COMMONWEALTH FOUNDATION | FACT SHEET

The Rising Cost of Pennsylvania's Alternative Energy Portfolio Standards

SUMMARY

- Pennsylvania ratepayers have paid **more than $3.3 billion** in "green energy" mandates thanks to the Alternative Energy Portfolio Standards (AEPS) Act. From 2020 to 2025, the annual cost of these mandates quadrupled.
  - For mandated "green energy", **ratepayers pay 60 to 85 percent** above the wholesale market price. A cost of $701.9 million in 2025 alone.[1]
- Roughly half of Tier I compliance dollars leave the state, sending an estimated $159 million annually to out-of-state generators.
- AEPS failed to produce a renewable generation buildout. Pennsylvania's share of electricity generation from renewables between 2013 and 2024 held flat at approximately 4 percent.
- **AEPS is not responsible for Pennsylvania's emissions reductions.** The Pennsylvania Department of Environmental Protection (DEP) attributes the state's 38 percent decline in electricity-generation emissions from 1990 to 2021 to the shift from coal-fired to natural gas-fired generation.
- Gov. Josh Shapiro's Pennsylvania Reliable Energy Sustainability Standard (PRESS) proposal **would nearly triple the AEPS mandate**, approximately doubling residential electricity bills.

THE CURRENT MANDATE

AEPS requires Pennsylvania's electric distribution companies (EDCs), such as PPL, PECO, and Duquesne Light, and electric generation suppliers (EGSs), such as Constellation, Direct Energy, and Clearview Energy, to acquire and retire alternative energy credits (AECs) relative to annual retail electricity sales.[2]

The current requirement equals approximately 18.29 percent of retail sales, in two tiers. Tier I totals approximately 8.29 percent: a 0.5 percent solar photovoltaic (PV) carve-out plus a 7.79 percent requirement for other Tier I resources (the 7.5 percent statutory base plus an Act 129 of 2008 quarterly adjustment). Tier II requires 10 percent.[3] AEPS's 14-year phase-in reached its full 18 percent level on June 1, 2020.[4]

MANDATE MECHANICS

Each megawatt-hour (MWh) of generation from a qualifying alternative energy resource creates one AEC. EDCs and EGSs purchase and retire AECs each year to demonstrate compliance.

AECs are financial instruments unbundled from the electricity itself. Qualifying generators sell their physical electricity output into PJM wholesale markets at clearing prices and separately sell their AECs toward Pennsylvania compliance.[5]

Utilities that cannot or do not acquire enough AECs during a reporting year (RY), which runs 12 successive months from June 1 through May 31, must pay an ACP, currently set by statute at $45 per MWh for Tier I and Tier II. The solar ACP is formulaic—200 percent of the weighted average solar AEC price plus the value of any solar rebates—and was $66.40 per credit in RY2025.[6]

Moreover, utilities cannot recover ACP penalties through retail rates,[7] which compels them to procure AECs at any price below the ACP ceiling. Compliance costs flow through to retail electricity rates as part of the generation supply portion of customer bills.[8]

AEPS Qualifying Generation Sources in 2026

Pennsylvania mandates over 18% of its consumers' electricity comes from alternative energy sources

Tier I - 8.29% of retail sales	Tier II Qualifying Resources — 10% of retail sales
Solar photovoltaic (0.5% Solar PV carve-out)	Waste coal
Solar thermal	Large-scale hydropower
Wind	Pumped storage hydropower
Low-impact hydropower	Municipal solid waste
Geothermal	Distributed generation
Biomass	Demand-side management
Biologically derived methane	
Fuel cells	
Coal mine methane	

Source: PUC AEPS 2025 Annual Report

AEPS HISTORY

Pennsylvania was an early adopter of "green" energy mandates. Yet, the commonwealth did not follow the path of other early adopters to ratchet up mandates, set net-zero goals, or take more extreme measures to undermine reliable energy production.

