



Electric Power Outlook for Pennsylvania 2024-2029

August 2025

ELECTRIC POWER OUTLOOK FOR PENNSYLVANIA 2024–2029

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Technical Utility Services

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Executive Summary

Introduction

Section 524(a) of the Public Utility Code (Code) requires jurisdictional electric distribution companies (EDCs) to submit annually to the Pennsylvania Public Utility Commission (PUC or Commission) information concerning plans and projections for meeting future customer demand.¹ The PUC's regulations set forth the form and content of such information, which is to be filed on or before May 1 of each year.² Section 524(b) of the Code requires the Commission to prepare an annual report summarizing and discussing the data provided, on or before September 1. This report is to be submitted to the General Assembly, the Governor, the Office of Consumer Advocate and each affected public utility.³ This report is authored by the Commission's Bureau of Technical Utility Services (TUS) on behalf of the Commission.

Since the enactment of the *Electricity Generation Customer Choice and Competition Act*,⁴ the Commission's regulations have been modified to reflect the competitive market. Thus, projections of generating capability and overall system reliability have been obtained from regional assessments.

Regional Overview

The North American Electric Reliability Corporation (NERC) provided a reliability assessment of the Regional Transmission Organization (RTO) that manages the bulk electric system (BES) for Pennsylvania, which is PJM Interconnection, LLC (PJM), and concluded that PJM will have enough generation capacity to meet its reserve margin requirements through 2033 provided planned generation and transmission projects will be forthcoming in a timely manner. However, NERC noted that there is potential for resource adequacy risks to emerge in PJM in 2033 and beyond and for operational risks to manifest as early as 2026, given certain scenarios, *e.g.*, an extreme cold snap combined with constraints on natural gas availability.⁵ The Long-Term Reliability Assessment LTRA indicated that in 2025, the PJM reserve margin requirement is 17.7% with an anticipated reserve of 36.8%, as compared to a reserve margin requirement of 14.8% and anticipated available reserve of 36.8% in 2024.

TUS' review of NERC's 2024 LTRA and PJM's analysis and studies (see the sections on PJM below) indicated that in the short-term PJM has sufficient generation resources. However, the PJM Long-Term Load Forecast Report released on Jan. 24, 2025,⁶ forecasts much higher peak loads than

¹ See, 66 Pa.C.S. § 524(a).

² See, 52 Pa. Code §§ 57.141—57.154.

³ See, 66 Pa.C.S. § 524(b).

⁴ See, 66 Pa.C.S. §§ 2801—2812.

⁵ See, NERC, *2024 Long-Term Reliability Assessment*, December 2024, updated July 15, 2025, available at: <https://www.nerc.com/pa/RAPA/ra/Pages/default.aspx>. The information relevant to PJM begins on page 89.

⁶ See, PJM, *PJM Load Forecast Report January 2025*, available at <https://www.pjm.com/-/media/DotCom/library/reports-notice/load-forecast/2025-load-report.ashx>.

those in the LTRA and PJM has found risks due to the potential mismatch between retirements, load growth and the pace of new generation entry.

NERC stated in the LTRA that to ensure that the future BES can operate reliably, market operators, system planners, regulators, and policymakers need to ensure effective mechanisms are in place to provide for the essential reliability services' (ERS)⁷ needs of the future system (emphasis added). NERC noted that long-term activities can provide incentives to generators with needed reliability attributes. NERC also noted that effective backstops will also be needed to prevent the loss of critical generators when analysis finds deactivation would violate reliability criteria.

PJM has taken several steps to try and address the issues and risks noted in the LTRA in terms of adding generation capacity. PJM's Reliability Resource Initiative (RRI) is a one-time opportunity for shovel-ready resources that can come online quickly and most effectively contribute to reliability. The RRI proposal was approved by the Federal Energy Regulatory Commission (FERC) on Feb. 11, 2025.⁸ Through the RRI process, PJM selected 51 projects that can come online quickly and provide more than 9,300 MW of reliable capacity. The projects consist of 39 uprates and 12 new construction proposals. The uprates apply to existing natural gas, nuclear, coal and onshore wind resources. Of the new projects, half are gas, five are batteries and one is nuclear. The uprates total 2,108 MW of unforced capacity (UCAP), or the amount of energy a resource can be expected to provide during times of highest system reliability risk. PJM noted that the new projects would contribute 7,253 MW of UCAP, for a combined total of 9,361 MW. PJM stated that 90% of the projects are expected to be online by 2030 with all projects projected to be online by 2031.

PJM also announced that on Aug. 8, 2025, the PJM Board decided to implement the Critical Issue Fast Path (CIFP) accelerated stakeholder process mechanism to pursue stakeholder consensus that would inform a PJM Board decision on a potential FERC filing on solutions to the potential resource adequacy challenges posed by rapidly interconnecting large loads, with a target of December 2025 for filing. PJM noted that this process was to address the development of reliability-focused solutions to ensure large load additions can continue to be integrated rapidly and reliably, without causing resource inadequacy, and while recognizing jurisdictional boundaries and data center relationships with existing Load Serving Entities and/or EDCs. As part of the initiation of the CIFP, the PJM Board is required to identify the scope of the initiative. PJM noted that the Board's primary focus in this effort is on the following five issues: resource adequacy, reliability criteria, interconnection rules, coordination, and timing.⁹

Pennsylvania Overview

Pennsylvania's aggregate electrical net energy usage (residential, commercial, industrial, sales for resale, and other) in 2024 was 142,644 gigawatt hours (GWh) as compared to: 138,744 GWh in 2023; 143,511 GWh in 2022; 142,827 GWh in 2021; and 139,185 GWh in 2020. Year-over-year

⁷ ERS are those generating resources that provide voltage control, frequency support, and ramping capability to balance and maintain the BES. More information on ERS can be found here:

<https://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/ERS%20Abstract%20Report%20Final.pdf>.

⁸ See, <https://insidelines.pjm.com/reliability-resource-initiative-draws-94-applications/>.

⁹ See, PJM, *Critical Issue Fast Path – Large Load Additions*, available here: <https://www.pjm.com/committees-and-groups/cifp-lla>.

(YOY) electric usage increased by 2.81%. In general, residential, commercial, and industrial usage changed YOY by 3.49%, 13.62%, and -5.14%, respectively. Pennsylvania's 2024 GDP saw a smaller YOY increase of 4.9%, as compared to 2023 when the GDP experienced a YOY increase of 5.84%.¹⁰

The total average annual aggregate five-year energy usage growth projection for the residential, commercial, and industrial classes is projected to increase by 6.17% per year. This includes a 1.08% growth rate for residential, a commercial growth rate decrease of -0.58%, and an industrial growth rate increase of 14.77% for the entire five-year projected period. The significant increase in industrial demand is primarily due to PPL Electric Utility Corporation's (PPL's) forecast for a number of larger users such as data centers. See the summary of PPL's forecast in the section on PPL in this report.

In order to understand the EDCs' longer-term forecasts as they compared to PJM's long-term forecasts for the transmission zones in PA and the impact of large load customers such as data centers,¹¹ TUS made an informal request for the EDCs to provide 10-year forecasts of demand and peak load in addition to the required five-year forecasts.¹² All EDCs complied, noting that PECO filed its 2030-2035 forecast information as confidential. Thus, Appendix D of this report contains tables of the 10-year forecasts of the six other large EDCs and UGI. TUS notes that 10-year forecasts should be seen as much more speculative than five-year forecasts and should be taken with the proverbial grain of salt.

As can be seen in Appendix D, PPL is predicting significant demand and peak load growth due to industrial customers, primarily data centers. It can also be seen that the other EDCs are not predicting significant impacts from data center load at this time. However, this is subject to change as the dynamics of large load users seeking reliable generation may seek more opportunities in Pennsylvania. TUS notes that while PPL has projected significantly higher demand and peak loads, this is factored in the capacity planning process through PJM and thus does not by itself indicate potential shortfalls in electric capacity in PPL or PJM. As noted above, PJM and NERC are cautioning stakeholders and policymakers that the forecasted increased demand for electric will require expeditious onboarding of additional electric generation and transmission resources and careful management of generation retirements, especially those that provide ERS.

The Commission has undertaken steps to better understand and evaluate the issues of resource adequacy and the interconnection and tariffs for large load customers such as data centers. The Commission held a technical conference (TC) on resource adequacy on Nov. 25, 2024, and received comments from numerous stakeholders such as generators, EDCs, and consumer and environmental groups.¹³ The comments and information gathered from participants in the TC will inform Commission actions and policies going forward.

¹⁰ US Bureau of Economic Analysis: www.bea.gov/.

¹¹ See, PJM, *PJM Load Forecast Report January 2025*, available at <https://www.pjm.com/-/media/DotCom/library/reports-notice/load-forecast/2025-load-report.ashx>.

¹² See, 52 Pa. Code §§ 57.141—57.154.

¹³ See, Docket No. M-2024-3051988, information available here: <https://www.puc.pa.gov/docket/M-2024-3051988>.

The Commission also held an *en banc* hearing concerning interconnection and tariffs for large load customers on April 24, 2025, pursuant to the Motion of Chairman Stephen M. DeFrank that was adopted on March 27, 2025 (Motion).¹⁴ The Motion directed Commission staff to review the testimony and written comments submitted at the Motion docket and to develop a proposed model tariff for large load customers for the Commission’s review. The proposed model tariff is being developed as of the timing of this report.

Evaluation

As detailed above, the anticipated increase in large load users such as data centers, among other factors such as decreased construction of electric generation and continued retirement of base load electric generation, is resulting in the need for stakeholders such as policy makers, regulators, utilities, and generation owners, to work together to ensure the continued reliable operation of the BES. PJM in particular has to manage a significant impact from data centers. As noted by NERC in the LTRA, it is key that stakeholders address resource adequacy to ensure ERS are maintained so that the BES functions reliably. The Commission is committed to continuing its efforts in this regard and providing as much information and support to policy makers in Pennsylvania to ensure Pennsylvania EDCs can continue to provide reliable service at a reasonable price.

¹⁴ See, Docket No. M-2025-3054271, information available here: <https://www.puc.pa.gov/docket/M-2025-3054271>.

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Section 1 – Regional Electric Outlook

Purpose

The *Electric Power Outlook for Pennsylvania 2024-2029* discusses the current and future electric power supply and demand needs for the 11 investor-owned jurisdictional electric distribution companies (EDCs) operating in the state and the entities responsible for maintaining the reliability of the bulk electric system (BES) within the region that encompasses the state.

Note that by the Order entered on Dec. 7, 2023, the Commission granted certain approvals and certificates of public convenience for the unification of the four FirstEnergy Company EDCs that operated in Pennsylvania (Metropolitan Edison Company, Pennsylvania Electric Company, Pennsylvania Power Company, and West Penn Power Company) into one EDC, FirstEnergy Pennsylvania Electric Company (FE PA).¹⁵ The former EDCs are now rate districts of FE PA. FE PA assumed all responsibilities and requirements of the former EDCs, including, *inter alia*, electric reliability (for reliability performance and reporting requirements).¹⁶ FE PA reports as one EDC but reports data for each rate district. In order to avoid confusion and to allow comparison to previous electric reliability reports, the FE PA rate districts are referred to as EDCs throughout this report.

Pursuant to Title 66, Pennsylvania Consolidated Statutes, Section 524(b), the PUC annually submits this report to the General Assembly, the Governor, the Office of Consumer Advocate and affected public utilities. It also is posted on the Commission's website.¹⁷

The information contained in this report includes highlights of the past year, as well as the EDCs' projections of energy demand and peak load for 2024-2029. The state's seven largest EDCs¹⁸ represent 99% of both jurisdictional electricity customers and electrical energy consumption in Pennsylvania. Accordingly, information regarding the other four smallest EDCs contained in this report is limited. The report also provides a regional perspective with statistical information on the projected resources and aggregate peak loads for the region that impacts Pennsylvania.

As permitted under Section 2809(e) of the Public Utility Code, the Commission has adopted revised regulations, reducing from 20 years to five years the reporting requirements and the reporting horizon for energy demand, connected peak load, and number of customers. Because Pennsylvania has a competitive retail electric market, certain information is no longer required to be reported. This includes information regarding generation facilities such as capital investments, energy costs, new facilities, and expansion of existing facilities. However, as noted in this report the Commission requested 10-year forecasts for demand and peak load from the EDCs to compare with the 2025 long-term load forecast of PJM Interconnection LLC. (PJM), which indicated a significant increase

¹⁵ See, *Joint Application of Metropolitan Edison Company, Pennsylvania Electric Company, Pennsylvania Power Company, West Penn Power Company, Keystone Appalachian Transmission Company, Mid-Atlantic Interstate Transmission, LLC, and FirstEnergy Pennsylvania Electric Company*, at Docket Nos. A-2023-3038771, et al.

¹⁶ *Id.* See also, at the same Docket Nos., *Joint Petition for Approval of Settlement of All Issues*, filed Aug. 30, 2023, and *Recommended Decision of Administrative Law Judge Conrad A. Johnson and Administrative Law Judge Emily I. DeVoe*, dated Oct. 19, 2023.

¹⁷ The reports are available at : http://www.puc.pa.gov/utility_industry/electricity/electric_reports.aspx.

¹⁸ Those EDCs with at least 100,000 customers.

in projected peak load and net energy load over the next 20 years, as compared to PJM's report in 2024.

Data for the report is submitted annually by EDCs, pursuant to the Commission's regulations.¹⁹ Additionally, the Commission relies on reports and analyses of regional entities, including ReliabilityFirst Corporation (RFC) and PJM, to obtain a more complete assessment of the current and future status of the electric power supply within the region. Sources also include data submitted by regional reliability councils to the North American Electric Reliability Corporation (NERC), which is subsequently forwarded to the U.S. Energy Information Administration (EIA).

Regional Reliability Organizations

In Pennsylvania, all major EDCs are interconnected with neighboring systems extending beyond state boundaries. These systems are organized into regional reliability entities responsible for ensuring the reliability of the BES.

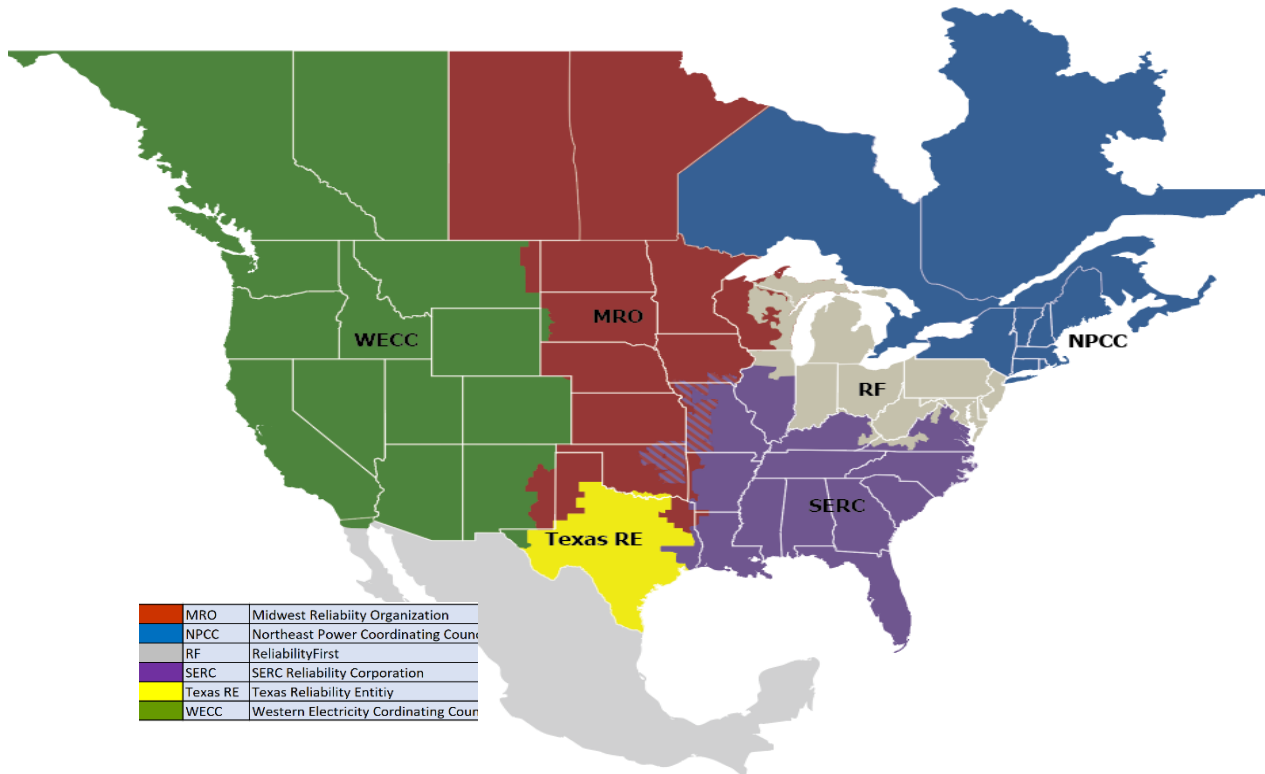
North American Electric Reliability Corporation

NERC has been granted legal authority by the Federal Energy Regulatory Commission (FERC) to enforce reliability standards and to mandate compliance with those standards. NERC oversees the reliability of the bulk power system that provides electricity to approximately 400 million people, has over 5,840 conventional generating units (greater than 20 megawatts (MW)), has a peak capacity of over 1,087 gigawatts (GW), and supplied about 4.86 million gigawatt hours (GWh) of electricity in 2024. NERC has approximately 526,833 miles of high-voltage transmission lines (100,000 volts and greater).²⁰

¹⁹ See, 52 Pa. Code §§ 57.141—57.154.

²⁰ See, NERC, *2025 State of Reliability*, available at: https://www.nerc.com/pa/RAPA/PA/Performance%20Analysis%20DL/NERC_SOR_2025_Overview.pdf.

North American Electric Reliability Corporation NERC Regional Reliability Entities



As shown above, NERC’s members operate in six regional reliability entities. Members include investor-owned utilities, federal and provincial entities, rural electric cooperatives, state/municipal and provincial utilities, independent power producers, independent system operators, merchant electricity generators, power marketers and end-use electricity customers. The membership accounts for virtually all the electricity supplied in the United States, Canada, and the northern portion of Baja California, Mexico. The regional entity operating in Pennsylvania is RFC.

To conduct NERC reliability assessments, NERC further divides the Regional Entities into 20 assessment areas, shown below.

North American Electric Reliability Corporation Assessment Areas



NERC is a not-for-profit international regulatory authority with the mission to assure the reliability of the BES in North America. NERC develops and enforces Reliability Standards; annually assesses seasonal and long-term reliability; monitors the BES through system awareness; and educates, trains, and certifies industry personnel.

NERC Executive Summary & Reliability Assessment

The *2024 Long-Term Reliability Assessment*²¹ (LTRA) is NERC's independent assessment and comprehensive report on the adequacy of planned North American BES resources to reliably meet the electricity demand across North America over the next 10 years. The LTRA also identifies reliability trends, emerging issues, and potential risks that could impact the long-term reliability, resilience, and security of the BES. NERC indicated that the findings presented in the LTRA are vitally important to understanding the reliability risks to the North American BES as it is currently planned and being influenced by government policies, regulations, consumer preferences, and economic factors.

NERC reported that most of the North American BES faces mounting resource adequacy challenges over the next 10 years as surging demand growth continues and thermal generators announce plans for retirement. NERC noted that new solar photo voltaic (PV), battery, and hybrid resources continue to flood interconnection queues, but completion rates are lagging behind the need for new generation. Furthermore, the performance of these replacement resources is more variable and weather dependent than the generators they are replacing. NERC noted that as a result, less overall capacity (dispatchable capacity in particular) is being added to the system than what was projected and needed to meet future demand. NERC stated that the trends point to

²¹ See, NERC, *2024 Long-Term Reliability Assessment*, December 2024, Updated July 15, 2025, available at: https://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/NERC_Long%20Term%20Reliability%20Assessment_2024.pdf.

certain critical reliability challenges facing the industry: satisfying escalating energy growth, managing generator retirements, and accelerating resource and transmission development.

Capacity and Risk Assessment

NERC noted that the resource mix transformation is making traditional capacity-based adequacy criteria obsolete. Resource planners and state and provincial policymakers use resource adequacy criteria to ensure sufficient resources are available to meet demand. In their application, current capacity-based adequacy criteria were not designed to differentiate between the scenarios, size, frequency, duration, and timing of energy shortfalls. This has become increasingly important as the resource transformation evolves from capacity-based resources with assured and stored energy supplies to energy-constrained resources that are increasingly impacted by weather and environmental conditions. Therefore, supplemental criteria must be adapted to properly assess system adequacy and help determine appropriate solutions. The LTRA includes probabilistic indices to measure these additional dimensions of risk and provide a more robust approach to understanding risk of inadequacy in future plans.

NERC reported that it used the following two approaches in the LTRA to assess future resource capacity and energy risk; both are forward-looking snapshots of resource adequacy that are tied to industry forecasts of electricity supplies, demand, and transmission development:²²

- Assessing load-loss metrics determined from probability-based simulation of projected demand and resource availability over all hours. This approach identifies high-risk periods and potential energy constraints resulting in load-loss events. The 2024 ProbA is performed for each assessment area and examines the system as planned for the years 2026 and 2028. Loss-of-load hours (LOLH) and expected unserved energy (EUE) from NERC's ProbA are used to identify risk levels.²³ In essence, ProbA is a more granular study that looks at hourly demand and supply for the entire year while factoring in risk factors such as extreme weather, fuel supply, expected generator outage rates, etc.
- Comparing the margin between projected resources and peak net demand (typically summer peak demand), or reserve margin, to a reserve margin target (known as RML) that represents the accepted level of risk based on a probability-based loss-of-load analysis.

NERC classifies the risk categories as High, Elevated, and Normal Risk. The RTO that manages the BES in Pennsylvania, PJM, is in the Elevated Risk Area. NERC noted that in its Risk Summary for PJM that resource additions are not keeping up with generator retirements and demand growth. NERC noted that PJM's higher-risk periods have moved from summer to winter due to generator performance and fuel supply issues. Further details on each of the Risk Areas can be found in the LTRA.

- High Risk Areas: NERC stated that an assessment area is high risk when established resource adequacy targets or requirements are not met during this assessment period.

²² *Id.*, page 11.

²³ For more detail on NERC's evaluation process, see the "Methods and Assumptions" section of the LTRA.

Regulatory authorities or market operators establish resource adequacy targets. Most targets in North America are currently based on a one-day/event load loss in a 10-year planning requirement. High-risk areas are likely to experience a shortfall in electricity supplies at the peak of an average summer or winter season. NERC noted that unusual heat waves or deep-freeze events pose an even greater threat to reliability. In its updated LTRA, NERC did not classify any areas as High Risk.²⁴

- **Elevated Risk Areas:** NERC noted that an assessment area is considered at the elevated level when it meets the established resource adequacy target or requirement, but probabilistic or deterministic analysis of conditions that are plausible but more extreme than normal seasonal peaks are likely to cause shortfall in area reserves. More extreme conditions can include temperatures that result in above-normal demand levels, low resource output or availability, and/or disruption of normal electricity transfers. NERC stated that in the analysis, elevated risk may be found by modeling above-normal demand and low resource availability. The risk can also be identified by examining output data from probabilistic analysis tools to determine the underlying conditions for load-loss events. In simple terms, elevated-risk areas meet resource adequacy requirements but may face challenges meeting load under extreme conditions. In the LTRA, assessment areas are classified as elevated risk based on an evaluation of the following criteria for each of the first five years of the LTRA period (*i.e.*, 2025–2029).
 - Annual LOLH is between 0.1 and 2.4 hours/year for one or more years in the ProbA.
 - Annual normalized EUE is less than 0.002% (20 ppm) but non-zero for one or more years in the ProbA.
 - Resource adequacy target(s) established by the regulatory authority or market operator are met, but plausible scenarios of above-normal demand and/or low-resource conditions associated with a once-per-decade event indicate risk of load loss.
- **Normal Risk Areas:** NERC noted that in these areas, resource adequacy criteria are met, and it is unlikely for electricity supply shortfalls to occur even when demand is above forecasts or resource performance is abnormally low, *e.g.*, above-normal forced outages or low VER performance.

NERC noted that PJM’s projections for generator additions in 2025 and 2026 are scaled back dramatically from the those in its 2023 LTRA, while demand forecasts continue to rise. As a result, Anticipated Reserve Margins (ARMs) for future years have fallen by as much as nine percentage points from last year. The trends in demand growth and resource additions create resource adequacy and system planning challenges for PJM as it carefully manages generator deactivation requests from the aging fossil and nuclear fleet.

NERC reported that PJM’s ProbA results provide indication of the increasing resource adequacy risk to the system (EUE and LOLH) that are found in both ProbA assessment years (2026 and

²⁴ See, NERC, *2024 Long-Term Reliability Assessment, December 2024, Updated July 15, 2025*, available at: https://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/NERC_Long%20Term%20Reliability%20Assessment_2024.pdf/d, page 6.

2028) with risk concentrated in the winter months (especially January). The risk occurs on days where temperatures are very low across the entire PJM area, which results in high loads. NERC stated that while normal resource performance can meet these demand forecasts, resource performance from thermal resources on very cold days has historically been below normal due to freezing and fuel supply issues. Furthermore, NERC noted that solar resources are not likely to contribute during some of the coldest hours, resulting in very low total electricity supply and thus projections of load loss. ProbA analysis showed some summer load-loss and unserved energy risk but at much lower levels. NERC noted that summer shortfall events are most likely to occur during wide-area heat events that coincide with low wind and low solar output, or very high outage and derates in the thermal generation fleet.

NERC noted that the smaller shares of EUE and LOLH observed in the summer period for 2026 and 2028 are associated with high temperatures and high loads across the assessment area that drive load-loss events in the evening (hours ending 19 and 20) as grid-connected and behind-the-meter solar resource output declines. NERC also noted that low performance of wind resources and, to a lesser extent, slightly worse performance of thermal resources, also contributed to the load-loss events in the analysis.²⁵

TUS's review of the LTRA and PJM's analysis and studies (see the sections on PJM below) indicated that in the short-term PJM has sufficient generation resources. However, the *PJM Long-Term Load Forecast Report* released on Jan. 24, 2025, forecasts much higher peak loads than those in the LTRA. In discussions with staff from RFC (see the section on RFC below) and a review of NERC's ProbA and PJM's Load Forecast, TUS notes that PJM could have operational issues as soon as 2026, given certain scenarios, *e.g.*, an extreme cold snap combined with constraints on natural gas availability and higher-than-expected generator disruptions. As noted later in this report, PJM has taken interim operational actions to improve natural gas electric generation performance during extreme cold events. Still, given the apparent potential for future disruptions to the BES as discussed above, TUS recommends supporting continued development of additional generation and associated transmission/distribution infrastructure.

Emerging Issues

While developing the LTRA, NERC noted that it and the industry considered trends and developments that have the potential to impact the future reliability of the BES over the next 10 years and beyond. Discussed below are emerging issues and trends identified by NERC in the LTRA that have the potential to impact future long-term projections or resource availability and operations.

- **Data Centers and Large Industrial Load:** Growth in large load parcels like data centers and industrial facilities pose various challenges for system planners and operators, in addition to fueling rapid demand growth. Other types of large industrial loads include smelters, manufacturing centers, hydrogen electrolyzers, and future electrified mass transit or shipping charging stations. Adding large parcels of load on the system can add new uncertainties to peak and hourly load forecasting. For example, data centers have longer operating hours and require more heating and cooling than other commercial

²⁵ *Id.*, pages 91-93.

buildings. The behavior of large data centers during normal grid faults is also an emerging concern because customer-initiated automatic disconnecting of sizeable load can cause operating issues.

- **Electric Vehicles and Electric Load:** With increased adoption of electric vehicles (EV), which use batteries to store energy, there is a need to understand the impact of battery charging on system performance. EV forecasting is important for resource adequacy and system planning to account for changing load and load patterns. It is also important for system studies to include EV modeling and parameterization that account for the behavior of battery charging systems on system performance. In January 2024, NERC released the EV Charging Study, noting that the behavior of large amounts of EV chargers in operation can affect the BES response to common outages.
- **Battery Energy Storage Systems (BESS):** NERC noted that planners and operators are focused on requirements to model, study, and operate the BES with increased BESS and hybrid resources. BESS are increasingly being relied upon in areas with substantial amounts of solar PV resources to reduce ramping requirements on other resources by discharging in late afternoon as solar PV output rapidly declines. BESS are also often used for ancillary services, such as frequency response. Accurately accounting for BESS in operating and planning studies is a challenge because it requires assumptions and modeling capabilities for battery charging and discharging behavior. In real-time operations, system operators often do not have visibility into battery state-of-charge, a necessary condition for reliably integrating batteries into system operating plans. Without such information, operators may be surprised should battery resources fail to deliver when needed. System planners in many areas will be counting on new BESS facilities to manage variability and demand and resources.
- **Energy Drought:** NERC noted that more reliance on wind, solar, and hydro resources in the resource mix has the potential to expose the electric system to supply shortages under abnormal weather patterns. When two or more resource types are simultaneously affected by conditions that cause below-normal resource output, operators can face challenges in meeting demand. There is also a higher likelihood for energy droughts to be more likely to occur during high-load periods than at other times, underscoring the importance in considering such events in planning for resource and storage needs.

Continuing Resource Mix Changes and Reliability Implications

NERC noted that new resource additions continue at a rapid pace. Solar PV remains the overwhelmingly predominant generation type being added to the BES followed by battery and hybrid resources, natural-gas-fired generators, and wind turbines. New resource additions fell short of industry's projections from the 2023 LTRA with the notable exception of batteries, which added more nameplate capacity than was reported in development last year.

NERC stated that as older fossil-fired generators retire and are replaced by more solar PV and wind resources, the resource mix is becoming increasingly variable and weather-dependent. Solar PV, wind, and other variable energy resources (VER) contribute some fraction of their

nameplate capacity output to serving demand based on the energy-producing inputs (*e.g.*, solar irradiance, wind speed). The new resources also have different physical and operating characteristics from the generators that they are replacing, affecting the ERS that the resource mix provides. As generators are deactivated and replaced by new types of resources, ERS must still be maintained for the grid to operate reliably.

