



Monitoring
Analytics

**REPORT TO THE PUBLIC UTILITIES
COMMISSION OF PENNSYLVANIA
Congestion in Pennsylvania:
2023/2024 through 2024/2025**

The Independent Market Monitor for PJM

July 16, 2026

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Congestion

In an LMP market, the lowest cost generation is dispatched to meet the load, but when there are transmission constraints, load pays the high local price for all generation, including the low cost generation serving part of that load. In an LMP market, load pays more than generation receives. Congestion is the difference between what load pays and generation receives. FTRs are the mechanism for returning those excess payments to load. But the current FTR mechanism in PJM does not and cannot return all the excess payments to load. The FTR mechanism in PJM needs a significant redesign in order to achieve that objective. The FTR mechanism has become unduly complicated and has deviated significantly from its original purpose. Return of all the excess payments to load would result in a perfect hedge against congestion. The current FTR mechanism has significantly attenuated the value of the FTR/ARR design as a hedge against congestion for load.¹

When there are binding transmission constraints and locational price differences, load pays more for energy than generation is paid to produce that energy. The difference is congestion. As a result, congestion belongs to load and should be returned to load. Load pays 100 percent of congestion. The amount of congestion collected from load due to a binding transmission constraint is equal to the market flow over the constraint times the price difference between the low priced side of the constraint and the high priced side of the constraint. The price difference caused by a constraint is the shadow price of the constraint. Congestion caused by a constraint is therefore equal to the market flow over the binding constraint times the shadow price of the binding constraint.

The only way to ensure that load receives the benefits associated with the use of the transmission system to deliver low cost energy is to ensure that all congestion revenues are returned to load or, more precisely, that the rights to all congestion revenues are assigned to load. In order to do that, congestion payments must be defined correctly based on the way that power actually flows in the PJM network and not based on arbitrary contract paths.

The ARR/FTR design does not serve as an efficient mechanism for returning congestion to load as a result of an FTR design that was flawed from its introduction and as a result of various distortions added to the design since its introduction. The distortions include the definition of target allocations based on day-ahead price differences only, the fact that ARR holders cannot set the sale price for the congestion revenue rights they own,

¹ See *2025 Annual State of the Market Report for PJM*, Vol. 2, Section 13: Financial Transmission and Auction Revenue Rights, for more details on the history of the FTR/ARR design.

the return of market revenues to FTR buyers when profit targets are not met, the failure to assign all FTR auction revenues to ARR holders, the differences between modeled and actual system capability, the definition and allocation of surplus, and the numerous cross subsidies among participants. The fundamental distortion was the assignment of the rights to congestion revenue based on specific generation to load transmission contract paths. This approach retained the contract path based view of how load is served that is fundamentally inconsistent with the way load is actually served in a network system and therefore inconsistent with the role of FTRs in a nodal, network system with locational marginal pricing.

If the original PJM FTR approach had been designed to return congestion revenues to load without use of the generation to load contract paths, and if the distortions subsequently introduced into the FTR design had not been added, many of the subsequent issues with the FTR design and complex redesigns would have been avoided. The design should simply have provided for the return of all congestion revenues to load. This would eliminate much of the complexity associated with ARRs and FTRs and eliminate unnecessary controversy about the appropriate recipients of congestion revenues.

In an LMP market, load pays more than generation receives when there are binding transmission constraints. FTRs/ARRs are the mechanism for returning those excess payments to load. Due to the inconsistency between actual network sources of congestion paid by load and path based congestion rights available to load, load can, from year to year, over or under collect congestion that they actually pay on a network basis. The FTR/ARR mechanism in PJM needs a significant redesign in order to achieve that objective. The FTR mechanism has become unduly complicated and has deviated significantly from its original purpose. Return of all the excess payments to load would result in a perfect hedge against congestion. The current FTR/ARR mechanism has significantly attenuated the value of the FTR/ARR design as a hedge against congestion for load on a system wide basis.

Overview of Congestion Calculations

This report provides details of congestion in Pennsylvania for the 2023/2024 and 2024/2025 planning periods. Congestion is defined to be total load payments in excess of generation revenues, excluding marginal losses, from both the day-ahead and balancing markets. When there are binding transmission constraints and locational price differences, load pays more for energy than generation is paid to produce that energy.²

² Load is generically referred to as withdrawals and generation is generically referred to as injections, unless specified otherwise.

The difference is congestion.³ As a result, congestion belongs to load and should be returned to load.

Congestion calculations in this report are for the state of Pennsylvania, which includes the Duquesne Light Company (DUQ), PPL Electric Utilities (PPL), PECO, Metropolitan Edison Company (MET-ED) and Pennsylvania Electric Company (Penelec), and parts of American Transmission Systems, Inc. (ATSI) and Allegheny Power Company (APS) zones that serve PA load. The report includes congestion event hours for the constraints that caused the congestion paid by load.⁴ Congestion in this report is calculated on a constraint specific basis which reflects the differences between credits and charges caused by binding transmission limits on the power flow from generators, regardless of the location of those generators, to load in the Pennsylvania zones.

Total congestion collected based on a constraint from the load in a zone is a product of the total difference in energy charges and credits caused by the constraint (constraint specific total congestion) and the proportion of the market flow on that constraint that is caused by the zone's load. In PJM, the load at every bus in a zone pays the zonal load-weighted average LMP (the nodal load-weighted average LMP) at every bus. While each constraint contributes a nodal specific CLMP effect, constraint specific CLMP effects are calculated on the same zone wide basis. This means that just as there is a zonal LMP paid by load, there is a zonal load-weighted average CLMP for each constraint that is paid by zonal load. Load at a specific load bus in the zone contributes to the total congestion collected by a constraint in proportion to the load at that bus relative to all other load buses in the zone. Where the listed zone serves more than just PA load (ATSI and APS), the amount of congestion paid by the PA load in that zone is equal to the load ratio share of the PA zonal load to total load of that zone.

In this report, congestion equals the total energy charges paid by load at the buses (excluding loss components of price) in Pennsylvania minus the total energy credits (excluding loss components of price) received by all generation that supplied that load, regardless of the location of the generation in PJM.

³ The difference in losses is not part of congestion.

⁴ Congestion event hours are hours in which a transmission constraint is binding. In the day-ahead market, an interval equals one hour. In the real-time market, an interval equals five minutes. In order to have a consistent metric for day-ahead and real-time congestion frequency, real-time congestion frequency is measured using the convention that an hour is constrained if any one of its component five-minute intervals is constrained.

Congestion charges and credits at specific buses are defined by the congestion component of LMP (CLMP) times load and generation MW. CLMPs are calculated when locational marginal prices (LMP) are calculated in a least cost security constrained dispatch solution. The CLMP at a bus is defined by the shadow prices of binding transmission constraints and the distribution factors from the binding constraints to each bus, relative to the load-weighted reference bus. The load-weighted reference bus is the theoretical point in a network where the LMP is equal to the load-weighted average price for energy in the least cost security constrained system solution. CLMPs are a measure of the degree to which the LMP at a bus is higher (in the case of a positive CLMP) or lower (in the case of a negative CLMP) than the average load-weighted LMP of the system (the LMP at the reference bus) due to binding transmission constraints. The resulting CLMP component of LMP at a bus is not congestion. Congestion is not the difference in CLMP between nodes. Congestion is not the billing line item labeled congestion.⁵

Locational Marginal Price (LMP)

Components of LMP

The locational marginal price (LMP) is the incremental price of energy at a bus. The LMP at a bus can be divided into three components: the system marginal price (SMP) or energy component, the congestion component (CLMP), and the marginal loss component (MLMP). SMP, CLMP and MLMP are the simultaneous products of the least cost, security constrained dispatch of system resources to meet system load and the use of a load-weighted reference bus. The relative values of SMP and CLMP are arbitrary and depend on the reference bus.

SMP is defined as the incremental price of energy for the system, given the current dispatch, at the load-weighted reference bus, or LMP net of losses and congestion. SMP is the LMP at the load-weighted reference bus. The SMP is the same as the load-weighted average LMP resulting from the security constrained dispatch. The load-weighted reference bus is not a fixed location but varies with the distribution of load at system load buses. SMP is the component of LMP not associated with a binding transmission constraint. All other locational prices that result from the least cost, security constrained market solution are higher or lower than this reference point price (SMP) as a result of binding constraints and marginal losses. The reference bus is a point of reference. For a given market solution, changes in the reference bus do not change the

⁵ PJM billing examples can be found in *2019 Annual State of the Market Report for PJM*, Appendix F: Congestion and Marginal Losses.

LMP for any node on the system, but change only the relative sizes of SMP, CLMP and MLMP.

CLMP is defined as the incremental price of meeting load at each bus when a transmission constraint is binding, based on the shadow price associated with the relief of a binding transmission constraint in the security constrained optimization. (There can be multiple binding transmission constraints.) CLMPs are positive or negative depending on location relative to binding constraints and relative to the load-weighted reference bus. In an unconstrained system CLMPs are zero. CLMP at a bus is not congestion. The difference between CLMPs at buses is not congestion, it is just the LMP difference between the two buses caused by transmission constraints. CLMP is the portion of the LMP at a bus that indicates whether the LMP at that bus is higher or lower than the marginal price of energy (SMP) at the reference bus due to binding transmission constraints. The relative values of SMP and CLMP are arbitrary and depend on the reference bus. In other words, CLMPs are the effect of constraints on LMP relative to the reference bus. A negative CLMP at a bus indicates that the LMP at the bus is lower than the system load-weighted average price and a positive CLMP at a bus indicates that the LMP is higher than the system load-weighted average price.

Congestion occurs when available, least-cost energy cannot be delivered to all loads because transmission facilities are not adequate to deliver that energy. When the least-cost available energy cannot be delivered to load in a transmission constrained area, higher cost units in the constrained area must be dispatched to meet that load. The result is that the price of energy in the constrained area is higher than in the unconstrained area because of the combination of transmission limitations and the cost of local generation. Congestion is the difference between the total cost of energy paid by load in the transmission constrained area and the total revenue received by generation to provide that energy, after virtual bids have been settled in both the day-ahead and balancing markets. Congestion equals the sum of day-ahead and balancing congestion.

MLMP is defined as the incremental price of losses at a bus, based on marginal loss factors in the security constrained optimization. Losses refer to energy lost to physical resistance in the transmission network as power is moved from generation to load.

Figure 1 shows the locations of the top 10 constraints affecting PA load by total congestion costs on a contour map of the real-time, load-weighted average CLMP for the 2024/2025 planning period. Figure 1 indicates that in 2024/2025 load-weighted LMPs are slightly lower, on average, in eastern PA than in western PA due to transmission constraints. (The load-weighted CLMPs in the eastern portion of PA are negative and the load weighted CLMPs in the western portion of PA are less negative and even positive). Eastern PA has lower cost sources of generation, on average, than western PA and transmission constraints limit the flow of energy from eastern PA to western PA.

Figure 1 also indicates that in 2024/2025 load weighted LMPs are lower, on average, in PA than in Maryland (MD) and Virginia (VA) due to transmission constraints that separate PA from MD and VA. (The load-weighted CLMPs in PA are more negative or less positive than the load-weighted CLMPs in VA and MD). This price separation is due to PA having lower cost sources of generation, on average, than MD and VA and transmission constraints limit the flow of energy from PA to MD and VA. Holding everything else constant, adding transmission to increase energy transfers from PA to MD and VA would tend to reduce prices in VA and MD and increase prices in PA.

Figure 1 Location of the top 10 constraints by total congestion costs: 2024/2025 planning period

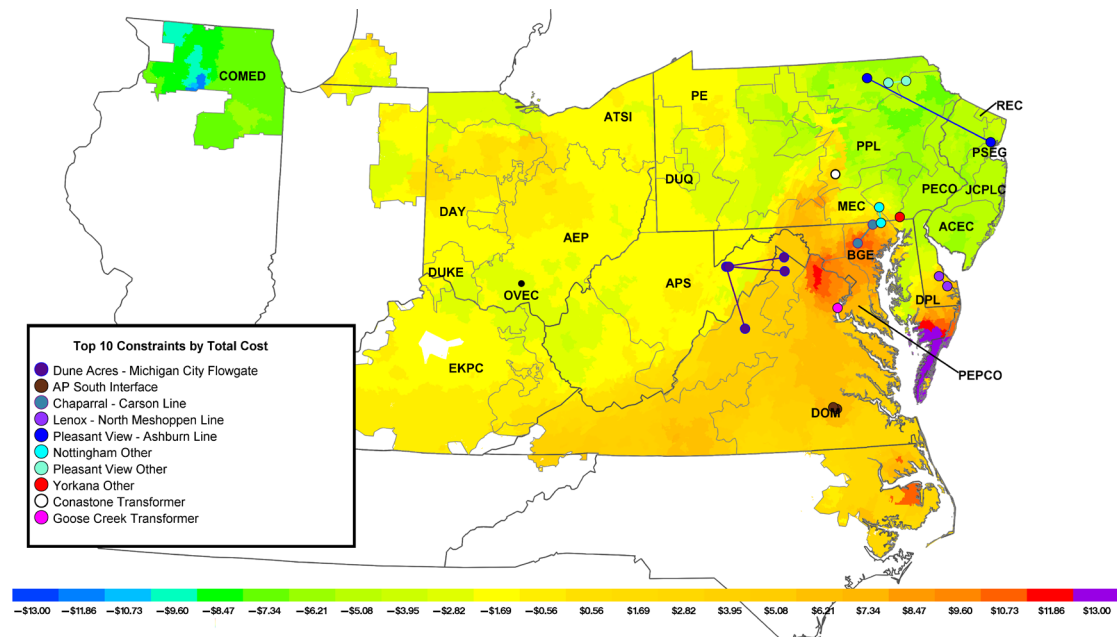


Figure 2 shows the locations of the top 10 constraints affecting PA load by total congestion costs on a contour map of the real-time, load-weighted average CLMP for the 2023/2024 planning period.

Comparing Figure 1 and Figure 2 shows that the difference in prices between PA, and MD and VA increased from 2023/2024 to 2024/2025.

Figure 2 Location of the top 10 constraints by total congestion costs: 2023/2024 planning period

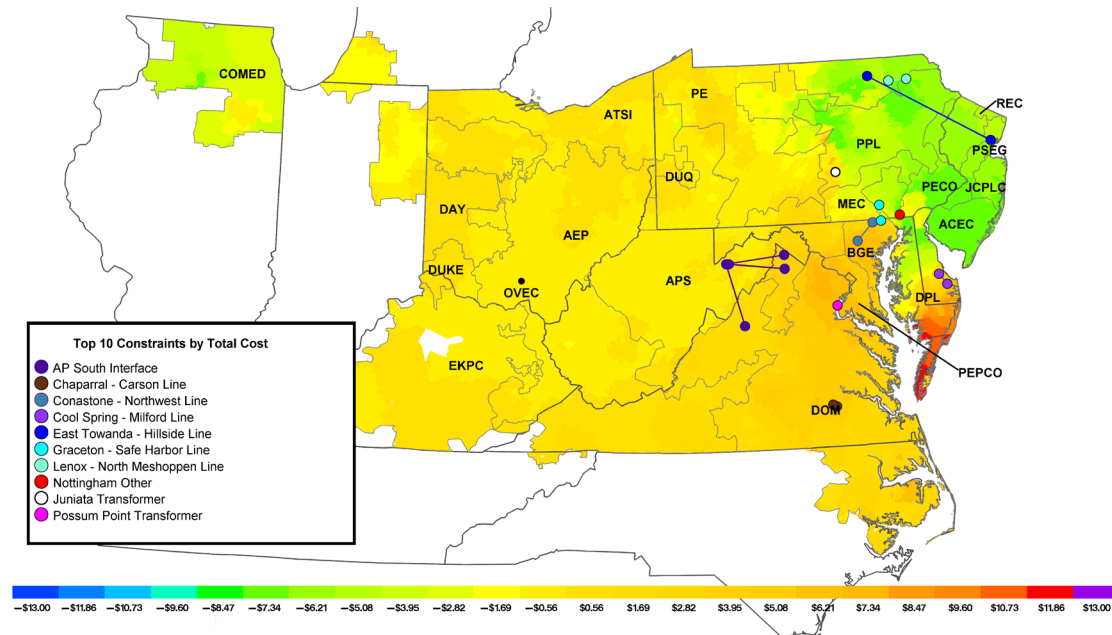


Table 1 shows the real-time load-weighted average LMP components for PJM and for Pennsylvania for the 2012/2013 through 2024/2025 planning period.⁶ The congestion component of LMP (CLMP) provided in Table 1 is not an indication of the amount of congestion paid by load in Pennsylvania.⁷ The CLMPs in Table 1 indicate that, due to transmission constraints, load in Pennsylvania paid real-time load-weighted average LMPs that were -\$3.16 (CLMP) lower than the real-time load-weighted average price (SMP) for all of PJM in the 2024/2025 planning period.