Act 213 of 2004 (Gov. Edward Rendell, November 30, 2004) established the program. It allowed for compliance credits from generators anywhere within the PJM Interconnection grid—the nation's largest, providing electricity to Pennsylvania, plus twelve other states and the District of Columbia.[9]

Act 35 of 2007 (Rendell, July 17, 2007) made technical adjustments to the solar phase-in schedule and clarified net metering definitions.[10]

Act 129 of 2008 (Rendell, October 15, 2008) expanded Tier I to include additional biomass and small hydropower resources and established the quarterly adjustment mechanism that adds approximately 0.29 percentage points to the Tier I requirement, shielding incumbent generators from falling AEC prices as eligibility expands.[11]

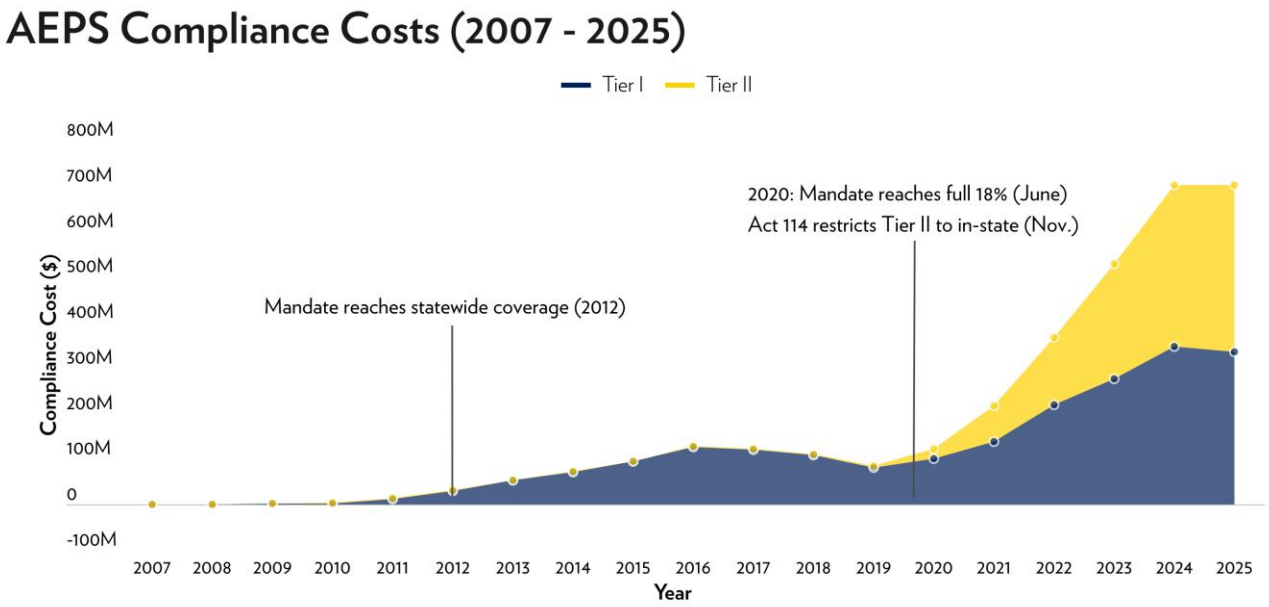
Act 40 of 2017 (Gov. Tom Wolf, October 30, 2017), an omnibus budget implementation law amending the Administrative Code, restricted Tier I solar compliance to facilities located in Pennsylvania, while grandfathering out-of-state solar credits generated under pre-existing contracts.[12]

Act 114 of 2020 (Wolf, November 23, 2020) restricted Tier II compliance to facilities located in Pennsylvania. Existing out-of-state Tier II contracts remained eligible through their AEC lifespan, but new Tier II compliance had to come from in-state facilities.[13]

WHAT AEPS COSTS PENNSYLVANIANS

Pennsylvania's EDCs and EGSs paid **$701.9 million** in AEPS compliance costs in RY2025.[14] Tier I non-solar compliance accounted for $311.6 million, Tier II compliance accounted for $367.6 million, and the solar PV carve-out accounted for $22.7 million.