Natural-gas-fired generators are a vital BES resource. They provide ERSs by ramping up and down to balance a more variable resource mix and are a dispatchable electricity supply for winter and times when wind and solar resources are less capable of serving demand. NERC noted that natural gas pipeline capacity additions over the past seven years have been trending downward, and some areas could experience insufficient pipeline capacity for electric generation during peak periods.

NERC stated that to ensure the future system can operate reliably, market operators, system planners, regulators, and policymakers need to ensure effective mechanisms are in place to provide for the ERS needs of the future system (emphasis added). NERC noted that long-term activities can provide incentives to generators with needed reliability attributes. NERC also noted that effective backstops will also be needed to prevent the loss of critical generators when analysis finds deactivation would violate reliability criteria.

Trends and Implications for Reliability

- Demand Trends: NERC noted that electricity peak demand and energy growth forecasts over the 10-year assessment period continue to climb; demand growth is now higher than at any point in the past two decades. Increasing amounts of large commercial and industrial loads are connecting rapidly to the BES. The size and speed with which data centers (including crypto and AI) can be constructed and connect to the grid presents unique challenges for demand forecasting and planning for system behavior. Additionally, NERC reported that the continued adoption of electric vehicles and heat pumps is a substantial driver for demand around North America. NERC noted that the aggregated BES-wide projections for both winter and summer have increased massively over the 10-year period.
 - The aggregated assessment area summer peak demand forecast is expected to rise by 15% for the 10-year period: 132 GW in the LTRA up from over 80 GW in the 2023 LTRA.
 - The aggregated assessment area winter peak demand forecast is expected to rise over almost 18% for the 10-year period: 149 GW in the LTRA up from almost 92 GW in the 2023 LTRA.
- Transmission Trends: NERC noted that for the first time in recent years, transmission projections reported for the LTRA reflect a significant increase in transmission development. This year's cumulative level of 28,275 miles of transmission (>100 kV) in various stages of development for the next 10 years is substantially higher than the 2023 LTRA 10-year projections (18,675 miles) and is above the average of the past five years of NERC's LTRA reporting on average (18,900 miles of transmission planning projects in

each 10-year period published in the last five LTRAs). Transmission in construction has yet to increase substantially; rather, the large increase in transmission projects is seen in planning stages of development. New transmission projects are being driven to support new generation and enhance reliability, and development continues to be affected by siting and permitting challenges. NERC reported that of the 1,160 projects that are under construction or in planning for the next 10 years, 68 projects totaling 1,230 miles of new transmission are delayed by siting and permitting issues, according to data collected for the LTRA.

NERC Conclusions and Recommendations

NERC recommended the following five actions for consideration, not in any particular order of importance, to address the energy and capacity risks identified in LTRA.

- Carefully manage generator deactivations: NERC stated that Independent System Operator/RTOs (ISO/RTOs) should evaluate mechanisms and process enhancements for obtaining information on expected generator retirements that would support early identification of reliability risks. State and provincial regulators and ISO/RTOs need to have mechanisms that they can employ to extend the service of generators seeking to retire when they are needed for reliability, including the management of energy shortfall risks. NERC reported that regulatory and policy-setting organizations must use their full suite of tools to manage the pace of retirements and ensure that replacement infrastructure can be developed and placed in service.
- Streamline siting and permitting processes to remove barriers to resource and transmission development: NERC reported that as ISO/RTOs continue looking for opportunities to speed transmission planning processes, delays from siting and permitting activities will need to be reduced and support from regulators and policymakers at the federal, state, and provincial levels is urgently needed.
- Implement a framework for addressing the operating and planning needs of the interconnected natural gas-electric energy system: various initiatives were launched in the past year to address the reliability needs that arise from the complexity of interconnecting natural gas and electric infrastructure. Voluntary actions taken by the natural gas industry in response to the North American Energy Standards Board (NAESB) Forum report are a positive step toward improving winter readiness. The National Association of Regulatory Utility Commissioners (NARUC) launched its Gas-Electric Alignment for Reliability (GEAR) task force in 2023 and recently created the Natural Gas Readiness Forum. NERC reported that it has enhanced its Reliability Standards requiring generators to prepare for winter extremes, implement training, and establish communication protocols between generators and grid operators.
- Continue to ensure essential reliability services are maintained: The changing composition of the North American resource mix calls for more robust planning approaches to ensure adequate ERSs. NERC reported that retiring conventional generation is being replaced with large amounts of wind and solar; planning considerations must adapt with more

attention to ERS. These new resources should be capable of supporting voltage, frequency, ramping, and dispatchability. Many technologies can contribute to ERS, including variable energy resources; however, policies and market mechanisms need to reflect these requirements to ensure these services are provided and maintained. RTOs, independent system operators, and FERC have taken steps in this direction, and these positive steps must continue.

- Improve the LTRA by incorporating new analysis and criteria to inform stakeholders of future reliability risks: NERC stated that it increased the frequency of the ProbA from biennial to annual and included unserved energy and load-loss metrics as the basis for risk analysis in this year's LTRA. To be more effective in using energy criteria and outputs of probabilistic analysis, NERC stated it must specify consistent methods and assumptions for assessment areas to follow in preparing the annual ProbA. Finally, NERC stated that it should work with the Regional Entities to perform wide-area energy analysis with modeled interregional transfer capability which will support the evaluation of extreme weather and regional fuel supply issues on an interconnection level.

ReliabilityFirst Corporation

RFC, headquartered in Cleveland, Ohio, is one of six NERC regional entities serving North America, and is the regional reliability entity for Pennsylvania. Its service territory consists of more than 87 million people in a 247,863 square-mile area covering New Jersey, Delaware, Pennsylvania, Maryland, District of Columbia, West Virginia, Ohio, Indiana; and parts of Michigan, Wisconsin, Illinois, Kentucky, Tennessee, and Virginia.²⁶ Its membership includes load-serving entities (LSEs),²⁷ RTOs, suppliers, and transmission companies.



RFC controls reliability standards and enforcement by entering into delegation agreements with regional entities to ensure adequate generating capacity and transmission. Program areas include compliance monitoring, enforcement, entity development, event analysis and situational awareness, regulation and certification, reliability assessment and performance analysis, risk analysis and mitigation, and standards.

RFC is responsible for resolving and enforcing noncompliance using a risk-based approach. RFC notes that this involves the following: assessing the risk of the noncompliance and understanding the

²⁶ See, RFC, *2024 Impact Report*, available at: <https://www.rfirst.org/wp-content/uploads/2025/04/RF-2024-IMPACT-REPORT.pdf>.

²⁷ A Load Serving Entity (LSE) is any entity (or the duly designated agent of such an entity), including a load aggregator or power marketer that (a) serves end-users within the PJM Control Area, and (b) is granted the authority or has an obligation pursuant to state or local law, regulation or franchise to sell electric energy to end-users located within the PJM Control Area (definition from *PJM.com* glossary).

root cause (and contributing cause(s)); working with entities to ensure they take steps to remediate the noncompliance and prevent recurrence; and processing the noncompliance through an appropriate resolution based on risk and other factors.

In 2024, RF remained focused on eliminating older open violations. More than 80% of open violations as of the first quarter of 2025 were identified between 2023 and 2024. Up slightly from prior years, more than 90% of noncompliances discovered in 2024 were either self-reported or self-logged, showing continued diligence and transparency of entities in identifying and reporting issues.²⁸

Regional Transmission Organization: PJM Interconnection

The two RTOs within the RFC footprint are PJM and MISO. Because MISO does not operate in Pennsylvania, only PJM will be addressed in this report.



PJM is a regional transmission organization that ensures the reliability of the largest centrally dispatched control area in North America, covering 369,054 square miles. PJM coordinates the operations of more than 88,333 miles of transmission lines.²⁹ The PJM RTO coordinates the movement of electricity for over 65 million people through 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. PJM coordinates the operation of electric power generators with more than 182,000 MW of generating capacity. PJM's peak customer load of 165,563 MW was recorded during Summer of 2006. According to the 2025 Summer forecast, PJM is prepared to serve a forecasted summer peak demand for electricity of approximately 154,000 MW but has performed reliability studies at even higher loads in excess of 164,000 MW. However, this summer also marks the first time in PJM's annual assessment where available generation capacity may fall short of required reserves in an extreme design scenario that would result in an all-time peak load of more than 166,000 MW, which would require PJM to enact emergency procedures to ensure stability of the grid.³⁰

PJM manages a sophisticated regional planning process for generation and transmission expansion to ensure the continued reliability of the electric system. PJM is responsible for maintaining the integrity of the regional power grid and its associated infrastructure and for managing changes and additions to the grid to accommodate both new and deactivating generating plants. In addition, PJM analyzes and forecasts future electricity needs of the region. Its planning process ensures that the electric system's growth is efficient and takes place in an orderly fashion. PJM supports market innovation through its active support for demand response markets for energy, capacity, and ancillary

²⁸ See, RFC, 2024 Impact Report, available at: <https://www.rfirst.org/wp-content/uploads/2025/04/RF-2024-IMPACT-REPORT.pdf>.

²⁹ See, PJM, 2024 PJM Annual Report, available at: <https://services.pjm.com/annualreport2024/>.

³⁰ See, PJM, <https://insidelines.pjm.com/pjm-summer-outlook-2025-adequate-resources-available-for-summer-amid-growing-risk>.

services, and helps ensure that appropriate infrastructure and operational capabilities are in place to support newly installed renewable energy and other generation facilities.

PJM's mission can be described as follows:³¹

- Acts as a neutral, independent party. PJM operates a competitive wholesale electricity market and manages the high-voltage electricity grid to ensure reliability for more than 65 million people.
- PJM's long-term regional planning process provides a broad, interstate perspective that identifies the most effective and cost-efficient improvements to the grid to ensure reliability and economic benefits on a system wide basis.
- An independent Board oversees PJM's activities. Effective governance and a collaborative stakeholder process help PJM achieve its vision: "To be the electric industry leader – today and tomorrow – in reliable operations, efficient wholesale markets, and infrastructure development."

PJM coordinates the continuous buying, selling and delivery of wholesale electricity through open and competitive spot markets. PJM balances the needs of suppliers, wholesale customers and other market participants, and continuously monitors market behavior in tandem with the Monitoring Analytics LLC, the PJM RTO Market Monitoring Unit.

PJM Bulk Power System Status

PJM membership, which includes energy suppliers, generation and/or transmission owners and operators, was 1,110 at the end of 2024. In 2024, the PJM market amount billed increased to \$51.7 billion as compared to: \$48.6 billion in 2023; \$86.3 billion in 2022; \$54.1 billion in 2021; \$36.2 billion in 2020; and \$39.2 billion in 2019.³²

In terms of generator deactivations, more than 42,000 MW of coal-fired generation has retired since 2011.³³ The economic impacts of environmental public policy, coupled with the age of these plants, many more than 40 years old, make ongoing operation prohibitively expensive.

Throughout 2024, PJM received 30 generator deactivation notices totaling 2,091 MW, as compared to: 5,885 MW in 2023, 5,119 MW in 2022; 10,607 MW in 2021; 4,428 MW in 2020; and 7,650 MW in 2019.

As of Dec. 31, 2024, PJM's 181,534 MW of eligible existing installed capacity reflects a fuel mix comprising 48.7% natural gas, 20.9% coal and 17.9% nuclear, as shown in Figure 1 below. Hydro,

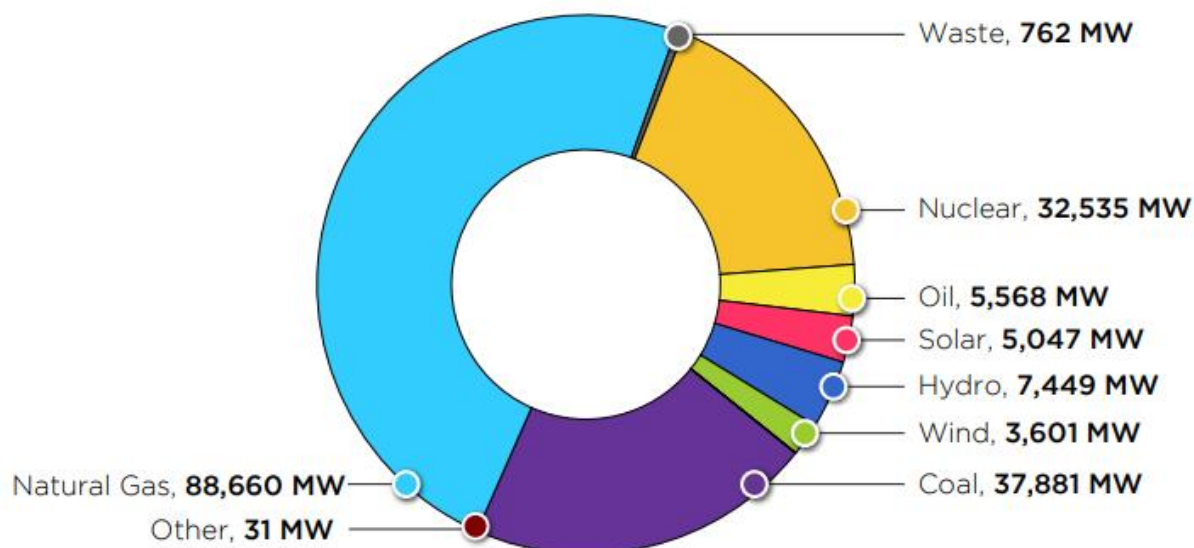
³¹ <http://www.pjm.com/about-pjm/who-we-are.aspx>.

³² See, PJM, 2024 PJM Annual Report, available at: <https://services.pjm.com/annualreport2024/>.

³³ See, PJM Publishes Annual Planning Report for 2023, <https://insidelines.pjm.com/pjm-publishes-annual-planning-report-for-2023/>

wind, solar, oil, waste fuels, and other constitute the remaining approximate 12.5%. Nameplate capacity values represent the full power output of the generators.³⁴

Figure 1: Existing Installed Capacity Mix within PJM as of Dec. 31, 2024

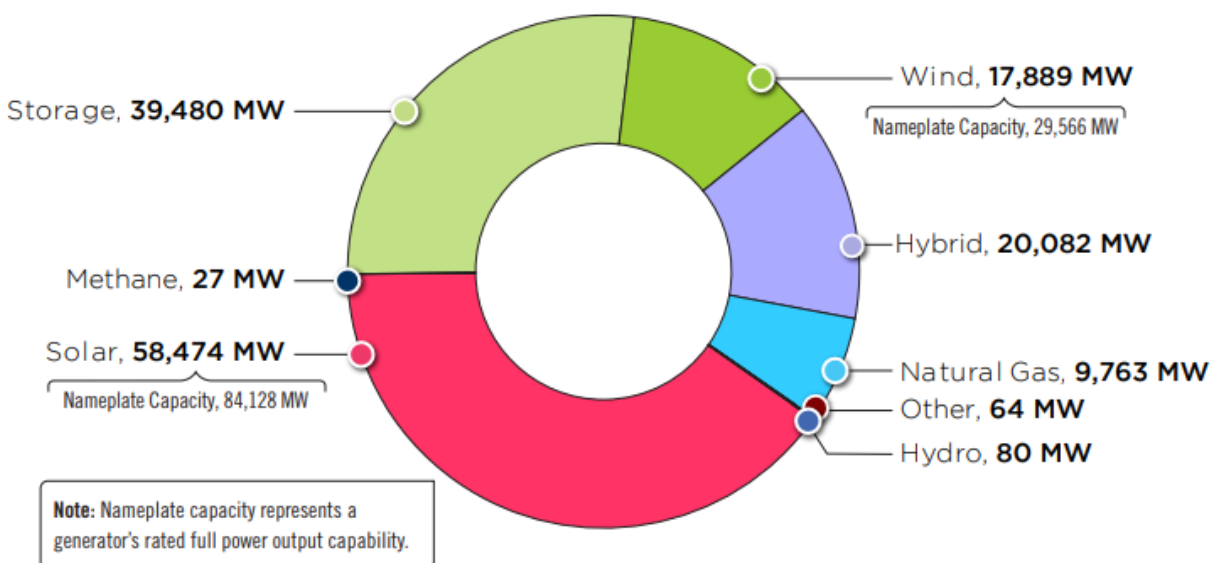


Totaling over 96,000 MW of Capacity Interconnection Rights (CIRs), renewable and hybrid fuels are changing the landscape of PJM's interconnection queue. Solar energy and storage make up approximately 67.2% of the generation in PJM's interconnection queue. An increase in solar generation interconnection requests is attributable to improved resource economics as well as state policies encouraging renewable generation. Figure 2 below shows PJM's fuel mix based on requested CIRs for generation as of Dec. 31, 2024.³⁵

³⁴ See, PJM, *PJM 2024 Regional Transmission Expansion Plan Report*, Book 1, available at: <https://www.pjm.com/-/media/library/reports-notices/2024-rtep/2024-rtep-report.ashx>, and 2024 *Pennsylvania State Infrastructure Report*, available at: <https://www.pjm.com/-/media/library/reports-notices/state-specific-reports/2024/pennsylvania.ashx>.

³⁵ *Id.*

Figure 2: PJM Interconnection Service Request Generation Fuel Mix – Requested CIRs



PJM Load Growth and Projections

Net energy for load growth for the PJM RTO is projected to average 4.8% per year over the next 10-year period, and 2.9% per year over the next 20 years. Total PJM RTO energy is forecasted to be 1,328,045 GWh in 2035, a 10-year increase of 495,264 GWh, and 1,482,068 GWh by 2045, a 20-year increase of 649,287 GWh. Annualized 10-year growth rates for individual transmission zones in PJM range from 0.2% to 8.4% with a median of 1.6%.³⁶ This significant load growth is primarily due to the impact of data centers and the large loads those require. However, the majority of the forecasted data center demand is located in three transmission zones within PJM: Dominion, AEP, and PPL. By 2030, Dominion, AEP, and PPL comprise approximately 79% of the forecast adjustments to summer peak load due to data centers. By 2045, those entities comprise approximately 81% of the adjustments to the peak load, or approximately 50,000 MW of the projected PJM RTO 228,544 MW summer peak load in 2045.³⁷

Summer peak load growth for the PJM RTO is projected to average 3.1% per year over the next 10 years and 2.0% over the next 20 years. The PJM RTO summer peak is forecasted to be 209,923 MW in 2035, which is a 10-year increase of 55,779 MW, and the summer peak reaches 228,544 MW in 2045, which is a 20-year increase of 74,400 MW. Annualized 10-year growth rates for individual zones range from 0.1% to 6.3% with a median of 0.7%.

Winter peak load growth for PJM RTO is projected to average 3.8% per year over the next 10-year period, and 2.9% over the next 20 years. The PJM RTO winter peak load for the 2034/35

³⁶ See, PJM, *PJM Load Forecast Report January 2025*, available at <https://www.pjm.com/-/media/DotCom/library/reports-notices/load-forecast/2025-load-report.ashx>.

³⁷ See, *PJM Load Forecast Development Process*, available here: <https://www.pjm.com/planning/resource-adequacy-planning/load-forecast-dev-process.aspx>. In particular, see the Excel tables for the *Long-Term Load Forecast* and *Load Adjustment Breakdown for Capacity Obligations* under the Forecasts and Reports section.

winter is forecasted to be 198,175 MW, which is a 10-year increase of 62,048 MW, and the winter peak reaches 218,760 MW in 2044/45 winter, which is a 20-year increase of 82,633 MW. Annualized 10-year growth rates for individual zones range from 0.2% to 8.4%, with a median of 1.6%.³⁸

PJM Pennsylvania State Infrastructure Information

The Pennsylvania electric power outlook generally reflects the projections of RFC, which are based on forecasts of PJM and MISO. PJM evaluates regional data concerning the current and future condition of the bulk power system because it is planned on a regional rather than a state basis. While the aggregate load for the state's consumers can be determined, the availability and mix of electrical generation units cannot be predicted, since the complexities of weather, generation availability, and fuel prices will be the primary driving forces.

An RTO such as PJM has the primary responsibility to coordinate and plan future upgrades and expansion of the regional transmission system. PJM noted that a key part of the planning process is to evaluate existing generation deactivation, new generation interconnection, and merchant transmission interconnection requests. Although transmission planning is performed on a regional basis, most upgrades and expansion in Pennsylvania are planned to support the local delivery system and new generation facilities.

LSEs acquire capacity resources as follows: entering bilateral agreements; participating in the PJM-operated capacity market; owning generation; and/or pursuing load management options. The PJM generator interconnection process ensures new capacity resources satisfy LSE requirements to reliably meet their obligations.

New generation that anticipates interconnecting to the BES and operating in parallel with the PJM transmission grid and participating in the PJM capacity and/or energy markets must submit an interconnection request to PJM for technical evaluation and approval. A summary of key information related to generation capacity and usage for the PJM RTO area and information specific to electric generation in Pennsylvania are provided in Appendices B and C of this report.

PJM Pennsylvania State Infrastructure Summary:³⁹

- Existing Capacity: Generating capacity in 2024 for Pennsylvania totaled 45,096 MW as compared to: 44,889 MW in 2023; 46,977 MW in 2022; 47,633 MW in 2021; 46,941 MW in 2020; and 44,705 MW in 2019.
- Natural gas represents approximately 55% of the total installed capacity in Pennsylvania service territory while coal represents approximately 13% and nuclear, 20%. See Figure 3 below. In terms of actual electrical generation in 2024 for Pennsylvania, natural gas generated 61% of the load, coal 5% and nuclear 33%. See Figure 4 below.

³⁸ *Id.*

³⁹ See, PJM, 2024 *Pennsylvania State Infrastructure Report*, available at: <https://www.pjm.com/-/media/library/reports-notices/state-specific-reports/2024/pennsylvania.ashx>.

- Interconnection Requests: Solar represents 49% of new interconnection requests in Pennsylvania, and storage represents 21%, while natural gas represents 2.5% of new requests. See Figure 5, below.
- Deactivations: 2 MW⁴⁰ in Pennsylvania gave notification of deactivation in future years, as compared to: 1,937 MW in 2023, 832 MW in 2022; 920.8 MW in 2021; 78.3 MW in 2020; and 976.2 MW in 2019. See Appendix B for further details on the generation that gave notification of deactivation.
- Regional Transmission Expansion Plan (RTEP) 2024: Pennsylvania's 2024 RTEP project total represents approximately \$1.64 billion in investment, as compared to Pennsylvania's 2023 RTEP projects that totaled \$898.47 million. A listing of PJM RTEP projects, and those specific to Pennsylvania, may be found in PJM's RTEP.⁴¹ The status of individual PJM Board-approved baseline and network RTEP projects, as well as that of Transmission Owner Supplemental Projects, is available on the PJM website.⁴²
- Load Forecast: Depending on the transmission zone, Pennsylvania's summer peak load growth is projected to range between 0.1% and 5.9% annually over the next ten years, while the winter peak load growth is projected to range between 0.1% and 5.8% annually over the next ten years. PPL's 10-year annual load growth is projected as 5.9% for summer and 5.8% for winter, which is the highest of all the transmission zones that serve Pennsylvania.⁴³
- Calendar Year 2024 Market Performance: Pennsylvania's average hourly locational marginal prices (LMPs) were generally lower than the PJM average hourly LMP.
- 2026/27 Capacity Market: Pennsylvania's service territory cleared at the RTO clearing price, \$329.17/MW-day, for the 2026/2027 Base Residual Auction for the entire PJM footprint. This includes the BGE zone in Maryland and the Dominion zones in Virginia and North Carolina.⁴⁴
- 2025/26 Capacity Market: Pennsylvania's service territory cleared at the RTO clearing price, \$269.92/MW-day. The BGE zone in Maryland and the Dominion zones in Virginia and North Carolina cleared at \$466.35/MW-day and \$444.26/MW-day, respectively. The higher

⁴⁰ Note that a total of 2 MW total gave notice in 2024 but 760 MW of that total that was scheduled to deactivate in 2025 for the Eddystone 3 & 4 generation plants has been postponed until August 28, 2025, due to the U.S. Department of Energy enacting an emergency order on May 30, 2025, pursuant to section 202 (c) of Federal Power Act. See, Order No. 202-25-4, available at: <https://www.energy.gov/sites/default/files/2025-05/Federal%20Power%20Act%20Section%20202%28c%29%20PJM%20Interconnection.pdf>. Also note that as of the time of the completion of this report, no request to extend the postponement date has been filed.

⁴¹ See, PJM, 2024 Regional Transmission Expansion Plan, available at: <https://www.pjm.com/library/reports-notices/rtep-documents.aspx>. Pennsylvania-specific information begins on page 235.

⁴² See here: <https://www.pjm.com/planning/m/project-construction>.

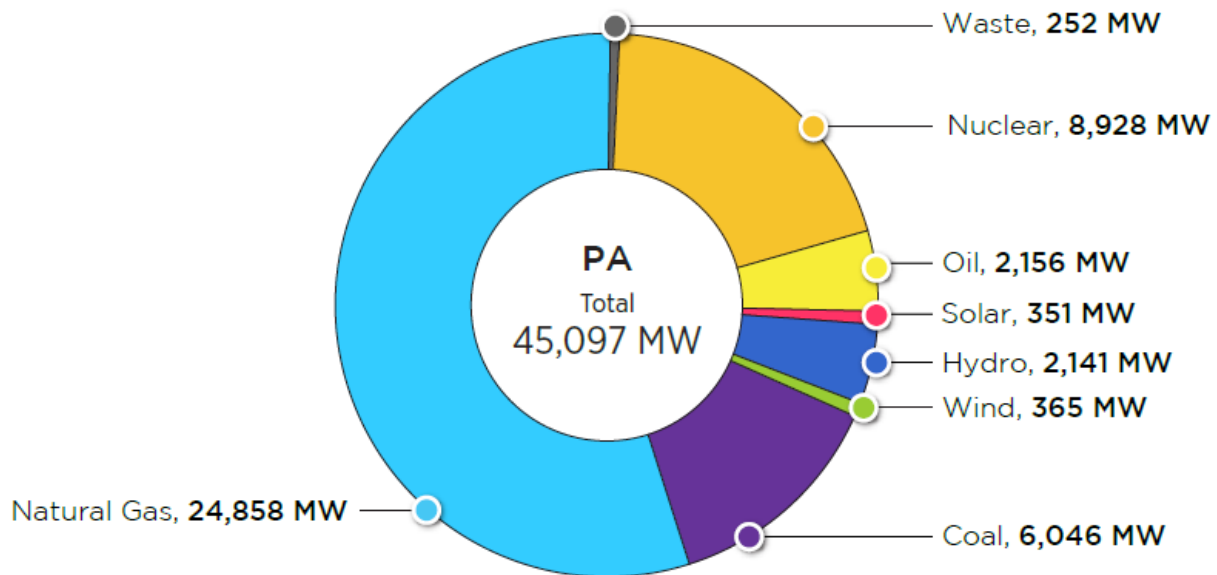
⁴³ See, PJM, PJM Load Forecast Report January 2025, available at <https://www.pjm.com/-/media/DotCom/library/reports-notices/load-forecast/2025-load-report.ashx>.

⁴⁴ See PJM, 2026/2027 Base Residual Auction Report, available at: <https://www.pjm.com/-/media/DotCom/markets-ops/rpm/rpm-auction-info/2026-2027/2026-2027-bra-report.pdf>.

prices for those zones were due to insufficient resources inside those regions and constraints on the transmission system that limit the ability to import capacity.⁴⁵

- Emissions: Pennsylvania's average CO2 emissions increased in 2024 compared to 2023 levels.

Figure 3: Pennsylvania Installed Electric Generation Capacity by Fuel Type as of Dec. 31, 2024



⁴⁵ PJM, *PJM Capacity Auction Procures Sufficient Resources To Meet RTO Reliability Requirement*, available here: <https://insidelines.pjm.com/pjm-capacity-auction-procures-sufficient-resources-to-meet-rto-reliability-requirement/>.

Figure 4: Pennsylvania Electric Generation by Fuel Type as of Dec. 31, 2024

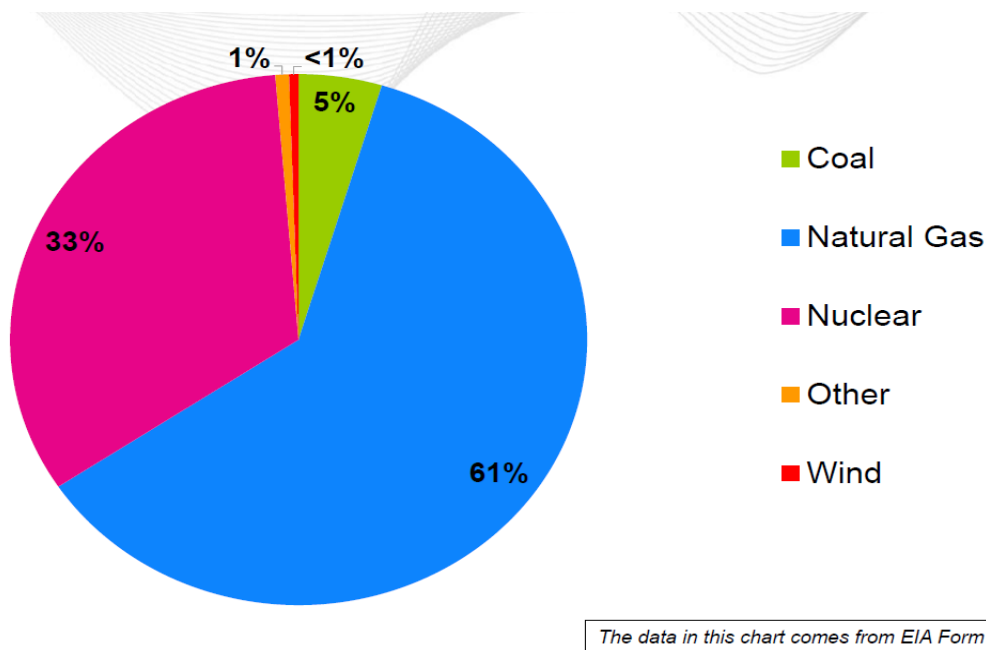
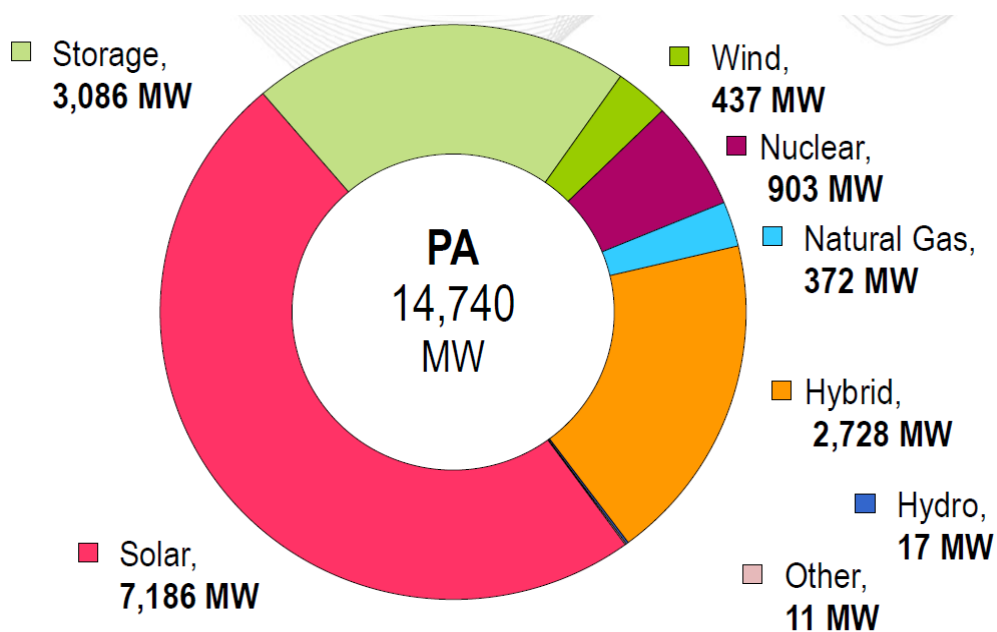


Figure 5: Pennsylvania – Queued Capacity by Fuel Type – as of May 7, 2025⁴⁶



⁴⁶ See, PJM, 2024 Pennsylvania State Infrastructure Report, available at: <https://www.pjm.com/-/media/library/reports-notice/state-specific-reports/2024/pennsylvania.ashx>.