⁶ See *2023 Annual State of the Market Report for PJM: Vol. 2, Section 11: Congestion and Marginal Losses*.

⁷ There are a number of reasons that the CLMP is not zero. The state estimator loads used to set prices in the market solution are different from the metered loads used in billing. There are price corrections based on updated meter data and solution overrides. PJM uses artificial constraints in the real time solution that affect prices. Pennsylvania is a part of PJM and while the weighted average CLMP over all of PJM is expected to be zero, there is no reason to expect that the weighted average of CLMPs in Pennsylvania to be zero.

Table 1 PJM and Pennsylvania real-time load-weighted average LMP components (Dollars per MWh): 2012/2013 through 2024/2025 planning period

Planning Period	PJM				Pennsylvania			
	Real-Time LMP	Energy Component	Congestion Component	Loss Component	Real-Time LMP	Energy Component	Congestion Component	Loss Component
2012/2013	\$37.87	\$37.82	\$0.03	\$0.02	\$38.04	\$37.70	(\$0.06)	\$0.39
2013/2014	\$54.05	\$54.06	(\$0.03)	\$0.02	\$55.56	\$54.03	\$0.71	\$0.81
2014/2015	\$40.23	\$40.18	\$0.03	\$0.02	\$40.70	\$40.16	\$0.07	\$0.46
2015/2016	\$28.80	\$28.75	\$0.04	\$0.01	\$25.70	\$28.68	(\$3.06)	\$0.08
2016/2017	\$30.57	\$30.52	\$0.03	\$0.01	\$28.94	\$30.46	(\$1.60)	\$0.09
2017/2018	\$36.98	\$36.93	\$0.03	\$0.02	\$36.23	\$36.84	(\$0.86)	\$0.26
2018/2019	\$31.67	\$31.62	\$0.03	\$0.02	\$30.61	\$31.57	(\$0.92)	(\$0.04)
2019/2020	\$23.72	\$23.68	\$0.02	\$0.02	\$22.09	\$23.55	(\$1.17)	(\$0.29)
2020/2021	\$26.02	\$25.98	\$0.03	\$0.02	\$23.88	\$25.96	(\$1.80)	(\$0.28)
2021/2022	\$52.44	\$52.35	\$0.06	\$0.03	\$49.52	\$52.35	(\$2.62)	(\$0.21)
2022/2023	\$68.07	\$67.94	\$0.08	\$0.05	\$63.05	\$67.24	(\$3.81)	(\$0.38)
2023/2024	\$31.70	\$31.61	\$0.06	\$0.02	\$28.08	\$31.55	(\$3.34)	(\$0.13)
2024/2025	\$40.53	\$40.40	\$0.09	\$0.03	\$37.29	\$40.41	(\$3.16)	\$0.04

Table 2 shows the real-time load-weighted average LMP components for PJM and for Pennsylvania load in the APS Zone for the 2012/2013 through 2024/2025 planning period.

Table 2 PJM and Pennsylvania (APS Zone) real-time load-weighted average LMP components (Dollars per MWh): 2012/2013 through 2024/2025 planning period

Planning Period	PJM				Pennsylvania (APS)			
	Real-Time LMP	Energy Component	Congestion Component	Loss Component	Real-Time LMP	Energy Component	Congestion Component	Loss Component
2012/2013	\$37.87	\$37.82	\$0.03	\$0.02	\$36.60	\$37.67	(\$0.89)	(\$0.19)
2013/2014	\$54.05	\$54.06	(\$0.03)	\$0.02	\$50.66	\$54.24	(\$3.61)	\$0.04
2014/2015	\$40.23	\$40.18	\$0.03	\$0.02	\$40.29	\$40.14	\$0.17	(\$0.02)
2015/2016	\$28.80	\$28.75	\$0.04	\$0.01	\$28.45	\$28.59	(\$0.21)	\$0.07
2016/2017	\$30.57	\$30.52	\$0.03	\$0.01	\$30.15	\$30.40	(\$0.24)	(\$0.01)
2017/2018	\$36.98	\$36.93	\$0.03	\$0.02	\$37.07	\$36.80	\$0.17	\$0.11
2018/2019	\$31.67	\$31.62	\$0.03	\$0.02	\$31.87	\$31.49	\$0.32	\$0.06
2019/2020	\$23.72	\$23.68	\$0.02	\$0.02	\$23.87	\$23.50	\$0.51	(\$0.14)
2020/2021	\$26.02	\$25.98	\$0.03	\$0.02	\$25.99	\$26.05	\$0.26	(\$0.32)
2021/2022	\$52.44	\$52.35	\$0.06	\$0.03	\$50.92	\$52.48	(\$1.27)	(\$0.29)
2022/2023	\$68.07	\$67.94	\$0.08	\$0.05	\$65.06	\$66.80	(\$1.26)	(\$0.48)
2023/2024	\$31.70	\$31.61	\$0.06	\$0.02	\$31.76	\$31.56	\$0.25	(\$0.05)
2024/2025	\$40.53	\$40.40	\$0.09	\$0.03	\$39.69	\$40.44	(\$0.85)	\$0.10

Table 3 shows the real-time load-weighted average LMP components for PJM and for Pennsylvania load in the ATSI Zone for the 2012/2013 through 2024/2025 planning period.

Table 3 PJM and Pennsylvania (ATSI) real-time load-weighted average LMP components (Dollars per MWh): 2012/2013 through 2024/2025 planning period

Planning Period	PJM				Pennsylvania (ATSI)			
	Real-Time LMP	Energy Component	Congestion Component	Loss Component	Real-Time LMP	Energy Component	Congestion Component	Loss Component
2012/2013	\$37.87	\$37.82	\$0.03	\$0.02	\$36.35	\$38.32	(\$1.40)	(\$0.57)
2013/2014	\$54.05	\$54.06	(\$0.03)	\$0.02	\$53.07	\$55.81	(\$2.07)	(\$0.67)
2014/2015	\$40.23	\$40.18	\$0.03	\$0.02	\$38.01	\$40.87	(\$2.58)	(\$0.28)
2015/2016	\$28.80	\$28.75	\$0.04	\$0.01	\$28.48	\$28.70	(\$0.26)	\$0.04
2016/2017	\$30.57	\$30.52	\$0.03	\$0.01	\$31.26	\$30.65	\$0.49	\$0.12
2017/2018	\$36.98	\$36.93	\$0.03	\$0.02	\$38.76	\$37.06	\$1.57	\$0.12
2018/2019	\$31.67	\$31.62	\$0.03	\$0.02	\$33.33	\$31.58	\$1.53	\$0.22
2019/2020	\$23.72	\$23.68	\$0.02	\$0.02	\$24.36	\$23.61	\$0.67	\$0.08
2020/2021	\$26.02	\$25.98	\$0.03	\$0.02	\$25.22	\$26.10	(\$0.47)	(\$0.41)
2021/2022	\$52.44	\$52.35	\$0.06	\$0.03	\$50.31	\$52.68	(\$1.77)	(\$0.60)
2022/2023	\$68.07	\$67.94	\$0.08	\$0.05	\$63.68	\$65.95	(\$1.29)	(\$0.99)
2023/2024	\$31.70	\$31.61	\$0.06	\$0.02	\$31.02	\$31.60	(\$0.21)	(\$0.37)
2024/2025	\$40.53	\$40.40	\$0.09	\$0.03	\$38.57	\$40.41	(\$1.46)	(\$0.37)

Table 4 shows the real-time load-weighted average LMP components for PJM and for Pennsylvania load in the DUQ Zone for the 2012/2013 through 2024/2025 planning period.

Table 4 PJM and Pennsylvania (DUQ) real-time load-weighted average LMP components (Dollars per MWh): 2012/2013 through 2024/2025 planning period

Planning Period	PJM				Pennsylvania (DUQ)			
	Real-Time LMP	Energy Component	Congestion Component	Loss Component	Real-Time LMP	Energy Component	Congestion Component	Loss Component
2012/2013	\$37.87	\$37.82	\$0.03	\$0.02	\$35.18	\$37.73	(\$1.26)	(\$1.28)
2013/2014	\$54.05	\$54.06	(\$0.03)	\$0.02	\$44.40	\$52.63	(\$6.59)	(\$1.64)
2014/2015	\$40.23	\$40.18	\$0.03	\$0.02	\$35.59	\$39.78	(\$3.12)	(\$1.07)
2015/2016	\$28.80	\$28.75	\$0.04	\$0.01	\$28.38	\$28.74	(\$0.04)	(\$0.33)
2016/2017	\$30.57	\$30.52	\$0.03	\$0.01	\$30.71	\$30.47	\$0.47	(\$0.23)
2017/2018	\$36.98	\$36.93	\$0.03	\$0.02	\$37.24	\$36.34	\$1.02	(\$0.12)
2018/2019	\$31.67	\$31.62	\$0.03	\$0.02	\$32.82	\$31.57	\$1.13	\$0.12
2019/2020	\$23.72	\$23.68	\$0.02	\$0.02	\$24.74	\$23.73	\$0.99	\$0.02
2020/2021	\$26.02	\$25.98	\$0.03	\$0.02	\$25.82	\$25.87	\$0.35	(\$0.39)
2021/2022	\$52.44	\$52.35	\$0.06	\$0.03	\$49.95	\$52.16	(\$1.42)	(\$0.79)
2022/2023	\$68.07	\$67.94	\$0.08	\$0.05	\$64.95	\$67.10	(\$1.17)	(\$0.98)
2023/2024	\$31.70	\$31.61	\$0.06	\$0.02	\$32.23	\$31.40	\$1.22	(\$0.40)
2024/2025	\$40.53	\$40.40	\$0.09	\$0.03	\$37.99	\$39.76	(\$1.28)	(\$0.49)

Table 5 shows the real-time load-weighted average LMP components for PJM the MET-ED Zone for the 2012/2013 through 2024/2025 planning period.

Table 5 PJM and Pennsylvania (MET-ED) real-time load-weighted average LMP components (Dollars per MWh): 2012/2013 through 2024/2025 planning period

Planning Period	PJM				Pennsylvania (MET-ED)			
	Real-Time LMP	Energy Component	Congestion Component	Loss Component	Real-Time LMP	Energy Component	Congestion Component	Loss Component
2012/2013	\$37.87	\$37.82	\$0.03	\$0.02	\$39.06	\$37.77	\$0.64	\$0.65
2013/2014	\$54.05	\$54.06	(\$0.03)	\$0.02	\$58.70	\$54.21	\$3.15	\$1.34
2014/2015	\$40.23	\$40.18	\$0.03	\$0.02	\$41.76	\$40.26	\$0.67	\$0.83
2015/2016	\$28.80	\$28.75	\$0.04	\$0.01	\$24.34	\$28.76	(\$4.57)	\$0.15
2016/2017	\$30.57	\$30.52	\$0.03	\$0.01	\$28.96	\$30.51	(\$1.82)	\$0.26
2017/2018	\$36.98	\$36.93	\$0.03	\$0.02	\$36.68	\$36.90	(\$0.67)	\$0.46
2018/2019	\$31.67	\$31.62	\$0.03	\$0.02	\$30.87	\$31.62	(\$0.74)	(\$0.01)
2019/2020	\$23.72	\$23.68	\$0.02	\$0.02	\$22.20	\$23.58	(\$1.07)	(\$0.30)
2020/2021	\$26.02	\$25.98	\$0.03	\$0.02	\$24.90	\$26.00	(\$0.98)	(\$0.12)
2021/2022	\$52.44	\$52.35	\$0.06	\$0.03	\$54.56	\$52.43	\$1.96	\$0.17
2022/2023	\$68.07	\$67.94	\$0.08	\$0.05	\$68.92	\$67.31	\$1.32	\$0.29
2023/2024	\$31.70	\$31.61	\$0.06	\$0.02	\$28.25	\$31.64	(\$3.47)	\$0.07
2024/2025	\$40.53	\$40.40	\$0.09	\$0.03	\$37.43	\$40.63	(\$3.43)	\$0.22

Table 6 shows the real-time load-weighted average LMP components for PJM and for Pennsylvania load in the PECO Zone for the 2012/2013 through 2024/2025 planning period.

Table 6 PJM and Pennsylvania (PECO) real-time load-weighted average LMP components (Dollars per MWh): 2012/2013 through 2024/2025 planning period

Planning Period	PJM				Pennsylvania (PECO)			
	Real-Time LMP	Energy Component	Congestion Component	Loss Component	Real-Time LMP	Energy Component	Congestion Component	Loss Component
2012/2013	\$37.87	\$37.82	\$0.03	\$0.02	\$39.37	\$37.82	\$0.54	\$1.01
2013/2014	\$54.05	\$54.06	(\$0.03)	\$0.02	\$58.35	\$53.63	\$3.01	\$1.71
2014/2015	\$40.23	\$40.18	\$0.03	\$0.02	\$41.52	\$40.16	\$0.38	\$0.98
2015/2016	\$28.80	\$28.75	\$0.04	\$0.01	\$24.40	\$28.87	(\$4.60)	\$0.13
2016/2017	\$30.57	\$30.52	\$0.03	\$0.01	\$28.16	\$30.59	(\$2.57)	\$0.14
2017/2018	\$36.98	\$36.93	\$0.03	\$0.02	\$35.68	\$36.85	(\$1.64)	\$0.46
2018/2019	\$31.67	\$31.62	\$0.03	\$0.02	\$29.84	\$31.68	(\$1.85)	\$0.01
2019/2020	\$23.72	\$23.68	\$0.02	\$0.02	\$20.83	\$23.72	(\$2.56)	(\$0.33)
2020/2021	\$26.02	\$25.98	\$0.03	\$0.02	\$22.19	\$25.93	(\$3.57)	(\$0.17)
2021/2022	\$52.44	\$52.35	\$0.06	\$0.03	\$46.33	\$52.18	(\$5.90)	\$0.05
2022/2023	\$68.07	\$67.94	\$0.08	\$0.05	\$59.16	\$68.96	(\$9.69)	(\$0.10)
2023/2024	\$31.70	\$31.61	\$0.06	\$0.02	\$24.63	\$31.72	(\$7.02)	(\$0.07)
2024/2025	\$40.53	\$40.40	\$0.09	\$0.03	\$36.34	\$40.60	(\$4.51)	\$0.25

Table 7 shows the real-time load-weighted average LMP components for PJM and for Pennsylvania load in the PENELEC Zone for the 2012/2013 through 2024/2025 planning period.

Table 7 PJM and Pennsylvania (PENELEC) real-time load-weighted average LMP components (Dollars per MWh): 2012/2013 through 2024/2025 planning period

Planning Period	PJM				Pennsylvania (PENELEC)			
	Real-Time LMP	Energy Component	Congestion Component	Loss Component	Real-Time LMP	Energy Component	Congestion Component	Loss Component
2012/2013	\$37.87	\$37.82	\$0.03	\$0.02	\$37.97	\$37.41	(\$0.01)	\$0.56
2013/2014	\$54.05	\$54.06	(\$0.03)	\$0.02	\$53.14	\$53.56	(\$1.24)	\$0.82
2014/2015	\$40.23	\$40.18	\$0.03	\$0.02	\$40.64	\$39.80	\$0.37	\$0.48
2015/2016	\$28.80	\$28.75	\$0.04	\$0.01	\$27.31	\$28.38	(\$1.52)	\$0.44
2016/2017	\$30.57	\$30.52	\$0.03	\$0.01	\$29.36	\$30.18	(\$1.11)	\$0.29
2017/2018	\$36.98	\$36.93	\$0.03	\$0.02	\$36.23	\$36.34	(\$0.42)	\$0.31
2018/2019	\$31.67	\$31.62	\$0.03	\$0.02	\$31.36	\$31.35	(\$0.20)	\$0.21
2019/2020	\$23.72	\$23.68	\$0.02	\$0.02	\$22.50	\$23.28	(\$0.58)	(\$0.20)
2020/2021	\$26.02	\$25.98	\$0.03	\$0.02	\$24.42	\$25.81	(\$1.16)	(\$0.23)
2021/2022	\$52.44	\$52.35	\$0.06	\$0.03	\$50.55	\$52.24	(\$1.54)	(\$0.14)
2022/2023	\$68.07	\$67.94	\$0.08	\$0.05	\$61.55	\$65.14	(\$3.13)	(\$0.46)
2023/2024	\$31.70	\$31.61	\$0.06	\$0.02	\$32.18	\$31.23	\$0.74	\$0.20
2024/2025	\$40.53	\$40.40	\$0.09	\$0.03	\$40.45	\$39.89	\$0.15	\$0.41

Table 8 shows the real-time load-weighted average LMP components for PJM and for Pennsylvania load in the PPL Zone for the 2012/2013 through 2024/2025 planning period.