Cumulative AEPS compliance costs are approximately $3.3 billion, with costs quadrupling since 2020.[15] The published total is a floor figure that excludes credits with undisclosed transaction prices, including credits self-generated or bundled with electricity purchases.[16] AEPS compliance costs are passed through to retail rates and are therefore subject to Pennsylvania's 5.9 percent Gross Receipts Tax. The tax on AEPS costs alone added approximately $41.4 million to ratepayer bills in RY2025.[17]



Source: PUC AEPS Annual Reports 2007-2025

Note: Tier I combines the Solar PV carve-out with other Tier I resources, which the PUC reports as separate categories

AEPS compliance costs rose modestly as the mandate phased in toward 18 percent through 2020. Act 114 of 2020 changed the trajectory by restricting Tier II compliance to Pennsylvania-sited generation. The law left the 10 percent Tier II requirement unchanged, forcing the same mandated demand onto a smaller pool of eligible suppliers. The Tier II credit price rose fourteenfold in five years.[18] Tier I credit prices have risen sharply as well, with non-solar Tier I prices increasing 176 percent from 2021 to 2025. Total compliance costs rose from $122.5 million in RY2020 to over $700 million annually in RY2024 and RY2025.

Spread across Pennsylvania's retail electricity sales, AEPS compliance costs add approximately $5 per MWh to retail electricity rates, or roughly $49 per year for an average family household.[19] AEPS represents approximately 2.5 to 3 percent of the average Pennsylvania residential electricity bill. **For the 18 percent of electricity the mandate covers, ratepayers pay 60 to 85 percent above the wholesale market price.** Government mandates that pick energy sources increase costs. Letting markets choose would let Pennsylvania lean into its comparative advantage: producing affordable, reliable baseload power.

AEPS FAILED TO MEET GOALS

Despite the high and rising price tag, these green energy mandates fail to increase renewable generation or drive down emissions.

Renewable share of generation unchanged. Pennsylvania's renewable share of total electricity generation was approximately 4 percent in 2013 and approximately 4 percent in 2024.[20] During the same period, the AEPS mandate increased from approximately 8 percent to 18.29 percent of retail sales. The mandate ramped; the generation mix did not.

Pennsylvania emissions reductions are driven by gas-for-coal substitution, not AEPS. Pennsylvania's CO_2 emissions from electricity generation declined 38 percent from 1990 to 2021. The DEP attributes this reduction “largely due to a shift from coal fired to natural gas-fired electricity generation.”[21]

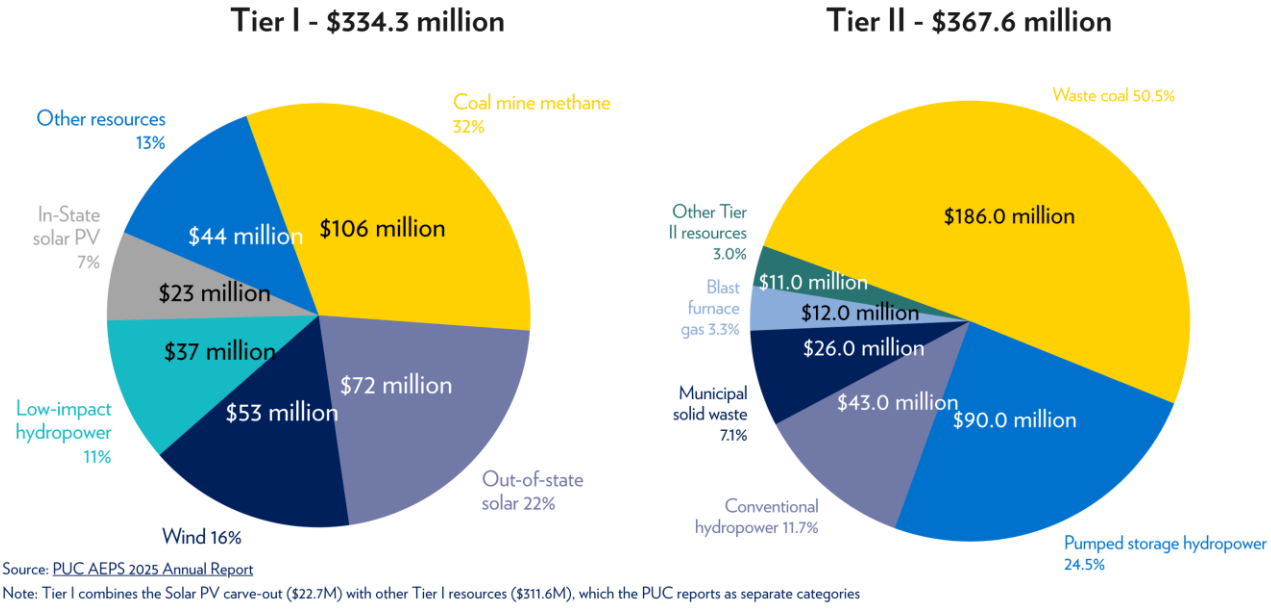
More costs, less power. Ratepayers now pay 100 times more for Tier II compliance than they did six years ago—$367.6 million in 2025, up from $3.6 million in 2019—yet Pennsylvania has less Tier II capacity today than it did in 2017.[22] Act 114 did not expand alternative energy; it raised the price of existing. The payments kept aging facilities from retiring, at a cost approaching $3 million per megawatt of avoided retirement.[23]