PJM Winter Performance

Based on the anticipated demand for power, PJM takes measures every year to prepare for the upcoming winter. For the 2024/25 winter season winter reliability assessment, PJM integrated the new NERC Extreme Cold Weather Temperature Standard (ECWTS) EOP-012-2⁴⁷ into its regular winter operations and preparedness protocols. ECWTS was developed to mitigate the vulnerabilities identified in the BES during extreme cold weather events, such as Winter Storm Elliot in 2022 and Winter Storm Uri in 2021. Before the cold weather arrives, PJM conducts annual winter readiness assessments, gathering information on minimum operating temperatures, fuel inventory, supply and delivery characteristic, and consulting with federal, state, and neighboring systems to review winter preparations, and performing its Emergency Operations Drill.⁴⁸

PJM's forecast for the 2024/25 winter outlook expected adequate power supplies to meet a peak load of 141,200 MW, plus forecasted 5,500 MW exports, under normal conditions. However, PJM noted that extreme cold weather events could result in the use of emergency procedures.⁴⁹

PJM noted that it performed adequately in maintaining system reliability for Winter 2024/25, which included a period of extreme cold weather and several named winter storms from Jan. 3 to Jan. 24, 2025 (January 2025 Arctic Events). Jan. 19 through Jan. 25, 2025, was the third coldest winter week (spanning Sunday through Saturday) across the U.S. since 2000. During January 2025 Arctic Events, PJM (145 GW), MISO South (33 GW), TVA (48 GW), and VACAR South (47 GW) established new winter peaks for energy demand. During cold weather events, the demand for electricity and natural gas increases significantly and almost simultaneously.⁵⁰

In order to handle the 145,060 MW instantaneous record peak load on Jan. 22, 2025, PJM Operations reported the following key takeaways.⁵¹

Successes:

- Sufficient reserves to serve all-time winter peak load and exports.
- Effective PJM Emergency Procedures were limited to advisories and alerts.
- Strong generator and transmission performance.
- Accurate load forecasting.

⁴⁷ See, NERC, <https://www.nerc.com/pa/Stand/Reliability%20Standards/EOP-012-2.pdf>.

⁴⁸ See, PJM, <https://insidelines.pjm.com/pjm-winter-outlook-adequate-power-supplies-available-under-normal-conditions> and <https://insidelines.pjm.com/pjm-and-members-conduct-annual-winter-emergency-operations-drill/>.

⁴⁹ See, PJM, <https://insidelines.pjm.com/pjm-winter-outlook-adequate-power-supplies-available-under-normal-conditions>.

⁵⁰ See, NERC, <https://www.ferc.gov/media/report-january-2025-arctic-events-system-performance-review-ferc-nerc-and-its-regional>.

⁵¹ See, PJM, Cold Weather Operations January 18-23, 2025, <https://www.pjm.com/-/media/DotCom/committees-groups/committees/mrc/2025/20250319/20250319-item-08---1-january-2025-cold-weather-update---presentation.pdf>.

Challenges:

- Gas-Electric market coordination and the need for multiple-day gas commitments during long holiday weekends.
- Inflexible gas nominations and ratable take requirements reducing generator dispatch flexibility.
- Operational risk is not reflected in markets
- Future resource adequacy concerns (increasing load / decreasing transfer margins).

PJM also utilized a risk-based scheduling approach for natural gas generators to lower unit startup and operating risk from the holiday weekend (January 19 was Martin Luther King Day). Gas units with extended start times were evaluated and started early to ensure units were online before extreme cold weather settled in. PJM's strategy was to have units warm and ready to ramp up. PJM provided advanced commitment to gas-only resources (Sunday through Thursday) to ensure fuel supply and keep unit down time to a minimum.

Section 2 – Pennsylvania Electric Outlook

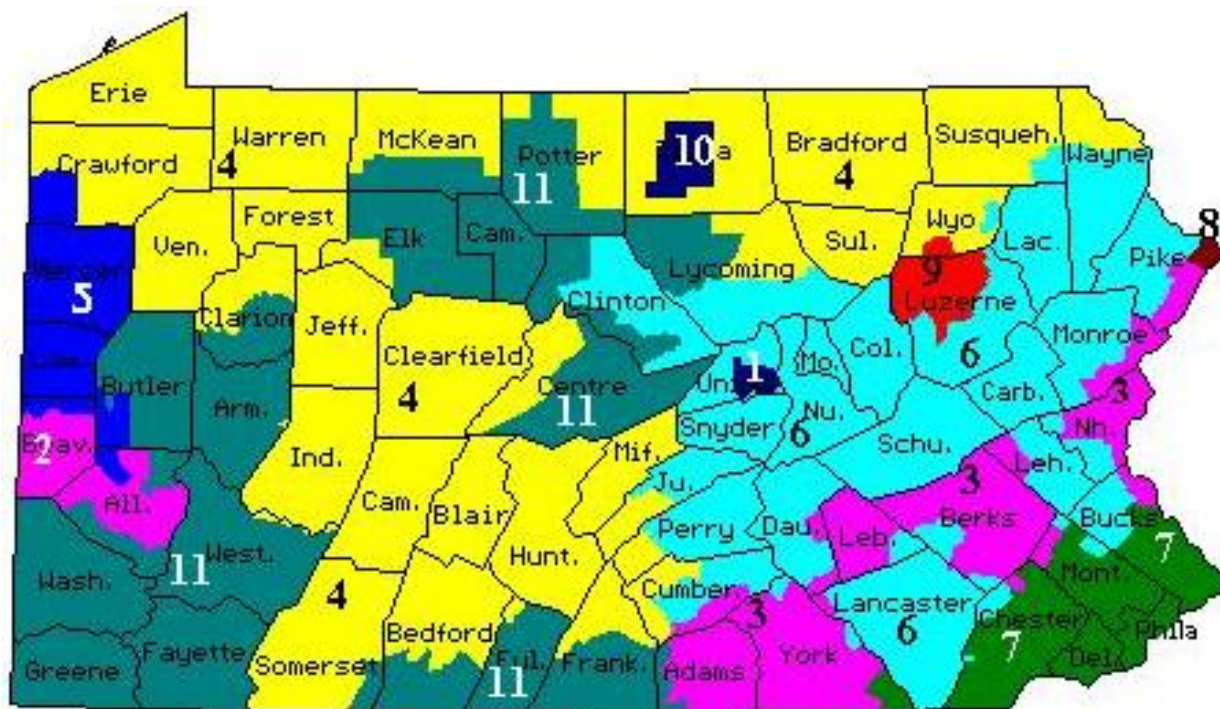
Electric Distribution Companies

Eleven EDCs currently serve the electricity needs of most Pennsylvania's homes, businesses and industries. Cooperatives and municipal systems provide service to several rural and urban areas. The Commission does not regulate the cooperative and municipal electric systems. The 11 jurisdictional EDCs⁵² shown in Figure 6 below are:

1. Citizens' Electric Company
2. Duquesne Light Company
3. Metropolitan Edison Company (FE PA)
4. Pennsylvania Electric Company (FE PA)
5. Pennsylvania Power Company (FE PA)
6. PPL Electric Utilities Corporation
7. PECO Energy Company (Exelon)
8. Pike County Light & Power Company
9. UGI Utilities Inc. – Electric Division
10. Wellsboro Electric Company
11. West Penn Power Company (FE PA)

⁵² Note that by the Order entered on Dec. 7, 2023, at Docket Nos. A-2023-3038771, *et al.*, the Commission granted certain approvals and certificates of public convenience for the unification of the four FirstEnergy Company EDCs that operated in Pennsylvania (Metropolitan Edison Company, Pennsylvania Electric Company, Pennsylvania Power Company, and West Penn Power Company) into one EDC, FirstEnergy Pennsylvania Electric Company (FE PA). In order to avoid confusion and to allow comparison to previous electric reliability reports, the FE PA rate districts are referred to as EDCs throughout this report.

Figure 6: Map of EDC Service Territories



Each LSE is responsible for making provisions for adequate generating resources to serve its customers. The local EDC or a Commission approved alternative Default Service Provider (DSP)⁵³ must acquire electricity, pursuant to a Commission approved competitive procurement process, for customers who:

1. Contract with a competitive Electric Generation Supplier (EGS). Contracting with an EGS allows customers to choose an electric provider in the competitive retail market. The Commission provides a website that provides a one source comparison of EGS electric offers and allows electric customers to directly link into an EGS website to switch electric services.⁵⁴

or,

2. Stay with the local EDC or Commission approved DSP. Under current law, the default electric generation prices are required to be based upon a “prudent mix” procurement strategy that will produce the least cost to customers over time.⁵⁵

⁵³ See, 66 Pa.C.S. § 2803.

⁵⁴ <http://www.papowerswitch.com>.

⁵⁵ See, 66 Pa.C.S. § 2807(e)(3).

Statewide Review of Electrical Energy Usage

As shown on Tables 1 and 2 below, Pennsylvania's Total electrical consumption energy usage (residential, commercial, industrial, sales for resale, and other) in 2024 was 142,644 GWh, as compared to: 138,744 GWh in 2023; 143,551 GWh in 2022; 142,827 GWh in 2021; and 139,185 GWh in 2020. The year-over-year (YOY) increase for electrical usage in 2024 was 2.81%. In general, residential, commercial, and industrial usage changed YOY by 3.49%, 13.62% and -5.14%, respectively. Pennsylvania's 2024 GDP saw a smaller YOY increase of 4.9%, as compared to 2023 when the GDP experienced a YOY increase of 5.84%.⁵⁶ In 2024, the total number of electrical customers increased to 5,977,883 from 5,951,573 in 2023, which is a YOY increase of 0.44%.

Table 1: PA EDC customers served, energy usage, and peak load (2024)

Company	Total Customers Served	Residential (MWh)	Commercial (MWh)	Industrial (MWh)	Other (MWh)	Sales For Resale (MWh)	Total Consumption (MWh)	System Losses (MWh)	Company Use (MWh)	Net Energy For Load (MWh)	Peak Load (MW)
Duquesne	609,591	4,034,089	6,664,571	2,960,549	50,472	26,378	13,736,059	750,941	28,903	14,515,903	2,691
Met-Ed	593,342	5,759,051	2,774,052	5,403,434	25,890	563,201	14,525,628	809,065	0	15,334,693	3,073
Penelec	588,521	4,221,435	3,198,114	5,881,003	32,740	2,735,041	16,068,333	1,010,851	0	17,079,184	2,953
Penn Power	172,182	1,610,252	904,140	1,932,785	3,232	168,571	4,618,980	154,592	0	4,773,572	935
PPL	1,487,328	14,117,062	13,761,299	8,470,645	73,810	0	36,422,816	2,625,862	47,492.00	39,096,170	7,840
PECO	1,704,093	13,963,265	7,682,585	13,889,264	620,986	3,655	36,159,755	1,952,780	2,832	38,115,367	8,651
West Penn	740,746	6,989,065	3,772,161	8,268,711	21,591	751,904	19,803,432	1,166,309	0	20,969,741	3,874
UGI	63,069	551,084	322,988	100,857	5,033	127	980,089	73,878	1,987	1,055,954	217
Citizens'	7,220	81,722	25,599	43,289	289	0	150,899	4,829	133	155,861	50
Pike County	5,318	34,173	46,750	0	458	0	81,381	0	28	81,409	20
Wellsboro	6,473	41,906	30,336	24,610	65	103	97,020	3,470	207	100,697	19
Total	5,977,883	51,403,104	39,182,595	46,975,147	834,566	4,248,980	142,644,392	8,552,577	81,582	151,278,551	30,323
% of Total		36.04%	27.47%	32.93%	0.59%	2.98%	100%				

Table 2: PA EDC customers served, energy usage, and peak load (2023)

Company	Total Customers Served	Residential (MWh)	Commercial (MWh)	Industrial (MWh)	Other (MWh)	Sales For Resale (MWh)	Total Consumption (MWh)	System Losses (MWh)	Company Use (MWh)	Net Energy For Load (MWh)	Peak Load (MW)
Duquesne	612,125	3,800,148	5,532,394	2,829,366	53,067	22,689	12,237,664	856,888	29,928	13,124,480	2,534
Met-Ed	588,329	5,490,295	2,000,508	6,159,394	26,179	538,950	14,215,326	842,389	0	15,057,715	2,890
Penelec	588,212	4,165,417	2,224,603	6,485,207	32,845	2,775,062	15,683,134	901,762	0	16,584,896	2,763
Penn Power	171,046	1,558,620	643,645	2,225,266	3,240	162,549	4,593,320	159,286	0	4,752,606	900
PPL	1,472,472	13,927,692	13,754,926	8,681,064	77,024	0	36,440,706	2,627,547	52,995.00	39,121,248	6,953
PECO	1,700,223	13,261,972	7,367,235	13,638,234	611,545	3,440	34,882,426	1,781,073	25,576	36,689,075	8,163
West Penn	737,355	6,768,904	2,552,879	9,332,983	21,837	732,383	19,408,986	1,139,456	0	20,548,442	3,714
UGI	62,879	537,077	308,794	103,258	4,868	126	954,123	67,422	1,856	1,023,401	195
Citizens'	7,143	82,450	25,615	42,995	300	0	151,360	4,132	128	155,620	42
Pike County	5,333	33,495	45,108	0	395	0	78,998	0	28	79,026	20
Wellsboro	6,456	41,669	30,833	24,793	68	94	97,457	6,335	217	104,009	19
Total	5,951,573	49,667,739	34,486,540	49,522,560	831,368	4,235,293	138,743,500	8,386,290	110,728	147,240,518	28,192
% of Total		35.80%	24.86%	35.69%	0.60%	3.05%	100%				

As shown in Table 3, below, the total average annual aggregate five-year energy usage growth projection for the residential, commercial, and industrial classes is projected to increase by 6.17% per year. This includes a 1.08% growth rate for residential, a commercial growth rate decrease of -0.58%, and an industrial growth rate increase of 14.77% for the entire five-year projected period. The significant increase in industrial demand is primarily due to PPL's forecast for a number of larger users such as data centers. See the summary of PPL's forecast in the section on PPL below.

⁵⁶ US Bureau of Economic Analysis: <https://www.bea.gov/>.

Table 3: Average Aggregate Five-year Electrical Energy Projection

PA Energy Usage Projection (GWh)				
Year	Residential	Commercial	Industrial	Total
2025	52,367	37,956	47,119	137,442
2026	52,569	37,735	50,116	140,420
2027	53,019	37,786	59,163	149,968
2028	53,700	38,011	75,006	166,717
2029	54,080	37,959	93,402	185,441
Average annual growth (%)	1.08%	-0.58%	14.77%	6.17%

Figure 7 below represents, in GWh, the Pennsylvania historic usage for residential, commercial, and industrial retail from 1972 through 2024, and forecasted GWh usage from 2025 through 2029.

Figure 7: Pennsylvania Retail Energy Usage and Five-year Forecast (GWh)

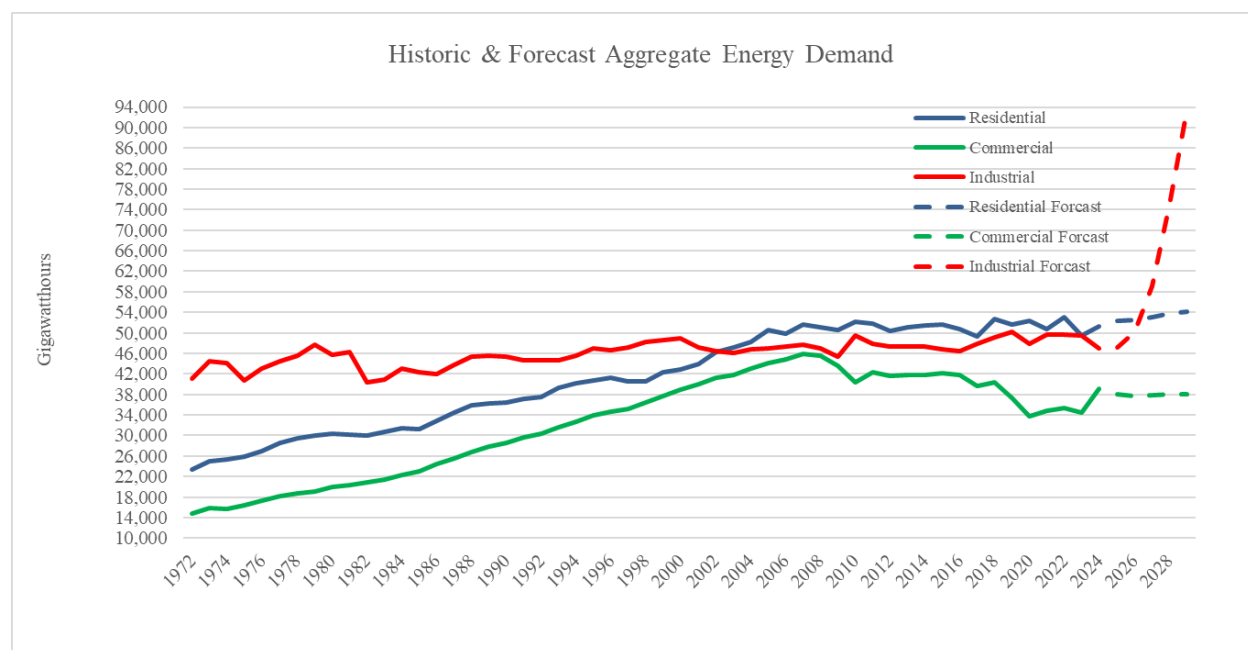
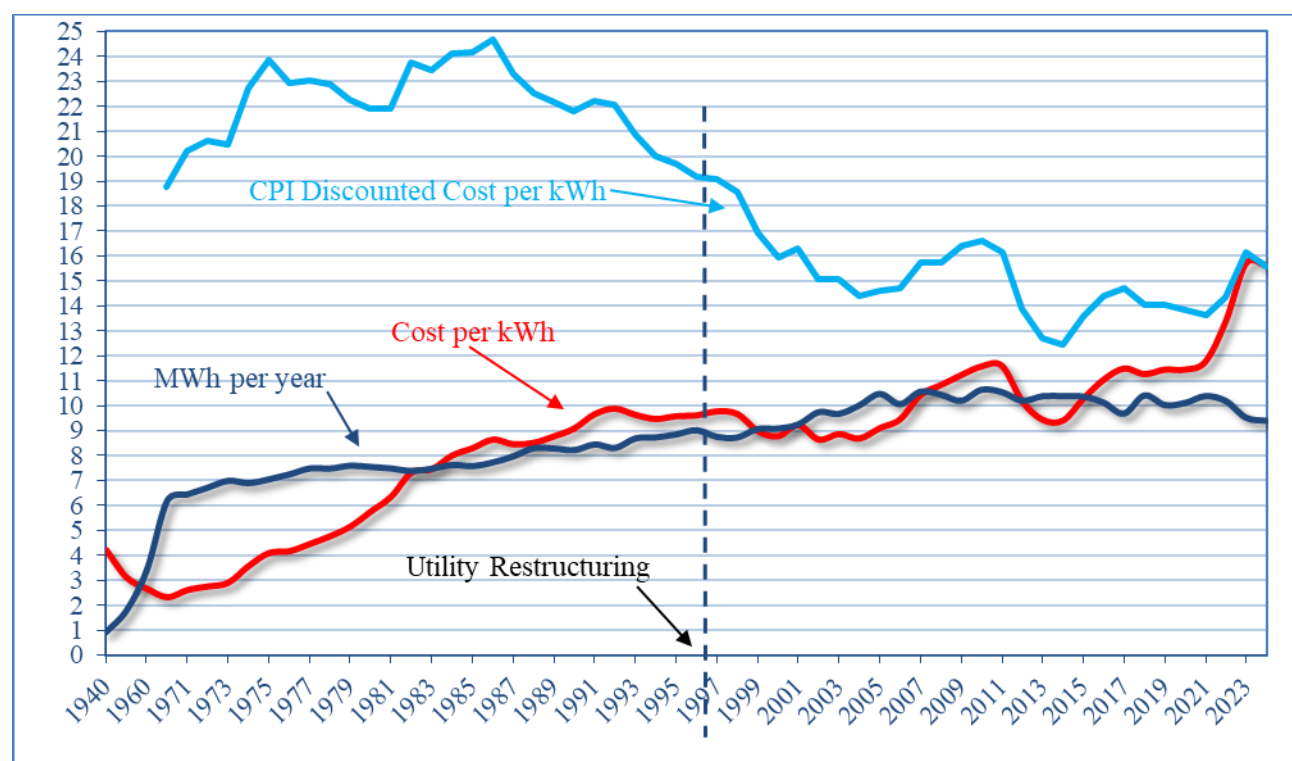


Figure 8 below shows average residential usage and nominal cost from 1940 through 2024. For this year's report, a discounted cost (using 2024 dollars) was added. During the last 10 years, residential usage decreased at an average of -1.00% each year, while the nominal yearly cost increased at an average of 5.21% each year and the discounted cost increased by an average of 2.29% each year. Note that these are not weighted averages (accounting for customer counts of each utility) and are only for the large EDCs. The past three years have seen the yearly average nominal cost (cents per kWh) increase significantly, primarily due to the increase in generation and transmission costs for residential electric retail customers in Pennsylvania. This was due in part to higher natural gas prices in 2021 and 2022. As the majority of electric generation in PJM is powered by natural gas, the price of natural gas has a significant impact on electric prices in PJM. The natural gas price increases tend

to have a lagging impact of about one year on electric prices for residential customers as the EDCs bid for their default supply contracts and residential customers shop for competitive electric supply contracts.⁵⁷ The cost of natural gas lowered in 2023 and the yearly cost for electric lowered some in 2024. However, as noted in the section on PJM, above, capacity prices have increased and may impact the cost of electric to residential customers in 2025 and 2026. Figure 8 reflects a combined trend of the total cost of generation, distribution, and transmission components. The trend within the individual components are not reflected in the chart.⁵⁸ Also of note, when the cost is discounted to 2024 dollars, it can be seen that the real cost is lower today than before utility restructuring.

In 2024, the average Pennsylvania residential customer used 9.41 MWh as compared to: 9.53 MWh in 2023; 10.21 MWh in 2022; 10.40 MWh in 2021; and 10.13 MWh in 2020. In 2024, the average customer paid 15.60 cents per kWh, which decreased from 15.69 cents per kWh in 2023.

Figure 8: Average Residential Nominal Cost (cents/kWh) and Usage (MWh/year)⁵⁹



⁵⁷ As can be seen in the historical default rates (generation and transmission rates) for non-shopping residential service for EDCs, available at <https://www.papowerswitch.com>, the default rates in 2022, 2023, and 2024 were significantly higher. While customers may shop for competitive supply, the competitive rates also saw increases in 2022 and 2023, see the historical price comparison price charts available here: <https://www.oca.pa.gov/electric-shopping-guide-archive/>.

⁵⁸ For more information on electricity price and cost trends over time, see the Lawrence Berkeley National Laboratory Report, *Retail Electricity Price and Cost Trends 2024 Update*, available here: https://eta-publications.lbl.gov/sites/default/files/2025-01/retail_price_and_cost_trends_2024_update_final_v3.pdf.

⁵⁹ The cost per kWh was discounted to 2024 dollars by using the annual Consumer Price Index for All Urban Consumers (CPI-U), available at the Bureau of Labor Statistics website. See, <https://www.bls.gov>.

Figure 9 below shows the EDCs' aggregate non-coincidental peak load demand from 2015 through 2024 and the associated five-year projections estimated during the last three years. Note the large increase in forecast peak load, which is driven primarily by PPL's forecast peak loads due to large load users such as data centers. See the summary of PPL's forecast in the section on PPL below.

Figure 9: Pennsylvania Aggregate Non-Coincidental Peak Load (MW)

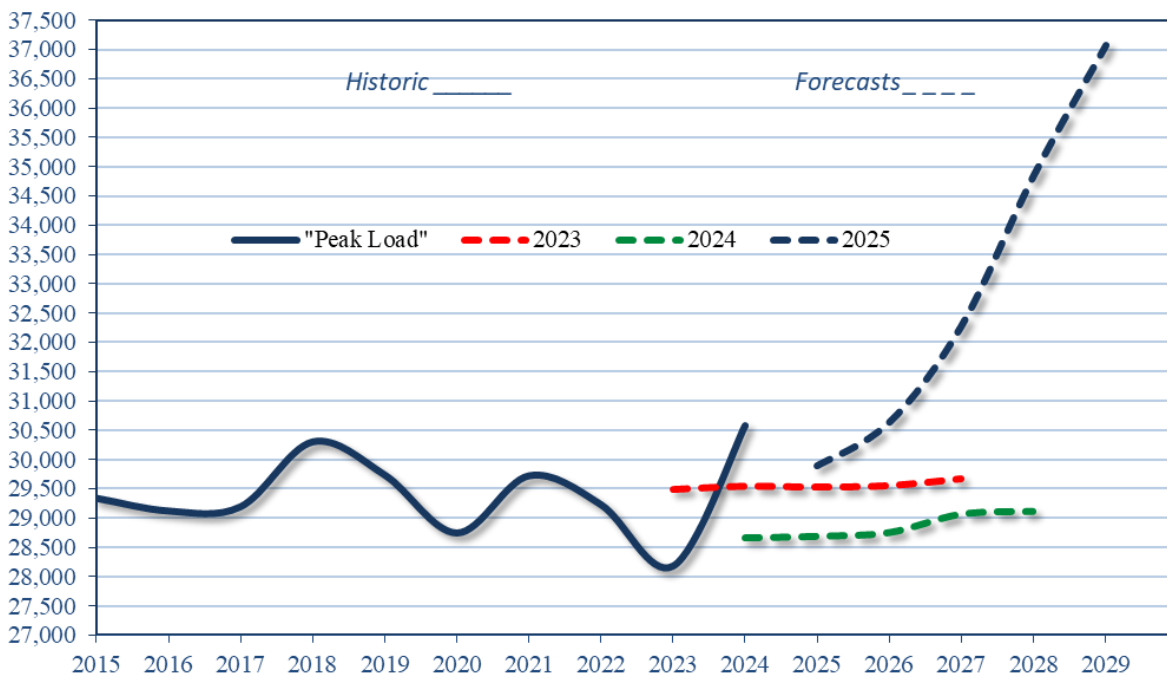
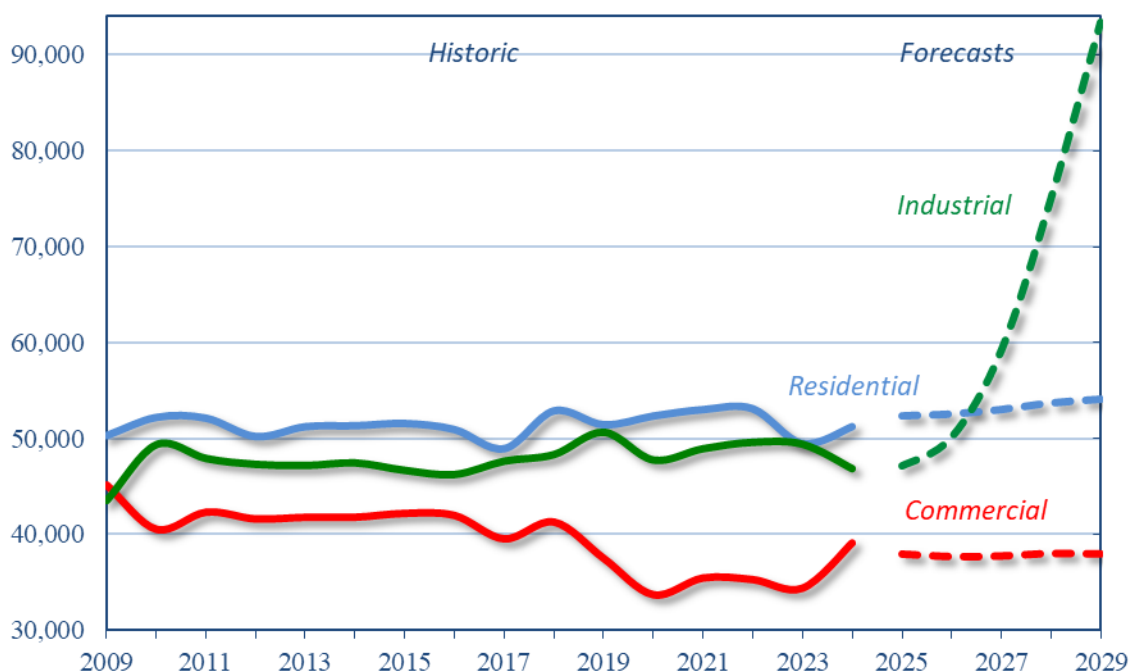


Figure 10 below shows the EDCs' aggregate energy demand from 2009 through 2024 and the associated five-year projections. Note the high forecast load projections for the industrial sector, which again is driven by PPL's forecast. PPL forecasts an increase in demand for its industrial customer class of over six times the actual demand in 2024. See the summary of PPL's forecast in the section below.