Table 8 PJM and Pennsylvania (PPL) real-time load-weighted average LMP components (Dollars per MWh): 2012/2013 through 2024/2025 planning period

Planning Period	PJM				Pennsylvania (PPL)			
	Real-Time LMP	Energy Component	Congestion Component	Loss Component	Real-Time LMP	Energy Component	Congestion Component	Loss Component
2012/2013	\$37.87	\$37.82	\$0.03	\$0.02	\$38.33	\$37.65	\$0.07	\$0.62
2013/2014	\$54.05	\$54.06	(\$0.03)	\$0.02	\$59.41	\$54.78	\$3.48	\$1.15
2014/2015	\$40.23	\$40.18	\$0.03	\$0.02	\$41.76	\$40.37	\$0.74	\$0.65
2015/2016	\$28.80	\$28.75	\$0.04	\$0.01	\$24.22	\$28.62	(\$4.42)	\$0.02
2016/2017	\$30.57	\$30.52	\$0.03	\$0.01	\$28.07	\$30.42	(\$2.40)	\$0.04
2017/2018	\$36.98	\$36.93	\$0.03	\$0.02	\$35.55	\$37.17	(\$1.82)	\$0.19
2018/2019	\$31.67	\$31.62	\$0.03	\$0.02	\$29.21	\$31.58	(\$2.02)	(\$0.35)
2019/2020	\$23.72	\$23.68	\$0.02	\$0.02	\$21.00	\$23.43	(\$1.92)	(\$0.50)
2020/2021	\$26.02	\$25.98	\$0.03	\$0.02	\$23.02	\$25.99	(\$2.59)	(\$0.38)
2021/2022	\$52.44	\$52.35	\$0.06	\$0.03	\$49.25	\$52.48	(\$2.87)	(\$0.36)
2022/2023	\$68.07	\$67.94	\$0.08	\$0.05	\$63.39	\$66.88	(\$2.97)	(\$0.52)
2023/2024	\$31.70	\$31.61	\$0.06	\$0.02	\$25.95	\$31.52	(\$5.23)	(\$0.34)
2024/2025	\$40.53	\$40.40	\$0.09	\$0.03	\$35.24	\$40.57	(\$5.13)	(\$0.19)

Table 9 shows the day-ahead load-weighted average LMP components for PJM and for Pennsylvania for the 2012/2013 through 2024/2025 planning period. The CLMPs in Table 9 indicate that, due to transmission constraints, load in Pennsylvania paid day-ahead load-weighted average LMPs that were -\$2.99 (CLMP) lower than the day-ahead load-weighted average price (SMP) for all of PJM in the 2024/2025 planning period.

Table 9 PJM and Pennsylvania day-ahead load-weighted average LMP components (Dollars per MWh): 2012/2013 through 2024/2025 planning period

Planning Period	PJM				Pennsylvania			
	Day-Ahead LMP	Energy Component	Congestion Component	Loss Component	Day-Ahead LMP	Energy Component	Congestion Component	Loss Component
2012/2013	\$37.44	\$37.35	\$0.10	(\$0.00)	\$37.73	\$37.21	\$0.13	\$0.39
2013/2014	\$54.59	\$54.36	\$0.23	(\$0.00)	\$56.45	\$53.77	\$2.14	\$0.54
2014/2015	\$40.74	\$40.49	\$0.27	(\$0.02)	\$40.56	\$40.36	\$0.32	(\$0.12)
2015/2016	\$29.15	\$29.02	\$0.14	(\$0.01)	\$26.12	\$28.90	(\$2.76)	(\$0.03)
2016/2017	\$30.86	\$30.78	\$0.10	(\$0.02)	\$29.08	\$30.67	(\$1.52)	(\$0.07)
2017/2018	\$35.94	\$35.86	\$0.09	(\$0.01)	\$34.99	\$35.67	(\$0.65)	(\$0.04)
2018/2019	\$32.37	\$32.24	\$0.14	(\$0.01)	\$30.91	\$32.15	(\$1.08)	(\$0.15)
2019/2020	\$23.38	\$23.35	\$0.04	(\$0.01)	\$21.72	\$23.25	(\$1.22)	(\$0.32)
2020/2021	\$25.94	\$25.81	\$0.11	\$0.01	\$23.86	\$25.76	(\$1.57)	(\$0.34)
2021/2022	\$51.94	\$51.62	\$0.22	\$0.09	\$49.78	\$51.78	(\$1.89)	(\$0.10)
2022/2023	\$63.72	\$63.54	\$0.09	\$0.08	\$59.35	\$63.08	(\$3.43)	(\$0.30)
2023/2024	\$32.05	\$31.93	\$0.10	\$0.02	\$28.34	\$31.86	(\$3.29)	(\$0.23)
2024/2025	\$40.86	\$40.68	\$0.09	\$0.09	\$37.93	\$40.71	(\$2.99)	\$0.21

Table 10 shows the day-ahead load-weighted average LMP components for PJM and for Pennsylvania load in the APS Zone for the 2012/2013 through 2024/2025 planning period.

Table 10 PJM and Pennsylvania (APS) day-ahead load-weighted average LMP components (Dollars per MWh): 2012/2013 through 2024/2025 planning period

Planning Period	PJM				Pennsylvania (APS)			
	Day-Ahead LMP	Energy Component	Congestion Component	Loss Component	Day-Ahead LMP	Energy Component	Congestion Component	Loss Component
2012/2013	\$37.44	\$37.35	\$0.10	(\$0.00)	\$36.42	\$37.27	(\$0.69)	(\$0.16)
2013/2014	\$54.59	\$54.36	\$0.23	(\$0.00)	\$51.75	\$54.87	(\$2.97)	(\$0.15)
2014/2015	\$40.74	\$40.49	\$0.27	(\$0.02)	\$39.83	\$40.61	(\$0.37)	(\$0.40)
2015/2016	\$29.15	\$29.02	\$0.14	(\$0.01)	\$28.69	\$28.86	(\$0.15)	(\$0.02)
2016/2017	\$30.86	\$30.78	\$0.10	(\$0.02)	\$30.36	\$30.70	(\$0.20)	(\$0.13)
2017/2018	\$35.94	\$35.86	\$0.09	(\$0.01)	\$35.83	\$35.68	\$0.18	(\$0.03)
2018/2019	\$32.37	\$32.24	\$0.14	(\$0.01)	\$32.33	\$32.09	\$0.18	\$0.06
2019/2020	\$23.38	\$23.35	\$0.04	(\$0.01)	\$23.50	\$23.16	\$0.47	(\$0.13)
2020/2021	\$25.94	\$25.81	\$0.11	\$0.01	\$25.64	\$25.87	\$0.07	(\$0.30)
2021/2022	\$51.94	\$51.62	\$0.22	\$0.09	\$51.61	\$51.77	\$0.02	(\$0.18)
2022/2023	\$63.72	\$63.54	\$0.09	\$0.08	\$61.17	\$62.49	(\$0.88)	(\$0.44)
2023/2024	\$32.05	\$31.93	\$0.10	\$0.02	\$32.25	\$31.89	\$0.39	(\$0.04)
2024/2025	\$40.86	\$40.68	\$0.09	\$0.09	\$40.54	\$41.04	(\$0.84)	\$0.34

Table 11 shows the day-ahead load-weighted average LMP components for and for Pennsylvania load in the ATSI Zone for the 2012/2013 through 2024/2025 planning period.

Table 11 PJM and Pennsylvania (ATSI) day-ahead load-weighted average LMP components (Dollars per MWh): 2012/2013 through 2024/2025 planning period

Planning Period	PJM				Pennsylvania (ATSI)			
	Day-Ahead LMP	Energy Component	Congestion Component	Loss Component	Day-Ahead LMP	Energy Component	Congestion Component	Loss Component
2012/2013	\$37.44	\$37.35	\$0.10	(\$0.00)	\$35.57	\$37.09	(\$1.11)	(\$0.41)
2013/2014	\$54.59	\$54.36	\$0.23	(\$0.00)	\$48.35	\$54.38	(\$5.31)	(\$0.72)
2014/2015	\$40.74	\$40.49	\$0.27	(\$0.02)	\$37.05	\$40.25	(\$2.76)	(\$0.44)
2015/2016	\$29.15	\$29.02	\$0.14	(\$0.01)	\$28.32	\$28.77	(\$0.35)	(\$0.10)
2016/2017	\$30.86	\$30.78	\$0.10	(\$0.02)	\$30.83	\$30.76	\$0.20	(\$0.13)
2017/2018	\$35.94	\$35.86	\$0.09	(\$0.01)	\$36.70	\$35.74	\$0.96	\$0.00
2018/2019	\$32.37	\$32.24	\$0.14	(\$0.01)	\$34.49	\$32.13	\$2.15	\$0.22
2019/2020	\$23.38	\$23.35	\$0.04	(\$0.01)	\$24.20	\$23.27	\$0.82	\$0.11
2020/2021	\$25.94	\$25.81	\$0.11	\$0.01	\$25.44	\$25.77	\$0.10	(\$0.44)
2021/2022	\$51.94	\$51.62	\$0.22	\$0.09	\$50.33	\$51.69	(\$0.75)	(\$0.61)
2022/2023	\$63.72	\$63.54	\$0.09	\$0.08	\$60.20	\$61.72	(\$0.51)	(\$1.00)
2023/2024	\$32.05	\$31.93	\$0.10	\$0.02	\$31.10	\$31.78	(\$0.37)	(\$0.31)
2024/2025	\$40.86	\$40.68	\$0.09	\$0.09	\$38.92	\$40.57	(\$1.37)	(\$0.28)

Table 12 shows the day-ahead load-weighted average LMP components for PJM and for Pennsylvania load in the DUQ Zone for the 2012/2013 through 2024/2025 planning period.

Table 12 PJM and Pennsylvania (DUQ) day-ahead load-weighted average LMP components (Dollars per MWh): 2012/2013 through 2024/2025 planning period

Planning Period	PJM				Pennsylvania (DUQ)			
	Day-Ahead LMP	Energy Component	Congestion Component	Loss Component	Day-Ahead LMP	Energy Component	Congestion Component	Loss Component
2012/2013	\$37.44	\$37.35	\$0.10	(\$0.00)	\$34.78	\$37.34	(\$1.25)	(\$1.30)
2013/2014	\$54.59	\$54.36	\$0.23	(\$0.00)	\$45.71	\$53.13	(\$5.66)	(\$1.77)
2014/2015	\$40.74	\$40.49	\$0.27	(\$0.02)	\$35.68	\$40.07	(\$3.13)	(\$1.26)
2015/2016	\$29.15	\$29.02	\$0.14	(\$0.01)	\$28.71	\$29.01	\$0.05	(\$0.35)
2016/2017	\$30.86	\$30.78	\$0.10	(\$0.02)	\$30.51	\$30.79	\$0.10	(\$0.38)
2017/2018	\$35.94	\$35.86	\$0.09	(\$0.01)	\$35.71	\$35.42	\$0.45	(\$0.15)
2018/2019	\$32.37	\$32.24	\$0.14	(\$0.01)	\$33.73	\$32.24	\$1.37	\$0.12
2019/2020	\$23.38	\$23.35	\$0.04	(\$0.01)	\$24.40	\$23.31	\$1.05	\$0.03
2020/2021	\$25.94	\$25.81	\$0.11	\$0.01	\$25.89	\$25.61	\$0.69	(\$0.40)
2021/2022	\$51.94	\$51.62	\$0.22	\$0.09	\$50.30	\$51.34	(\$0.27)	(\$0.76)
2022/2023	\$63.72	\$63.54	\$0.09	\$0.08	\$61.13	\$62.38	(\$0.26)	(\$0.99)
2023/2024	\$32.05	\$31.93	\$0.10	\$0.02	\$32.13	\$31.81	\$0.68	(\$0.36)
2024/2025	\$40.86	\$40.68	\$0.09	\$0.09	\$39.11	\$40.28	(\$0.72)	(\$0.46)

Table 13 shows the day-ahead load-weighted average LMP components for PJM and for Pennsylvania load in the MET-ED Zone for the 2012/2013 through 2024/2025 planning period.

Table 13 PJM and Pennsylvania (MET-ED) day-ahead load-weighted average LMP components (Dollars per MWh): 2012/2013 through 2024/2025 planning period

Planning Period	PJM				Pennsylvania (MET-ED)			
	Day-Ahead LMP	Energy Component	Congestion Component	Loss Component	Day-Ahead LMP	Energy Component	Congestion Component	Loss Component
2012/2013	\$37.44	\$37.35	\$0.10	(\$0.00)	\$38.67	\$37.20	\$0.70	\$0.78
2013/2014	\$54.59	\$54.36	\$0.23	(\$0.00)	\$60.45	\$54.10	\$5.37	\$0.98
2014/2015	\$40.74	\$40.49	\$0.27	(\$0.02)	\$41.51	\$40.26	\$1.14	\$0.11
2015/2016	\$29.15	\$29.02	\$0.14	(\$0.01)	\$24.71	\$28.91	(\$4.20)	\$0.01
2016/2017	\$30.86	\$30.78	\$0.10	(\$0.02)	\$29.10	\$30.70	(\$1.69)	\$0.09
2017/2018	\$35.94	\$35.86	\$0.09	(\$0.01)	\$35.67	\$35.70	(\$0.10)	\$0.07
2018/2019	\$32.37	\$32.24	\$0.14	(\$0.01)	\$30.93	\$32.15	(\$1.02)	(\$0.20)
2019/2020	\$23.38	\$23.35	\$0.04	(\$0.01)	\$21.75	\$23.27	(\$1.13)	(\$0.39)
2020/2021	\$25.94	\$25.81	\$0.11	\$0.01	\$24.45	\$25.77	(\$1.10)	(\$0.21)
2021/2022	\$51.94	\$51.62	\$0.22	\$0.09	\$54.83	\$51.88	\$2.59	\$0.36
2022/2023	\$63.72	\$63.54	\$0.09	\$0.08	\$64.29	\$62.36	\$1.56	\$0.37
2023/2024	\$32.05	\$31.93	\$0.10	\$0.02	\$29.30	\$32.11	(\$2.79)	(\$0.02)
2024/2025	\$40.86	\$40.68	\$0.09	\$0.09	\$38.59	\$40.94	(\$2.85)	\$0.49

Table 14 shows the day-ahead load-weighted average LMP components for PJM and for Pennsylvania load in the PECO Zone for the 2012/2013 through 2024/2025 planning period.

Table 14 PJM and Pennsylvania (PECO) day-ahead load-weighted average LMP components (Dollars per MWh): 2012/2013 through 2024/2025 planning period

Planning Period	PJM				Pennsylvania (PECO)			
	Day-Ahead LMP	Energy Component	Congestion Component	Loss Component	Day-Ahead LMP	Energy Component	Congestion Component	Loss Component
2012/2013	\$37.44	\$37.35	\$0.10	(\$0.00)	\$39.43	\$37.42	\$0.82	\$1.19
2013/2014	\$54.59	\$54.36	\$0.23	(\$0.00)	\$60.44	\$53.81	\$5.11	\$1.52
2014/2015	\$40.74	\$40.49	\$0.27	(\$0.02)	\$41.85	\$40.28	\$1.25	\$0.33
2015/2016	\$29.15	\$29.02	\$0.14	(\$0.01)	\$24.75	\$29.08	(\$4.38)	\$0.05
2016/2017	\$30.86	\$30.78	\$0.10	(\$0.02)	\$28.42	\$30.82	(\$2.47)	\$0.07
2017/2018	\$35.94	\$35.86	\$0.09	(\$0.01)	\$34.47	\$35.61	(\$1.26)	\$0.12
2018/2019	\$32.37	\$32.24	\$0.14	(\$0.01)	\$29.77	\$32.22	(\$2.30)	(\$0.15)
2019/2020	\$23.38	\$23.35	\$0.04	(\$0.01)	\$20.37	\$23.37	(\$2.59)	(\$0.41)
2020/2021	\$25.94	\$25.81	\$0.11	\$0.01	\$22.13	\$25.69	(\$3.29)	(\$0.27)
2021/2022	\$51.94	\$51.62	\$0.22	\$0.09	\$45.33	\$51.59	(\$6.35)	\$0.09
2022/2023	\$63.72	\$63.54	\$0.09	\$0.08	\$55.46	\$64.77	(\$9.27)	(\$0.04)
2023/2024	\$32.05	\$31.93	\$0.10	\$0.02	\$24.58	\$32.01	(\$7.22)	(\$0.22)
2024/2025	\$40.86	\$40.68	\$0.09	\$0.09	\$37.14	\$40.73	(\$4.09)	\$0.50

Table 15 shows the day-ahead load-weighted average LMP components for PJM and for Pennsylvania load in the PENELEC Zone for the 2012/2013 through 2024/2025 planning period.