CUI BONO: WHO BENEFITS?

Pennsylvania's dominant electricity sources—natural gas (60 percent of generation), nuclear (30 percent), and conventional coal (6 percent)—**receive nothing from AEPS.** The compliance costs added to ratepayer purchases instead flow to AEC-eligible generators.

2025 AEPS Compliance Dollars by Energy Source

AEPS subsidies to select energy sources cost $701.9 million in 2025



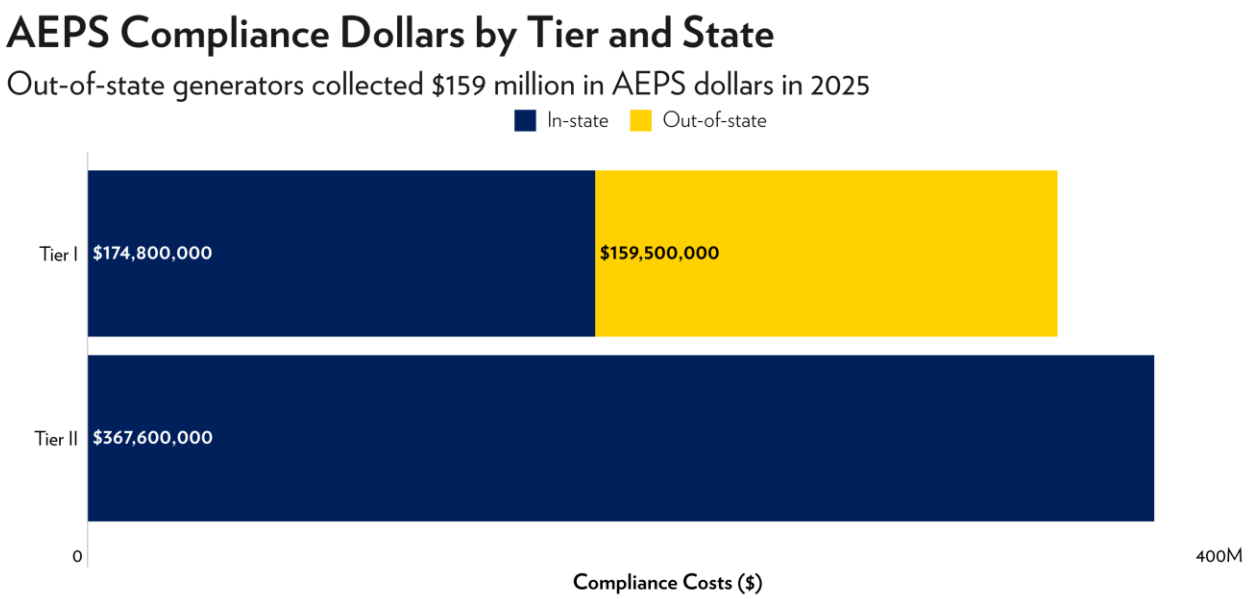
Source: PUC AEPS 2025 Annual Report

Note: Tier I combines the Solar PV carve-out ($22.7M) with other Tier I resources ($311.6M), which the PUC reports as separate categories

Tier I credits totaled $334.3 million in RY2025. The non-PV portion ($311.6 million) flows to a diffuse mix of resources dominated by coal mine methane (34 percent), out-of-state solar under grandfathered Act 40 contracts (23 percent), and out-of-state wind (17 percent).