Figure 10: Pennsylvania Aggregate Energy Demand (GWh)



Summary of Data for the Seven Largest EDCs

Individual EDC forecasts are more specific to customers and geographical areas. Each EDC bases its forecasts on financial forecasts of its choosing. The EDCs' forecasts are more specific for each territory than the PJM forecast, which is a broader forecast that includes all Pennsylvania EDC territories.

The following section provides historic and projected energy usage and peak load demand statistics for Pennsylvania's seven largest EDCs. Note that TUS made an informal request for the EDCs to provide 10-year forecasts of demand and peak load in addition to the required five-year forecasts.⁶⁰ TUS sought to understand the EDCs' longer-term forecasts as they compared to PJM's long-term forecasts for the transmission zones in PA and the impact of large load customers such as data centers.⁶¹ All EDCs complied, noting that PECO filed its 2030-2035 forecast information as confidential. Thus, Appendix D of this report contains tables of the 10-year forecasts of the 6 other large EDCs and UGI. TUS notes that 10-year forecasts should be seen as much more speculative than five-year forecasts and should be taken with the proverbial grain of salt.

As can be seen in Appendix D, PPL is predicting significant demand and peak load growth due to industrial customers, primarily data centers. It can also be seen that the other EDCs are not predicting significant impacts from data center load at this time. However, this is subject to change as the

⁶⁰ See, 52 Pa. Code §§ 57.141—57.154.

⁶¹ See, PJM, *PJM Load Forecast Report January 2025*, available at <https://www.pjm.com/-/media/DotCom/library/reports-notice/load-forecast/2025-load-report.ashx>

dynamics of large load users seeking reliable generation may seek more opportunities in PA. While PECO's information was confidential for years 2030 to 2025, based on PECO's forecasts provided to PJM, PECO has not predicted significant large user load impacts, especially to the scale that PPL and two other transmission zones (Dominion and AEP) in PJM have predicted. In fact, as shown in the supporting documentation for the *PJM Load Forecast Report January 2025*, by 2030, PPL, Dominion and AEP comprise approximately 79% of the forecast adjustments to summer peak load due to large load users, *i.e.*, data centers, provided by the transmission zones in PJM. By 2045, those entities comprise approximately 81% of the adjustments to the peak load, or approximately 50,000 MW of the projected PJM RTO 228,544 MW summer peak load in 2045.⁶²

Duquesne Light Company (Duquesne)

Duquesne provides electric service to about 609,591 customers in the City of Pittsburgh and portions of Allegheny and Beaver counties in Southwestern Pennsylvania. Duquesne's 2024 energy usage total was 13,736 GWh, as compared to: 12,237 GWh in 2023; 12,527 GWh in 2022; 12,581 GWh in 2021; and 12,159 GWh in 2020. Year-over-year (YOY) energy usage increased 12.24%. Duquesne's total usage mix consisted of residential (29.4%), commercial (48.5%), industrial (21.6%), other (0.4%) and sales for resale (0.2%).



Duquesne notes that the primary driver of its YOY increase in energy usage was weather driven. Duquesne states that there were more cooling degree days in 2024. As shown below, Duquesne's peak load also had a significant YOY increase and the peak load was experienced in the summer. Over the next five years, total energy usage is projected to decrease at an average annual rate of -1.49%. This includes a residential usage average annual decrease of -0.98%, commercial usage decrease of -4.19%, and an industrial usage increase by 3.10%, as shown in Figure 11 below.

Duquesne's highest peak load in 2024 was 2,961 MW, which represents a YOY increase of 16.85% from the previous year's peak load of 2,534 MW. The five-year peak load forecast is projected to decrease by an average -1.68% per year as shown in Figure 12 below.

Refer to Appendix A, Tables A01-A04 for Duquesne's forecasts of peak load and residential, commercial, and industrial energy demand, filed with the Commission in the years 2015 through 2024. Refer to Appendix D for Duquesne's 10-year demand and peak load forecast.

⁶² *Id.* In particular, see the Excel tables for the *Long-Term Load Forecast* and *Load Adjustment Breakdown for Capacity Obligations* under the Forecasts and Reports section.

Figure 11: Duquesne energy usage (GWh)

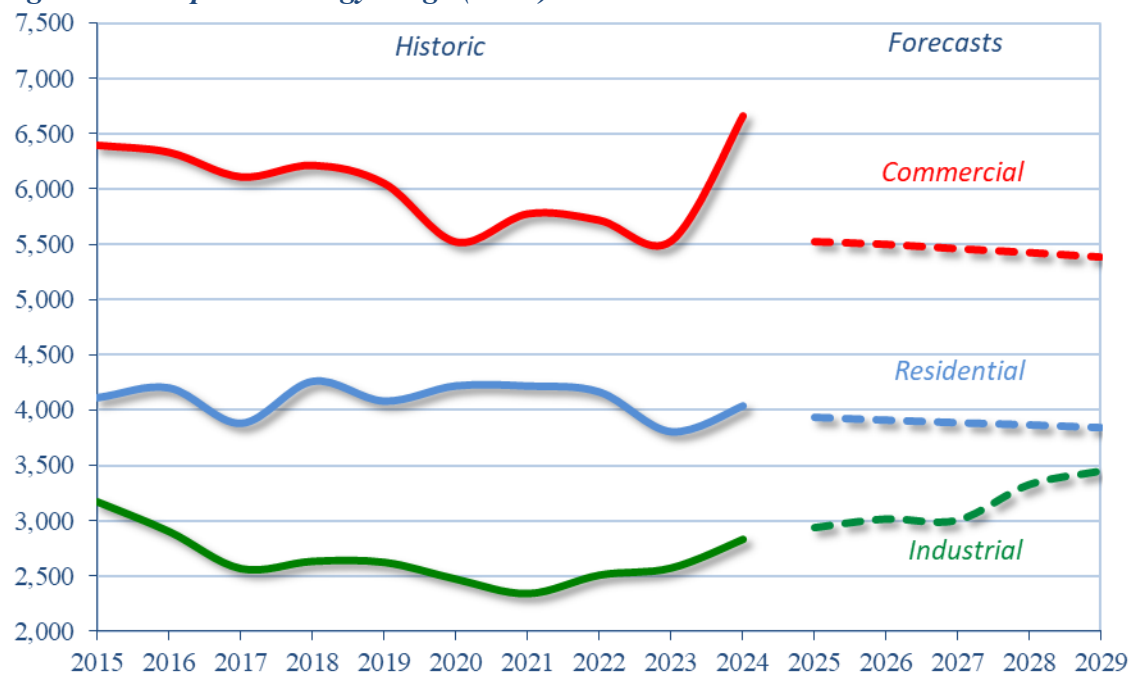
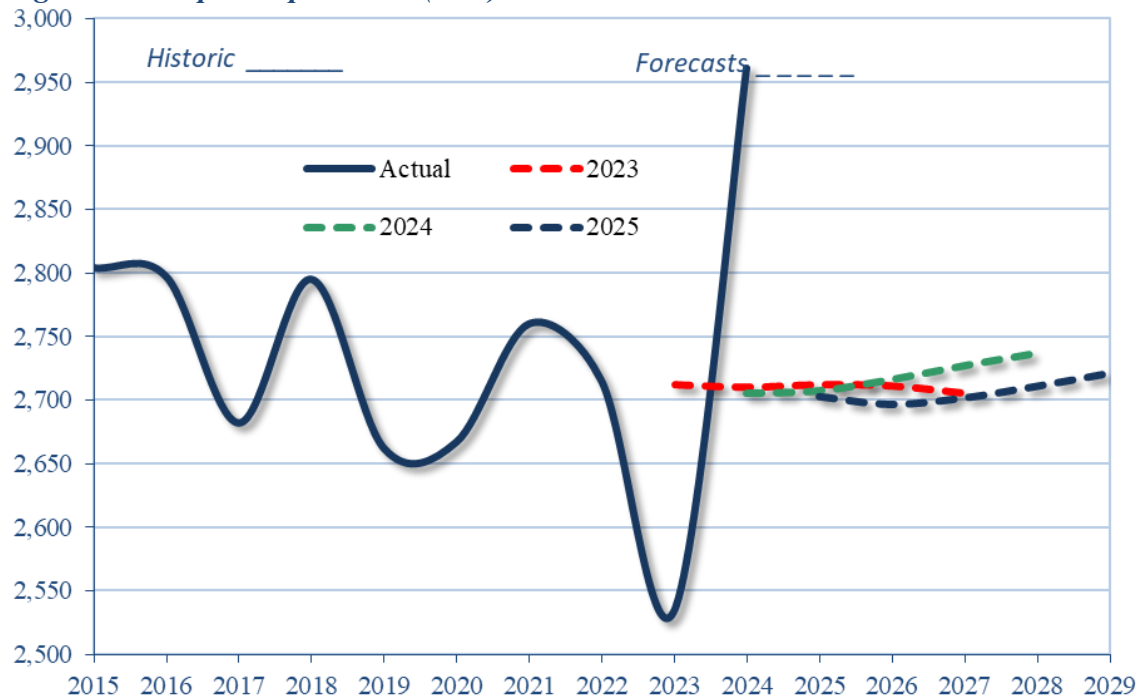
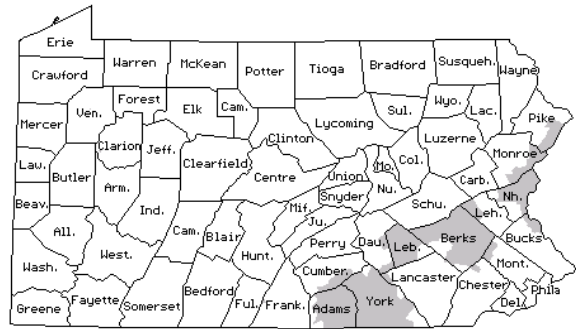


Figure 12: Duquesne peak load (MW)



Metropolitan Edison Company (Met-Ed)

Met-Ed provides electric service to about 593,342 customers in all or portions of 14 counties in Eastern and Southcentral Pennsylvania. Met-Ed's 2024 energy usage total was 14,525 GWh, as compared to: 14,215 GWh in 2023; 14,949 GWh in 2022; 14,748 GWh in 2021; and 14,291 GWh in 2020. Year-over-year (YOY) energy usage increased 2.18%. Met-Ed's total usage mix consisted of residential (39.65%), commercial (19.1%), industrial (37.2%) and sales for resale (3.88%).



Over the next five years, total energy usage is projected to increase at an average annual rate of 1.53%. This includes a residential usage average annual increase of 1.92%, commercial usage increase of 2.42%, and industrial usage increase of 0.63% as shown in Figure 13 below.

Met-Ed's highest peak load in 2024 was 3,073 MW. This represents a YOY increase of 6.33% from the previous year's peak of 2,890 MW. The five-year peak load forecast is projected to increase by 0.58% each year as shown in Figure 14 below.

Refer to Appendix A, Tables A05-A08 for Met-Ed's forecasts of peak load and residential, commercial, and industrial energy demand, filed with the Commission in the years 2015 through 2024. Refer to Appendix D for Met-Ed's 10-year demand and peak load forecast.

Figure 13: Met-Ed energy usage (GWh)

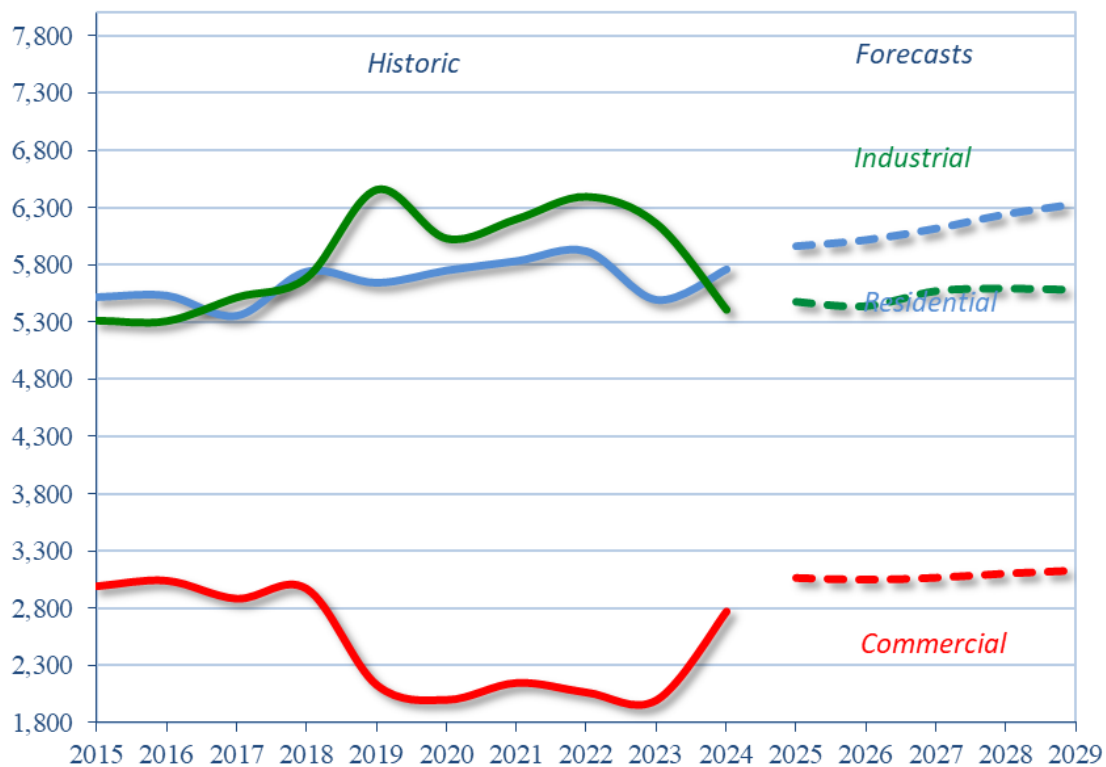
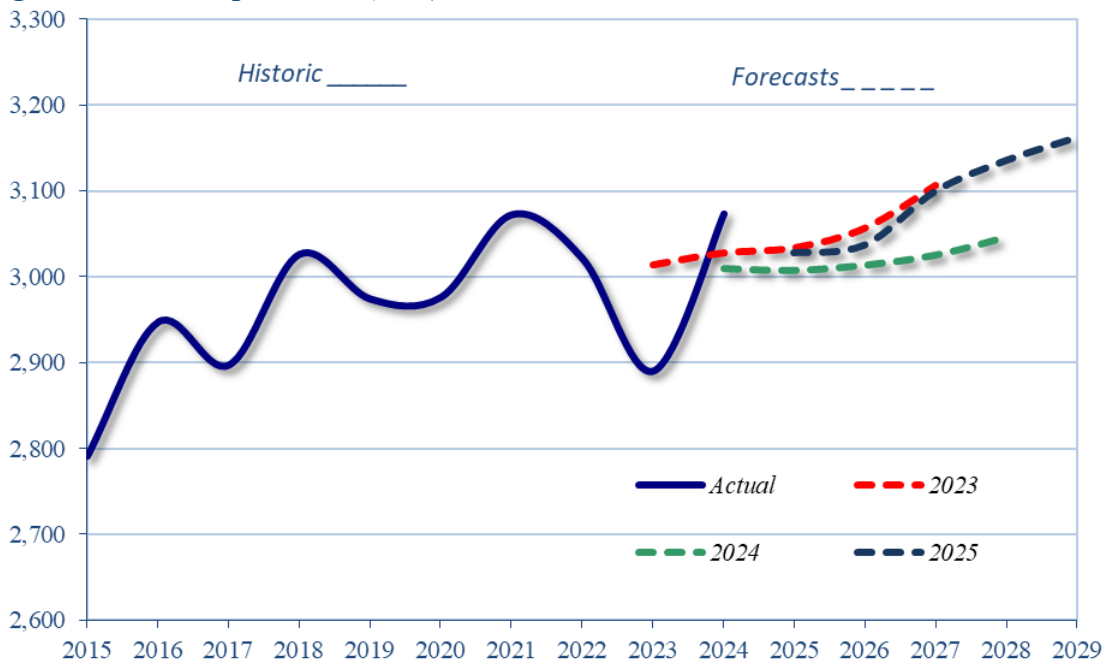
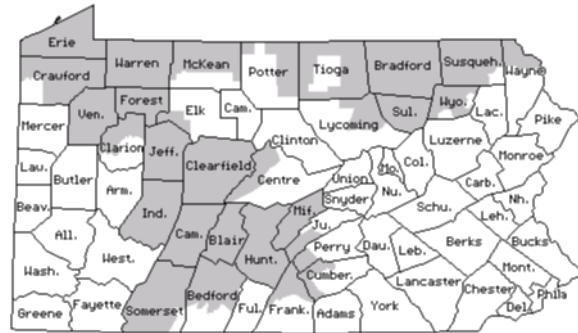


Figure 14: Met-Ed peak load (MW)



Pennsylvania Electric Company (Penelec)

Penelec provides electric service to about 588,521 customers in all or portions of 29 counties in Western and Northern Pennsylvania. Penelec's 2024 energy usage total was 16,068 GWh, as compared to: 15,683 GWh in 2023; 16,091 GWh in 2022; 15,972 GWh in 2021; and 15,715 GWh in 2020. Year-over-year (YOY) energy usage increased 2.46%. Penelec's total usage mix consisted of residential (26.3%), commercial (19.9%), industrial (36.6%), and sales for resale (17.%).



Over the next five years, total energy usage is projected to decrease at an average annual rate of -0.62%. This includes a residential usage average annual increase of 1.62%, commercial usage decrease of -0.38%, and industrial usage decrease of -2.20%, as shown in Figure 15 below.

Penelec's highest peak load in 2024 was 2,953 MW. This represents a YOY increase of 6.88% from the previous year's peak of 2,763 MW. The five-year peak load forecast is projected to decrease by an average of -1.08% per year as shown in Figure 16 below.

Refer to Appendix A, Tables A09-A12 for Penelec's forecasts of peak load and residential, commercial and industrial energy demand, filed with the Commission in the years 2015 through 2024. Refer to Appendix D for Penelec's 10-year demand and peak load forecast.

Figure 15: Penelec energy usage (GWh)

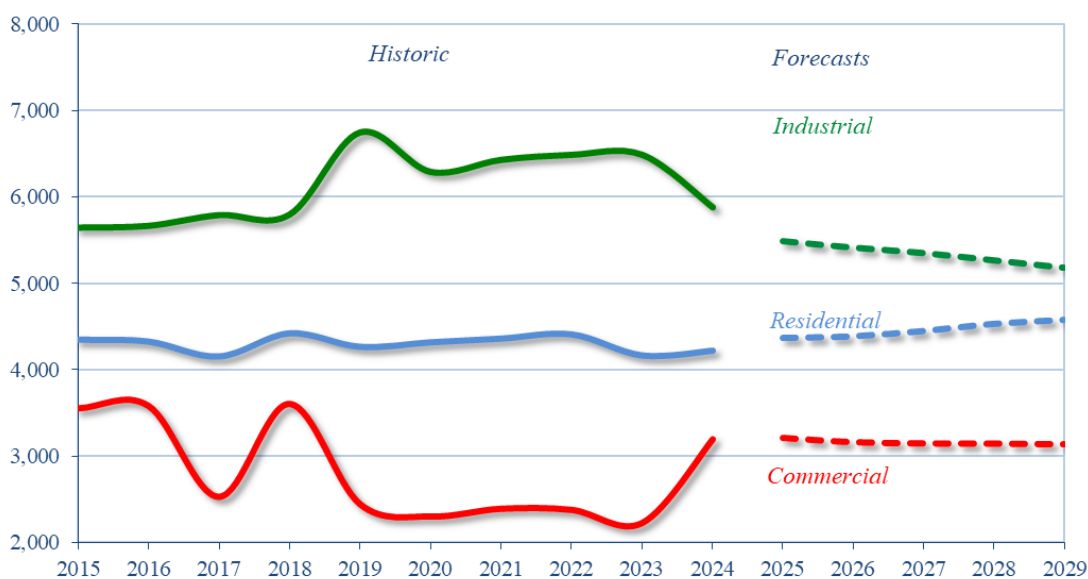
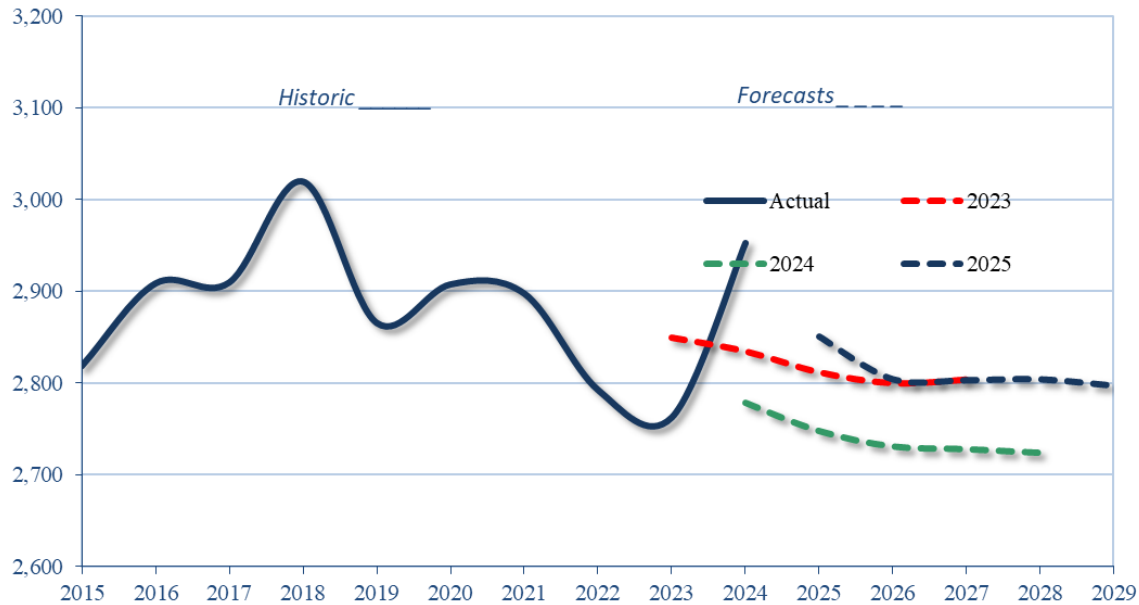
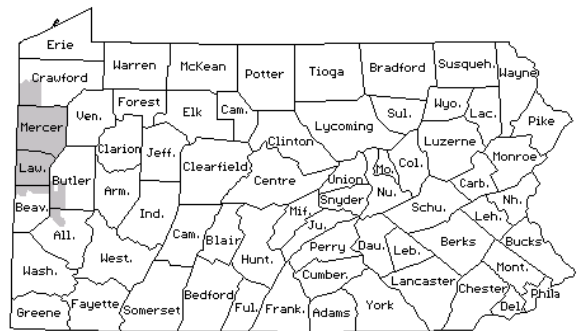


Figure 16: Penelec peak load (MW)



Pennsylvania Power Company (Penn Power)

Penn Power provides electric service to about 172,182 customers in all or portions of six counties in Western Pennsylvania. Penn Power's 2024 energy usage total was 4,619 GWh, as compared to: 4,594 in 2023; 4,752 GWh in 2022; 4,600 GWh in 2021; and 4,427 GWh in 2020. Year-over-year (YOY) energy usage increased 0.56%. Penn Power's total usage mix consisted of residential (34.86%), commercial (19.57%), industrial (41.85%), and sales for resale (3.66%).



Over the next five years, total energy usage is projected to increase at an average annual rate of 0.93%. This includes residential usage increasing at an average annual rate of 2.13%, a commercial average annual usage decrease of -0.56%, and an industrial usage increase of 0.57% as shown in Figure 17 below.

Penn Power's highest peak load in 2024 was 935 MW. This represents a YOY increase of 3.89% from the previous year's peak of 900 MW. The five-year peak load forecast is projected to increase by an average of 0.68% per year as shown in Figure 18 below.

Refer to Appendix A, Tables A13-A16 for Penn Power’s forecasts of peak load and residential, commercial, and industrial energy demand, filed with the Commission in years 2015 through 2024. Refer to Appendix D for Penn Power’s 10-year demand and peak load forecast.

Figure 17: Penn Power energy usage (GWh)

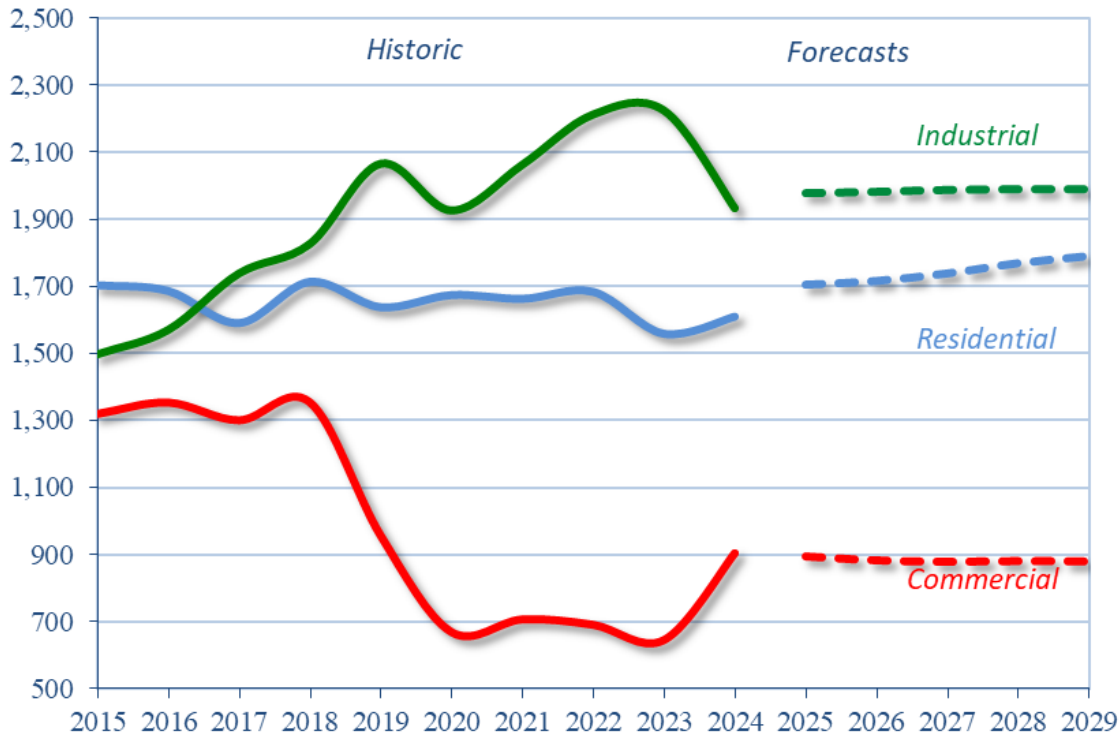
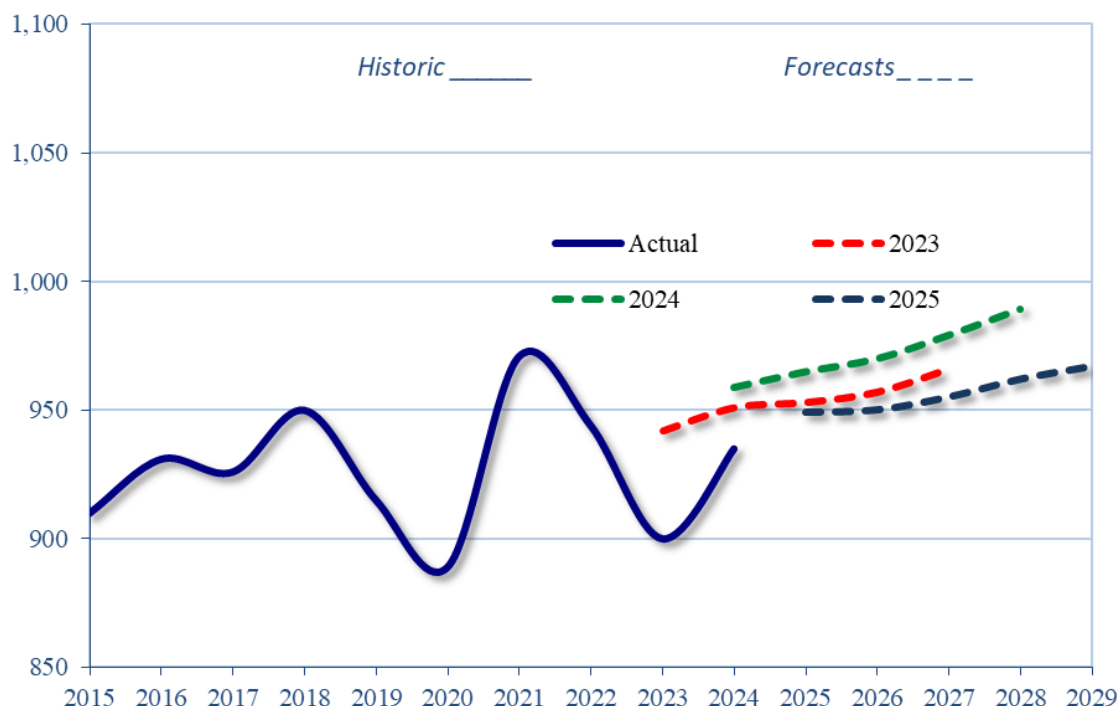
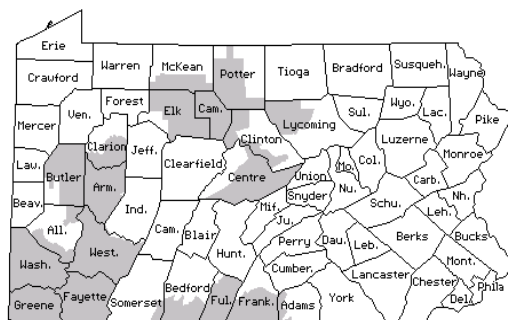


Figure 18: Penn Power peak load (MW)



West Penn Power Company (West Penn)

West Penn provides electric service to 740,746 customers in all or portions of 24 counties in Western, North and South-Central Pennsylvania. West Penn's 2024 energy usage total was 19,804 GWh, as compared to: 19,409 GWh in 2023; 20,353 in 2022; 20,050 GWh in 2021; and 19,598 in 2020. Year-over-year (YOY) energy usage increased by 2.03%. West Penn's total usage mix consisted of residential (35.29%), commercial (19.05%), industrial (41.75%), and sales for resale (3.80%).