Table 15 PJM and Pennsylvania (PENELEC) day-ahead load-weighted average LMP components (Dollars per MWh): 2012/2013 through 2024/2025 planning period

Planning Period	PJM				Pennsylvania (PENELEC)			
	Day-Ahead LMP	Energy Component	Congestion Component	Loss Component	Day-Ahead LMP	Energy Component	Congestion Component	Loss Component
2012/2013	\$37.44	\$37.35	\$0.10	(\$0.00)	\$37.20	\$36.94	\$0.05	\$0.21
2013/2014	\$54.59	\$54.36	\$0.23	(\$0.00)	\$51.10	\$50.99	(\$0.37)	\$0.49
2014/2015	\$40.74	\$40.49	\$0.27	(\$0.02)	\$39.67	\$40.21	(\$0.32)	(\$0.22)
2015/2016	\$29.15	\$29.02	\$0.14	(\$0.01)	\$27.54	\$28.72	(\$1.26)	\$0.08
2016/2017	\$30.86	\$30.78	\$0.10	(\$0.02)	\$29.29	\$30.36	(\$0.97)	(\$0.10)
2017/2018	\$35.94	\$35.86	\$0.09	(\$0.01)	\$34.52	\$35.37	(\$0.82)	(\$0.04)
2018/2019	\$32.37	\$32.24	\$0.14	(\$0.01)	\$32.21	\$32.21	(\$0.20)	\$0.20
2019/2020	\$23.38	\$23.35	\$0.04	(\$0.01)	\$22.78	\$23.28	(\$0.44)	(\$0.06)
2020/2021	\$25.94	\$25.81	\$0.11	\$0.01	\$25.17	\$25.96	(\$0.66)	(\$0.12)
2021/2022	\$51.94	\$51.62	\$0.22	\$0.09	\$52.88	\$52.69	(\$0.06)	\$0.25
2022/2023	\$63.72	\$63.54	\$0.09	\$0.08	\$60.54	\$62.82	(\$2.19)	(\$0.09)
2023/2024	\$32.05	\$31.93	\$0.10	\$0.02	\$32.01	\$31.64	\$0.26	\$0.11
2024/2025	\$40.86	\$40.68	\$0.09	\$0.09	\$38.93	\$40.21	(\$1.80)	\$0.52

Table 16 shows the day-ahead load-weighted average LMP components for PJM and for Pennsylvania load in the PPL Zone for the 2012/2013 through 2024/2025 planning period.

Table 16 PJM and Pennsylvania (PPL) day-ahead load-weighted average LMP components (Dollars per MWh): 2012/2013 through 2024/2025 planning period

Planning Period	PJM				Pennsylvania (PPL)			
	Day-Ahead LMP	Energy Component	Congestion Component	Loss Component	Day-Ahead LMP	Energy Component	Congestion Component	Loss Component
2012/2013	\$37.44	\$37.35	\$0.10	(\$0.00)	\$38.15	\$37.16	\$0.38	\$0.61
2013/2014	\$54.59	\$54.36	\$0.23	(\$0.00)	\$61.78	\$55.03	\$5.95	\$0.79
2014/2015	\$40.74	\$40.49	\$0.27	(\$0.02)	\$42.07	\$40.58	\$1.49	(\$0.00)
2015/2016	\$29.15	\$29.02	\$0.14	(\$0.01)	\$24.60	\$28.84	(\$4.16)	(\$0.08)
2016/2017	\$30.86	\$30.78	\$0.10	(\$0.02)	\$28.27	\$30.65	(\$2.27)	(\$0.11)
2017/2018	\$35.94	\$35.86	\$0.09	(\$0.01)	\$34.59	\$35.96	(\$1.15)	(\$0.21)
2018/2019	\$32.37	\$32.24	\$0.14	(\$0.01)	\$29.28	\$32.05	(\$2.23)	(\$0.54)
2019/2020	\$23.38	\$23.35	\$0.04	(\$0.01)	\$20.38	\$23.16	(\$2.19)	(\$0.58)
2020/2021	\$25.94	\$25.81	\$0.11	\$0.01	\$22.85	\$25.74	(\$2.37)	(\$0.52)
2021/2022	\$51.94	\$51.62	\$0.22	\$0.09	\$49.39	\$51.63	(\$1.94)	(\$0.31)
2022/2023	\$63.72	\$63.54	\$0.09	\$0.08	\$59.12	\$62.53	(\$2.90)	(\$0.52)
2023/2024	\$32.05	\$31.93	\$0.10	\$0.02	\$26.19	\$31.71	(\$5.01)	(\$0.52)
2024/2025	\$40.86	\$40.68	\$0.09	\$0.09	\$36.13	\$40.85	(\$4.63)	(\$0.10)

Table 17 shows the real-time monthly load-weighted average CLMP components of LMP for PJM and for Pennsylvania for the 2012/2013 through 2024/2025 planning period.

Table 17 PJM and Pennsylvania real-time monthly load-weighted average CLMP component (Dollars per MWh): 2012/2013 through 2024/2025 planning period

PJM													
Planning Period	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
2012/2013	\$0.03	\$0.02	\$0.02	\$0.01	\$0.03	\$0.03	\$0.04	\$0.02	\$0.07	\$0.06	\$0.03	\$0.01	\$0.03
2013/2014	(\$0.01)	(\$0.33)	(\$0.06)	\$0.02	\$0.04	\$0.03	(\$0.00)	\$0.00	(\$0.05)	\$0.02	\$0.00	(\$0.02)	(\$0.03)
2014/2015	\$0.02	(\$0.02)	(\$0.00)	\$0.03	\$0.13	\$0.03	\$0.01	\$0.01	\$0.02	\$0.05	\$0.05	\$0.02	\$0.03
2015/2016	\$0.03	\$0.02	\$0.04	\$0.07	\$0.02	\$0.06	\$0.02	\$0.02	\$0.04	\$0.06	\$0.05	\$0.04	\$0.04
2016/2017	\$0.01	\$0.02	\$0.03	\$0.01	\$0.02	\$0.02	\$0.03	\$0.04	\$0.07	\$0.06	\$0.02	\$0.02	\$0.03
2017/2018	\$0.05	\$0.01	\$0.04	\$0.04	\$0.09	\$0.01	\$0.02	\$0.01	\$0.08	\$0.02	\$0.01	(\$0.01)	\$0.03
2018/2019	\$0.02	\$0.01	\$0.03	\$0.02	\$0.02	\$0.04	\$0.02	\$0.02	\$0.06	\$0.03	\$0.03	\$0.01	\$0.03
2019/2020	\$0.01	\$0.01	\$0.01	\$0.01	\$0.03	\$0.01	\$0.02	\$0.01	\$0.05	\$0.05	\$0.04	\$0.02	\$0.02
2020/2021	\$0.01	\$0.04	\$0.04	\$0.06	\$0.02	\$0.03	\$0.04	\$0.03	\$0.02	\$0.02	\$0.02	\$0.02	\$0.03
2021/2022	\$0.08	\$0.05	\$0.04	\$0.11	\$0.21	\$0.04	\$0.02	\$0.03	\$0.03	\$0.04	\$0.10	\$0.03	\$0.06
2022/2023	\$0.02	\$0.02	\$0.03	\$0.10	\$0.06	\$0.06	\$0.07	\$0.16	\$0.08	\$0.08	\$0.09	\$0.13	\$0.08
2023/2024	\$0.07	\$0.06	\$0.04	\$0.04	\$0.08	\$0.04	\$0.06	\$0.06	\$0.08	\$0.11	\$0.05	\$0.04	\$0.06
2024/2025	\$0.14	\$0.13	\$0.11	\$0.14	\$0.05	\$0.06	\$0.13	\$0.07	\$0.07	\$0.05	\$0.02	\$0.14	\$0.09
Pennsylvania													
Planning Period	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
2012/2013	(\$1.14)	(\$0.83)	(\$0.57)	(\$0.57)	(\$0.49)	\$0.12	\$0.43	\$0.31	\$0.13	\$0.20	\$1.64	\$0.11	(\$0.06)
2013/2014	\$7.31	\$2.06	\$0.58	(\$0.65)	(\$4.09)	\$1.08	\$1.49	\$0.61	(\$3.43)	\$0.37	\$0.25	\$0.41	\$0.71
2014/2015	\$0.56	\$10.96	(\$0.21)	(\$2.88)	\$0.02	(\$0.99)	\$0.36	(\$2.12)	(\$1.65)	(\$3.72)	\$0.78	(\$2.34)	\$0.07
2015/2016	(\$1.97)	(\$2.67)	(\$3.03)	(\$4.37)	(\$1.09)	(\$5.52)	(\$3.51)	(\$1.98)	(\$1.68)	(\$3.10)	(\$4.08)	(\$4.02)	(\$3.06)
2016/2017	(\$0.52)	(\$1.36)	\$0.06	\$0.28	(\$0.41)	(\$2.10)	(\$0.86)	(\$1.81)	(\$5.09)	(\$5.35)	(\$1.77)	(\$0.67)	(\$1.60)
2017/2018	\$6.29	(\$0.26)	(\$4.40)	(\$1.17)	(\$6.02)	(\$1.26)	(\$2.09)	(\$0.82)	(\$2.40)	(\$3.18)	(\$0.67)	\$3.52	(\$0.86)
2018/2019	\$0.23	(\$0.76)	(\$0.98)	(\$0.69)	(\$1.54)	(\$2.34)	(\$0.64)	(\$0.68)	(\$1.31)	(\$1.45)	(\$0.81)	(\$0.37)	(\$0.92)
2019/2020	(\$0.66)	(\$0.41)	(\$0.49)	(\$0.30)	(\$0.83)	(\$1.36)	(\$0.95)	(\$1.33)	(\$3.08)	(\$3.18)	(\$1.82)	\$0.19	(\$1.17)
2020/2021	(\$1.93)	(\$2.63)	(\$3.36)	(\$3.73)	(\$2.25)	(\$0.86)	(\$0.01)	(\$0.96)	(\$2.96)	(\$3.05)	(\$0.64)	(\$0.23)	(\$1.80)
2021/2022	\$2.63	(\$1.94)	(\$1.43)	(\$3.87)	(\$12.75)	(\$1.90)	(\$1.50)	(\$0.97)	(\$3.15)	(\$3.90)	(\$3.60)	(\$1.62)	(\$2.62)
2022/2023	(\$1.33)	(\$1.23)	(\$2.04)	(\$3.49)	(\$3.96)	(\$9.08)	(\$3.93)	(\$0.30)	(\$8.37)	(\$3.55)	(\$5.03)	(\$4.22)	(\$3.81)
2023/2024	(\$2.51)	(\$2.60)	(\$0.82)	(\$0.26)	(\$6.39)	(\$3.15)	(\$4.04)	(\$6.86)	(\$4.79)	(\$4.96)	(\$0.90)	(\$2.32)	(\$3.34)
2024/2025	(\$3.37)	(\$0.81)	(\$2.74)	(\$5.92)	(\$4.99)	(\$3.35)	(\$2.63)	(\$3.55)	(\$5.12)	(\$4.09)	\$0.21	(\$2.19)	(\$3.16)

Table 18 shows the real-time monthly load-weighted average CLMP components of LMP for PJM and for Pennsylvania (APS) for the 2012/2013 through 2024/2025 planning period.

Table 18 PJM and Pennsylvania (APS) real-time monthly load-weighted average CLMP component (Dollars per MWh): 2012/2013 through 2024/2025 planning period

Planning Period	PJM												
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
2012/2013	\$0.03	\$0.02	\$0.02	\$0.01	\$0.03	\$0.03	\$0.04	\$0.02	\$0.07	\$0.06	\$0.03	\$0.01	\$0.03
2013/2014	(\$0.01)	(\$0.33)	(\$0.06)	\$0.02	\$0.04	\$0.03	(\$0.00)	\$0.00	(\$0.05)	\$0.02	\$0.00	(\$0.02)	(\$0.03)
2014/2015	\$0.02	(\$0.02)	(\$0.00)	\$0.03	\$0.13	\$0.03	\$0.01	\$0.01	\$0.02	\$0.05	\$0.05	\$0.02	\$0.03
2015/2016	\$0.03	\$0.02	\$0.04	\$0.07	\$0.02	\$0.06	\$0.02	\$0.02	\$0.04	\$0.06	\$0.05	\$0.04	\$0.04
2016/2017	\$0.01	\$0.02	\$0.03	\$0.01	\$0.02	\$0.02	\$0.03	\$0.04	\$0.07	\$0.06	\$0.02	\$0.02	\$0.03
2017/2018	\$0.05	\$0.01	\$0.04	\$0.04	\$0.09	\$0.01	\$0.02	\$0.01	\$0.08	\$0.02	\$0.01	(\$0.01)	\$0.03
2018/2019	\$0.02	\$0.01	\$0.03	\$0.02	\$0.02	\$0.04	\$0.02	\$0.02	\$0.06	\$0.03	\$0.03	\$0.01	\$0.03
2019/2020	\$0.01	\$0.01	\$0.01	\$0.01	\$0.03	\$0.01	\$0.02	\$0.01	\$0.05	\$0.05	\$0.04	\$0.02	\$0.02
2020/2021	\$0.01	\$0.04	\$0.04	\$0.06	\$0.02	\$0.03	\$0.04	\$0.03	\$0.02	\$0.02	\$0.02	\$0.02	\$0.03
2021/2022	\$0.08	\$0.05	\$0.04	\$0.11	\$0.21	\$0.04	\$0.02	\$0.03	\$0.03	\$0.04	\$0.10	\$0.03	\$0.06
2022/2023	\$0.02	\$0.02	\$0.03	\$0.10	\$0.06	\$0.06	\$0.07	\$0.16	\$0.08	\$0.08	\$0.09	\$0.13	\$0.08
2023/2024	\$0.07	\$0.06	\$0.04	\$0.04	\$0.08	\$0.04	\$0.06	\$0.06	\$0.08	\$0.11	\$0.05	\$0.04	\$0.06
2024/2025	\$0.14	\$0.13	\$0.11	\$0.14	\$0.05	\$0.06	\$0.13	\$0.07	\$0.07	\$0.05	\$0.02	\$0.14	\$0.09
Planning Period	Pennsylvania (APS)												
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
2012/2013	(\$2.74)	(\$0.99)	(\$0.20)	(\$0.36)	(\$1.22)	(\$0.66)	(\$0.95)	(\$1.28)	(\$0.53)	\$0.78	(\$1.23)	(\$0.81)	(\$0.89)
2013/2014	(\$25.39)	\$1.99	(\$6.19)	(\$0.23)	\$0.33	(\$0.32)	(\$1.04)	(\$0.54)	(\$5.11)	(\$0.23)	(\$0.44)	(\$0.86)	(\$3.61)
2014/2015	(\$0.72)	\$3.73	\$1.86	\$0.28	\$0.23	(\$0.42)	(\$0.86)	(\$0.25)	(\$0.53)	(\$0.84)	(\$0.74)	(\$0.35)	\$0.17
2015/2016	(\$1.18)	(\$0.88)	\$0.19	\$0.11	(\$0.12)	(\$0.59)	\$1.31	\$0.10	(\$0.02)	(\$0.12)	(\$0.64)	(\$0.52)	(\$0.21)
2016/2017	(\$1.01)	(\$0.16)	\$0.15	\$0.11	(\$0.18)	(\$0.66)	(\$0.33)	\$0.77	(\$0.83)	(\$0.48)	(\$0.02)	(\$0.37)	(\$0.24)
2017/2018	\$1.52	\$0.48	\$0.78	\$1.31	(\$1.65)	(\$0.57)	(\$0.92)	\$0.97	\$0.72	(\$0.03)	\$0.96	(\$1.62)	\$0.17
2018/2019	(\$1.12)	\$0.40	(\$0.03)	(\$0.28)	\$0.49	(\$0.25)	\$0.03	(\$0.08)	\$5.46	(\$0.78)	\$0.05	\$0.18	\$0.32
2019/2020	(\$0.31)	\$0.15	\$0.29	\$0.49	\$4.60	(\$0.10)	(\$0.46)	\$0.49	\$0.62	\$1.16	\$0.77	(\$0.67)	\$0.51
2020/2021	(\$0.74)	(\$1.98)	(\$1.36)	(\$1.24)	(\$0.17)	\$1.20	\$8.48	(\$0.12)	(\$0.31)	(\$0.43)	(\$0.11)	(\$1.29)	\$0.26
2021/2022	(\$10.85)	(\$1.23)	\$0.74	\$1.65	(\$8.17)	\$1.56	(\$0.49)	(\$0.69)	(\$0.86)	\$1.23	\$4.21	(\$0.43)	(\$1.27)
2022/2023	\$1.33	\$0.47	\$0.13	(\$0.92)	\$1.28	(\$0.06)	(\$2.78)	(\$11.07)	(\$0.59)	\$0.19	(\$1.27)	(\$0.53)	(\$1.26)
2023/2024	(\$2.15)	\$0.31	\$1.03	\$1.30	(\$1.83)	\$0.32	(\$0.88)	(\$1.28)	\$0.54	\$2.26	\$3.34	\$0.86	\$0.25
2024/2025	(\$0.50)	(\$0.04)	\$1.61	(\$1.28)	(\$3.68)	(\$0.41)	(\$2.39)	(\$2.67)	(\$1.07)	\$0.00	\$1.36	(\$0.88)	(\$0.85)

Table 19 shows the real-time monthly load-weighted average CLMP components of LMP for PJM and for Pennsylvania (ATSI) for the 2012/2013 through 2024/2025 planning period.