Coal mine methane's share rose from 5 percent in 2023 to 34 percent in 2025, reflecting credit market dynamics rather than changes in underlying environmental activity. The $22.7 million solar PV carve-out is essentially Pennsylvania-sited.

Nearly half of Tier I compliance dollars—an estimated $159 million annually—flow to out-of-state generators.[24] Act 40 of 2017 restricted Tier I *solar* to in-state facilities, but left the larger non-solar portion of Tier I open to the entire regional grid.



Source: PUC AEPS 2025 Annual Report

Note: Tier I combines the Solar PV carve-out ($22.7M) with other Tier I resources ($311.6M), which the PUC reports as separate categories

The Tier II recipient mix is far more concentrated than Tier I. **Sixty-nine in-state facilities supply the entire $367.6 million Tier II compliance stream—roughly $5.3 million per facility annually.**[25] Waste coal operators received over half of Tier II credits across approximately 14 to 16 in-state facilities operating roughly at 1,356 MW capacity. Pumped storage hydropower received nearly a quarter of Tier II compliance, divided between two Pennsylvania facilities—Raystown (1,072 MW) and Muddy Run (412 MW). The remainder flowed to conventional hydropower, municipal solid waste, blast furnace gas at integrated steel mills, and smaller resources.

Waste coal facilities depend on Tier II revenue to cover the higher costs of refuse pile combustion relative to conventional generation. The remaining Tier II recipients receive AEPS revenue as a windfall on assets built decades ago that continue to operate without the subsidy. Tier II's post-Act-114 cost surge flowed almost entirely to this concentrated set of preexisting in-state facilities.

AEPS gives politically selected generators a revenue premium. Tier I non-solar generators receive approximately $29 per MWh of AEPS revenue above their wholesale electricity market revenue, a 65–75 percent premium. Meanwhile, solar generators have a 75–85 percent premium with Tier II generators at 60–70 percent.

A small group of generators collects millions of dollars per facility each year, while the cost is spread across millions of Pennsylvania ratepayers in small amounts on every bill. Because no single ratepayer feels the full weight, the program survives—despite failing to meet its goals and raising electricity rates for twenty years.

EXPANSION PROPOSALS

The Shapiro administration's Lightning Plan, announced in March 2025, comprises six initiatives. One of them—**PRESS–would nearly triple the AEPS mandate**.

PRESS, as proposed in House Bill (HB) 501 and Senate Bill (SB) 372, would expand the AEPS mandate from 18 percent to 50 percent of retail electricity sales by 2035: 35 percent from a Tier I expanded to include solar, wind, small modular reactors, fusion, and other zero-emission resources; 10 percent from a redefined Tier II including large hydropower and battery storage; and 5 percent from a new Tier III including low-emission natural gas and alternative fuels. PRESS also creates Zero Emission Credits to support existing nuclear generation.[26]

PRESS is not a novel proposal. Every legislative session since 2009–10 included proposals for expanded AEPS mandates.[27]

The Shapiro administration claims that the Lightning Plan will save Pennsylvania ratepayers approximately $664 million by 2040, but those estimates are based on assumptions contradicted by the legislation.[28] Independent modeling by Always On Energy Research, commissioned by the Commonwealth Foundation, projects that **PRESS would impose $155 billion in additional ratepayer costs,** approximately doubling residential electricity bills from $1,717 in 2023 to $3,471 in 2035.[29]

SOLUTIONS

AEPS has imposed $3.3 billion in cumulative compliance costs on Pennsylvania ratepayers without catalyzing the production of non-fossil fuel generation or driving emissions reductions. The program transfers ratepayer dollars to a concentrated set of AEC-eligible generators while the electricity grid faces tightening supply. Every day this mandate pushes electricity rates higher.