Over the next five years, total energy usage is projected to increase at an average annual rate of 1.42%. This includes a residential usage average annual increase of 1.66%, commercial usage decrease of -1.04%, and industrial usage increase by 2.29%. See Figure 19 below.

West Penn's highest peak load in 2024 was 3,874 MW. This represents a YOY increase of 4.31% from the previous year's peak of 3,714 MW. The five-year peak load forecast is projected to increase by an average of 0.05% per year as shown in Figure 20 below.

Refer to Appendix A, Tables A25-A28 for West Penn’s forecasts of peak load and residential, commercial, and industrial energy demand, filed with the Commission in the years 2015 through 2024. Refer to Appendix D for West Penn’s 10-year demand and peak load forecast.

Figure 19: West Penn energy usage (GWh)

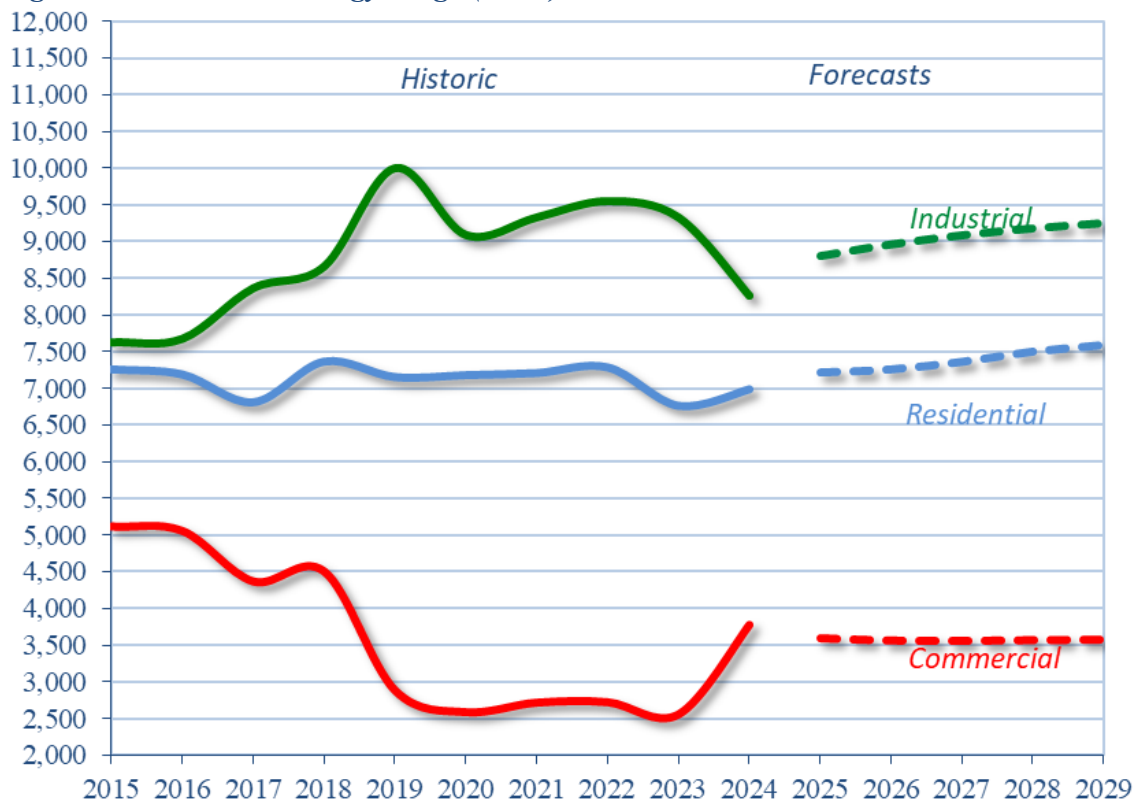
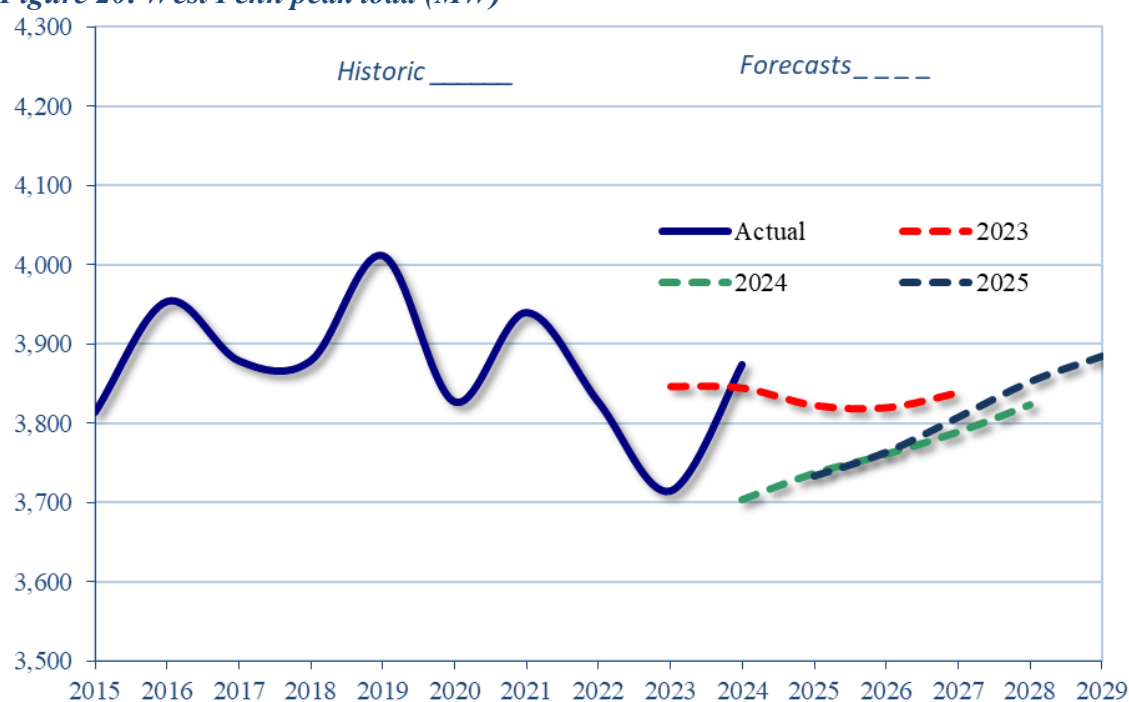
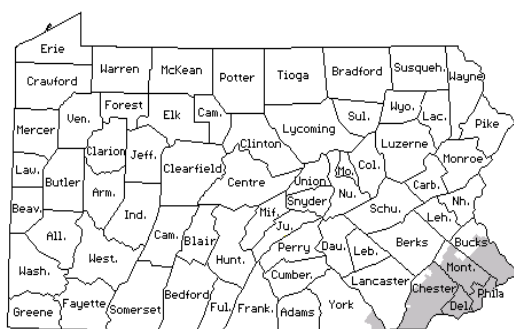


Figure 20: West Penn peak load (MW)



PECO Energy Company (PECO)

PECO is the largest electric utility in Pennsylvania, providing service to about 1,704,093 customers in the City of Philadelphia and all or portions of six counties in Southeastern Pennsylvania. PECO's 2024 energy usage total was 36,160 GWh as compared to: 34,882 GWh in 2023; 39,773 in 2022; 36,431 GWh in 2021; and 35,507 GWh in 2020. Year-over-year (YOY) energy usage decreased 3.66%. PECO's total usage mix consisted of residential (38.61%), commercial (21.25%), industrial (38.41%), other (1.72%) and sales for resale (less than 1%).

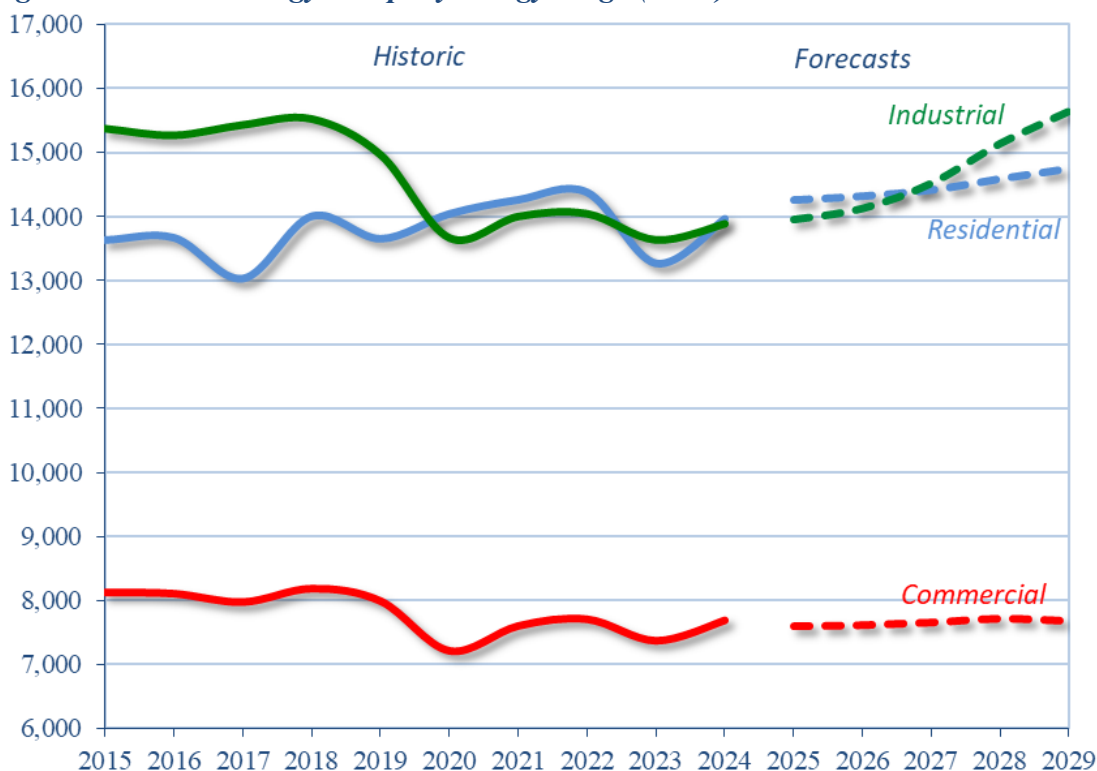


Over the next five years, total energy usage is projected to increase at an average annual rate of 1.33%. This includes a residential usage average annual increase of 1.11%, commercial usage average annual decrease of -0.02% and an industrial usage increase of 2.40% as shown in Figure 21 below.

PECO's highest peak load in 2024 was 8,651 MW. This represents a YOY increase of 5.98% from the previous year's peak of 8,163 MW. The five-year peak load forecast is projected to increase by an average of 0.61% per year as shown in Figure 22 below.

Refer to Appendix A, Tables A21-A24 for PECO’s forecasts of peak load and residential, commercial, and industrial energy demand, filed with the Commission in years 2015 through 2024. As noted above, PECO’s 10-year forecast was submitted as proprietary for the years 2030 through 2035 and thus PECO does not appear in Appendix D. However, as seen in PECO’s forecasts provided to PJM, PECO has not predicted significant large user load impacts, especially to the scale that PPL and two other transmission zones (Dominion and AEP) in PJM have predicted.⁶³

Figure 21: PECO Energy Company energy usage (GWh)



⁶³ See, PJM, *PJM Load Forecast Report January 2025*, available at <https://www.pjm.com/-/media/DotCom/library/reports-notice/load-forecast/2025-load-report.ashx>.

Year	Actual (EBIT)	2023 Forecast (EBIT)	2024 Forecast (EBIT)	2025 Forecast (EBIT)
2015	8,100			
2016	8,100			
2017	8,100			
2018	8,600			
2019	8,400			
2020	8,150			
2021	8,450			
2022	8,600			
2023	8,150	8,600		
2024	8,650	8,600	8,150	
2025		8,600	8,150	8,550
2026		8,600	8,150	8,650
2027		8,600	8,150	8,750
2028			8,150	8,850
2029				8,950

PPL provides service to about 1,487,328 customers over a 10,000-square-mile area in all or portions of 29 counties in Central Eastern Pennsylvania. PPL's 2024 energy total usage was 36,423 GWh as compared to: 36,441 GWh in 2023; 39,729 GWh in 2022; 37,104 in 2021; and 36,171 GWh in 2020. Year-over-year (YOY) energy usage decreased by -0.05%. PPL's total usage mix consisted of residential (38.76%), commercial (37.78%), industrial (23.26%), and other (less than 1%).



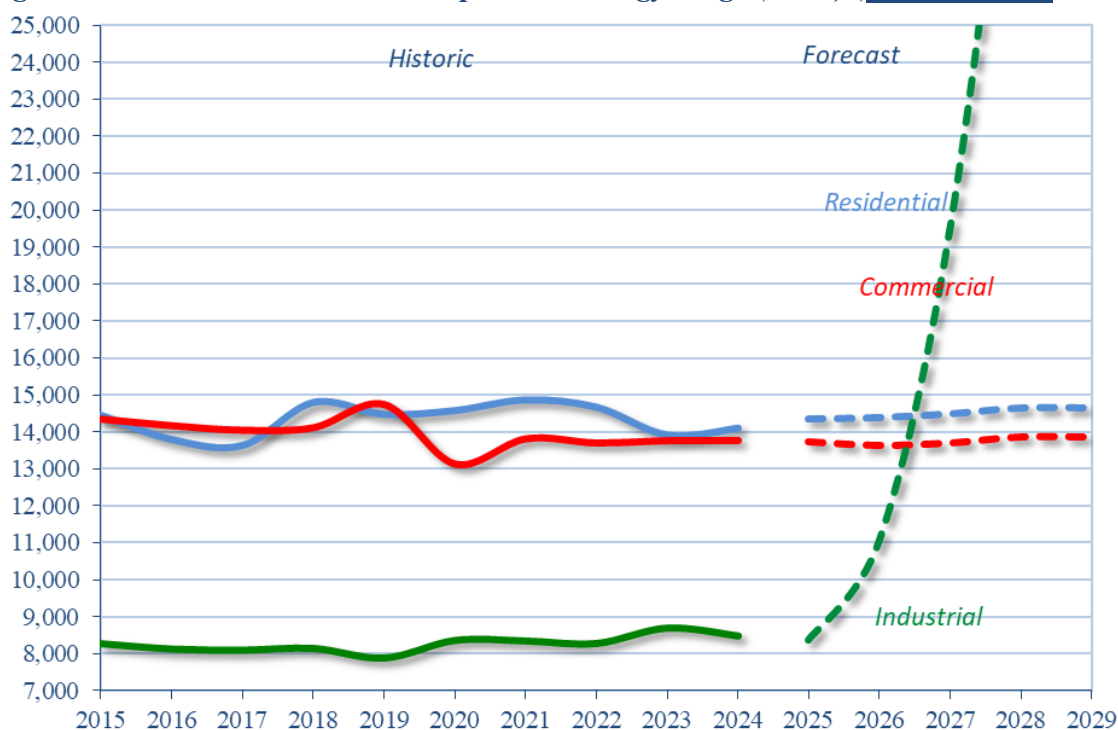
⁶⁴ PPL's projections and additions due to data center load have been documented in the *PJM Load Forecast Report January 2025*, available at <https://www.pjm.com/-/media/DotCom/library/reports-notice/load-forecast/2025-load-forecast-january-2025.pdf>.

of the PA EDCs. In terms of a 10-year outlook, PPL’s forecast is far larger than any other large EDC, as shown in Appendix D.

PPL’s highest annual peak load in 2024 was 7,840 MW. This represents a YOY increase of 12.76% from the previous year’s peak of 6,953 MW. The five-year peak load forecast is projected to increase by an average of 12.98% per year as shown in Figure 24 below. The large increase in expected peak load is due to large user load such as data centers.

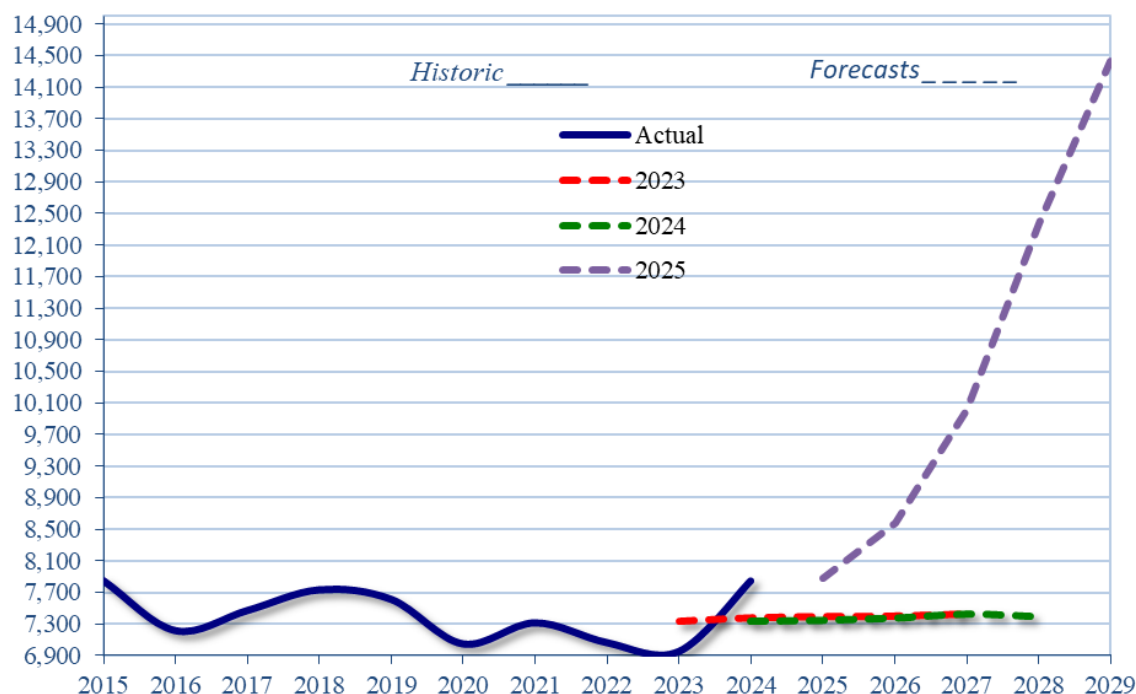
Refer to Appendix A, Tables A17-A20 for PPL’s forecasts of peak load and residential, commercial, and industrial energy demand, filed with the Commission in the years 2015 through 2024. Also refer to Appendix D for PPL’s 10-year demand and peak load forecast.

Figure 23: PPL Electric Utilities Corporation energy usage (GWh) (see note above)



[report.ashx](#), and supporting documents, available at: <https://www.pjm.com/planning/resource-adequacy-planning/load-forecast-dev-process.aspx>.

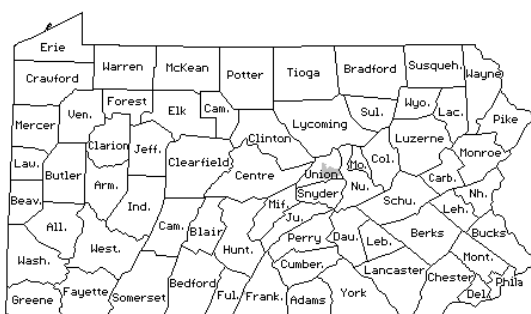
Figure 24: PPL Electric Utilities Corporation peak load (MW)



Summary of Data for the Four Smallest EDCs

Citizens' Electric Company (Citizens')

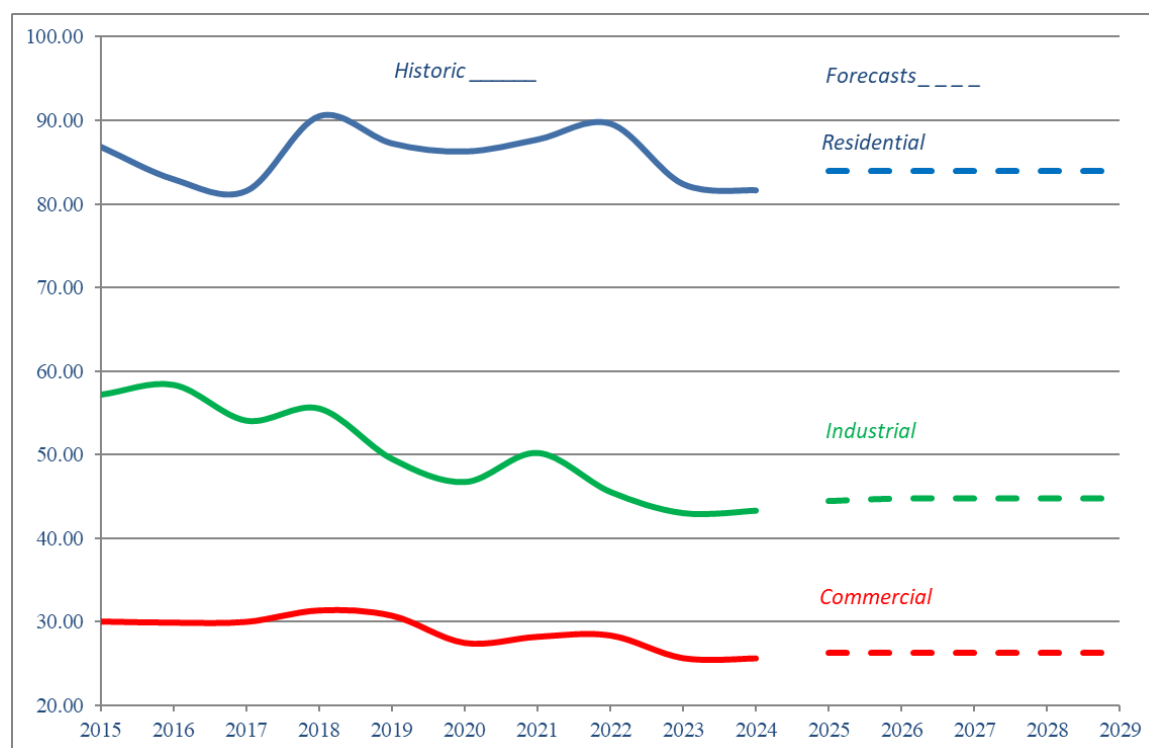
Citizens' provides service to about 7,220 customers in Union County, Pennsylvania. Citizens' 2024 energy usage total was 151 GWh, as compared to: 151 GWh in 2023; 164 GWh in 2022; 167 GWh in 2021; and 161 GWh in 2020. Year-over-year (YOY) energy usage was essentially flat. Citizens' total usage mix consisted of residential (54.15%), commercial (16.96%), industrial (28.69%), and other (less than 1%).



Over the next five years, total energy usage is projected to increase at an average annual rate of 0.58%. This includes a residential usage average annual increase of 0.55%, commercial usage increase of 0.55%, and industrial usage increase of 0.67% as shown in Figure 25 below.

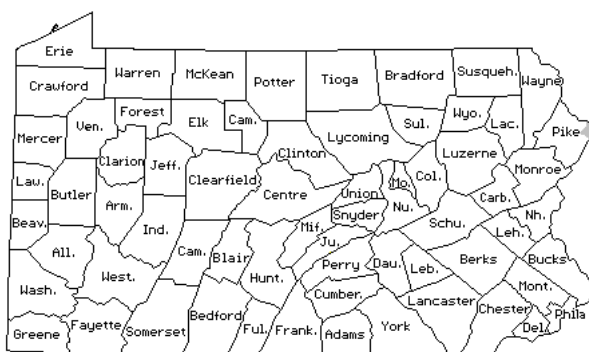
Citizens' highest peak load in 2024 was 49.9 MW. This represents a YOY increase of 19.66% from the previous year's peak of 41.7 MW. The five-year peak load forecast is projected to decrease by an average of -1.44% per year.

Figure 25: Citizens' energy usage (GWh)



Pike County Light & Power Company (Pike)

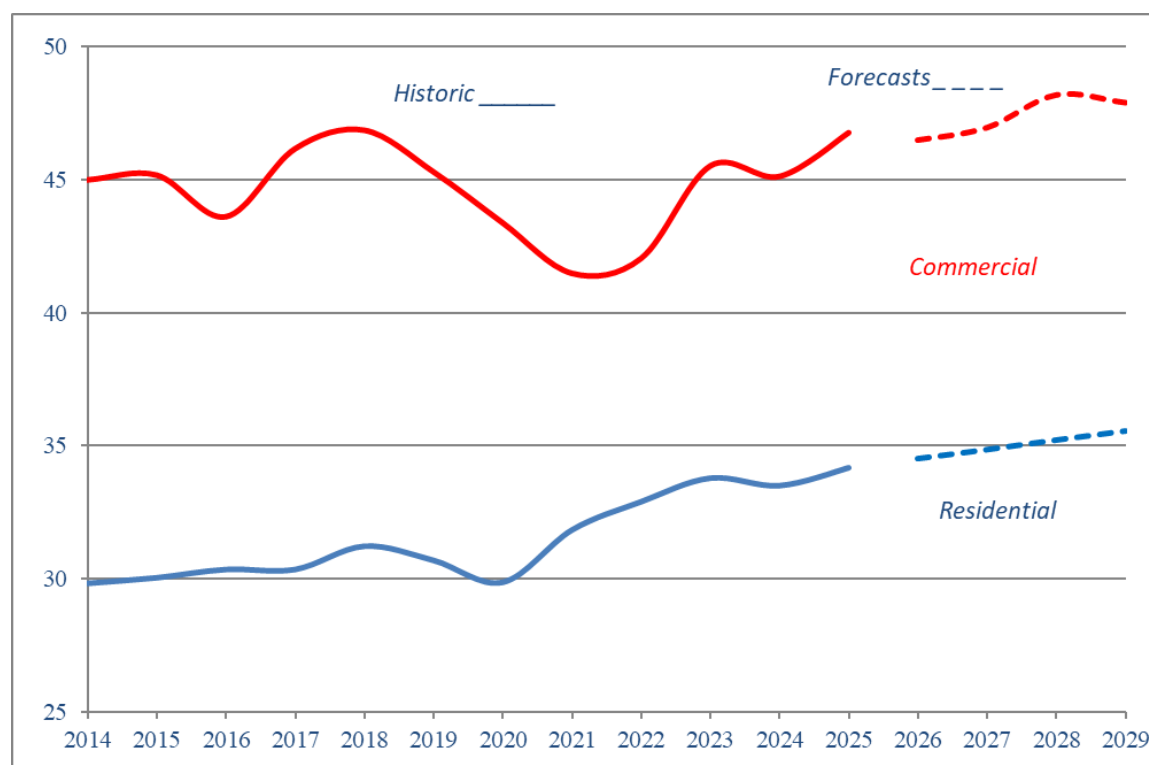
Pike provides service to about 5,318 customers in Eastern Pike County, Northeastern Pennsylvania. Pike's 2024 energy usage total was 81.4 GWh, as compared to 79.0 GWh in 2023; 79.7 GWh in 2022; 75.4 GWh in 2021; and 73.7 GWh in 2020. Year-over-year (YOY) energy usage increased by 3.02%. Pike's total usage mix consisted of residential (41.99%), commercial (57.45%), and other (less than 1%). Pike has no industrial customers or sales for resale.



Over the next five years, total energy usage is projected to increase at an average annual rate of 0.81%. This includes a residential usage average annual increase of 1.00%, and a commercial usage increase of 0.68% as shown in Figure 26 below.

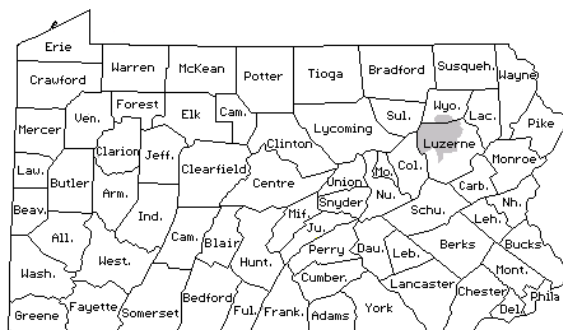
Pike's peak load in 2024 was 19.4 MW. This represents a YOY decrease of -1.17% from the previous year's peak of 19.6 MW. The five-year peak load forecast is projected to decrease by an average of -1.49% per year.

Figure 26: Pike County Light & Power energy usage (GWh)



UGI Utilities Inc.—Electric Division (UGI)

UGI provides electric service to about 63,069 customers in Northwestern Luzerne and Southern Wyoming counties in Pennsylvania. UGI’s 2024 energy usage total was 980 GWh, as compared to: 954 GWh in 2023; 1,001 GWh in 2022; 996 GWh in 2021; and 977 GWh in 2020. Year-over-year (YOY) energy usage increased by 2.72%. UGI’s total usage mix consisted of residential (56.22%), commercial (32.95%), industrial (10.30%), and sales for resale (less than 1%).