Table 19 PJM and Pennsylvania (ATSI) real-time monthly load-weighted average CLMP component (Dollars per MWh): 2012/2013 through 2024/2025 planning period

Planning Period	PJM												
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
2012/2013	\$0.03	\$0.02	\$0.02	\$0.01	\$0.03	\$0.03	\$0.04	\$0.02	\$0.07	\$0.06	\$0.03	\$0.01	\$0.03
2013/2014	(\$0.01)	(\$0.33)	(\$0.06)	\$0.02	\$0.04	\$0.03	(\$0.00)	\$0.00	(\$0.05)	\$0.02	\$0.00	(\$0.02)	(\$0.03)
2014/2015	\$0.02	(\$0.02)	(\$0.00)	\$0.03	\$0.13	\$0.03	\$0.01	\$0.01	\$0.02	\$0.05	\$0.05	\$0.02	\$0.03
2015/2016	\$0.03	\$0.02	\$0.04	\$0.07	\$0.02	\$0.06	\$0.02	\$0.02	\$0.04	\$0.06	\$0.05	\$0.04	\$0.04
2016/2017	\$0.01	\$0.02	\$0.03	\$0.01	\$0.02	\$0.02	\$0.03	\$0.04	\$0.07	\$0.06	\$0.02	\$0.02	\$0.03
2017/2018	\$0.05	\$0.01	\$0.04	\$0.04	\$0.09	\$0.01	\$0.02	\$0.01	\$0.08	\$0.02	\$0.01	(\$0.01)	\$0.03
2018/2019	\$0.02	\$0.01	\$0.03	\$0.02	\$0.02	\$0.04	\$0.02	\$0.02	\$0.06	\$0.03	\$0.03	\$0.01	\$0.03
2019/2020	\$0.01	\$0.01	\$0.01	\$0.01	\$0.03	\$0.01	\$0.02	\$0.01	\$0.05	\$0.05	\$0.04	\$0.02	\$0.02
2020/2021	\$0.01	\$0.04	\$0.04	\$0.06	\$0.02	\$0.03	\$0.04	\$0.03	\$0.02	\$0.02	\$0.02	\$0.02	\$0.03
2021/2022	\$0.08	\$0.05	\$0.04	\$0.11	\$0.21	\$0.04	\$0.02	\$0.03	\$0.03	\$0.04	\$0.10	\$0.03	\$0.06
2022/2023	\$0.02	\$0.02	\$0.03	\$0.10	\$0.06	\$0.06	\$0.07	\$0.16	\$0.08	\$0.08	\$0.09	\$0.13	\$0.08
2023/2024	\$0.07	\$0.06	\$0.04	\$0.04	\$0.08	\$0.04	\$0.06	\$0.06	\$0.08	\$0.11	\$0.05	\$0.04	\$0.06
2024/2025	\$0.14	\$0.13	\$0.11	\$0.14	\$0.05	\$0.06	\$0.13	\$0.07	\$0.07	\$0.05	\$0.02	\$0.14	\$0.09
Planning Period	Pennsylvania (ATSI)												
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
2012/2013	(\$4.17)	(\$1.54)	(\$0.99)	(\$0.60)	(\$1.69)	(\$0.73)	(\$1.68)	(\$1.98)	(\$0.32)	\$0.95	(\$2.24)	(\$1.09)	(\$1.40)
2013/2014	(\$38.85)	(\$5.93)	(\$11.48)	(\$0.40)	\$0.63	(\$0.82)	\$9.35	(\$0.90)	\$44.98	(\$0.39)	(\$0.91)	(\$1.93)	(\$2.07)
2014/2015	(\$3.53)	(\$16.63)	(\$1.88)	\$0.54	(\$0.23)	(\$0.65)	(\$1.75)	\$0.71	(\$0.55)	(\$0.77)	(\$1.39)	\$0.14	(\$2.58)
2015/2016	(\$1.78)	(\$1.32)	\$0.76	\$0.17	(\$0.50)	\$0.11	\$0.04	(\$0.34)	(\$0.13)	\$0.27	(\$0.44)	\$0.25	(\$0.26)
2016/2017	(\$1.11)	(\$0.05)	\$0.80	\$0.12	\$1.00	\$0.92	(\$0.61)	\$3.28	\$1.46	(\$0.18)	(\$0.03)	(\$0.23)	\$0.49
2017/2018	(\$1.73)	\$0.03	\$1.13	\$2.54	\$15.96	(\$0.26)	\$1.89	\$1.19	\$2.31	\$0.75	\$0.18	(\$4.18)	\$1.57
2018/2019	(\$1.13)	\$0.32	\$0.06	\$0.26	\$0.64	\$3.73	\$1.14	\$2.10	\$9.02	\$2.21	\$0.94	(\$0.18)	\$1.53
2019/2020	(\$0.09)	\$0.36	\$0.47	\$0.81	\$1.92	\$0.08	(\$0.23)	\$0.42	\$1.74	\$2.37	\$1.04	(\$0.42)	\$0.67
2020/2021	(\$0.76)	(\$2.87)	(\$1.18)	(\$1.37)	(\$1.16)	(\$0.10)	\$3.20	(\$0.59)	\$0.35	(\$0.13)	(\$0.07)	(\$1.40)	(\$0.47)
2021/2022	(\$16.40)	(\$2.14)	\$0.97	\$1.84	(\$5.14)	\$0.02	\$0.98	(\$1.09)	(\$0.83)	\$1.34	\$2.18	(\$0.32)	(\$1.77)
2022/2023	\$0.46	(\$0.35)	\$0.34	(\$0.14)	\$1.37	\$2.69	(\$2.74)	(\$10.85)	(\$0.66)	\$0.45	(\$0.87)	(\$3.86)	(\$1.29)
2023/2024	(\$3.84)	\$0.84	\$0.12	\$0.94	(\$5.06)	\$0.53	(\$0.68)	(\$1.05)	\$1.02	\$3.44	\$0.67	\$1.61	(\$0.21)
2024/2025	(\$7.88)	(\$0.00)	\$1.21	(\$0.10)	(\$4.00)	(\$1.50)	(\$1.63)	(\$2.08)	(\$0.89)	\$0.32	\$1.65	(\$1.06)	(\$1.46)

Table 20 shows the real-time monthly load-weighted average CLMP components of LMP for PJM and for Pennsylvania (DUQ) for the 2012/2013 through 2024/2025 planning period.

Table 20 PJM and Pennsylvania (DUQ) real-time monthly load-weighted average CLMP component (Dollars per MWh): 2012/2013 through 2024/2025 planning period

PJM													
Planning Period	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
2012/2013	\$0.03	\$0.02	\$0.02	\$0.01	\$0.03	\$0.03	\$0.04	\$0.02	\$0.07	\$0.06	\$0.03	\$0.01	\$0.03
2013/2014	(\$0.01)	(\$0.33)	(\$0.06)	\$0.02	\$0.04	\$0.03	(\$0.00)	\$0.00	(\$0.05)	\$0.02	\$0.00	(\$0.02)	(\$0.03)
2014/2015	\$0.02	(\$0.02)	(\$0.00)	\$0.03	\$0.13	\$0.03	\$0.01	\$0.01	\$0.02	\$0.05	\$0.05	\$0.02	\$0.03
2015/2016	\$0.03	\$0.02	\$0.04	\$0.07	\$0.02	\$0.06	\$0.02	\$0.02	\$0.04	\$0.06	\$0.05	\$0.04	\$0.04
2016/2017	\$0.01	\$0.02	\$0.03	\$0.01	\$0.02	\$0.02	\$0.03	\$0.04	\$0.07	\$0.06	\$0.02	\$0.02	\$0.03
2017/2018	\$0.05	\$0.01	\$0.04	\$0.04	\$0.09	\$0.01	\$0.02	\$0.01	\$0.08	\$0.02	\$0.01	(\$0.01)	\$0.03
2018/2019	\$0.02	\$0.01	\$0.03	\$0.02	\$0.02	\$0.04	\$0.02	\$0.02	\$0.06	\$0.03	\$0.03	\$0.01	\$0.03
2019/2020	\$0.01	\$0.01	\$0.01	\$0.01	\$0.03	\$0.01	\$0.02	\$0.01	\$0.05	\$0.05	\$0.04	\$0.02	\$0.02
2020/2021	\$0.01	\$0.04	\$0.04	\$0.06	\$0.02	\$0.03	\$0.04	\$0.03	\$0.02	\$0.02	\$0.02	\$0.02	\$0.03
2021/2022	\$0.08	\$0.05	\$0.04	\$0.11	\$0.21	\$0.04	\$0.02	\$0.03	\$0.03	\$0.04	\$0.10	\$0.03	\$0.06
2022/2023	\$0.02	\$0.02	\$0.03	\$0.10	\$0.06	\$0.06	\$0.07	\$0.16	\$0.08	\$0.08	\$0.09	\$0.13	\$0.08
2023/2024	\$0.07	\$0.06	\$0.04	\$0.04	\$0.08	\$0.04	\$0.06	\$0.06	\$0.08	\$0.11	\$0.05	\$0.04	\$0.06
2024/2025	\$0.14	\$0.13	\$0.11	\$0.14	\$0.05	\$0.06	\$0.13	\$0.07	\$0.07	\$0.05	\$0.02	\$0.14	\$0.09
Pennsylvania (DUQ)													
Planning Period	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
2012/2013	(\$4.20)	(\$1.13)	(\$0.90)	(\$0.71)	(\$1.85)	(\$0.27)	(\$1.09)	(\$2.04)	(\$0.35)	\$1.02	(\$2.21)	(\$1.17)	(\$1.26)
2013/2014	(\$38.71)	(\$13.18)	(\$11.90)	(\$1.49)	\$0.48	(\$0.77)	(\$0.97)	(\$1.02)	(\$5.23)	(\$0.37)	(\$1.01)	(\$1.17)	(\$6.59)
2014/2015	(\$0.64)	(\$31.19)	(\$3.18)	\$0.72	\$0.78	\$0.51	(\$2.52)	(\$0.48)	(\$0.80)	(\$0.17)	\$0.81	(\$0.14)	(\$3.12)
2015/2016	(\$1.59)	(\$1.15)	\$0.84	\$0.44	(\$0.42)	\$0.47	\$0.53	(\$0.10)	\$0.13	\$0.46	(\$0.18)	\$0.19	(\$0.04)
2016/2017	(\$1.27)	\$0.00	\$0.65	\$0.09	\$0.80	\$0.11	(\$0.58)	\$3.23	\$1.73	\$0.08	\$0.40	(\$0.24)	\$0.47
2017/2018	(\$7.49)	\$0.10	\$1.36	\$5.32	\$14.69	\$0.07	\$0.39	\$1.48	\$1.56	\$0.50	\$0.10	(\$4.67)	\$1.02
2018/2019	(\$1.08)	\$0.30	\$0.14	\$0.07	\$0.80	\$1.85	\$0.49	\$0.60	\$5.78	\$2.72	\$1.98	(\$0.28)	\$1.13
2019/2020	(\$0.01)	\$0.62	\$0.85	\$1.23	\$3.02	\$0.11	\$0.06	\$0.72	\$2.84	\$2.34	\$1.05	(\$0.35)	\$0.99
2020/2021	(\$0.59)	(\$2.36)	(\$0.96)	(\$0.68)	(\$0.49)	\$0.92	\$5.82	\$0.31	\$0.69	\$0.42	\$0.13	(\$1.13)	\$0.35
2021/2022	(\$16.45)	(\$1.34)	\$0.94	\$2.10	(\$5.09)	\$1.81	(\$0.16)	(\$0.68)	(\$0.45)	\$1.80	\$2.93	(\$0.63)	(\$1.42)
2022/2023	\$0.63	(\$0.31)	\$0.43	(\$0.20)	\$1.61	\$2.95	(\$2.07)	(\$11.43)	(\$0.02)	\$0.82	(\$0.71)	(\$3.30)	(\$1.17)
2023/2024	(\$3.94)	\$0.96	\$0.45	\$1.14	\$8.86	\$0.73	(\$0.44)	(\$0.62)	\$1.16	\$3.35	\$3.91	\$0.47	\$1.22
2024/2025	(\$7.45)	(\$0.20)	\$1.10	\$0.14	(\$4.20)	(\$0.58)	(\$1.61)	(\$2.17)	(\$0.28)	\$0.76	\$1.61	(\$0.87)	(\$1.28)

Table 21 shows the real-time monthly load-weighted average CLMP components of LMP for PJM and for Pennsylvania (MET-ED) for the 2012/2013 through 2024/2025 planning period.

Table 21 PJM and Pennsylvania (MET-ED) real-time monthly load-weighted average CLMP component (Dollars per MWh): 2012/2013 through 2024/2025 planning period

PJM													
Planning Period	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
2012/2013	\$0.03	\$0.02	\$0.02	\$0.01	\$0.03	\$0.03	\$0.04	\$0.02	\$0.07	\$0.06	\$0.03	\$0.01	\$0.03
2013/2014	(\$0.01)	(\$0.33)	(\$0.06)	\$0.02	\$0.04	\$0.03	(\$0.00)	\$0.00	(\$0.05)	\$0.02	\$0.00	(\$0.02)	(\$0.03)
2014/2015	\$0.02	(\$0.02)	(\$0.00)	\$0.03	\$0.13	\$0.03	\$0.01	\$0.01	\$0.02	\$0.05	\$0.05	\$0.02	\$0.03
2015/2016	\$0.03	\$0.02	\$0.04	\$0.07	\$0.02	\$0.06	\$0.02	\$0.02	\$0.04	\$0.06	\$0.05	\$0.04	\$0.04
2016/2017	\$0.01	\$0.02	\$0.03	\$0.01	\$0.02	\$0.02	\$0.03	\$0.04	\$0.07	\$0.06	\$0.02	\$0.02	\$0.03
2017/2018	\$0.05	\$0.01	\$0.04	\$0.04	\$0.09	\$0.01	\$0.02	\$0.01	\$0.08	\$0.02	\$0.01	(\$0.01)	\$0.03
2018/2019	\$0.02	\$0.01	\$0.03	\$0.02	\$0.02	\$0.04	\$0.02	\$0.02	\$0.06	\$0.03	\$0.03	\$0.01	\$0.03
2019/2020	\$0.01	\$0.01	\$0.01	\$0.01	\$0.03	\$0.01	\$0.02	\$0.01	\$0.05	\$0.05	\$0.04	\$0.02	\$0.02
2020/2021	\$0.01	\$0.04	\$0.04	\$0.06	\$0.02	\$0.03	\$0.04	\$0.03	\$0.02	\$0.02	\$0.02	\$0.02	\$0.03
2021/2022	\$0.08	\$0.05	\$0.04	\$0.11	\$0.21	\$0.04	\$0.02	\$0.03	\$0.03	\$0.04	\$0.10	\$0.03	\$0.06
2022/2023	\$0.02	\$0.02	\$0.03	\$0.10	\$0.06	\$0.06	\$0.07	\$0.16	\$0.08	\$0.08	\$0.09	\$0.13	\$0.08
2023/2024	\$0.07	\$0.06	\$0.04	\$0.04	\$0.08	\$0.04	\$0.06	\$0.06	\$0.08	\$0.11	\$0.05	\$0.04	\$0.06
2024/2025	\$0.14	\$0.13	\$0.11	\$0.14	\$0.05	\$0.06	\$0.13	\$0.07	\$0.07	\$0.05	\$0.02	\$0.14	\$0.09
Pennsylvania (MET-ED)													
Planning Period	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
2012/2013	(\$0.17)	\$0.07	(\$0.07)	(\$0.62)	(\$0.18)	\$0.81	\$0.78	\$1.37	\$0.12	\$0.35	\$3.50	\$1.49	\$0.64
2013/2014	\$25.00	\$5.09	\$5.35	(\$1.21)	(\$7.86)	\$2.01	\$2.38	\$1.61	(\$3.72)	(\$0.59)	\$0.85	\$1.45	\$3.15
2014/2015	\$1.28	\$19.48	\$0.13	(\$4.69)	\$3.94	(\$1.71)	\$0.31	(\$3.31)	(\$2.73)	(\$5.31)	\$1.26	(\$3.89)	\$0.67
2015/2016	(\$2.18)	(\$3.70)	(\$4.51)	(\$6.72)	(\$1.71)	(\$8.59)	(\$6.06)	(\$2.86)	(\$2.30)	(\$4.65)	(\$5.65)	(\$6.25)	(\$4.57)
2016/2017	\$0.24	(\$2.15)	\$0.42	\$1.81	(\$0.27)	(\$2.53)	\$0.08	(\$2.82)	(\$6.87)	(\$7.33)	(\$2.55)	(\$0.34)	(\$1.82)
2017/2018	\$13.65	\$0.09	(\$7.35)	(\$3.79)	(\$13.23)	(\$0.36)	(\$0.95)	(\$1.31)	\$1.40	(\$6.03)	(\$0.07)	\$5.64	(\$0.67)
2018/2019	\$2.08	\$0.09	(\$0.29)	(\$1.12)	(\$0.83)	(\$3.85)	(\$0.80)	(\$0.16)	(\$4.52)	(\$1.29)	\$0.10	\$0.96	(\$0.74)
2019/2020	\$0.29	(\$0.06)	(\$0.93)	(\$0.66)	(\$2.46)	(\$1.30)	(\$0.56)	(\$1.49)	(\$2.21)	(\$3.13)	(\$1.76)	\$0.68	(\$1.07)
2020/2021	(\$1.69)	(\$2.41)	(\$3.00)	(\$2.41)	(\$0.93)	(\$0.18)	(\$2.23)	\$6.10	(\$3.85)	(\$4.91)	\$1.32	\$0.98	(\$0.98)
2021/2022	\$16.51	(\$1.06)	(\$1.27)	(\$1.20)	(\$8.49)	(\$1.62)	\$0.63	\$6.11	\$1.64	\$1.97	\$4.48	\$1.67	\$1.96
2022/2023	\$1.57	(\$1.17)	(\$1.92)	(\$4.25)	(\$0.89)	(\$5.04)	\$3.31	\$22.12	(\$4.12)	(\$0.35)	(\$2.47)	\$2.63	\$1.32
2023/2024	(\$0.30)	(\$1.80)	(\$0.32)	\$0.39	(\$9.11)	(\$3.11)	(\$5.37)	(\$8.42)	(\$6.98)	(\$2.22)	(\$1.26)	(\$2.44)	(\$3.47)
2024/2025	(\$2.77)	(\$2.10)	\$0.68	(\$7.49)	(\$0.07)	(\$4.92)	(\$5.96)	(\$4.00)	(\$5.64)	(\$6.80)	\$0.10	(\$1.95)	(\$3.43)