Pennsylvania reformed its energy policy in 2025 by exiting the Regional Greenhouse Gas Initiative. AEPS reform must follow to drive down the cost of energy and protect reliability for all consumers. Pennsylvania would not be acting alone: West Virginia repealed its alternative energy mandate outright in 2015, and Ohio cut its renewable standard from 12.5 to 8.5 percent and set it to expire at the end of 2026.[30]

- **Reject PRESS.** AEPS expansion to 50 percent of retail sales by 2035 would impose $155 billion in additional ratepayer costs and double electricity prices over ten years. The Pennsylvania record on AEPS does not support tripling the mandate.
- **Repeal AEPS.** Pennsylvania ratepayers should stop funding $700 million in annual compliance costs that have produced no measurable renewable buildout in twenty years. Electricity generators should compete on price, not politics.
- **Phase down AEPS.** Short of an immediate repeal, a phase-down would reduce ratepayer cost gradually through a structured reduction in the compliance percentage.

Even without PRESS, AEPS compliance costs will continue to escalate. Pennsylvania's twenty-year track record on AEPS—and price tag of $3.3 billion—does not support continuing the mandate, let alone tripling it. AEPS imposed substantial ratepayer costs without producing meaningful renewable buildout. Pennsylvania needs more generation, not more mandates that pick winners and losers.

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[1] Pennsylvania Public Utility Commission, "Alternative Energy Portfolio Standards Act of 2004: Compliance for Reporting Year 2024–2025" (Pennsylvania Public Utility Commission, February 2026), 4, 13, 52, https://www.puc.pa.gov/filing-resources/reports/alternative-energy-portfolio-standards-aeps-reports/, [hereinafter: PUC, AEPS Compliance RY2025].