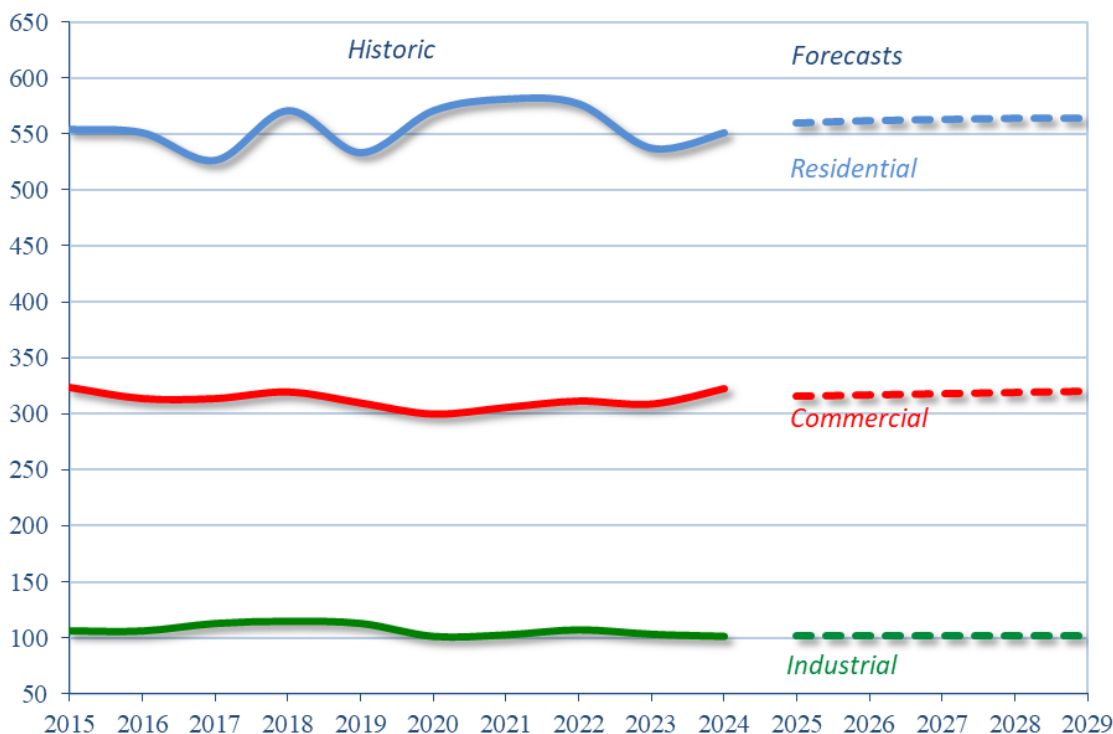


Over the next five years, total energy usage is projected to increase at an average annual rate of 0.22%. This includes a residential average annual increase of 0.47%, commercial usage decrease of -0.19%, and industrial usage increase by 0.20% as shown in Figure 27 below.

UGI’s highest peak load in 2024 was 217 MW. This represents a YOY increase of 11.28% from the previous year’s peak of 195 MW. The five-year peak load forecast is projected to decrease by an average of -1.52% per year.

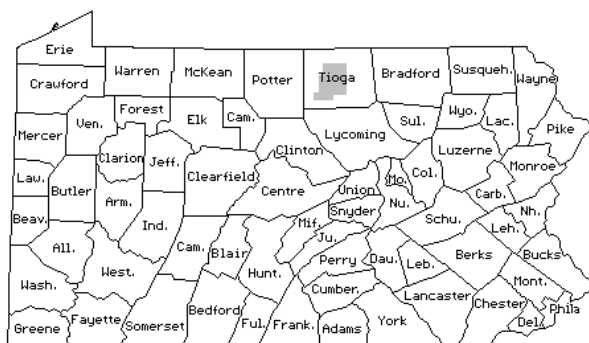
See Appendix D for UGI’s 10-year demand and peak load forecast.

Figure 27: UGI Utilities Inc. energy usage (GWh)



Wellsboro Electric Company (Wellsboro)

Wellsboro provides electric service to about 6,473 customers in Tioga County, North Central Pennsylvania. Wellsboro's 2024 energy use was 96 GWh, as compared to: 98 GWh in 2023; 102 GWh in 2022; 104 GWh in 2021; and 103 GWh in 2020. Year-over-year (YOY) energy usage decreased by approximately -0.45%. Wellsboro's total usage mix consisted of residential (43.19%), commercial (31.27%), industrial (25.37%), and other/sales for resale (less than 1%).

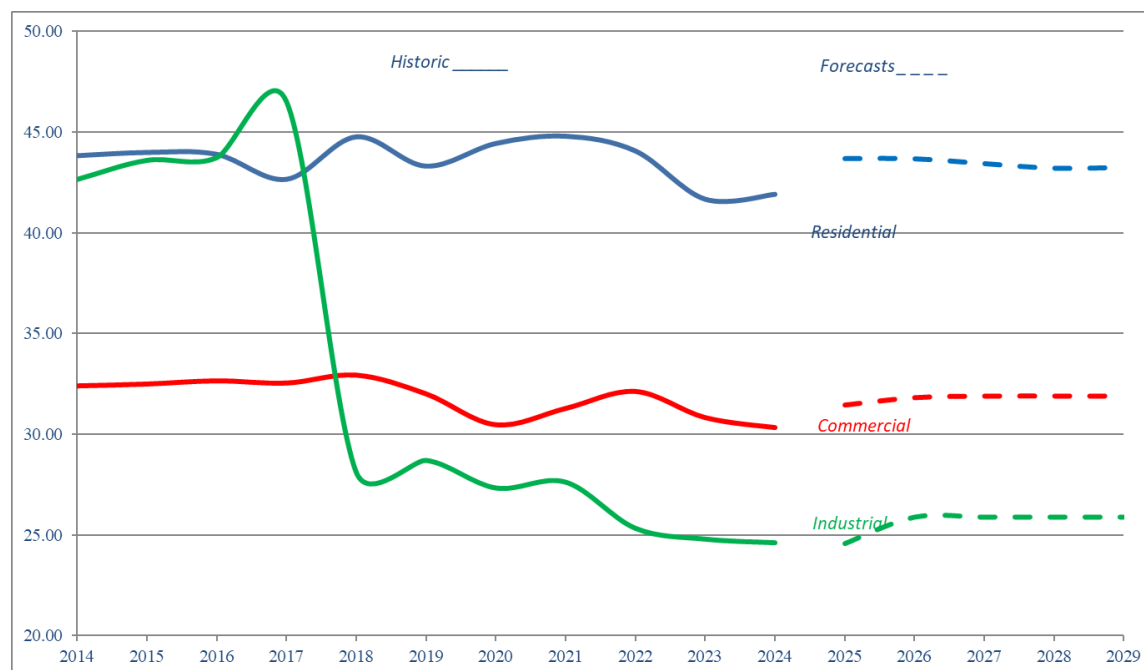


Over the next five years, total energy usage is projected to increase at an average annual rate of 0.85%. This includes a residential average annual increase of 0.64%, commercial usage increase of 1.01%, and industrial usage increase by 1.02% as shown in Figure 28 below.

Note: the dramatic drop in Industrial usage in 2017 is due to two large industrial customers leaving the region in 2017.

Wellsboro’s highest peak load in 2024 was 19.4 MW. This represents a YOY increase of 2.60% from the previous year’s peak of 18.9 MW. The five-year peak load forecast is projected to decrease by an average of -1.49% per year.

Figure 28: Wellsboro Electric Company energy usage (GWh)



Alternative Energy Portfolio Standards

The PUC continues to implement procedures and guidelines necessary to carry out the requirements of the Alternative Energy Portfolio Standards Act (AEPS) of 2004 (Act 213).⁶⁵ Act 213 required annual increasing percentages of electricity sold to Pennsylvania retail customers be derived from alternative energy resources. The amount of electricity to be supplied by alternative resources increased to its peak total of 18% in 2021, including 8% from Tier I resources, including solar, and 10% from Tier II resources. In 2008, the Commission adopted regulations pertaining to the AEPS obligations of EDCs and EGSs.⁶⁶ All EDCs and EGSs have been required to comply since Jan. 1, 2011.

Eligible resources are categorized as Tier I and Tier II. Tier I resources include solar, wind, low-impact hydropower, geothermal, biologically derived methane gas, fuel cells, biomass (including electricity generated in Pennsylvania utilizing by-products of the pulping process and wood manufacturing process, including bark, wood chips, sawdust and lignin’s in spent pulping liquors)⁶⁷ and coal mine methane. Tier II resources include waste coal, demand side management, distributed

⁶⁵ Alternative Energy Portfolio Standards Act, effective Feb. 28, 2005; 73 P.S. §§ 1648.1—1648.8.

⁶⁶ See, Docket No. L-00060180; 52 Pa. Code §§ 75.61-75.70.

⁶⁷ See, 66 Pa.C.S. § 2814(b).

generation, large-scale hydropower, by-products of wood pulping and wood manufacturing, municipal solid waste, and integrated combined coal gasification technology.

To meet the requirements of Act 213, EDCs and EGSs acquire alternative energy credits (AECs) in quantities commensurate with the required tier percentage and the electricity sold to retail customers. AECs are separate from the electricity sold to customers. An AEC represents one megawatt hour (MWh) of qualified alternative electric generation or conservation, whether self-generated, purchased along with the electric commodity, or purchased separately through a tradable instrument.⁶⁸

AECs are earned when a qualified facility generates one MWh of electricity. An AEC is a serialized, tradable, and tracked certificate that represents the characteristics of electricity generated from a facility. PJM EIS' Generation Attribute Tracking System (GATS) is the alternative energy credit registry used by the Commission to create, track, transfer, and retire alternative energy credits.

An AEC can be sold or traded separately from the power. AECs are generally purchased by EDCs and EGSs to meet the AEPS requirements for any given year. AECs can also be obtained and retired to comply with the private sector's voluntary commitments. AECs can be moved (sold or traded) multiple times until they are ultimately retired for regulatory or voluntary compliance purposes, but they can only be used for compliance purposes (retired) once. The Commission, together with its Pennsylvania AEPS Program Administrator, verifies that EGSs and EDCs are complying with the requirements of Act 213.

Under Act 213, the Commission adopted regulations promoting onsite generation by customer-generators using renewable resources and eliminated previously existing barriers to net metering.⁶⁹ The regulations also provide for required metering capabilities and a compensation mechanism that reimburses customer-generators for surplus energy supplied to the electric grid.⁷⁰ Act 35 of 2007 amended Act 213 by altering the reconciliation mechanism used to compensate resellers for surplus energy supplied through net metering.⁷¹

The Commission also adopted regulations that govern interconnection for customer-generators. The regulations strive to eliminate barriers which may have previously existed with regard to interconnection, while ensuring that interconnection by customer-generators will not pose unnecessary risks to the Commonwealth's electric distribution systems.⁷²

On Oct. 27, 2016, the Commission adopted regulations to revise and update existing regulations to comply with Act 129 of 2008, and Act 35 of 2007, and to clarify certain issues of law, administrative procedure, and policy.⁷³ On Apr. 19, 2018, the Commission adopted a Final Implementation Order

⁶⁸ See, 52 Pa. Code §§ 75.61—75.70.

⁶⁹ Net metering measures the difference between the electricity supplied by an electric utility or EGS 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. See 52 Pa. Code § 75.12.

⁷⁰ See, Docket No. L-00050174; 52 Pa. Code §§ 75.11-75.15.

⁷¹ *Id.*

⁷² See, Docket No. L-00050175; 52 Pa. Code §§ 75.21-75.40.

⁷³ See, Docket No. L-2014-2404361; 52 Pa. Code §§ 75.1-75.72.

to provide the Commission's interpretation and implementation of Section 11.1 of Act 40 of 2017.⁷⁴ Effective Oct. 30, 2017, Act 40 contained a section that further amended Act 213 by establishing geographical limits on solar photovoltaic (solar PV) systems that qualify for the solar PV share requirements of the AEPS. On May 6, 2021, the Commission adopted a Final Implementation Order to provide the Commission's interpretation as well as implementation of Sections 10 and 14 of Act 114.⁷⁵

Effective Nov. 23, 2020, Act 114 at Section 10 amended the Act 213 by revising the definition of customer-generator. Section 10 added the following to the definition of customer-generator: net-metered distributed generation systems owned, operated, or supporting the Department of Military and Veterans Affairs (DMVA) on property owned or leased and operated by the DMVA with a nameplate capacity not exceeding the DMVA's annual electric needs to support the DMVA's facilities on its property. Furthermore, Act 114 at Section 14 amended Act 213 by establishing geographic limits on Tier II alternative energy resource systems that qualify for the Tier II share requirements of the AEPS.

As of May 31, 2024, Pennsylvania had certified 71,569⁷⁶ alternate energy facilities, of which 60,015 are located within the state. For additional information on Alternative Energy in Pennsylvania, please visit the Commission's website.⁷⁷

Energy Efficiency and Conservation Program (Act 129)

Act 129 of 2008⁷⁸ required the seven electric distribution companies (EDCs)⁷⁹ with at least 100,000 customers⁸⁰ to establish an energy efficiency and conservation (EE&C) plan. The Act is being implemented in phases. Phases I through III are complete. Phase IV of Act 129, the current five-year phase, began on June 1, 2021, and will end on May 31, 2026.

In its planning for Phase IV, the Commission directed the Statewide Evaluator (SWE) to perform electric consumption baseline studies to establish baseline energy use and building characteristics for the residential, commercial and industrial sectors. The SWE submitted the final residential and non-residential baseline studies to the Commission on Feb. 12, 2019.⁸¹

The Commission further directed the SWE to perform an EE and Peak Demand Reduction (EEPDR) potential study to inform the Commission of the energy savings potential remaining in the EDCs' service territories. This data was used to assist the Commission to determine EE&C consumption reduction targets for Phase IV. In addition, the Commission tasked the SWE to

⁷⁴ See, Docket No. M-2017-2631527.

⁷⁵ See, Docket No. M-2020-3023323.

⁷⁶ See [Reports – Pennsylvania Alternative Energy Portfolio Standard Program \(pennaeps.com\)](https://pennaeps.com).

⁷⁷ http://www.puc.pa.gov/consumer_info/electricity/alternative_energy.aspx.

⁷⁸ Act 129 of 2008, effective Nov. 14, 2008; 66 Pa. C.S. §§2806.1-2806.2.

⁷⁹ The seven EDCs with Act 129 Energy Efficiency and Conservation obligations are Duquesne Light Company, Metropolitan Edison Company, PECO Energy Company, Pennsylvania Electric Company, Pennsylvania Power Company, PPL Electric Utilities Corporation, and West Penn Power Company.

⁸⁰ See, 66 Pa. C.S. § 2806.1.

⁸¹ The 2018 Pennsylvania Residential and Non-Residential Baseline Studies are available at: <https://www.puc.pa.gov/filing-resources/issues-laws-regulations/act-129/act-129-statewide-evaluator-swe/>.

conduct a Dispatchable Demand Response (DDR) potential study to determine if cost-effective dispatchable demand response potential remains in the EDCs service territories for a potential Phase IV. The SWE submitted the final EEPDR and DDR Potential Studies to the Commission on Feb. 28, 2020.^{82 83}

The EEPDR and DDR Potential Studies were released publicly via a Commission Secretarial Letter served March 2, 2020.⁸⁴ Following a review of the SWE's EEPDR and DDR Potential Studies, the Commission determined that additional consumption and peak demand reduction targets were cost-effective.

On June 18, 2020, the Commission adopted the Final Implementation Order prescribing targets for Phase IV of the Act 129 EE&C Program.⁸⁵ The Commission found that peak demand reductions from EE measures were more cost-effective and longer lasting than DDR programming, persisting for years after Phase IV has ended. In addition, peak demand reductions from EE measures are available every day rather than just a small number of DR event days and can be recognized in PJM's Forward Capacity Market.⁸⁶ For these reasons, Phase IV includes Peak Demand Reduction targets but does not include a DDR target.

Phase IV began on June 1, 2021, and will end on May 31, 2026. The EDCs' Phase IV electric consumption and peak demand reduction requirements and compliance for Program Years 13 (PY13), 14 (PY14), and 15 (PY15) and the first six months of Program Year 16 (PY16) are provided in Table 4 below.

Table 4: Phase IV Electric Consumption and Peak Demand Reduction Targets

EDC	Phase IV Electric Consumption Reduction Targets (MWh)	Phase IV Electric Consumption Reduction Compliance to Date (MWh)	Phase IV Peak Demand Reduction Targets (MW/yr)	Phase IV Peak Demand Reduction Compliance to Date (MW)
Duquesne	348,126	303,532	62	52.00
Met-Ed	463,215	407,784	76	46.48
PECO	1,380,837	1,178,163	256	199.09
Penelec	437,676	354,687	80	42.41
Penn Power	128,909	142,710	20	14.47

⁸² See, Pennsylvania Act 129 Phase IV Energy Efficiency and Peak Demand Reduction Market Potential Study Report, filed by NMR Group, Inc. on Feb. 28, 2020, at Docket No. M-2020-3015229.

⁸³ See, Pennsylvania Act 129 Phase IV Demand Response Potential Study, filed by NMR Group, Inc. on Feb. 28, 2020, at Docket No. M-2020-3015229.

⁸⁴ See, Secretarial Letter, at Docket No. M-2020-3015229, served March 2, 2020.

⁸⁵ See, Energy Efficiency and Conservation Program Implementation Order, at Docket No. M-2020-3015228, entered June 18, 2020, at 7-8.

⁸⁶ *Id.* at 62.

PPL	1,250,157	1,098,370	229	135.26
West Penn	504,951	471,487	86	52.84

PY13: Jun. 1, 2021 – May 31, 2022

PY14: Jun. 1, 2022 – May 31, 2023

PY15: Jun. 1, 2023 – May 31, 2024

PY16: Jun. 1, 2024 – May 31, 2025

For Phase IV, the Commission concluded that it was unnecessary to continue requiring preliminary annual reports. Therefore, to streamline the reporting process, only semiannual and final annual reports are required. In addition, in the interest of providing the final annual reports to the public in a much timelier fashion, the Commission required the EDCs to submit the final annual reports by September 30 of each year and semi-annual reports by January 15 of each year.⁸⁷

The EDCs filed their semiannual reports for the fourth year of Phase IV, PY16, in January 2025.⁸⁸ Final annual reports for PY16 are due to the Commission by Sept. 30, 2025.

In its planning for a potential Phase V, the Commission directed the SWE to perform electric consumption baseline studies to establish baseline energy use and building characteristics for the residential, commercial and industrial sectors. The SWE submitted the final residential and non-residential baseline studies to the Commission in February and March 2024.⁸⁹ The studies were released publicly via a Commission Secretarial Letter served March 25, 2024.⁹⁰

The Commission further directed the SWE to perform an energy efficiency market potential study to inform the Commission of the energy savings potential remaining in the EDCs' service territories. This data will be used to assist the Commission to determine energy efficiency and conservation consumption reduction targets for Phase V.

In addition, the Commission tasked the SWE to conduct a demand response market potential study to determine if cost-effective demand response potential remains in the EDCs service territories for the next phase of Act 129. These studies were released publicly, also by a Commission Secretarial Letter served Feb. 21, 2025.⁹¹

On June 18, 2025, the Commission adopted the Final Implementation Order prescribing targets for Phase V of the Act 129 EE&C Program.⁹²

Phase V will begin June 1, 2026, and end May 31, 2031.

⁸⁷ *Id.* at 102-103.

⁸⁸ *See*, the EDCs semiannual reports for PY16 at:

http://www.puc.pa.gov/filing_resources/issues_laws_regulations/act_129_information/electric_distribution_company_act_129_reporting_requirements.aspx

⁸⁹ The 2023 Pennsylvania Residential and Non-Residential Baseline Studies are available at:

<https://www.puc.pa.gov/filing-resources/issues-laws-regulations/act-129/act-129-statewide-evaluator-swe/>

⁹⁰ *See*, Secretarial Letter, at Docket No. M-2023-3044490, served March 25, 2024.

⁹¹ *See*, Secretarial Letter, at Docket No. M-2025-3052827, served Feb. 21, 2025.

⁹² *See*, Energy Efficiency and Conservation Program Implementation Order, at Docket No. M-2025-3052826, entered June 18, 2025, at 12

Appendix A – Data Tables

The following tables provide actual and projected peak load as well as residential, commercial and industrial energy demand by EDC. The five-year projections are filed each year by the large EDCs. Actual values are provided for the years 2015 through 2024 and values are listed in the second column labeled “Actual.” The lower-right-most-column in the body of the table is the latest five-year projection for the years 2025 through 2029.

Table A01 Duquesne Light Company
Actual and Projected Peak Load (MW)

Year	Actual	Projected Peak Load Requirements (Year Forecast Was Filed)										
		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
2015	2804	2969										
2016	2797	3005	2893									
2017	2682	3026	2918	2884								
2018	2795	3042	2938	2895	2872							
2019	2662	3056	2950	2901	2874	2862						
2020	2667		2942	2890	2861	2852	2759					
2021	2760			2882	2862	2853	2781	2768				
2022	2715				2869	2865	2797	2796	2742			
2023	2534					2866	2807	2832	2759	2712		
2024	2961						2818	2855	2776	2710	2705	
2025								2875	2794	2712	2707	2703
2026									2804	2711	2716	2697
2027										2705	2727	2702
2028											2737	2711
2029												2721

Table A03 Duquesne Light Company
Actual and Projected Commercial Energy Demand (GWh)

Year	Actual	Projected Commercial Energy Demand (Year Forecast Was Filed)										
		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
2015	6399	6494										
2016	6335	6503	6371									
2017	6112	6472	6327	6261								
2018	6218	6455	6299	6232	6072							
2019	6053	6430	6254	6187	6024	6098						
2020	5522		6210	6151	5980	6029	6057					
2021	5778			6082	5905	5973	5986	5645				
2022	5719				5833	5896	5881	5711	5707			
2023	5532					5804	5807	5624	5666	5625		
2024	6665						5754	5556	5603	5622	5663	
2025								5463	5508	5720	5666	5527
2026									5419	5840	5644	5501
2027										5806	5622	5460
2028											5616	5423
2029												5380

Table A02 Duquesne Light Company
Actual and Projected Residential Energy Demand (GWh)

Year	Actual	Projected Residential Energy Demand (Year Forecast Was Filed)										
		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
2015	4109	4176										
2016	4197	4202	4081									
2017	3876	4184	4068	4004								
2018	4258	4172	4067	3987	3949							
2019	4078	4164	4053	3955	3915	4011						
2020	4217		4012	3908	3856	3971	4005					
2021	4215			3863	3797	3913	3951	4021				
2022	4160				3747	3862	3908	3895	3975			
2023	3800					3816	3864	3834	3934	4136		
2024	4034						3821	3782	3887	4125	3954	
2025								3722	3836	4120	3948	3936
2026									3791	4110	3947	3910
2027										4103	3957	3886
2028											3975	3866
2029												3840

Table A04 Duquesne Light Company
Actual and Projected Industrial Energy Demand (GWh)

Year	Actual	Projected Industrial Energy Demand (Year Forecast Was Filed)										
		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
2015	3164	2787										
2016	2898	2778	2909									
2017	2566	2762	2896	2890								
2018	2632	2734	2873	2852	2665							
2019	2623	2711	2851	2837	2658	2675						
2020	2472		2826	2819	2640	2656	2719					
2021	2343			2803	2638	2650	2783	2641				
2022	2509				2618	2627	2733	2553	2405			
2023	2572					2605	2712	2519	2399	2347		
2024	2829						2692	2485	2367	2318	2608	
2025								2457	2343	2291	2583	2961
2026									2312	2253	2547	2933
2027										2225	2518	2933
2028											2492	2935
2029												2917

Table A05 Metropolitan Edison Company
Actual and Projected Peak Load (MW)

Year	Actual	Projected Peak Load Requirements (Year Forecast Was Filed)										
		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
2015	2791	2975										
2016	2947	2979	2987									
2017	2897	2985	2995	2901								
2018	3026	2987	2997	2895	2926							
2019	2974	2986	2996	2872	2907	2921						
2020	2976		2995	2855	2874	2871	2934					
2021	3072			2856	2865	2868	2928	2837				
2022	3021				2875	2876	2940	2891	2966			
2023	2890					2883	2949	2935	3039	3014		
2024	3073						2971	2960	3047	3028	3009	
2025								2977	3043	3034	3007	3028
2026									3046	3057	3013	3037
2027										3107	3025	3100
2028											3046	3136
2029												3163

Table A07 Metropolitan Edison Company
Actual and Projected Commercial Energy Demand (GWh)*

Year	Actual	Projected Commercial Energy Demand (Year Forecast Was Filed)										
		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
2015	2995	2983										
2016	3043	2929	2919									
2017	2886	2938	2923	2953								
2018	2972	2938	2927	2948	2952							
2019	2133	2923	2925	2941	2948	2940						
2020	2003		2921	2935	2924	2899	2101					
2021	2151			2925	2904	2873	2081	1906				
2022	2068				2912	2875	2083	1933	2074			
2023	2001					2880	2089	1956	2031	2147		
2024	2774						2146	1969	2021	2133	2083	
2025								1965	1982	2093	2064	3062
2026									1960	2070	2049	3047
2027										2067	2057	3064
2028											2077	3100
2029												3126

Table A06 Metropolitan Edison Company
Actual and Projected Residential Energy Demand (GWh)

Year	Actual	Projected Residential Energy Demand (Year Forecast Was Filed)										
		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
2015	5515	5533										
2016	5528	5378	5190									
2017	5351	5392	5042	5316								
2018	5740	5382	4925	5242	5347							
2019	5641	5351	4840	5154	5265	5318						
2020	5750		4760	5083	5201	5239	5460					
2021	5832			5044	5166	5201	5422	5577				
2022	5918				5172	5198	5418	5539	5763			
2023	5490					5203	5428	5573	5702	5898		
2024	5759						5553	5628	5749	5901	5920	
2025								5666	5701	5879	5961	
2026									5726	5899	5885	6016
2027										5972	5910	6117
2028											5968	6244
2029												6334

Table A08 Metropolitan Edison Company
Actual and Projected Industrial Energy Demand (GWh)*

Year	Actual	Projected Industrial Energy Demand (Year Forecast Was Filed)										
		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
2015	5309	5413										
2016	5304	5472	5350									
2017	5512	5507	5372	5360								
2018	5685	5523	5467	5428	5449							
2019	6459	5532	5474	5408	5443	5451						
2020	6029		5467	5397	5396	5372	6396					
2021	6201			5458	5388	5409	6422	6302				
2022	6397				5419	5450	6466	6471	6570			
2023	6159					5472	6507	6577	6677	6315		
2024	5403						6876	6625	6733	6363	6295	
2025								6611	6735	6342	6283	5473
2026									6732	6413	6267	5435
2027										6578	6249	5566
2028											6228	5589
2029												5576

**Table A09 Pennsylvania Electric Company
Actual and Projected Peak Load (MW)**

Year	Actual	Projected Peak Load Requirements (Year Forecast Was Filed)										
		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
2015	2819	2888										
2016	2909	2896	2890									
2017	2910	2904	2898	2797								
2018	3020	2904	2906	2794	2823							
2019	2866	2902	2907	2775	2809	2849						
2020	2908		2907	2751	2779	2811	2892					
2021	2898			2739	2775	2811	2884	2855				
2022	2793				2779	2813	2884	2862	2865			
2023	2763					2817	2873	2880	2850	2850		
2024	2953						2866	2882	2835	2835	2779	
2025								2886	2812	2812	2748	2851
2026									2800	2800	2731	2804
2027										2804	2728	2803
2028											2724	2804
2029												2797

**Table A11 Pennsylvania Electric Company
Actual and Projected Commercial Energy Demand (GWh)***

Year	Actual	Projected Commercial Energy Demand (Year Forecast Was Filed)										
		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
2015	3558	3649										
2016	3587	3582	3539									
2017	2529	3614	3545	3483								
2018	3610	3619	3551	3454	3525							
2019	2443	3607	3553	3426	3516	3506						
2020	2300		3552	3392	3499	3459	2485					
2021	2390			3352	3473	3424	2459	2222				
2022	2377				3472	3406	2446	2296	2497			
2023	2225						2440	2364	2446	2575		
2024	3198						2449	2403	2418	2558	2461	
2025								2390	2354	2505	2408	3214
2026									2307	2470	2361	3164
2027										2452	2348	3149
2028											2345	3146
2029												3138

**Table A10 Pennsylvania Electric Company
Actual and Projected Residential Energy Demand (GWh)**

Year	Actual	Projected Residential Energy Demand (Year Forecast Was Filed)										
		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
2015	4350	4491										
2016	4328	4373	4145									
2017	4153	4393	4011	4248								
2018	4424	4394	3923	4229	4238							
2019	4266	4377	3856	4181	4157	4187						
2020	4319		3791	4133	4090	4134	4141					
2021	4363			4112	4056	4104	4111	4279				
2022	4412				4057	4104	4109	4247	4269			
2023	4165					4112	4104	4244	4240	4341		
2024	4221						4112	4256	4223	4325	4403	
2025								4259	4125	4308	4381	4364
2026									4147	4293	4375	4384
2027										4318	4391	4445
2028											4420	4528
2029												4574

**Table A12 Pennsylvania Electric Company
Actual and Projected Industrial Energy Demand (GWh)***

Year	Actual	Projected Industrial Energy Demand (Year Forecast Was Filed)										
		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
2015	5647	5747										
2016	5668	5822	5723									
2017	5792	5931	5746	5602								
2018	5797	6017	5721	5617	5822							
2019	6743	5998	5675	5602	5832	5807						
2020	6289		5623	5569	5757	5720	6520					
2021	6427			5548	5751	5770	6587	6473				
2022	6485				5790	5819	6474	6522	6049			
2023	6485					5854	6394	6513	5988	6245		
2024	5881						6327	6481	6011	6295	5999	
2025								6463	5977	6280	5896	5485
2026									5990	6278	5831	5412
2027										6284	5798	5350
2028											5728	5267
2029												5183

**Table A13 Pennsylvania Power Company
Actual and Projected Peak Load (MW)**

Year	Actual	Projected Peak Load Requirements (Year Forecast Was Filed)										
		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
2015	910	931										
2016	931	940	992									
2017	926	947	999	973								
2018	950	949	1003	965	983							
2019	915	949	1004	956	979	976						
2020	889		1006	951	975	965	923					
2021	971			945	977	968	926	910				
2022	944				985	973	927	912	932			
2023	900					976	937	924	942	942		
2024	935						945	932	951	951	959	
2025								940	953	953	965	949
2026									957	957	970	950
2027										966	979	955
2028											989	962
2029												967

**Table A15 Pennsylvania Power Company
Actual and Projected Commercial Energy Demand (GWh)**

Year	Actual	Projected Commercial Energy Demand (Year Forecast Was Filed)										
		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
2015	1321	1180										
2016	1355	1048	1311									
2017	1302	1049	1315	1345								
2018	1356	1047	1319	1330	1317							
2019	957	1040	1321	1314	1312	1307						
2020	668		1321	1302	1303	1287	1016					
2021	706			1289	1295	1262	996	787				
2022	690				1293	1237	977	850	751			
2023	644					1221	967	908	724	744		
2024	904						1023	940	720	725	686	
2025								931	699	705	671	893
2026									684	686	663	882
2027										680	664	878
2028											668	880
2029												879

