of the Alternative Energy Portfolio Standards Act of 2004: Standard Interconnection Application Forms, Docket No. M-00051865, PUC Public Meeting on Feb. 26, 2009, entered Feb. 27, 2009.

Implementation of Act 129 of 2008 Phase 4 – Relating to the Alternative Energy Portfolio Standards Act, Docket No. M-2009-2093383, PUC Public Meeting on May 28, 2009, entered on May 28, 2009.

Implementation of the Alternative Energy Portfolio Standards Act of 2004: Standards for the Participation of Demand Side Management Resources – Technical Reference Manual Update, Docket No. M-00051865, PUC Public Meeting on May 28, 2009, entered on June 1, 2009.

Implementation of the Alternative Energy Portfolio Standards Act of 2004: Standards for the Participation of Demand Side Management Resources – Technical Reference Manual Update, Docket No. M-00051865, PUC Public Meeting on June 3, 2010, entered on June 8, 2010.

Policy Statement in Support of Pennsylvania Solar Projects, Docket No. M-2009-2140263, entered Sept. 16, 2010.

Policy Statement regarding Net Metering – Use of Third Party Operators, Docket No. M-2011-2249441 entered March 29, 2012.



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