[2] 73 P.S. § 1648.1 et seq. (Alternative Energy Portfolio Standards Act).
[3] 73 P.S. § 1648.2 (qualifying alternative energy resource definitions); PUC, AEPS Compliance RY2025, 5.
[4] 73 P.S. § 1648.3 (compliance schedule).
[5] For further detail on AEC tracking and separation from physical electricity flows, see PJM-EIS Generation Attribute Tracking System (GATS), Operating Rules and User Guide at https://www.pjm-eis.com/.
[6] 73 P.S. § 1648.3 (Alternative Compliance Payment). The $45 Tier I and Tier II ACP is statutory. The solar ACP sums 200 percent of the weighted-average solar AEC price with the value of in-state and out-of-state solar rebates. For 2025, the PUC reports a weighted-average solar AEC price of $33.20, yielding a solar ACP of $66.40. See: PUC, AEPS Compliance RY2025, 52 (Table 2 and accompanying methodology note explaining that weighted-average prices exclude credits with undisclosed transaction costs).
[7] 52 Pa. Code § 75.65(b)(3) (alternative compliance payments not recoverable from ratepayers).
[8] 52 Pa. Code § 75.67 (alternative energy cost-recovery).
[9] Sen. Edwin Erickson, 2004 Act 213, P.L. 1672 (Senate Bill 1030), Pennsylvania General Assembly, Regular Session 2003–04, November 30, 2004, https://www.palegis.us/legislation/bills/2003/sb1030.
[10] Rep. John Hornaman, 2007 Act 35, P.L. 114 (House Bill 1203), Pennsylvania General Assembly, Regular Session 2007–08, July 17, 2007, https://www.palegis.us/legislation/bills/2007/hb1203.
[11] Rep. Camille George, 2008 Act 129, P.L. 1592 (House Bill 2200), Pennsylvania General Assembly, Regular Session 2007–08, October 15, 2008, https://www.palegis.us/legislation/bills/2007/hb2200.
[12] Rep. Aaron Kaufer, 2017 Act 40, P.L. 379 (House Bill 118, Administrative Code Omnibus Amendments), Pennsylvania General Assembly, Regular Session 2017–18, October 30, 2017, https://www.palegis.us/legislation/bills/2017/hb118. The AEPS in-state solar restriction appears in Section 11.1 of the act, adding § 2804 to the Administrative Code.
[13] Rep. R. Lee James, 2020 Act 114, P.L. 1140 (House Bill 2536, Fiscal Code Omnibus Amendments), Pennsylvania General Assembly, Regular Session 2019–20, November 23, 2020, https://www.palegis.us/legislation/bills/2019/hb2536. The AEPS Tier II in-state restriction appears in Section 14 of the act, adding § 1799.10-E to the Fiscal Code.
[14] PUC, AEPS Compliance RY2025, 52 (Appendix A, Table 2). Tier I non-solar compliance: $311.6 million; Solar PV: $22.7 million; Tier II: $367.6 million; total: $701.9 million.
[15] Cumulative AEPS compliance costs from RY2007 through RY2025 equal approximately $3.36 billion. See: Pennsylvania Public Utility Commission, "Alternative Energy Portfolio Standards (AEPS) Reports," accessed June 1, 2026, https://www.puc.pa.gov/filing-resources/reports/alternative-energy-portfolio-standards-aeps-reports/.
[16] PUC, AEPS Compliance 2025, 52 (methodology note explaining that weighted-average credit prices and total cost figures exclude credits with undisclosed transaction costs).
[17] Pennsylvania Department of Revenue, "Gross Receipts Tax," https://www.pa.gov/agencies/revenue/resources/tax-types-and-information/corporation-taxes/gross-receipts-tax (stating the rate on sales of electric energy of 59 mills, or 5.9 percent), accessed June 12, 2026. EDCs pass AEC compliance costs onto retail electricity rates under 52 Pa. Code § 75.67 and are therefore subject to GRT as part of their gross receipts. ACPs are not recoverable from ratepayers under 52 Pa. Code § 75.65(b)(3) and are accordingly not part of GRT-subject receipts. The $41.4 million figure represents 5.9 percent on top of the $701.9 million in published AEC compliance costs.
[18] PUC, AEPS Compliance RY2025, 47 (Section 4E recommendation for reassessment of Act 114; Tier II weighted-average credit price progression from $1.92 in RY2020 to $26.92 in RY2025). Tier II spot prices reached $36.43 per credit by RY2025, approximately 81 percent of the $45 statutory ACP ceiling. See PUC, AEPS Compliance RY2025, 17 (Chart 8: Tier II Average Spot Market vs. Weighted Average AEC Credit Prices).
[19] Calculated from $701.9 million RY2025 compliance cost divided by approximately 143 million MWh of Pennsylvania retail electricity sales (Pennsylvania Independent Fiscal Office, "Pennsylvania Electricity Update," February 2026, https://www.ifo.state.pa.us/releases/907/Pennsylvania-Electricity-Update/). Per-household impact based on the US Energy Information Administration (EIA) average for Pennsylvania residential consumption of 9,804 kWh annually (see: EIA, "Electric Power Monthly," Table 5A, https://www.eia.gov/electricity/sales_revenue_price/pdf/table_5A.pdf). Bill share calculated against average annual Pennsylvania residential electricity bills of approximately $1,717 (2023 baseline, from: Orr and Rolling, "Preventing Pennsylvania from Powering Down," note 17) to approximately $1,920 (2025 estimate based on current EIA Table 5A data), yielding a range of approximately 2.5 to 3 percent.
[20] PUC, AEPS Compliance RY2025, 23 (Chart 9: Pennsylvania Annual Electric Generation by Energy Source).
[21] PUC, AEPS Compliance RY2025, 42.
[22] The comparison of Tier II cost of purchased credits in RY2019 at $3,601,760 to RY2025 at $367,594,667. See: Pennsylvania Public Utility Commission, "Alternative Energy Portfolio Standards (AEPS) Reports."
[23] PUC, AEPS Compliance RY2025, 35 (Chart 18: Cumulative Tier II Nameplate Capacity Installed by Year). Pennsylvania Tier II nameplate capacity: 4,286 MW in 2017; 4,063 MW in 2020; 4,195 MW in 2025.
[24] PUC, AEPS Compliance RY2025, 4 (out-of-state recipient detail) and 11 (Chart 3: Percentage of Sources of Tier I AECs Retired for the 2025 Reporting Year). Approximately 51 percent of Tier I non-PV credits originated from generators outside Pennsylvania (the solar PV carve-out is essentially in-state by statute, after Act 40 of 2017). Top out-of-state recipients in RY2025: North Carolina ($43 million); Illinois ($27 million); Indiana ($27 million); Kentucky ($18 million); Ohio ($15 million); Virginia ($14 million); West Virginia ($11 million).
[25] PUC, AEPS Compliance RY2025, 12 (Chart 4: Sources and Percentages of Tier II AECs Retired for the 2025 Reporting Year) and 34 (Chart 16: Cumulative Number of In-State Tier II Systems, by Year). Pennsylvania-sited Tier II systems totaled 69 in 2025.
[26] Rep. Danielle Friel Otten, House Bill 501, Pennsylvania General Assembly, Regular Session 2025–26, https://www.palegis.us/legislation/bills/2025/hb501; Sen. Sharif Street, Senate Bill 372, Pennsylvania General Assembly, Regular Session 2025–26, https://www.palegis.us/legislation/bills/2025/sb372.
[27] Rep. Eugene DePasquale, House Bill 2405, Pennsylvania General Assembly, Regular Session 2009–10, https://www.palegis.us/legislation/bills/2009/hb2405. For other examples of AEPS expansion legislation introduced in subsequent sessions, see HB 100 of 2013–14, SB 510 of 2019–20, SB 300 of 2021–22, SB 230 of 2023–24, and HB 1467 of 2023–24.
[28] Pennsylvania Office of the Governor, "Governor Shapiro's 2026–27 Budget Address as Prepared for Delivery," February 2026, https://www.pa.gov/governor/newsroom/2026-press-releases/governor-shapiro-s-2026-27-budget-address-as-prepared-for-delive. Notably, the