**Table A14 Pennsylvania Power Company
Actual and Projected Residential Energy Demand (GWh)**

Year	Actual	Projected Residential Energy Demand (Year Forecast Was Filed)										
		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
2015	1703	1752										
2016	1686	1689	1597									
2017	1591	1703	1563	1651								
2018	1713	1713	1545	1632	1640							
2019	1638	1714	1532	1609	1617	1630						
2020	1674		1520	1593	1604	1612	1613					
2021	1663			1584	1595	1604	1604	1647				
2022	1683				1598	1606	1608	1636	1692			
2023	1559					1614	1616	1647	1659	1684		
2024	1610						1657	1662	1682	1687	1722	
2025								1672	1657	1683	1718	1705
2026									1668	1692	1723	1716
2027										1735	1735	1738
2028											1754	1768
2029												1789

**Table A16 Pennsylvania Power Company
Actual and Projected Industrial Energy Demand (GWh)**

Year	Actual	Projected Industrial Energy Demand (Year Forecast Was Filed)										
		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
2015	1496	1847										
2016	1569	2079	1637									
2017	1738	2202	1696	1513								
2018	1826	2256	1742	1476	1702							
2019	2066	2278	1775	1465	1713	1727						
2020	1926		1790	1467	1726	1728	2088					
2021	2063			1460	1757	1781	2121	1970				
2022	2213				1794	1833	2153	2075	2250			
2023	2225					1866	2220	2141	2297	2240		
2024	1933						2298	2182	2346	2242	2239	
2025								2200	2357	2280	2273	1978
2026									2340	2256	2299	1982
2027										2294	2323	1987
2028											2343	1989
2029												1989

Table A17 PPL Electric Utilities Corporation
Actual and Projected Peak Load (MW)

Year	Actual	Projected Peak Load Requirements (Year Forecast Was Filed)										
		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
2015	7842	7220										
2016	7216	7314	7209									
2017	7468	7408	7298	7209								
2018	7729	7467	7385	7298	7248							
2019	7609	7511	7435	7385	7215	7250						
2020	7049		7427	7435	7194	7229	7336					
2021	7314			7427	7208	7267	7383	7513				
2022	7065				7243	7280	7449	7512	7252			
2023	6953					7294	7497	7513	7249	7334		
2024	7840						7541	7552	7260	7377	7342	
2025								7584	7261	7391	7353	7875
2026									7271	7399	7379	8577
2027										7425	7425	10004
2028											7395	12369
2029												14429

Table A19 PPL Electric Utilities Corporation
Actual and Projected Commercial Energy Demand (GWh)

Year	Actual	Projected Commercial Energy Demand (Year Forecast Was Filed)										
		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
2015	14336	14235										
2016	14160	14234	14214									
2017	14037	14376	14257	14394								
2018	14105	14440	14326	14517	14353							
2019	14728	14484	14357	14578	14372	13986						
2020	13129		14357	14560	14336	13880	14721					
2021	13807			14493	14307	13818	14776	13609				
2022	13696				14260	13810	14799	13807	14046			
2023	13755					13802	14803	13926	14140	14121		
2024	13761						14827	13976	14196	14196	13975	
2025								13950	14195	14201	14003	13742
2026									14187	14199	14046	13649
2027										14205	14085	13709
2028											14142	13867
2029												13863

Table A18 PPL Electric Utilities Corporation
Actual and Projected Residential Energy Demand (GWh)

Year	Actual	Projected Residential Energy Demand (Year Forecast Was Filed)										
		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
2015	14462	13647										
2016	13810	13720	13721									
2017	13650	13732	13750	13856								
2018	14811	13781	13825	13940	13588							
2019	14490	13790	13826	13982	13499	14050						
2020	14592		13679	13853	13448	13960	14399					
2021	14879			13750	13253	13901	14383	14011				
2022	14680				13045	13845	14383	14075	14643			
2023	13928					13827	14382	14115	14565	14714		
2024	14117						14382	14102	14604	14727	14557	
2025								14056	14588	14691	14462	14364
2026									14653	14708	14433	14400
2027										14718	14346	14491
2028											14249	14638
2029												14637

Table A20 PPL Electric Utilities Corporation
Actual and Projected Industrial Energy Demand (GWh)

Year	Actual	Projected Industrial Energy Demand (Year Forecast Was Filed)										
		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
2015	8269	7966										
2016	8128	8066	8283									
2017	8098	8129	8354	8370								
2018	8144	8168	8420	8467	8421							
2019	7889	8189	8450	8521	8486	8109						
2020	8354		8450	8520	8440	8058	7814					
2021	8340			8520	8406	8025	7836	8364				
2022	8276				8345	7997	7855	8585	8470			
2023	8681					7965	7872	8724	8533	8612		
2024	8471						7891	8783	8589	8668	8629	
2025								8787	8607	8686	8651	8385
2026									8624	8703	8674	11077
2027										8725	8700	19544
2028											8739	34408
2029												52205

Table A21 PECO Energy Company
Actual and Projected Peak Load (MW)

Year	Actual	Projected Peak Load Requirements (Year Forecast Was Filed)										
		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
2015	8094	8259										
2016	8094	8267	8102									
2017	8141	8275	8110	8102								
2018	8608	8284	8118	8110	8149							
2019	8428	8292	8126	8118	8157	8617						
2020	8148		8135	8126	8165	8625	8436					
2021	8479			8135	8174	8634	8445	8156				
2022	8583				8182	8642	8453	8164	8487			
2023	8163					8651	8462	8172	8496	8592		
2024	8651						8470	8181	8504	8600	8171	
2025								8189	8513	8609	8179	8548
2026									8521	8617	8188	8602
2027										8626	8196	8710
2028											8204	8817
2029												8918

Table A23 PECO Energy Company
Actual and Projected Commercial Energy Demand (GWh)

Year	Actual	Projected Commercial Energy Demand (Year Forecast Was Filed)										
		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
2015	8118	8021										
2016	8099	8017	8044									
2017	7968	8013	8020	8132								
2018	8177	8009	8016	8073	7992							
2019	7983	8005	8018	8063	8043	8143						
2020	7210		8019	8046	8049	8156	7976					
2021	7597			7995	8038	8163	7936	7638				
2022	7701				8042	8163	7917	7873	7809			
2023	7367					8163	7892	7866	7818	7709		
2024	7683						7882	7857	7813	7692	7620	
2025								7809	7757	7643	7557	7599
2026									7739	7647	7559	7615
2027										7672	7592	7653
2028											7646	7707
2029												7674

Table A22 PECO Energy Company
Actual and Projected Residential Energy Demand (GWh)

Year	Actual	Projected Residential Energy Demand (Year Forecast Was Filed)										
		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
2015	13630	13288										
2016	13664	13355	13366									
2017	13024	13422	13341	13436								
2018	14005	13489	13352	13423	13266							
2019	13650	13556	13354	13404	13240	13581						
2020	14041		13360	13428	13182	13661	13600					
2021	14262			13346	13104	13718	13570	13809				
2022	14379				13009	13741	13580	13602	14037			
2023	13262					13762	13599	13672	14135	14140		
2024	13963						13671	13804	14304	14281	14227	
2025								13848	14393	14367	14260	14255
2026									14508	14496	14369	14317
2027										14655	14532	14414
2028											14796	14591
2029												14753

Table A24 PECO Energy Company
Actual and Projected Industrial Energy Demand (GWh)

Year	Actual	Projected Industrial Energy Demand (Year Forecast Was Filed)										
		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
2015	15365	15302										
2016	15263	15294	15547									
2017	15425	15287	15515	15016								
2018	15516	15279	15513	15364	15421							
2019	14958	15271	15517	15320	15293	15385						
2020	13669		15529	15356	15306	15415	14430					
2021	14003			15355	15247	15431	14444	14173				
2022	14046				15217	15431	14598	14647	14367			
2023	13638					15431	14715	14692	14511	14146		
2024	13889						14687	14623	14604	14158	14075	
2025								14587	14611	14106	13974	13956
2026									14698	14116	13922	14129
2027										14133	13897	14520
2028											13886	15137
2029												15637

Table A25 West Penn Power Company
Actual and Projected Peak Load (MW)

Year	Actual	Projected Peak Load Requirements (Year Forecast Was Filed)										
		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
2015	3814	3793										
2016	3954	3842	3793									
2017	3879	3927	3840	3776								
2018	3879	4020	3886	3789	3828							
2019	4012	4031	3916	3775	3824	3764						
2020	3827		3917	3767	3804	3704	3821					
2021	3940			3762	3802	3690	3862	3821				
2022	3827				3821	3695	3884	3862	3800			
2023	3714					3704	3894	3884	3846	3846		
2024	3874						3891	3894	3844	3844	3704	
2025								3891	3822	3822	3737	3733
2026									3819	3819	3761	3763
2027										3838	3789	3807
2028											3823	3852
2029												3884

Table A27 West Penn Power Company
Actual and Projected Commercial Energy Demand (GWh)

Year	Actual	Projected Commercial Energy Demand (Year Forecast Was Filed)										
		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
2015	5112	4996										
2016	5051	4957	4900									
2017	4364	5015	4915	4996								
2018	4500	5029	4941	4957	4285							
2019	2880	5006	4952	5015	4246	4261						
2020	2584		4954	5029	4208	4260	2879					
2021	2714			5006	4184	4266	2882	2686				
2022	2719				4184	4273	2880	2738	2818			
2023	2553					4279	2868	2786	2729	2998		
2024	3772						2861	2819	2734	2942	2728	
2025								2805	2626	2915	2691	3603
2026									2585	2788	2662	3560
2027										2795	2668	3555
2028											2682	3569
2029												3579

Table A26 West Penn Power Company
Actual and Projected Residential Energy Demand (GWh)

Year	Actual	Projected Residential Energy Demand (Year Forecast Was Filed)										
		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
2015	7255	7383										
2016	7186	7157	6775									
2017	6817	7244	6634	7383								
2018	7358	7298	6548	7157	6931							
2019	7152	7303	6473	7244	6906	6988						
2020	7178		6407	7298	6819	6901	6931					
2021	7206			7303	6756	6851	6844	6925				
2022	7281				6756	6858	6849	6877	7202			
2023	6769					6864	6846	6897	7081	7233		
2024	6989						6862	6926	7179	7232	7315	
2025								6916	7016	7241	7277	7222
2026									7076	7205	7270	7264
2027										7289	7286	7365
2028											7337	7501
2029												7589

Table A28 West Penn Power Company
Actual and Projected Industrial Energy Demand (GWh)

Year	Actual	Projected Industrial Energy Demand (Year Forecast Was Filed)										
		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
2015	7635	8053										
2016	7684	8492	8287									
2017	8371	8903	8641	8053								
2018	8667	9321	8798	8492	8785							
2019	10003	9700	8847	8903	8873	8617						
2020			8852	9321	8865	8540	10074					
2021	9334			9700	8920	8651	10209	9889				
2022	9554				8920	8760	10306	10162	9726			
2023	9333					8813	10375	10258	10077	9351		
2024	8269						10857	10273	10219	9807	9438	
2025								10237	10249	10013	9653	8807
2026									10282	10146	9806	8967
2027										10257	9937	9093
2028											10049	9188
2029												9260

Appendix B – Plant Additions and Upgrades

Table B-1 below provides detail of PJM interconnection requests for new generating resources located in Pennsylvania.⁹³ Currently Pennsylvania has 276 MW under construction as compared to: 1,340 MW in 2023; 1,153 MW in 2022; 1,563 in 2021; 2,503 MW in 2020: and 2,831 MW in 2019.

Table B-2 below details the generation deactivation requests for Pennsylvania from Jan. 1, 2024, through Dec. 31, 2024. In 2024 there was one deactivation notice comprising approximately 2 MW, as compared to: eight deactivation notices comprising approximately 2,697 MW in 2023 (760 MW of that amount was to deactivate in 2025, but was granted an extension through August 2025 by the Department of Energy); 832 MW in 2022; 920.8 MW in 2021; 78.3 MW in 2020; and 931.1 MW in 2019.⁹⁴

Table B-1: New Generation Queue for Pennsylvania – Interconnection Requests (Dec. 31, 2024)

		In Queue				Complete				Grand Total	
		Active		Under Construction		In Service		Withdrawn			
		Projects	Capacity (MW)	Projects	Capacity (MW)	Projects	Capacity (MW)	Projects	Capacity (MW)	Projects	Capacity (MW)
Non-renewable	Coal	0	0.0	0	0.0	17	2,31.5	28	14,354.6	45	14,586.1
	Natural Gas	1	60.0	0	0.0	126	21,743.3	261	92,559.5	388	114,362.8
	Oil	0	0.0	0	0.0	9	16.9	9	1,307.0	18	1,323.9
	Diesel	0	0.0	0	0.0	4	37.4	13	51.5	17	88.9
	Nuclear	0	0.0	1	44.0	14	2,565	15	1,731.0	30	4,340.0
	Wood	0	0.0	0	0.0	0	0.0	1	16.0	1	16.0
	Other	1	2.9	0	0.0	1	304.0	4	344.0	6	650.9
	Storage	46	3,414	0	0.0	5	0.0	89	2,292.4	140	5,706.3
Renewable	Hybrid	73	3,092.4	0	0.0	0	0.0	77	1,628.0	150	4,720.3
	Hydro	2	23.0	1	12.0	12	480.8	23	939.6	38	1,455.4
	Biomass	0	0.0	0	0.0	1	6.4	4	36.5	5	42.9
	Methane	0	0.0	0	0.0	22	120.2	37	201.3	59	321.5
	Solar	247	4,508	8	185.7	37	495.9	542	7,726.6	834	12,916.1
	Wind	12	380.4	2	34.5	40	289.0	141	1,799.3	195	2,503.1
Grand Total		382	11,480.6	12	276.2	288	26,290.3	1,244	124,987.2	1,926	163,034.2

Table B-2: Pennsylvania Actual Generation Deactivations in 2024

Unit	TO Zone	Fuel Type	Request Received to Deactivate	Actual or Projected Deactivation Date	Age (Years)	Capacity (MW)
Morris Road	PECO	Oil	7/17/2024	5/31/2025	14	2

⁹³ See, PJM, *PJM Regional Transmission Expansion Plan 2024*, available at: <https://www.pjm.com/library/reports-notices/rtep-documents>.

⁹⁴ See, PJM, *2024 Pennsylvania State Infrastructure Report*, available at: <https://www.pjm.com/-/media/library/reports-notices/state-specific-reports/2024/pennsylvania.ashx>. See here for the notice on the extension in 2025: <https://apnews.com/article/trump-pennsylvania-eddystone-power-plant-e5eb5295a6b8de72636a9478e06fec4b>.

Appendix C – Pennsylvania Generation Capability/Facilities

Table C-1 below represents the PJM region installed electrical capacity percentage and actual generation percentage by energy source from 2019 through 2024.⁹⁵ Chart C on the next page represents the 2024 and 2023 Pennsylvania installed capacity percentage by energy source.⁹⁶ Table C-2 starting on page 65 represents existing generating facilities by fuel type located in Pennsylvania.⁹⁷

Table C-1 PJM Region Electrical Power Supply Mix

PJM Region Electrical Power Supply Mix 2024/2023/2022/2021/2020/2019

Energy Source	Capacity						Generation					
	2024	2023	2022	2021	2020	2019	2024	2023	2022	2021	2020	2019
Coal	21	21.8	23.4	26.1	27	30.5	14.5	14.7	20	22.2	19.3	23.8
Nuclear	17.9	18.1	17.4	17.4	17.5	17.5	32.2	33.3	32.3	32.8	34.2	33.6
Natural Gas	49.4	49.3	47.9	46.1	45.6	42.3	44.5	44.3	40	37.9	39.8	36.2
Hydro, Wind, Solar & Other	9.4	8.5	8.4	7.9	7	6.3	8.3	7.5	7.4	6.8	6.4	5.9
Oil	2.2	2.5	2.8	3	3	3.4	0.5	0.3	0.3	0.3	0.2	0.2

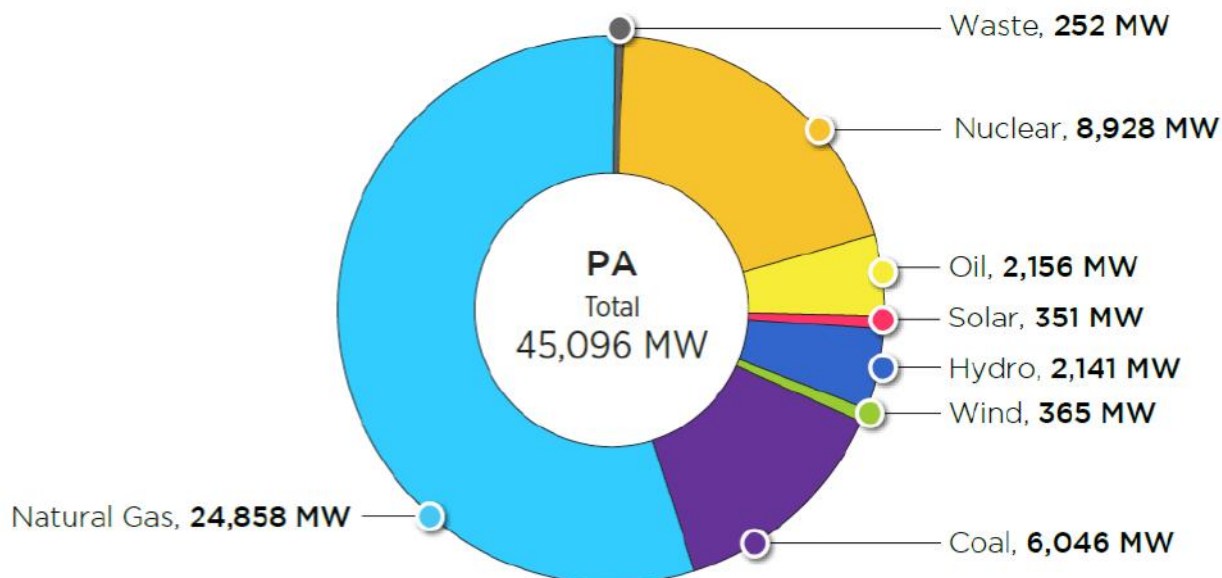
⁹⁵ See, PJM, *State of the Market Report for PJM*, Volume II, Sections 3 & 5 reporting years 2024, 2023, 2022, 2021, 2020, and 2019. Available at: www.monitoringanalytics.com.

⁹⁶ See, PJM, *2024 PJM Pennsylvania State Infrastructure Report*, available at: <https://www.pjm.com/-/media/library/reports-notices/state-specific-reports/2024/pennsylvania.ashx>, and also, PJM, *2023 PJM Pennsylvania State Infrastructure Report*, available at: <https://www.pjm.com/-/media/library/reports-notices/state-specific-reports/2023/pennsylvania.ashx>.

⁹⁷ Data accessed through S&P Global Market Intelligence as of July 21, 2025. Note: S&P Global Market Intelligence uses the best available data to estimate the power market region for each power plant unit and electric utility. Estimates are based on ownership, purchase power agreements, interconnected utilities, membership lists (load serving or transmission owning), and geographically based public information. Power plant units which belong to more than one power market region are allocated on a percentage basis of their operating capacity. Companies which belong to more than one power market region will be wholly placed into each region to which they are assigned.

Chart C – Electrical Power Capacity Mix

2024 Pennsylvania Installed Capacity



2023 Pennsylvania Installed Capacity

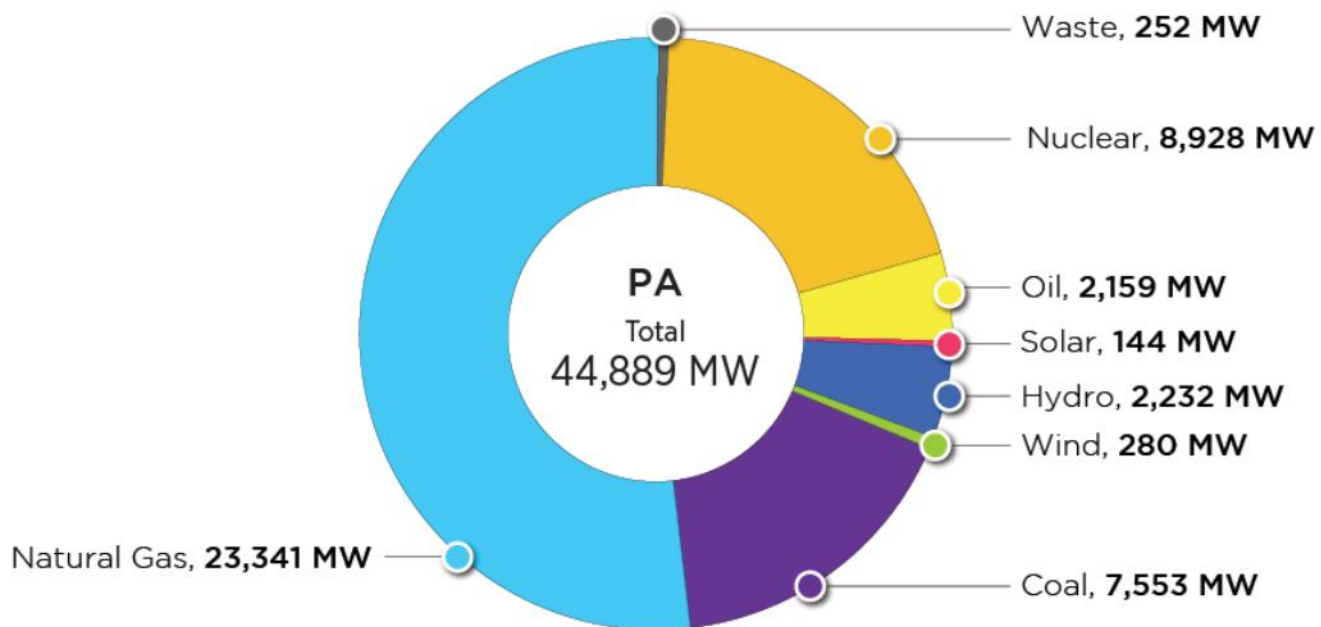


Table C-2 Electric Generating Facilities in Pennsylvania

Power Plant	Owner Name	Ultimate Parent	Fuel Type	Operating Capacity (MW)	State	First Unit Online	Last Unit Online
Allenwood (PPLRE Lycoming County Landfill Proj)	Talen Renewable Energy	Energy Power Partners LLC	Biomass	3.2	PA	10/2012	10/2012
Andromeda One A Biomass Plant	Andromeda Green Energy	Andromeda Green Energy	Biomass	4.0	PA	2/2016	2/2016
Arden Landfill	WM Renewable Energy LLC	Waste Mgmt Inc.	Biomass	4.8	PA	2/2009	2/2009
Covanta Plymouth (Montenay Montgomery)	Covanta Plymouth Renewable	EQT AB (publ)	Biomass	28.0	PA	12/1991	12/1991
Dart Container Corp Cogen	Dart Container Corp.	Dart Container Corp.	Biomass	10.4	PA	12/2012	12/2012
Delaware County Resource Recovery Facility	Covanta Delaware Valley	EQT AB (publ)	Biomass	80.0	PA	4/1991	4/1991
Frey Farm Landfill	Talen Renewable Energy	Energy Power Partners LLC	Biomass	3.2	PA	1/2006	1/2006
Glades Pike Cogeneration Plant IC	State Correctional Inst (Laure	State Correctional Inst (Laure	Biomass	3.2	PA	10/2011	10/2011
Greater Lebanon Refuse Authority Landfill	Talen Renewable Energy	Energy Power Partners LLC	Biomass	3.2	PA	9/2007	9/2007
Green Knight Energy Center	Waste Mgmt Inc.	Waste Mgmt Inc.	Biomass	8.7	PA	2/2001	2/2001
Honey Brook Generating Station (Granger)	Granger Electric Co	Granger Electric Co	Biomass	3.2	PA	12/2006	8/2010
IESI Blue Ridge Landfill	Talen Renewable Energy	Energy Power Partners LLC	Biomass	6.4	PA	1/2013	1/2013
Johnsonburg Mill	Domtar Paper Co. LLC	First Mgmt Ltd.	Biomass	49.0	PA	2/1993	2/1993
Lakeview Gas Recovery	WM Renewable Energy LLC	Waste Mgmt Inc.	Biomass	6.0	PA	5/1997	6/1997
Lancaster County Resource Recovery	Covanta Lancaste	EQT AB (publ)	Biomass	32.4	PA	5/1991	5/1991
Lycoming County Landfill Project (PPL Renewable	Talen Renewable Energy	Energy Power Partners LLC	Biomass	3.0	PA	10/2012	10/2012
Morgantown Generating Station	Granger Electric Co	Granger Electric Co	Biomass	1.6	PA	5/2016	5/2016
Mountain View Landfill	CCI Power Holdings	Energy Trading Innovations	Biomass	14.4	PA	3/2003	3/2003
Northern Tier Landfill	Talen Renewable Energy	Energy Power Partners LLC	Biomass	1.6	PA	1/2009	1/2009
Pioneer Crossing Landfill	Fortistar LLC	Fortistar LLC	Biomass	8.0	PA	10/2008	11/2013
SECCRA Community Landfill	Southeastern Chester County Re	Southeastern Chester County Re	Biomass	2.5	PA	1/2007	11/2010
Shippensburg (Cumberland County) Landfill	Talen Renewable Energy	Energy Power Partners LLC	Biomass	6.4	PA	1/2009	1/2009
Susquehanna Resource Management Complex (Harr	Covanta Harrisburg, Inc.	EQT AB (publ)	Biomass	16.7	PA	10/1986	4/2006
Tullytown Landfill Gas Facility	WM Renewable Energy LLC	Waste Mgmt Inc.	Biomass	1.6	PA	3/2013	3/2013
Wheelabrator Falls	Wheelabrator Falls Inc.	Wheelabrator Falls Inc.	Biomass	43.9	PA	5/1994	5/1994
York County Resource Recovery Center	Covanta York Renewable Energy	EQT AB (publ)	Biomass	36.5	PA	11/1989	11/1989
Zook Generating Station (L&S Sweetners)	Granger Electric Co	Granger Electric Co	Biomass	3.2	PA	10/2013	10/2013
Colver Power Project	Colver Green Energy LLC	Generation Holdings LP	Coal	110.0	PA	2/1995	2/1995
Conemaugh	ArcLight Capital Partners LLC	ACHP L.P.	Coal	1,700.0	PA	5/1970	5/1971
Ebensburg Power Company	Ebensburg Power Co.	Babcock & Wilcox Enterprises	Coal	50.0	PA	5/1991	5/1991
John B Rich Memorial Power Station	RI-CORP Development	RI-CORP Development	Coal	80.0	PA	2/1988	2/1988
Keystone	ArcLight Capital Partners LLC	ACHP L.P.	Coal	1,700.0	PA	8/1967	7/1968
Mount Carmel Cogeneration	Mt Carmel Co-Gen	Mt Carmel Co-Gen	Coal	43.0	PA	1/1990	1/1990
P.H. Glatfelter Company - Pennsylvania	Glatfelter Corp.	Glatfelter Corp.	Coal	85.0	PA	5/1948	1/1994
Seward Waste Coal	Robindale Energy Services Inc	Robindale Energy Services Inc	Coal	521.0	PA	11/2004	11/2004
St. Nicholas Cogeneration	Schuylkill Energy Resources In	Schuylkill Energy Resources In	Coal	86.0	PA	9/1990	9/1990
Westwood Generating Station	WPS Westwood Generation LLC	Olympus Holdings LLC	Coal	30.0	PA	6/1987	6/1987
AE Hunlock 4	UGI Development Company	UGI Corp.	Natural Gas	50.5	PA	12/2000	12/2000
Allegheny Energy 3, 4 and 5 (Springdale)	Aspen Generating LLC	LS Power Dev. LLC	Natural Gas	604.0	PA	7/2003	7/2003
Allegheny Energy Units 1 and 2 (Springdale)	Aspen Generating LLC	LS Power Dev. LLC	Natural Gas	98.3	PA	12/1999	12/1999

Table C-2 Electric Generating Facilities in Pennsylvania (cont'd)