Table 22 shows the real-time monthly load-weighted average CLMP components of LMP for PJM and for Pennsylvania (PECO) for the 2012/2013 through 2024/2025 planning period.

Table 22 PJM and Pennsylvania (PECO) real-time monthly load-weighted average CLMP component (Dollars per MWh): 2012/2013 through 2024/2025 planning period

Planning Period	PJM												
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
2012/2013	\$0.03	\$0.02	\$0.02	\$0.01	\$0.03	\$0.03	\$0.04	\$0.02	\$0.07	\$0.06	\$0.03	\$0.01	\$0.03
2013/2014	(\$0.01)	(\$0.33)	(\$0.06)	\$0.02	\$0.04	\$0.03	(\$0.00)	\$0.00	(\$0.05)	\$0.02	\$0.00	(\$0.02)	(\$0.03)
2014/2015	\$0.02	(\$0.02)	(\$0.00)	\$0.03	\$0.13	\$0.03	\$0.01	\$0.01	\$0.02	\$0.05	\$0.05	\$0.02	\$0.03
2015/2016	\$0.03	\$0.02	\$0.04	\$0.07	\$0.02	\$0.06	\$0.02	\$0.02	\$0.04	\$0.06	\$0.05	\$0.04	\$0.04
2016/2017	\$0.01	\$0.02	\$0.03	\$0.01	\$0.02	\$0.02	\$0.03	\$0.04	\$0.07	\$0.06	\$0.02	\$0.02	\$0.03
2017/2018	\$0.05	\$0.01	\$0.04	\$0.04	\$0.09	\$0.01	\$0.02	\$0.01	\$0.08	\$0.02	\$0.01	(\$0.01)	\$0.03
2018/2019	\$0.02	\$0.01	\$0.03	\$0.02	\$0.02	\$0.04	\$0.02	\$0.02	\$0.06	\$0.03	\$0.03	\$0.01	\$0.03
2019/2020	\$0.01	\$0.01	\$0.01	\$0.01	\$0.03	\$0.01	\$0.02	\$0.01	\$0.05	\$0.05	\$0.04	\$0.02	\$0.02
2020/2021	\$0.01	\$0.04	\$0.04	\$0.06	\$0.02	\$0.03	\$0.04	\$0.03	\$0.02	\$0.02	\$0.02	\$0.02	\$0.03
2021/2022	\$0.08	\$0.05	\$0.04	\$0.11	\$0.21	\$0.04	\$0.02	\$0.03	\$0.03	\$0.04	\$0.10	\$0.03	\$0.06
2022/2023	\$0.02	\$0.02	\$0.03	\$0.10	\$0.06	\$0.06	\$0.07	\$0.16	\$0.08	\$0.08	\$0.09	\$0.13	\$0.08
2023/2024	\$0.07	\$0.06	\$0.04	\$0.04	\$0.08	\$0.04	\$0.06	\$0.06	\$0.08	\$0.11	\$0.05	\$0.04	\$0.06
2024/2025	\$0.14	\$0.13	\$0.11	\$0.14	\$0.05	\$0.06	\$0.13	\$0.07	\$0.07	\$0.05	\$0.02	\$0.14	\$0.09

Planning Period	Pennsylvania (PECO)												
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
2012/2013	(\$1.38)	(\$1.68)	(\$0.54)	(\$0.93)	(\$0.27)	\$0.68	\$3.36	\$1.93	\$0.79	(\$0.37)	\$3.31	\$0.36	\$0.54
2013/2014	\$25.64	\$3.73	\$6.07	(\$0.36)	(\$7.06)	\$1.96	\$1.47	\$1.21	(\$5.34)	\$2.53	\$0.61	\$0.26	\$3.01
2014/2015	\$1.26	\$19.61	(\$0.78)	(\$4.81)	(\$2.02)	(\$1.42)	\$1.95	(\$3.26)	(\$1.71)	(\$5.32)	\$1.54	(\$3.51)	\$0.38
2015/2016	(\$2.48)	(\$3.55)	(\$5.30)	(\$7.15)	(\$1.37)	(\$8.03)	(\$5.66)	(\$3.02)	(\$2.35)	(\$4.91)	(\$6.03)	(\$5.91)	(\$4.60)
2016/2017	(\$0.57)	(\$2.26)	(\$0.41)	(\$0.02)	(\$0.38)	(\$3.39)	(\$0.10)	(\$3.52)	(\$8.15)	(\$8.52)	(\$2.98)	(\$1.00)	(\$2.57)
2017/2018	\$10.98	(\$0.83)	(\$6.27)	(\$2.32)	(\$11.08)	(\$2.49)	(\$2.71)	(\$1.67)	(\$7.25)	(\$4.55)	(\$2.06)	\$7.19	(\$1.64)
2018/2019	\$3.10	(\$1.74)	(\$1.59)	(\$0.45)	(\$3.58)	(\$4.33)	(\$1.10)	(\$1.80)	(\$5.26)	(\$3.06)	(\$1.94)	(\$1.04)	(\$1.85)
2019/2020	(\$0.44)	(\$0.66)	(\$0.94)	(\$0.85)	(\$3.25)	(\$2.11)	(\$0.57)	(\$2.81)	(\$7.62)	(\$7.77)	(\$3.82)	(\$0.95)	(\$2.56)
2020/2021	(\$3.12)	(\$3.63)	(\$5.00)	(\$6.44)	(\$5.03)	(\$2.50)	(\$2.51)	(\$4.44)	(\$4.88)	(\$4.38)	(\$2.27)	\$0.26	(\$3.57)
2021/2022	\$12.30	(\$2.81)	(\$4.00)	(\$11.61)	(\$21.30)	(\$3.49)	(\$2.83)	(\$3.98)	(\$6.86)	(\$12.94)	(\$16.74)	(\$4.40)	(\$5.90)
2022/2023	(\$4.36)	(\$2.57)	(\$4.58)	(\$5.61)	(\$12.16)	(\$23.50)	(\$8.61)	(\$2.88)	(\$19.08)	(\$10.42)	(\$11.09)	(\$12.28)	(\$9.69)
2023/2024	(\$3.25)	(\$6.15)	(\$2.29)	(\$1.86)	(\$11.68)	(\$6.76)	(\$5.75)	(\$10.61)	(\$7.90)	(\$15.50)	(\$6.46)	(\$6.47)	(\$7.02)
2024/2025	(\$3.22)	(\$1.41)	(\$8.59)	(\$10.33)	(\$7.66)	(\$3.92)	\$0.26	(\$3.77)	(\$8.94)	(\$6.21)	(\$0.82)	(\$3.26)	(\$4.51)

Table 23 shows the real-time monthly load-weighted average CLMP components of LMP for PJM and for Pennsylvania (PENELEC) for the 2012/2013 through 2024/2025 planning period.

Table 23 PJM and Pennsylvania (PENELEC) real-time monthly load-weighted average CLMP component (Dollars per MWh): 2012/2013 through 2024/2025 planning period

PJM													
Planning Period	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
2012/2013	\$0.03	\$0.02	\$0.02	\$0.01	\$0.03	\$0.03	\$0.04	\$0.02	\$0.07	\$0.06	\$0.03	\$0.01	\$0.03
2013/2014	(\$0.01)	(\$0.33)	(\$0.06)	\$0.02	\$0.04	\$0.03	(\$0.00)	\$0.00	(\$0.05)	\$0.02	\$0.00	(\$0.02)	(\$0.03)
2014/2015	\$0.02	(\$0.02)	(\$0.00)	\$0.03	\$0.13	\$0.03	\$0.01	\$0.01	\$0.02	\$0.05	\$0.05	\$0.02	\$0.03
2015/2016	\$0.03	\$0.02	\$0.04	\$0.07	\$0.02	\$0.06	\$0.02	\$0.02	\$0.04	\$0.06	\$0.05	\$0.04	\$0.04
2016/2017	\$0.01	\$0.02	\$0.03	\$0.01	\$0.02	\$0.02	\$0.03	\$0.04	\$0.07	\$0.06	\$0.02	\$0.02	\$0.03
2017/2018	\$0.05	\$0.01	\$0.04	\$0.04	\$0.09	\$0.01	\$0.02	\$0.01	\$0.08	\$0.02	\$0.01	(\$0.01)	\$0.03
2018/2019	\$0.02	\$0.01	\$0.03	\$0.02	\$0.02	\$0.04	\$0.02	\$0.02	\$0.06	\$0.03	\$0.03	\$0.01	\$0.03
2019/2020	\$0.01	\$0.01	\$0.01	\$0.01	\$0.03	\$0.01	\$0.02	\$0.01	\$0.05	\$0.05	\$0.04	\$0.02	\$0.02
2020/2021	\$0.01	\$0.04	\$0.04	\$0.06	\$0.02	\$0.03	\$0.04	\$0.03	\$0.02	\$0.02	\$0.02	\$0.02	\$0.03
2021/2022	\$0.08	\$0.05	\$0.04	\$0.11	\$0.21	\$0.04	\$0.02	\$0.03	\$0.03	\$0.04	\$0.10	\$0.03	\$0.06
2022/2023	\$0.02	\$0.02	\$0.03	\$0.10	\$0.06	\$0.06	\$0.07	\$0.16	\$0.08	\$0.08	\$0.09	\$0.13	\$0.08
2023/2024	\$0.07	\$0.06	\$0.04	\$0.04	\$0.08	\$0.04	\$0.06	\$0.06	\$0.08	\$0.11	\$0.05	\$0.04	\$0.06
2024/2025	\$0.14	\$0.13	\$0.11	\$0.14	\$0.05	\$0.06	\$0.13	\$0.07	\$0.07	\$0.05	\$0.02	\$0.14	\$0.09
Pennsylvania (PENELEC)													
Planning Period	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
2012/2013	\$0.89	\$0.58	(\$0.59)	(\$0.29)	(\$0.18)	(\$0.37)	(\$0.67)	(\$0.63)	\$0.27	\$0.83	\$0.13	(\$0.03)	(\$0.01)
2013/2014	(\$13.26)	\$3.27	(\$2.67)	\$0.15	\$2.04	\$0.12	\$0.78	\$0.08	(\$4.11)	\$0.46	(\$0.01)	\$0.52	(\$1.24)
2014/2015	\$0.34	\$3.79	\$2.80	(\$0.76)	\$0.00	\$0.02	\$1.12	(\$0.54)	(\$0.33)	(\$2.19)	(\$0.46)	(\$0.26)	\$0.37
2015/2016	(\$2.12)	(\$1.91)	(\$1.19)	(\$1.77)	(\$0.37)	(\$2.82)	(\$0.14)	(\$0.12)	(\$0.74)	(\$1.48)	(\$2.82)	(\$2.77)	(\$1.52)
2016/2017	(\$0.94)	(\$0.60)	(\$0.74)	\$1.01	(\$0.39)	(\$1.53)	(\$0.90)	(\$0.97)	(\$3.28)	(\$3.05)	(\$0.99)	(\$0.94)	(\$1.11)
2017/2018	(\$0.36)	\$2.00	(\$1.88)	\$0.01	(\$2.64)	(\$1.13)	(\$2.34)	(\$0.79)	(\$1.66)	(\$0.90)	\$3.42	\$1.08	(\$0.42)
2018/2019	(\$1.88)	\$0.04	(\$0.41)	(\$0.77)	\$0.18	(\$0.95)	\$0.01	\$0.31	(\$0.51)	(\$1.06)	(\$0.53)	\$3.03	(\$0.20)
2019/2020	(\$0.70)	(\$0.16)	\$0.44	(\$0.18)	(\$0.15)	(\$0.76)	(\$1.16)	(\$0.31)	(\$1.78)	(\$1.19)	(\$0.25)	(\$0.70)	(\$0.58)
2020/2021	(\$0.31)	(\$0.30)	(\$2.49)	(\$4.22)	(\$1.57)	(\$1.06)	\$0.83	(\$0.02)	(\$1.78)	(\$1.11)	(\$0.98)	(\$1.61)	(\$1.16)
2021/2022	(\$0.52)	\$0.86	\$0.51	(\$0.82)	(\$11.42)	(\$2.82)	(\$1.10)	(\$1.91)	(\$2.36)	(\$2.33)	\$1.99	\$0.32	(\$1.54)
2022/2023	\$0.24	(\$0.42)	(\$0.65)	(\$1.90)	(\$1.09)	(\$2.37)	(\$4.82)	(\$11.67)	(\$3.91)	(\$1.81)	(\$2.51)	(\$5.49)	(\$3.13)
2023/2024	\$0.88	\$0.83	\$2.56	\$0.47	(\$2.29)	(\$0.05)	\$0.65	(\$3.53)	\$1.84	(\$0.97)	\$5.48	\$2.99	\$0.74
2024/2025	(\$0.82)	\$9.67	\$3.02	(\$3.05)	(\$4.42)	(\$0.13)	(\$4.03)	(\$1.86)	(\$1.97)	(\$1.54)	\$0.81	\$5.39	\$0.15

Table 24 shows the real-time monthly load-weighted average CLMP components of LMP for PJM and for Pennsylvania (PPL) for the 2012/2013 through 2024/2025 planning period.