$664 million figure references his “Lightning Plan” first publicly presented in 2025. See: Pennsylvania Office of the Governor, “Governor Shapiro Unveils ‘Lightning Plan’ to Strengthen Commonwealth Energy Leadership,” March 2025, https://www.pa.gov/governor/newsroom/2025-press-releases/governor-shapiro-unveils--lightning-plan--to-strengthen-commonwe. To understand the underlying modeling, see: Pat Knight et al., “Modernizing Pennsylvania's Clean Energy Policies,” Synapse Energy Economics with Lawrence Berkeley National Laboratory (U.S. Department of Energy Grid Deployment Office, Contract No. DE-AC02-05CH11231), January 15, 2025, https://www.synapse-energy.com/modernizing-pennsylvanias-clean-energy-policies. For a detailed analysis of methodological issues in the Synapse modeling, see: Joshua Schubert, “Pennsylvania's RGGI Odyssey: Six Years of Lost Investment Underline Danger of New State Energy Taxes,” Commonwealth Foundation, May 2026, https://commonwealthfoundation.org/research/pennsylvanias-rggi-odyssey/.

[29] Isaac Orr and Mitch Rolling, “Preventing Pennsylvania from Powering Down: Analysis of Governor Shapiro's PACER and PRESS Proposals,” Commonwealth Foundation, May 27, 2025, https://commonwealthfoundation.org/research/pacer-press-report.

[30] Del. Marty Gearheart, Chapter 55 – 2015 Regular Session (House Bill 2001), West Virginia Legislature, 82nd Legislature, January 27, 2015 (filed February 3, 2015), https://www.wvlegislature.gov/Bill_Status/bills_history.cfm?INPUT=2001&year=2015&sessiontype=RS (repealing the Alternative and Renewable Energy Portfolio Act's portfolio standard, W. Va. Code §§ 24-2F-1 to -7, -9 to -12); Reps. Jamie Callender and Shane Wilkin, Am. Sub. House Bill 6, Ohio Legislature, 133rd General Assembly, July 23, 2019 (effective October 22, 2019), https://www.legislature.ohio.gov/legislation/133/hb6 (amending Ohio Revised Code § 4928.64 to cut the final renewable benchmark from 12.5 to 8.5 percent and terminate the standard after 2026).

For modeling of the broader economic costs of Ohio's mandate (beyond the compliance costs to which this report confines its Pennsylvania figures), see: Orphe Divounguy et al., “The Impact of Renewables Portfolio Standards on the Ohio Economy,” The Buckeye Institute, March 3, 2017, https://www.buckeyeinstitute.org/library/doclib/The-Impact-of-Renewables-Portfolio-Standards-on-the-Ohio-Economy.pdf.