Power Plant	Owner Name	Ultimate Parent	Fuel Type	Operating Capacity (MW)	State	First Unit Online	Last Unit Online
Allegheny Energy Units 12 & 13 (Chambersburg)	Aspen Generating LLC	LS Power Dev. LLC	Natural Gas	99.0	PA	11/2001	11/2001
Allegheny Energy Units 8 and 9 (Gans Plant)	Aspen Generating LLC	LS Power Dev. LLC	Natural Gas	97.9	PA	11/2000	11/2000
Alpaca Gas Project	Tenaska Energy Inc.	Tenaska Energy Inc.	Natural Gas	20.4	PA	4/2017	4/2017
Archbald Cogeneration	PEI Power Corporation	Energy Transfer LP	Natural Gas	20.0	PA	9/1988	9/1988
Archbald Power Station	PEI Power Corporation	Energy Transfer LP	Natural Gas	59.2	PA	5/2001	2/2010
Armstrong County	Ihi Power Services Corp.	Ihi Power Services Corp.	Natural Gas	829.7	PA	5/2002	5/2002
Beaver Dam Gas Project	Tenaska Energy Inc.	Tenaska Energy Inc.	Natural Gas	21.0	PA	5/2016	5/2016
Bethlehem CC	Calpine Corp.	ECP ControlCo LLC	Natural Gas	1,136.0	PA	1/2003	1/2003
Birdsboro Combined Cycle Plant	NAES Corp	ITOCHU Corp.	Natural Gas	485.0	PA	5/2019	5/2019
Brunner Island	Talen Generation LLC	Talen Energy Corporation	Natural Gas	1,411.0	PA	5/1961	6/1969
Brunot Island CC	GenOn Power Midwest, LP	GenOn Holdings Inc.	Natural Gas	270.0	PA	6/1973	7/1974
Bucknell University	Bucknell University	Bucknell University	Natural Gas	6.7	PA	10/1991	6/1998
Chester Operations CC	Kimberly-Clark Corp.	Kimberly-Clark Corp.	Natural Gas	65.2	PA	8/2020	8/2020
CPV Fairview Energy Center	NAES Corp	ITOCHU Corp.	Natural Gas	1,092.8	PA	12/2019	12/2019
East Campus Plant	The PA State University	The PA State University	Natural Gas	8.9	PA	6/2011	6/2011
Fairless Works Energy Center	Lotus Infrastructure Ptnrs LP	Lotus Infrastructure Ptnrs LP	Natural Gas	1,355.4	PA	5/2004	6/2004
Falling Spring	Chambersburg Borough of	Chambersburg Borough of	Natural Gas	7.1	PA	12/1967	6/2001
Fayette Energy Facility	Vistra Corp.	Vistra Corp.	Natural Gas	716.0	PA	6/2003	6/2003
Grays Ferry Cogeneration	Grays Ferry Cogeneration Ptnsh	Antin Infrastructure Partners	Natural Gas	183.6	PA	10/1997	10/1997
Handsome Lake Energy	Handsome Lake Energy, LLC	Handsome Lake Energy, LLC	Natural Gas	267.5	PA	7/2001	8/2001
Hazleton Cogeneration	NAES Corp	ITOCHU Corp.	Natural Gas	150.9	PA	1/1989	6/2002
Hill Top Energy Center	Hill Top Energy Center LLC	Hill Top Energy Center LLC	Natural Gas	622.8	PA	7/2021	7/2021
Hunlock Repowering	UGI Development Company	UGI Corp.	Natural Gas	128.9	PA	7/2011	7/2011
Indiana University of Pennsylvania	IN University PA	IN University PA	Natural Gas	24.0	PA	3/1988	3/1988
Jefferson Torresdale Hospital IC Project (Cogen)	Jefferson Torresdale Hospital	Jefferson Torresdale Hospital	Natural Gas	1.1	PA	5/2016	5/2016
Juniata Locomotive Shop GT Cogen Project	Norfolk Southern Corporation	Norfolk Southern Corporation	Natural Gas	1.5	PA	4/2015	4/2015
Lackawanna Energy Center	Invenergy LLC	Invenergy LLC	Natural Gas	1,467.0	PA	3/2018	1/2019
Liberty Electric Power	Liberty Electric Power LLC	Vistra Corp.	Natural Gas	562.0	PA	5/2002	5/2002
Lower Mount Bethel	Talen Energy Corporation	Talen Energy Corporation	Natural Gas	601.6	PA	2/2004	3/2004
Martins Creek 3 and 4	Talen Generation LLC	Talen Energy Corporation	Natural Gas	1,700.0	PA	10/1975	3/1977
Mehoopany	The Procter & Gamble Co.	The Procter & Gamble Co.	Natural Gas	1.6	PA	10/1984	10/1984
Mehoopany CT	The Procter & Gamble Co.	The Procter & Gamble Co.	Natural Gas	123.0	PA	6/1985	4/2013
Milan Gas Project	Tenaska Energy Inc.	Tenaska Energy Inc.	Natural Gas	20.4	PA	4/2017	4/2017
Montour	Talen Generation LLC	Talen Energy Corporation	Natural Gas	1,504.0	PA	3/1972	4/1973
Mount Joy Wire	Mount Joy Wire Corp.	Mount Joy Wire Corp.	Natural Gas	1.1	PA	12/2011	12/2011
Navy Yard Natural Gas Plant	Ameresco Inc.	Ameresco Inc.	Natural Gas	8.0	PA	1/2018	11/2018
New Castle	GenOn Power Midwest, LP	GenOn Holdings Inc.	Natural Gas	327.0	PA	11/1939	6/1964
Newman & Company Inc.	Newman & Co.	Newman & Co.	Natural Gas	1.8	PA	5/1964	5/1964
Ontelaunee Energy Center	Dynegy Power	Vistra Corp.	Natural Gas	624.5	PA	5/2002	5/2002
Orchard Park	Chambersburg Borough of	Chambersburg Borough of	Natural Gas	23.2	PA	12/2003	12/2003

Table C-2 Electric Generating Facilities in Pennsylvania (cont'd)

Power Plant	Owner Name	Ultimate Parent	Fuel Type	Operating Capacity (MW)	State	First Unit Online	Last Unit Online
Oxbow Creek Energy	Tenaska Energy Inc.	Tenaska Energy Inc.	Natural Gas	21.0	PA	12/2019	12/2019
Panda Liberty Generating Station (Moxie Liberty)	The Carlyle Group	The Carlyle Group	Natural Gas	850.0	PA	10/2016	10/2016
Patriot Power Generation Plant (Moxie Patriot)	The Carlyle Group	The Carlyle Group	Natural Gas	880.0	PA	7/2016	7/2016
Phoenix Contact - CCHP Plant	Phoenix Contact USA, Inc.	Phoenix Contact USA, Inc.	Natural Gas	1.0	PA	3/2014	3/2014
PPL Ironwood	Helix Generation LLC	LS Power Dev. LLC	Natural Gas	760.0	PA	12/2001	12/2001
Roundtop	Tenaska Energy Inc.	Tenaska Energy Inc.	Natural Gas	21.0	PA	10/2015	10/2015
Shell Chemical Appalachia Cogen	Shell Chemical Appalachia LLC	Shell plc	Natural Gas	291.1	PA	7/2021	10/2021
Spring House IC Plant	Janssen Pharmaceuticals Inc.	Johnson & Johnson	Natural Gas	3.8	PA	4/2013	4/2013
Temple SEGF Plant	Temple University	Temple University	Natural Gas	16.0	PA	5/1993	5/1993
Tenaska Westmoreland Generating Station	Tenaska Operations, Inc.	Tenaska Energy Inc.	Natural Gas	1,032.0	PA	12/2018	12/2018
West Campus Plant	The PA State University	The PA State University	Natural Gas	7.1	PA	1/1938	12/2021
West Campus Steam Plant CHP Expansion	The PA State University	The PA State University	Natural Gas	6.1	PA	12/2021	12/2021
West Point Facility	Merck & Co.	Merck & Co.	Natural Gas	66.0	PA	1/1989	4/2001
West Point Facility IC	Merck & Co.	Merck & Co.	Natural Gas	16.8	PA	1/1972	7/2024
Wolf Run Energy Project	Tenaska Energy Inc.	Tenaska Energy Inc.	Natural Gas	22.0	PA	6/2019	6/2019
York 2 Energy Center	Calpine Corp.	ECP ControlCo LLC	Natural Gas	864.0	PA	3/2019	3/2019
York Energy Center (Delta Power Project)	Connectiv Mid Merit LLC	ECP ControlCo LLC	Natural Gas	569.0	PA	3/2011	3/2011
Clairton Works	U.S. Steel Corp.		Other Fuel	26.0	PA	1/1955	1/1955
Mon Valley Works	U.S. Steel Corp.		Other Fuel	67.9	PA	6/1943	2/2002
Brunot Island	GenOn Power Midwest, LP	GenOn Holdings Inc.	Petroleum Products	18.1	PA	3/1972	3/1972
Conemaugh IC	ArcLight Capital Partners LLC	ACHP L.P.	Petroleum Products	11.2	PA	2/1970	2/1970
Ephrata PA BTM IC Power Plant	American Mun Power Inc	American Mun Power Inc	Petroleum Products	5.4	PA	11/2021	11/2021
General Electric Company	General Electric Co.	General Electric Co.	Petroleum Products	4.3	PA	6/1984	6/1984
Girard (PA) RTO BTM	American Mun Power Inc	American Mun Power Inc	Petroleum Products	2.7	PA	3/2022	3/2022
Hatfield PA BTMIC Power Plant	American Mun Power Inc	American Mun Power Inc	Petroleum Products	2.7	PA	12/2022	12/2022
Keystone IC	ArcLight Capital Partners LLC	ACHP L.P.	Petroleum Products	11.2	PA	11/1968	11/1968
New Castle IC	GenOn Power Midwest, LP	GenOn Holdings Inc.	Petroleum Products	2.5	PA	12/1968	12/1968
Perkasie PA BTMIC Project	American Mun Power Inc	American Mun Power Inc	Petroleum Products	4.4	PA	4/2022	4/2022
Pine Grove Landfill	CCIPower Holdings	Energy Trading Innovations	Petroleum Products	5.4	PA	2/2008	2/2008
PPG Monroeville Chemicals Center	PPG Monroeville Chemicals	PPG Industries Inc.	Petroleum Products	1.1	PA	10/1998	9/2000
PPG Place	PPG Industries Inc.	PPG Industries Inc.	Petroleum Products	2.3	PA	5/1990	6/1998
Quakertown Power Plant	American Mun Power Inc	American Mun Power Inc	Petroleum Products	10.8	PA	11/2023	11/2023
Schuylkill Haven BTM PA Generation Project	American Mun Power Inc	American Mun Power Inc	Petroleum Products	5.4	PA	6/2023	6/2023
Sunbury CT	Sunbury Generation LP	Corona Power	Petroleum Products	36.0	PA	11/1971	11/1971
Sunbury IC	Sunbury Generation LP	Corona Power	Petroleum Products	5.0	PA	4/1967	4/1967
Vitro Architectural Glass (PA)	PPG Industries Inc.	PPG Industries Inc.	Petroleum Products	5.0	PA	7/1972	11/2021
500 Virginia Solar	500 Virginia Solar Lp	500 Virginia Solar Lp	Solar	1.0	PA	7/2011	7/2011
ABE4 Solar Project	Mid-River PA LLC	Mid-River PA LLC	Solar	3.0	PA	9/2020	9/2020
Aqua Ingrams Mill Solar	Essential Utilities Inc.	Essential Utilities Inc.	Solar	0.9	PA	12/2009	12/2009
Beaver Solar	Tangent Energy Solutions Inc.	Tangent Energy Solutions Inc.	Solar	1.3	PA	12/2012	12/2012

Table C-2 Electric Generating Facilities in Pennsylvania (cont'd)

Power Plant	Owner Name	Ultimate Parent	Fuel Type	Operating Capacity (MW)	State	First Unit Online	Last Unit Online
Cottontail Solar 2 Project (Hokes 1 Solar)	Lightsource bp Renewable Energy	Lightsource bp Renewable Energy	Solar	20.0	PA	2/2024	2/2024
Cottontail Solar 8 Project (Hokes 2 Solar)	Lightsource bp Renewable Energy	Lightsource bp Renewable Energy	Solar	20.0	PA	4/2024	4/2024
Crayola Solar Park	Talen Renewable Energy	Energy Power Partners LLC	Solar	2.8	PA	5/2010	11/2011
Dickinson Solar Project (Carlisle)	Dickinson Solar LLC	NextEra Energy Inc.	Solar	3.0	PA	12/2016	12/2016
EDF Saucon Valley Solar Project	Standard Solar Inc.	Brookfield Corp.	Solar	2.6	PA	6/2024	6/2024
Elizabethtown Solar	Community Energy Solar LLC	The AES Corp.	Solar	2.0	PA	2/2016	2/2016
Elk Hill Solar 1	Lightsource bp Renewable Energy	Lightsource bp Renewable Energy	Solar	20.0	PA	12/2022	12/2022
Elk Hill Solar 2 Project	Elk Hill Solar 2, LLC	Elk Hill Solar 2, LLC	Solar	15.0	PA	12/2020	12/2020
ER Bison Solar CSG Project	Greenbacker Renewable Energy	Greenbacker Renewable Energy C	Solar	1.4	PA	1/2023	1/2023
Erie County Solar Project	Cypress Creek Renewables	EQT AB (publ)	Solar	24.0	PA	2/2025	2/2025
Exelon-Conergy Solar Energy Center	Mf Mesa Lane, LLC	Mf Mesa Lane, LLC	Solar	3.0	PA	11/2008	11/2008
Fort Indiantown Gap Solar Project (FTIG)	Standard Solar Inc.	Brookfield Corp.	Solar	3.0	PA	1/2019	1/2019
Franklin Solar	Hecate Energy	Hecate Energy	Solar	20.0	PA		
GSK York RDC Solar Facility	GlaxoSmithKline Cnsmr Hlthcr L	Haleon US Holdings LLC	Solar	1.6	PA	12/2010	12/2010
Hunker Solar River Project	Hunker Solar River LLC	Hunker Solar River LLC	Solar	3.3	PA	10/2021	10/2021
IKEA Conshohocken Rooftop PV System	IKEA Energy US LLC	Stichting INGKA Foundation	Solar	1.0	PA	7/2012	7/2012
Keystone Solar Project	Keystone Solar LLC	Keystone Solar LLC	Solar	5.0	PA	9/2012	9/2012
Knouse Foods Solar Plant	Knouse Foods Co-Operative Inc	Knouse Foods Co-Operative Inc	Solar	3.0	PA	12/2010	12/2010
Longwood Gardens Solar Plant	Ecogy Pennsylvania Systems Llc	Ecogy Pennsylvania Systems Llc	Solar	1.3	PA	5/2010	5/2010
Maple Hill Solar Project	Competitive Power Ventures Inc	Competitive Power Ventures Inc	Solar	100.0	PA	11/2023	11/2023
Marlboro Mushrooms Solar Field	Marlborough Mushrooms	Marlborough Mushrooms	Solar	1.0	PA	11/2011	11/2011
Martin Limestone Solar Array Plant	Sunstream Energy Llc	Sunstream Energy Llc	Solar	1.0	PA	12/2012	12/2012
Masser Farms Realty Solar	Masser Farms Realty, Ltd.	Masser Farms Realty, Ltd.	Solar	1.0	PA	5/2011	5/2011
Merck-Upper Gwynedd Solar Array	Ray Angelini, Inc.	Ray Angelini, Inc.	Solar	1.5	PA	5/2011	5/2011
PA Solar Park II Project	Con Edison Development	RWE Aktiengesellschaft	Solar	10.0	PA	1/2020	1/2020
PA Solar Park Project	Con Edison Development	RWE Aktiengesellschaft	Solar	10.0	PA	10/2012	10/2012
PA4 Solar Farm	DEPCOM Power Inc.	DEPCOM Power Inc.	Solar	3.6	PA	5/2019	5/2019
Pickering Solar	Essential Utilities Inc.	Essential Utilities Inc.	Solar	1.4	PA	1/2012	1/2012
Romark PA Solar	Romark Logistics Of Pa, Inc.	Romark Logistics Of Pa, Inc.	Solar	1.8	PA	11/2011	11/2011
Spring Lane Solar Project	MN8 Energy Inc.	The Goldman Sachs Group	Solar	13.8	PA	12/2024	12/2024
Susquehanna University Solar Project	TerraForm Power Inc	Brookfield Corp.	Solar	3.0	PA	9/2018	9/2018
Temple Solar Arrays Project	UGI Energy Services LLC	UGI Corp.	Solar	2.2	PA	5/2011	5/2011
TPE Pennsylvania Solar 1	DEPCOM Power Inc.	DEPCOM Power Inc.	Solar	3.6	PA	8/2019	8/2019
University Park Solar Project	SS Pa II PSU LLC	SS Pa II PSU LLC	Solar	1.5	PA	12/2018	12/2018
Whitetail Solar 1	Whitetail Solar 1 LLC	Lightsource bp Renewable Energy	Solar	13.5	PA	12/2019	12/2019
Whitetail Solar 2	Lightsource bp Renewable Energy	Lightsource bp Renewable Energy	Solar	20.0	PA	9/2020	9/2020
Whitetail Solar 3	Lightsource bp Renewable Energy	Lightsource bp Renewable Energy	Solar	20.0	PA	8/2020	8/2020
Peach Bottom	Constellation Energy Corp.	Constellation Energy Corp.	Uranium	2,684.6	PA	7/1974	12/1974
Susquehanna Nuclear	Susquehanna Nuclear, LLC	Talen Energy Corporation	Uranium	2,494.0	PA	6/1983	2/1985
Allegheny 5	Ontario Power Generation Inc.	Province of Ontario	Water	10.0	PA	10/1988	10/1988

Table C-2 Electric Generating Facilities in Pennsylvania (cont'd)

Power Plant	Owner Name	Ultimate Parent	Fuel Type	Operating Capacity (MW)	State	First Unit Online	Last Unit Online
Allegheny 6	Ontario Power Generation Inc.	Province of Ontario	Water	12.0	PA	11/1988	11/1988
Holtwood Hydroelectric Plant	Talen Energy Supply LLC	Talen Energy Corporation	Water	249.0	PA	10/1910	11/2013
Kinzua Pumped Storage Project (Seneca)	PE Hydro Generation LLC	LS Power Dev. LLC	Water	463.4	PA	1/1970	1/1970
Mahoning Creek	Ontario Power Generation Inc.	Province of Ontario	Water	6.7	PA	12/2013	12/2013
Piney	Brookfield Power Piney & Deep	Brookfield Power Piney & Deep	Water	33.2	PA	6/1924	2/1928
Safe Harbor	Safe Harbor Water Power Corp.	Brookfield Corp.	Water	417.5	PA	12/1931	4/1986
Townsend Hydro	Beaver Falls Municipal Authori	Beaver Falls Municipal Authori	Water	4.2	PA	10/1987	10/1987
Wallenpaupack	Brookfield Renewable	Brookfield Corp.	Water	44.0	PA	6/1926	6/1926
Warrior Ridge Hydroelectric	American Hydro Power Co.	American Hydro Power Co.	Water	2.8	PA	12/1985	12/1985
Wm F Matson Generating Station	Allegheny Electric Coop	Allegheny Electric Coop	Water	21.7	PA	6/1988	6/1988
York Haven	Ontario Power Generation Inc.	Province of Ontario	Water	19.0	PA	12/1905	12/1905
Yough Hydro Power	D/R Hydro Co.	D/R Hydro Co.	Water	12.2	PA	12/1989	12/1989
Allegheny Ridge Wind Farm	Allegheny Ridge Wind Farm LLC	OMERS Administration Corp.	Wind	80.0	PA	6/2007	6/2007
Armenia Mountain Wind	ALLETE Clean Energy	ALLETE Inc.	Wind	100.5	PA	12/2009	12/2009
Big Level Wind Project (Cunningham)	TransAlta Renewables Inc.	TransAlta Corp	Wind	90.0	PA	12/2019	12/2019
Casselman Wind	Avangrid Renewables LLC	Iberdrola SA	Wind	34.5	PA	12/2007	12/2007
Highland Wind Project (Krayn Wind)	Cambria Wind LLC	Corporación Masaveu	Wind	62.5	PA	8/2009	8/2009
Laurel Hill	Brookfield Renewable	Brookfield Corp.	Wind	69.0	PA	9/2012	9/2012
Locust Ridge II	Avangrid Renewables LLC	Iberdrola SA	Wind	102.0	PA	5/2009	5/2009
Locust Ridge Wind Farm	Avangrid Renewables LLC	Iberdrola SA	Wind	26.0	PA	2/2007	2/2007
Mehoopany Wind	BP Wind Energy North Am Inc	BP p.l.c.	Wind	140.8	PA	12/2012	12/2012
Meyersdale Wind Project	GlidePath Power Solutions	Quinbrook Infrastructure Ptnrs	Wind	30.0	PA	12/2003	12/2003
Mill Run Wind Farm	GlidePath Power Solutions	Quinbrook Infrastructure Ptnrs	Wind	15.0	PA	12/2001	12/2001
North Allegheny Wind	Brookfield Renewable	Brookfield Corp.	Wind	75.0	PA	9/2009	9/2009
Ringer Hill Wind Farm	Skyline Renewables LLC	Skyline Renewables LLC	Wind	38.3	PA	12/2016	12/2016
Somerset Wind Project	GlidePath Power Solutions	Quinbrook Infrastructure Ptnrs	Wind	9.0	PA	12/2001	12/2001
South Chestnut Wind Project	Avangrid Renewables LLC	Iberdrola SA	Wind	50.4	PA	4/2012	4/2012
Turkey Point Wind Project (Frey Farm Wind)	Talen Renewable Energy	Energy Power Partners LLC	Wind	3.2	PA	1/2011	1/2011
Twin Ridges Wind Farm	Senvion GmbH	Centerbridge Partners L.P.	Wind	139.4	PA	12/2012	12/2012
Waymart Wind Farm	GlidePath Power Solutions	Quinbrook Infrastructure Ptnrs	Wind	64.5	PA	10/2003	10/2003
Wind Park Bear Creek Project	Wind Park Bear Creek LLC	JPMorgan Chase & Co.	Wind	24.0	PA	3/2006	3/2006

Appendix D – Large EDC (and UGI) 10-Year Demand and Peak Load Forecasts⁹⁸

Duquesne										
	ENERGY DEMAND (GWH)							ANNUAL		ANNUAL
Year	RES	COM	IND	OTHER	RETAIL	RESALE	TOTAL	% CHANGE	PEAK MW	% CHANGE
2024	4,034	6,665	2,961	50	13,710	26	13,736		2,961	
2025	3,936	5,527	2,933	50	12,446	26	12,472	-9.20%	2,703	-8.71%
2026	3,910	5,501	3,012	50	12,473	26	12,499	0.22%	2,697	-0.22%
2027	3,886	5,460	3,001	49	12,396	26	12,422	-0.62%	2,702	0.19%
2028	3,866	5,423	3,326	49	12,664	26	12,690	2.16%	2,711	0.33%
2029	3,840	5,380	3,450	48	12,718	26	12,744	0.43%	2,721	0.37%
2030	3,929	5,610	3,444	48	13,031	26	13,057	2.46%	2,730	0.33%
2031	3,923	5,656	3,435	48	13,062	26	13,088	0.24%	2,742	0.44%
2032	3,918	5,697	3,432	48	13,095	26	13,121	0.25%	2,754	0.44%
2033	3,908	5,735	3,412	48	13,103	26	13,129	0.06%	2,770	0.58%
2034	3,895	5,804	3,400	48	13,147	26	13,173	0.34%	2,788	0.65%
							10-YEAR CHANGE	-4.10%		-5.84%
							AVG ANNUAL CHANGE	-0.37%		-0.56%

Met-Ed										
	ENERGY DEMAND (GWH)							ANNUAL		ANNUAL
Year	RES	COM	IND	OTHER	RETAIL	RESALE	TOTAL	% CHANGE	PEAK MW	% CHANGE
2024	5,759	2,774	5,403	26	13,962	563	14,525		3,073	
2025	5,961	3,062	5,473	27	14,523	533	15,056	3.66%	3,028	-1.46%
2026	6,016	3,047	5,435	27	14,525	531	15,056	0.00%	3,037	0.30%
2027	6,117	3,064	5,566	27	14,774	530	15,304	1.65%	3,100	2.07%
2028	6,244	3,100	5,589	27	14,960	529	15,489	1.21%	3,136	1.16%
2029	6,334	3,126	5,576	28	15,064	527	15,591	0.65%	3,163	0.86%
2030	6,434	3,154	5,564	28	15,180	525	15,705	0.73%	3,191	0.89%
2031	6,530	3,181	5,552	28	15,291	524	15,815	0.70%	3,217	0.81%
2032	6,637	3,214	5,540	28	15,419	523	15,942	0.80%	3,245	0.87%
2033	6,722	3,239	5,529	28	15,518	521	16,039	0.61%	3,271	0.80%
2034	6,829	3,280	5,520	29	15,658	519	16,177	0.86%	3,304	1.01%
							10-YEAR CHANGE	11.37%		7.52%
							AVG ANNUAL CHANGE	1.09%		0.73%

⁹⁸ Note that PECO did provide a 10-year forecast, but reported the years 2030 through 2035 as confidential. Also note that 10-year forecasts should be seen as having a much more speculative aspect than the five-year forecasts required by 52 Pa. Code §§ 57.141—57.154. Finally, Duquesne’s 10-year demand and peak load percentages may be somewhat skewed by the high demand and peak year in 2024, *i.e.*, it shows as an overall decrease when it is actually a slight increase as compared to what could be called a “normal” usage year in 2024, in TUS’ opinion.

Penelec										
	ENERGY DEMAND (GWH)							ANNUAL		ANNUAL
Year	RES	COM	IND	OTHER	RETAIL	RESALE	TOTAL	% CHANGE	PEAK MW	% CHANGE
2024	4,221	3,198	5,881	33	13,333	2,735	16,068		2,953	
2025	4,364	3,214	5,485	33	13,096	2,808	15,904	-1.02%	2,851	-3.45%
2026	4,384	3,164	5,412	33	12,993	2,825	15,818	-0.54%	2,804	-1.65%
2027	4,445	3,149	5,350	32	12,976	2,842	15,818	0.00%	2,803	-0.04%
2028	4,528	3,146	5,267	32	12,973	2,864	15,837	0.12%	2,804	0.04%
2029	4,574	3,138	5,183	32	12,927	2,879	15,806	-0.20%	2,797	-0.25%
2030	4,634	3,134	5,098	32	12,898	2,896	15,794	-0.08%	2,792	-0.18%
2031	4,695	3,130	4,995	32	12,852	2,914	15,766	-0.18%	2,783	-0.32%
2032	4,770	3,129	4,836	31	12,766	2,935	15,701	-0.41%	2,768	-0.54%
2033	4,820	3,129	4,683	31	12,663	2,950	15,613	-0.56%	2,751	-0.61%
2034	4,892	3,140	4,563	31	12,626	2,968	15,594	-0.12%	2,745	-0.22%
						10-YEAR CHANGE		-2.95%		-7.04%
						AVG ANNUAL CHANGE		-0.30%		-0.72%

Penn Power										
	ENERGY DEMAND (GWH)							ANNUAL		ANNUAL
Year	RES	COM	IND	OTHER	RETAIL	RESALE	TOTAL	% CHANGE	PEAK	% CHANGE
2024	1,610	904	1,933	3	4,450	169	4,619		935	
2025	1,705	893	1,978	3	4,579	165	4,744	2.71%	949	1.50%
2026	1,716	882	1,982	3	4,583	165	4,748	0.08%	950	0.11%
2027	1,738	878	1,987	3	4,606	163	4,769	0.44%	955	0.53%
2028	1,768	880	1,989	3	4,640	163	4,803	0.71%	962	0.73%
2029	1,789	879	1,989	3	4,660	162	4,822	0.40%	967	0.52%
2030	1,813	878	1,985	3	4,679	162	4,841	0.39%	972	0.52%
2031	1,838	877	1,980	3	4,698	162	4,860	0.39%	977	0.51%
2032	1,865	879	1,973	3	4,720	162	4,882	0.45%	983	0.61%
2033	1,887	879	1,966	3	4,735	161	4,896	0.29%	987	0.41%
2034	1,914	883	1,958	3	4,758	160	4,918	0.45%	993	0.61%
						10-YEAR CHANGE		6.47%		6.20%
						AVG ANNUAL CHANGE		0.63%		0.60%

West Penn										
	ENERGY DEMAND (GWH)							ANNUAL		ANNUAL
Year	RES	COM	IND	OTHER	RETAIL	RESALE	TOTAL	% CHANGE	PEAK MW	% CHANGE
2024	6,989	3,772	8,269	22	19,052	752	19,804		3,874	
2025	7,222	3,603	8,807	20	19,652	750	20,402	3.02%	3,733	-3.64%
2026	7,264	3,560	8,967	20	19,811	751	20,562	0.78%	3,763	0.80%
2027	7,365	3,555	9,093	20	20,033	752	20,785	1.09%	3,807	1.17%
2028	7,501	3,569	9,188	20	20,278	754	21,032	1.19%	3,852	1.18%
2029	7,589	3,579	9,260	20	20,448	755	21,203	0.81%	3,884	0.83%
2030	7,693	3,591	9,315	20	20,619	756	21,375	0.81%	3,918	0.88%
2031	7,793	3,600	9,363	20	20,776	757	21,533	0.74%	3,949	0.79%
2032	7,911	3,611	9,405	21	20,948	758	21,706	0.80%	3,984	0.89%
2033	7,800	3,612	9,450	21	20,883	759	21,642	-0.29%	4,013	0.73%
2034	8,118	3,627	9,491	21	21,257	760	22,017	1.73%	4,048	0.87%
						10-YEAR CHANGE		11.18%		4.49%
						AVG ANNUAL CHANGE		1.07%		0.45%

PPL										
	ENERGY DEMAND (GWH)							ANNUAL		ANNUAL
Year	RES	COM	IND	OTHER	RETAIL	RESALE	TOTAL	% CHANGE	PEAK MW	% CHANGE
2024	14,117	13,761	8,471	74	36,423	-	36,423		7,840	
2025	14,364	13,742	8,385	74	36,565	-	36,565	0.39%	7,875	0.45%
2026	14,400	13,649	11,077	74	39,200	-	39,200	7.21%	8,577	8.91%
2027	14,491	13,709	19,544	75	47,819	-	47,819	21.99%	10,004	16.64%
2028	14,638	13,867	34,408	75	62,988	-	62,988	31.72%	12,369	23.64%
2029	14,637	13,863	52,205	75	80,780	-	80,780	28.25%	14,429	16.65%
2030	14,623	13,873	65,500	75	94,071		94,071	16.45%	15,565	7.87%
2031	14,724	13,992	73,925	75	102,716		102,716	9.19%	16,515	6.10%
2032	14,819	14,018	79,009	75	107,921		107,921	5.07%	16,823	1.86%
2033	14,792	13,996	80,243	75	109,106		109,106	1.10%	16,865	0.25%
2034	14,824	13,981	81,225	75	110,105		110,105	0.92%	17,070	1.22%
						10-YEAR CHANGE		202.30%		117.73%
						AVG ANNUAL CHANGE		12.23%		8.36%

UGI										
	ENERGY DEMAND (GWH)							ANNUAL		ANNUAL
Year	RES	COM	IND	OTHER	RETAIL	RESALE	TOTAL	% CHANGE	PEAK MW	% CHANGE
2024	551	323	101	5	980	0.13	980		217	
2025	561	316	102	5	984	0.13	984	0.41%	202	-6.91%
2026	562	317	102	5	986	0.13	986	0.20%	202	0.00%
2027	562	318	102	5	987	0.13	987	0.10%	202	0.00%
2028	564	319	102	5	990	0.13	990	0.30%	202	0.00%
2029	564	320	102	5	991	0.13	991	0.10%	201	-0.50%
2030	565	321	102	5	993	0.13	993	0.20%	202	0.50%
2031	566	322	102	5	995	0.13	995	0.20%	203	0.50%
2032	567	323	102	5	997	0.13	997	0.20%	204	0.49%
2033	568	324	102	5	999	0.13	999	0.20%	204	0.00%
2034	569	325	102	5	1,001	0.13	1,001	0.20%	204	0.00%
						10-YEAR CHANGE		2.14%		-5.99%
						AVG ANNUAL CHANGE		0.21%		-0.59%



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