Table 24 PJM and Pennsylvania (PPL) real-time monthly load-weighted average CLMP component (Dollars per MWh): 2012/2013 through 2024/2025 planning period

PJM													
Planning Period	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
2012/2013	\$0.03	\$0.02	\$0.02	\$0.01	\$0.03	\$0.03	\$0.04	\$0.02	\$0.07	\$0.06	\$0.03	\$0.01	\$0.03
2013/2014	(\$0.01)	(\$0.33)	(\$0.06)	\$0.02	\$0.04	\$0.03	(\$0.00)	\$0.00	(\$0.05)	\$0.02	\$0.00	(\$0.02)	(\$0.03)
2014/2015	\$0.02	(\$0.02)	(\$0.00)	\$0.03	\$0.13	\$0.03	\$0.01	\$0.01	\$0.02	\$0.05	\$0.05	\$0.02	\$0.03
2015/2016	\$0.03	\$0.02	\$0.04	\$0.07	\$0.02	\$0.06	\$0.02	\$0.02	\$0.04	\$0.06	\$0.05	\$0.04	\$0.04
2016/2017	\$0.01	\$0.02	\$0.03	\$0.01	\$0.02	\$0.02	\$0.03	\$0.04	\$0.07	\$0.06	\$0.02	\$0.02	\$0.03
2017/2018	\$0.05	\$0.01	\$0.04	\$0.04	\$0.09	\$0.01	\$0.02	\$0.01	\$0.08	\$0.02	\$0.01	(\$0.01)	\$0.03
2018/2019	\$0.02	\$0.01	\$0.03	\$0.02	\$0.02	\$0.04	\$0.02	\$0.02	\$0.06	\$0.03	\$0.03	\$0.01	\$0.03
2019/2020	\$0.01	\$0.01	\$0.01	\$0.01	\$0.03	\$0.01	\$0.02	\$0.01	\$0.05	\$0.05	\$0.04	\$0.02	\$0.02
2020/2021	\$0.01	\$0.04	\$0.04	\$0.06	\$0.02	\$0.03	\$0.04	\$0.03	\$0.02	\$0.02	\$0.02	\$0.02	\$0.03
2021/2022	\$0.08	\$0.05	\$0.04	\$0.11	\$0.21	\$0.04	\$0.02	\$0.03	\$0.03	\$0.04	\$0.10	\$0.03	\$0.06
2022/2023	\$0.02	\$0.02	\$0.03	\$0.10	\$0.06	\$0.06	\$0.07	\$0.16	\$0.08	\$0.08	\$0.09	\$0.13	\$0.08
2023/2024	\$0.07	\$0.06	\$0.04	\$0.04	\$0.08	\$0.04	\$0.06	\$0.06	\$0.08	\$0.11	\$0.05	\$0.04	\$0.06
2024/2025	\$0.14	\$0.13	\$0.11	\$0.14	\$0.05	\$0.06	\$0.13	\$0.07	\$0.07	\$0.05	\$0.02	\$0.14	\$0.09
Pennsylvania (PPL)													
Planning Period	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
2012/2013	(\$0.03)	(\$0.74)	(\$0.80)	(\$0.40)	\$0.05	\$0.13	(\$0.98)	\$0.44	(\$0.06)	(\$0.29)	\$3.18	\$0.43	\$0.07
2013/2014	\$28.26	\$4.78	\$3.96	(\$1.03)	(\$7.14)	\$1.80	\$2.87	\$1.19	(\$4.19)	(\$0.74)	\$0.72	\$1.48	\$3.48
2014/2015	\$1.17	\$22.54	(\$1.05)	(\$4.55)	\$0.23	(\$1.60)	\$0.22	(\$3.03)	(\$2.74)	(\$5.32)	\$1.40	(\$3.56)	\$0.74
2015/2016	(\$1.91)	(\$3.31)	(\$4.50)	(\$6.40)	(\$1.66)	(\$8.26)	(\$5.88)	(\$3.18)	(\$2.81)	(\$4.56)	(\$5.61)	(\$5.57)	(\$4.42)
2016/2017	(\$0.05)	(\$1.76)	\$0.39	(\$0.17)	(\$1.23)	(\$2.72)	(\$2.44)	(\$3.67)	(\$7.43)	(\$7.47)	(\$2.46)	(\$0.72)	(\$2.40)
2017/2018	\$9.46	(\$1.33)	(\$7.84)	(\$3.48)	(\$12.66)	(\$1.29)	(\$3.73)	(\$1.71)	(\$2.67)	(\$5.15)	(\$2.56)	\$6.30	(\$1.82)
2018/2019	(\$0.95)	(\$1.54)	(\$1.90)	(\$1.30)	(\$2.71)	(\$3.70)	(\$1.35)	(\$1.16)	(\$3.89)	(\$2.50)	(\$1.82)	(\$1.97)	(\$2.02)
2019/2020	(\$1.62)	(\$1.13)	(\$1.27)	(\$0.77)	(\$2.75)	(\$2.23)	(\$2.18)	(\$1.99)	(\$4.15)	(\$4.75)	(\$3.27)	\$2.09	(\$1.92)
2020/2021	(\$2.73)	(\$3.14)	(\$4.38)	(\$4.12)	(\$2.22)	(\$1.13)	(\$3.57)	(\$1.44)	(\$4.22)	(\$4.79)	(\$0.32)	\$0.38	(\$2.59)
2021/2022	\$4.82	(\$3.13)	(\$2.19)	(\$4.77)	(\$12.69)	(\$3.33)	(\$2.34)	(\$0.48)	(\$3.97)	(\$3.63)	(\$4.06)	(\$2.23)	(\$2.87)
2022/2023	(\$2.56)	(\$1.63)	(\$2.60)	(\$4.82)	(\$4.09)	(\$9.75)	(\$2.74)	\$8.37	(\$9.11)	(\$3.17)	(\$5.46)	(\$1.20)	(\$2.97)
2023/2024	(\$3.57)	(\$4.06)	(\$2.59)	(\$0.81)	(\$10.09)	(\$4.55)	(\$6.80)	(\$9.54)	(\$9.17)	(\$5.70)	(\$2.35)	(\$3.60)	(\$5.23)
2024/2025	(\$4.35)	(\$4.55)	(\$5.05)	(\$7.64)	(\$5.61)	(\$6.22)	(\$4.54)	(\$5.00)	(\$7.04)	(\$6.53)	(\$0.29)	(\$5.42)	(\$5.13)

Table 25 shows the day-ahead monthly load-weighted average CLMP components of LMP for PJM and for Pennsylvania for the 2012/2013 through 2024/2025 planning period.

Table 25 PJM and Pennsylvania day-ahead monthly load-weighted average CLMP component (Dollars per MWh): 2012/2013 through 2024/2025 planning period

Planning Period	PJM												
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
2012/2013	\$0.12	\$0.04	\$0.03	\$0.03	\$0.10	\$0.17	\$0.20	\$0.10	\$0.18	\$0.03	\$0.09	\$0.05	\$0.10
2013/2014	\$0.76	\$0.30	\$0.19	\$0.02	\$0.14	\$0.18	\$0.29	\$0.09	\$0.34	\$0.06	\$0.07	\$0.20	\$0.23
2014/2015	\$0.38	\$0.77	\$0.29	(\$0.06)	\$0.20	\$0.23	\$0.23	\$0.12	\$0.18	\$0.27	\$0.36	\$0.14	\$0.27
2015/2016	\$0.19	\$0.17	\$0.07	\$0.04	\$0.06	\$0.30	\$0.18	\$0.12	\$0.23	\$0.10	\$0.09	\$0.09	\$0.14
2016/2017	\$0.08	\$0.01	\$0.01	(\$0.02)	(\$0.06)	\$0.16	\$0.26	\$0.29	\$0.19	\$0.06	(\$0.01)	\$0.13	\$0.10
2017/2018	\$0.56	\$0.06	(\$0.07)	(\$0.01)	(\$0.05)	\$0.10	\$0.13	\$0.03	\$0.03	\$0.02	\$0.06	\$0.16	\$0.09
2018/2019	\$0.22	\$0.03	\$0.06	\$0.02	(\$0.01)	\$0.11	\$0.05	\$0.17	\$0.15	\$0.27	\$0.24	\$0.33	\$0.14
2019/2020	\$0.01	\$0.01	(\$0.06)	(\$0.08)	(\$0.03)	\$0.02	\$0.19	\$0.08	\$0.06	\$0.03	\$0.02	\$0.15	\$0.04
2020/2021	\$0.05	\$0.35	\$0.17	(\$0.10)	(\$0.04)	\$0.04	\$0.28	\$0.27	\$0.06	(\$0.00)	(\$0.05)	\$0.17	\$0.11
2021/2022	\$1.39	\$0.39	(\$0.04)	(\$0.08)	\$0.06	\$0.27	\$0.22	\$0.40	\$0.09	(\$0.11)	(\$0.30)	\$0.03	\$0.22
2022/2023	(\$0.12)	\$0.11	(\$0.03)	(\$0.04)	(\$0.06)	\$0.28	\$0.21	\$0.41	\$0.05	\$0.10	(\$0.04)	\$0.12	\$0.09
2023/2024	\$0.03	(\$0.00)	\$0.01	(\$0.06)	(\$0.01)	\$0.06	\$0.29	\$0.33	\$0.14	(\$0.05)	\$0.11	\$0.27	\$0.10
2024/2025	\$0.21	\$0.03	\$0.08	(\$0.00)	\$0.05	\$0.22	\$0.35	\$0.48	(\$0.04)	(\$0.04)	(\$0.29)	(\$0.20)	\$0.09
Planning Period	Pennsylvania												
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
2012/2013	(\$0.32)	(\$1.10)	(\$0.56)	(\$0.36)	(\$0.10)	\$1.14	\$0.39	\$0.36	\$0.39	\$0.41	\$1.14	\$0.13	\$0.13
2013/2014	\$17.60	\$1.40	\$2.29	(\$0.27)	(\$1.76)	\$0.49	\$1.27	\$0.63	(\$0.07)	(\$0.02)	\$0.52	\$0.69	\$2.14
2014/2015	\$0.76	\$10.81	\$0.33	(\$2.24)	(\$0.36)	(\$0.86)	\$0.36	(\$2.04)	(\$2.44)	(\$2.20)	\$1.36	(\$1.38)	\$0.32
2015/2016	(\$2.24)	(\$2.78)	(\$3.19)	(\$3.54)	(\$1.57)	(\$3.48)	(\$3.16)	(\$1.93)	(\$1.71)	(\$2.63)	(\$3.52)	(\$3.45)	(\$2.76)
2016/2017	(\$0.52)	(\$0.99)	(\$0.16)	(\$0.03)	(\$0.62)	(\$1.65)	(\$0.48)	(\$1.62)	(\$3.98)	(\$5.27)	(\$2.55)	(\$0.87)	(\$1.52)
2017/2018	\$7.53	(\$0.18)	(\$3.15)	(\$1.03)	(\$4.78)	(\$1.32)	(\$1.03)	(\$1.34)	(\$2.46)	(\$2.41)	(\$0.98)	\$1.58	(\$0.65)
2018/2019	\$0.25	(\$0.66)	(\$1.09)	(\$0.82)	(\$1.94)	(\$2.95)	(\$1.15)	(\$0.57)	(\$1.96)	(\$1.41)	(\$1.24)	\$0.11	(\$1.08)
2019/2020	(\$0.61)	(\$0.74)	(\$0.83)	(\$0.31)	(\$0.93)	(\$1.53)	(\$1.23)	(\$1.28)	(\$2.78)	(\$2.35)	(\$1.61)	(\$0.43)	(\$1.22)
2020/2021	(\$1.15)	(\$1.68)	(\$2.15)	(\$2.97)	(\$2.49)	(\$1.19)	(\$0.38)	(\$0.88)	(\$2.25)	(\$3.25)	(\$0.59)	(\$0.77)	(\$1.57)
2021/2022	\$3.03	(\$1.41)	(\$1.95)	(\$2.46)	(\$8.08)	(\$1.58)	(\$1.42)	(\$0.18)	(\$2.21)	(\$3.82)	(\$4.12)	(\$0.61)	(\$1.89)
2022/2023	(\$2.14)	(\$0.64)	(\$1.33)	(\$2.84)	(\$3.94)	(\$9.48)	(\$3.66)	(\$0.24)	(\$7.37)	(\$4.37)	(\$4.88)	(\$1.28)	(\$3.43)
2023/2024	(\$1.79)	(\$1.60)	(\$1.28)	(\$1.35)	(\$6.40)	(\$3.91)	(\$3.78)	(\$5.80)	(\$5.61)	(\$4.74)	(\$0.97)	(\$2.18)	(\$3.29)
2024/2025	(\$0.47)	(\$1.35)	(\$1.82)	(\$3.73)	(\$5.81)	(\$2.46)	(\$3.58)	(\$3.52)	(\$4.23)	(\$4.95)	(\$1.64)	(\$3.26)	(\$2.99)

Table 26 shows the day-ahead monthly load-weighted average CLMP components of LMP for PJM and for Pennsylvania (APS) for the 2012/2013 through 2024/2025 planning period.

Table 26 PJM and Pennsylvania (APS) day-ahead monthly load-weighted average CLMP component (Dollars per MWh): 2012/2013 through 2024/2025 planning period

Planning Period	PJM												
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
2012/2013	\$0.12	\$0.04	\$0.03	\$0.03	\$0.10	\$0.17	\$0.20	\$0.10	\$0.18	\$0.03	\$0.09	\$0.05	\$0.10
2013/2014	\$0.76	\$0.30	\$0.19	\$0.02	\$0.14	\$0.18	\$0.29	\$0.09	\$0.34	\$0.06	\$0.07	\$0.20	\$0.23
2014/2015	\$0.38	\$0.77	\$0.29	(\$0.06)	\$0.20	\$0.23	\$0.23	\$0.12	\$0.18	\$0.27	\$0.36	\$0.14	\$0.27
2015/2016	\$0.19	\$0.17	\$0.07	\$0.04	\$0.06	\$0.30	\$0.18	\$0.12	\$0.23	\$0.10	\$0.09	\$0.09	\$0.14
2016/2017	\$0.08	\$0.01	\$0.01	(\$0.02)	(\$0.06)	\$0.16	\$0.26	\$0.29	\$0.19	\$0.06	(\$0.01)	\$0.13	\$0.10
2017/2018	\$0.56	\$0.06	(\$0.07)	(\$0.01)	(\$0.05)	\$0.10	\$0.13	\$0.03	\$0.03	\$0.02	\$0.06	\$0.16	\$0.09
2018/2019	\$0.22	\$0.03	\$0.06	\$0.02	(\$0.01)	\$0.11	\$0.05	\$0.17	\$0.15	\$0.27	\$0.24	\$0.33	\$0.14
2019/2020	\$0.01	\$0.01	(\$0.06)	(\$0.08)	(\$0.03)	\$0.02	\$0.19	\$0.08	\$0.06	\$0.03	\$0.02	\$0.15	\$0.04
2020/2021	\$0.05	\$0.35	\$0.17	(\$0.10)	(\$0.04)	\$0.04	\$0.28	\$0.27	\$0.06	(\$0.00)	(\$0.05)	\$0.17	\$0.11
2021/2022	\$1.39	\$0.39	(\$0.04)	(\$0.08)	\$0.06	\$0.27	\$0.22	\$0.40	\$0.09	(\$0.11)	(\$0.30)	\$0.03	\$0.22
2022/2023	(\$0.12)	\$0.11	(\$0.03)	(\$0.04)	(\$0.06)	\$0.28	\$0.21	\$0.41	\$0.05	\$0.10	(\$0.04)	\$0.12	\$0.09
2023/2024	\$0.03	(\$0.00)	\$0.01	(\$0.06)	(\$0.01)	\$0.06	\$0.29	\$0.33	\$0.14	(\$0.05)	\$0.11	\$0.27	\$0.10
2024/2025	\$0.21	\$0.03	\$0.08	(\$0.00)	\$0.05	\$0.22	\$0.35	\$0.48	(\$0.04)	(\$0.04)	(\$0.29)	(\$0.20)	\$0.09
Planning Period	Pennsylvania (APS)												
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
2012/2013	(\$2.34)	(\$1.32)	(\$0.52)	(\$0.31)	(\$0.51)	(\$0.86)	(\$0.50)	(\$0.60)	(\$0.08)	\$0.27	(\$0.59)	(\$0.54)	(\$0.69)
2013/2014	(\$25.91)	(\$0.18)	(\$1.40)	(\$0.28)	\$0.13	(\$0.51)	(\$0.48)	(\$0.33)	(\$1.24)	(\$0.08)	(\$0.35)	\$0.12	(\$2.97)
2014/2015	(\$1.85)	(\$1.20)	\$0.73	\$0.47	\$0.49	(\$0.06)	(\$1.05)	(\$0.52)	(\$0.65)	(\$0.18)	\$0.01	(\$0.17)	(\$0.37)
2015/2016	(\$0.93)	(\$0.80)	\$0.13	\$0.12	(\$0.11)	(\$0.31)	\$0.63	\$0.34	\$0.03	\$0.07	(\$0.41)	(\$0.42)	(\$0.15)
2016/2017	(\$0.54)	(\$0.14)	\$0.01	\$0.06	(\$0.20)	(\$0.24)	(\$0.41)	\$0.17	(\$0.25)	(\$0.49)	(\$0.14)	(\$0.26)	(\$0.20)
2017/2018	(\$0.00)	\$0.96	\$0.76	\$0.85	\$0.15	(\$0.64)	(\$0.38)	\$0.24	\$0.50	\$0.28	\$0.86	(\$1.15)	\$0.18
2018/2019	(\$0.31)	\$0.20	\$0.09	(\$0.13)	\$0.20	(\$0.76)	(\$0.31)	\$0.61	\$2.25	(\$0.41)	\$0.32	\$0.44	\$0.18
2019/2020	(\$0.36)	\$0.23	\$0.15	\$0.51	\$3.25	\$0.00	(\$0.17)	\$0.26	\$0.82	\$0.65	\$0.86	(\$0.02)	\$0.47
2020/2021	(\$0.43)	(\$1.30)	(\$0.33)	\$0.06	(\$0.23)	(\$0.26)	\$3.06	(\$0.01)	\$0.38	(\$0.43)	\$0.28	(\$0.31)	\$0.07
2021/2022	(\$3.15)	(\$0.45)	\$0.61	\$1.91	(\$2.94)	(\$0.52)	(\$0.05)	\$0.44	\$0.34	\$1.34	\$2.89	\$0.58	\$0.02
2022/2023	\$1.44	(\$0.64)	\$0.68	\$0.41	\$1.35	(\$0.58)	(\$1.84)	(\$6.05)	(\$0.59)	\$1.08	(\$0.45)	(\$4.11)	(\$0.88)
2023/2024	(\$0.98)	\$0.27	\$0.91	\$0.65	(\$2.30)	\$0.43	(\$0.27)	(\$0.57)	\$0.11	\$1.76	\$3.82	\$1.13	\$0.39
2024/2025	(\$2.09)	(\$0.32)	\$2.12	\$1.25	(\$4.04)	\$0.00	(\$2.72)	(\$1.32)	(\$0.69)	(\$0.06)	\$0.38	(\$1.75)	(\$0.84)

Table 27 shows the day-ahead monthly load-weighted average CLMP components of LMP for PJM and for Pennsylvania (ATSI) for the 2012/2013 through 2024/2025 planning period.

Table 27 PJM and Pennsylvania (ATSI) day-ahead monthly load-weighted average CLMP component (Dollars per MWh): 2012/2013 through 2024/2025 planning period

Planning Period	PJM												
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
2012/2013	\$0.12	\$0.04	\$0.03	\$0.03	\$0.10	\$0.17	\$0.20	\$0.10	\$0.18	\$0.03	\$0.09	\$0.05	\$0.10
2013/2014	\$0.76	\$0.30	\$0.19	\$0.02	\$0.14	\$0.18	\$0.29	\$0.09	\$0.34	\$0.06	\$0.07	\$0.20	\$0.23
2014/2015	\$0.38	\$0.77	\$0.29	(\$0.06)	\$0.20	\$0.23	\$0.23	\$0.12	\$0.18	\$0.27	\$0.36	\$0.14	\$0.27
2015/2016	\$0.19	\$0.17	\$0.07	\$0.04	\$0.06	\$0.30	\$0.18	\$0.12	\$0.23	\$0.10	\$0.09	\$0.09	\$0.14
2016/2017	\$0.08	\$0.01	\$0.01	(\$0.02)	(\$0.06)	\$0.16	\$0.26	\$0.29	\$0.19	\$0.06	(\$0.01)	\$0.13	\$0.10
2017/2018	\$0.56	\$0.06	(\$0.07)	(\$0.01)	(\$0.05)	\$0.10	\$0.13	\$0.03	\$0.03	\$0.02	\$0.06	\$0.16	\$0.09
2018/2019	\$0.22	\$0.03	\$0.06	\$0.02	(\$0.01)	\$0.11	\$0.05	\$0.17	\$0.15	\$0.27	\$0.24	\$0.33	\$0.14
2019/2020	\$0.01	\$0.01	(\$0.06)	(\$0.08)	(\$0.03)	\$0.02	\$0.19	\$0.08	\$0.06	\$0.03	\$0.02	\$0.15	\$0.04
2020/2021	\$0.05	\$0.35	\$0.17	(\$0.10)	(\$0.04)	\$0.04	\$0.28	\$0.27	\$0.06	(\$0.00)	(\$0.05)	\$0.17	\$0.11
2021/2022	\$1.39	\$0.39	(\$0.04)	(\$0.08)	\$0.06	\$0.27	\$0.22	\$0.40	\$0.09	(\$0.11)	(\$0.30)	\$0.03	\$0.22
2022/2023	(\$0.12)	\$0.11	(\$0.03)	(\$0.04)	(\$0.06)	\$0.28	\$0.21	\$0.41	\$0.05	\$0.10	(\$0.04)	\$0.12	\$0.09
2023/2024	\$0.03	(\$0.00)	\$0.01	(\$0.06)	(\$0.01)	\$0.06	\$0.29	\$0.33	\$0.14	(\$0.05)	\$0.11	\$0.27	\$0.10
2024/2025	\$0.21	\$0.03	\$0.08	(\$0.00)	\$0.05	\$0.22	\$0.35	\$0.48	(\$0.04)	(\$0.04)	(\$0.29)	(\$0.20)	\$0.09
Planning Period	Pennsylvania (ATSI)												
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
2012/2013	(\$3.23)	(\$2.05)	(\$1.22)	(\$0.85)	(\$1.15)	(\$1.54)	(\$0.68)	(\$1.07)	(\$0.56)	\$0.08	\$0.22	(\$0.90)	(\$1.11)
2013/2014	(\$37.11)	(\$5.29)	(\$7.38)	(\$0.22)	(\$0.28)	(\$1.08)	(\$0.14)	(\$0.44)	(\$2.27)	\$0.51	(\$1.04)	(\$1.02)	(\$5.31)
2014/2015	(\$3.76)	(\$21.86)	(\$2.01)	\$1.35	\$0.25	\$0.12	(\$2.42)	(\$0.05)	(\$1.00)	(\$0.26)	(\$1.09)	(\$0.03)	(\$2.76)
2015/2016	(\$1.75)	(\$1.38)	\$0.42	\$0.31	(\$0.34)	(\$0.29)	(\$0.29)	(\$0.27)	(\$0.14)	\$0.24	(\$0.44)	(\$0.08)	(\$0.35)
2016/2017	(\$0.37)	(\$0.02)	\$0.44	\$0.32	\$0.74	\$0.15	(\$0.70)	\$1.09	\$0.92	\$0.16	\$0.03	(\$0.35)	\$0.20
2017/2018	(\$3.91)	\$1.12	\$0.78	\$2.41	\$6.87	\$0.18	\$0.82	\$1.60	\$2.19	\$2.03	\$1.06	(\$2.47)	\$0.96
2018/2019	(\$0.35)	\$0.98	\$0.55	\$0.91	\$0.76	\$4.65	\$3.06	\$2.78	\$6.75	\$3.28	\$1.68	\$1.23	\$2.15
2019/2020	(\$0.04)	\$0.46	\$0.66	\$0.65	\$1.52	\$0.21	\$0.40	\$0.51	\$2.00	\$2.10	\$1.34	\$0.17	\$0.82
2020/2021	(\$0.56)	\$1.80	(\$0.19)	(\$0.00)	(\$0.52)	(\$0.12)	\$0.50	\$0.09	\$0.47	\$0.01	\$0.30	(\$0.66)	\$0.10
2021/2022	(\$9.40)	(\$1.12)	\$0.80	\$2.10	(\$2.26)	(\$0.17)	(\$0.03)	(\$0.40)	(\$0.12)	\$1.55	\$2.11	(\$0.58)	(\$0.75)
2022/2023	\$0.31	(\$2.67)	\$0.81	\$0.68	\$1.50	\$6.26	(\$1.21)	(\$6.02)	(\$0.25)	\$1.68	(\$0.68)	(\$5.42)	(\$0.51)
2023/2024	(\$2.88)	\$0.43	(\$0.06)	\$0.45	(\$4.21)	\$0.28	(\$0.12)	\$0.08	(\$0.25)	\$2.61	(\$1.12)	\$0.93	(\$0.37)
2024/2025	(\$5.51)	(\$1.28)	\$1.68	\$1.71	(\$3.98)	(\$1.10)	(\$3.24)	(\$1.68)	(\$0.65)	\$0.23	\$0.59	(\$1.79)	(\$1.37)

Table 28 shows the day-ahead monthly load-weighted average CLMP components of LMP for PJM and for Pennsylvania (DUQ) for the 2012/2013 through 2024/2025 planning period.

Table 28 PJM and Pennsylvania (DUQ) day-ahead monthly load-weighted average CLMP component (Dollars per MWh): 2012/2013 through 2024/2025 planning period

Planning Period	PJM												
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
2012/2013	\$0.12	\$0.04	\$0.03	\$0.03	\$0.10	\$0.17	\$0.20	\$0.10	\$0.18	\$0.03	\$0.09	\$0.05	\$0.10
2013/2014	\$0.76	\$0.30	\$0.19	\$0.02	\$0.14	\$0.18	\$0.29	\$0.09	\$0.34	\$0.06	\$0.07	\$0.20	\$0.23
2014/2015	\$0.38	\$0.77	\$0.29	(\$0.06)	\$0.20	\$0.23	\$0.23	\$0.12	\$0.18	\$0.27	\$0.36	\$0.14	\$0.27
2015/2016	\$0.19	\$0.17	\$0.07	\$0.04	\$0.06	\$0.30	\$0.18	\$0.12	\$0.23	\$0.10	\$0.09	\$0.09	\$0.14
2016/2017	\$0.08	\$0.01	\$0.01	(\$0.02)	(\$0.06)	\$0.16	\$0.26	\$0.29	\$0.19	\$0.06	(\$0.01)	\$0.13	\$0.10
2017/2018	\$0.56	\$0.06	(\$0.07)	(\$0.01)	(\$0.05)	\$0.10	\$0.13	\$0.03	\$0.03	\$0.02	\$0.06	\$0.16	\$0.09
2018/2019	\$0.22	\$0.03	\$0.06	\$0.02	(\$0.01)	\$0.11	\$0.05	\$0.17	\$0.15	\$0.27	\$0.24	\$0.33	\$0.14
2019/2020	\$0.01	\$0.01	(\$0.06)	(\$0.08)	(\$0.03)	\$0.02	\$0.19	\$0.08	\$0.06	\$0.03	\$0.02	\$0.15	\$0.04
2020/2021	\$0.05	\$0.35	\$0.17	(\$0.10)	(\$0.04)	\$0.04	\$0.28	\$0.27	\$0.06	(\$0.00)	(\$0.05)	\$0.17	\$0.11
2021/2022	\$1.39	\$0.39	(\$0.04)	(\$0.08)	\$0.06	\$0.27	\$0.22	\$0.40	\$0.09	(\$0.11)	(\$0.30)	\$0.03	\$0.22
2022/2023	(\$0.12)	\$0.11	(\$0.03)	(\$0.04)	(\$0.06)	\$0.28	\$0.21	\$0.41	\$0.05	\$0.10	(\$0.04)	\$0.12	\$0.09
2023/2024	\$0.03	(\$0.00)	\$0.01	(\$0.06)	(\$0.01)	\$0.06	\$0.29	\$0.33	\$0.14	(\$0.05)	\$0.11	\$0.27	\$0.10
2024/2025	\$0.21	\$0.03	\$0.08	(\$0.00)	\$0.05	\$0.22	\$0.35	\$0.48	(\$0.04)	(\$0.04)	(\$0.29)	(\$0.20)	\$0.09
Planning Period	Pennsylvania (DUQ)												
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
2012/2013	(\$3.52)	(\$2.17)	(\$1.27)	(\$0.91)	(\$0.24)	(\$1.39)	(\$1.04)	(\$1.28)	(\$0.73)	(\$0.01)	(\$1.43)	(\$0.87)	(\$1.25)
2013/2014	(\$37.75)	(\$9.54)	(\$10.05)	(\$1.38)	(\$0.30)	(\$1.01)	(\$0.48)	(\$0.63)	(\$2.15)	(\$0.32)	(\$1.10)	(\$0.28)	(\$5.66)
2014/2015	(\$3.62)	(\$30.15)	(\$2.11)	\$0.89	\$1.50	(\$0.06)	(\$2.51)	(\$0.76)	(\$1.14)	\$0.24	\$1.47	\$0.11	(\$3.13)
2015/2016	(\$1.29)	(\$1.29)	\$0.68	\$0.56	(\$0.17)	\$0.67	\$0.35	\$0.13	\$0.08	\$0.52	\$0.41	\$0.05	\$0.05
2016/2017	(\$0.49)	(\$0.02)	\$0.28	\$0.15	\$0.43	(\$0.04)	(\$0.73)	\$0.77	\$0.71	\$0.21	\$0.28	(\$0.30)	\$0.10
2017/2018	(\$5.91)	\$0.91	\$0.95	\$2.93	\$4.93	\$0.20	\$0.26	\$1.01	\$1.59	\$1.26	\$0.68	(\$2.41)	\$0.45
2018/2019	(\$0.61)	\$0.46	\$0.37	\$0.36	\$0.69	\$1.88	\$1.82	\$1.30	\$5.12	\$2.12	\$2.09	\$0.44	\$1.37
2019/2020	(\$0.02)	\$0.97	\$0.82	\$0.84	\$2.37	\$0.28	\$0.59	\$0.93	\$2.59	\$2.12	\$1.19	\$0.16	\$1.05
2020/2021	(\$0.36)	\$0.01	(\$0.04)	\$0.67	\$0.41	\$0.43	\$2.79	\$1.14	\$1.66	\$0.52	\$0.46	(\$0.41)	\$0.69
2021/2022	(\$8.56)	(\$0.41)	\$0.71	\$2.31	(\$1.70)	\$0.33	\$0.28	\$0.42	\$0.18	\$1.88	\$2.56	(\$0.51)	(\$0.27)
2022/2023	\$0.76	(\$2.00)	\$0.87	\$0.78	\$1.94	\$4.19	(\$0.56)	(\$5.35)	\$0.05	\$2.03	(\$0.14)	(\$4.63)	(\$0.26)
2023/2024	(\$3.24)	\$0.48	\$0.30	\$0.49	\$0.35	\$0.58	\$0.19	\$0.46	\$0.35	\$3.19	\$4.16	\$1.55	\$0.68
2024/2025	(\$5.52)	(\$1.34)	\$1.66	\$1.60	(\$4.03)	\$2.21	(\$2.23)	(\$0.15)	\$0.19	\$0.64	\$0.68	(\$1.53)	(\$0.72)

Table 29 shows the day-ahead monthly load-weighted average CLMP components of LMP for PJM and for Pennsylvania (MET-ED) for the 2012/2013 through 2024/2025 planning period.

Table 29 PJM and Pennsylvania (MET-ED) day-ahead monthly load-weighted average CLMP component (Dollars per MWh): 2012/2013 through 2024/2025 planning period

Planning Period	PJM												
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
2012/2013	\$0.12	\$0.04	\$0.03	\$0.03	\$0.10	\$0.17	\$0.20	\$0.10	\$0.18	\$0.03	\$0.09	\$0.05	\$0.10
2013/2014	\$0.76	\$0.30	\$0.19	\$0.02	\$0.14	\$0.18	\$0.29	\$0.09	\$0.34	\$0.06	\$0.07	\$0.20	\$0.23
2014/2015	\$0.38	\$0.77	\$0.29	(\$0.06)	\$0.20	\$0.23	\$0.23	\$0.12	\$0.18	\$0.27	\$0.36	\$0.14	\$0.27
2015/2016	\$0.19	\$0.17	\$0.07	\$0.04	\$0.06	\$0.30	\$0.18	\$0.12	\$0.23	\$0.10	\$0.09	\$0.09	\$0.14
2016/2017	\$0.08	\$0.01	\$0.01	(\$0.02)	(\$0.06)	\$0.16	\$0.26	\$0.29	\$0.19	\$0.06	(\$0.01)	\$0.13	\$0.10
2017/2018	\$0.56	\$0.06	(\$0.07)	(\$0.01)	(\$0.05)	\$0.10	\$0.13	\$0.03	\$0.03	\$0.02	\$0.06	\$0.16	\$0.09
2018/2019	\$0.22	\$0.03	\$0.06	\$0.02	(\$0.01)	\$0.11	\$0.05	\$0.17	\$0.15	\$0.27	\$0.24	\$0.33	\$0.14
2019/2020	\$0.01	\$0.01	(\$0.06)	(\$0.08)	(\$0.03)	\$0.02	\$0.19	\$0.08	\$0.06	\$0.03	\$0.02	\$0.15	\$0.04
2020/2021	\$0.05	\$0.35	\$0.17	(\$0.10)	(\$0.04)	\$0.04	\$0.28	\$0.27	\$0.06	(\$0.00)	(\$0.05)	\$0.17	\$0.11
2021/2022	\$1.39	\$0.39	(\$0.04)	(\$0.08)	\$0.06	\$0.27	\$0.22	\$0.40	\$0.09	(\$0.11)	(\$0.30)	\$0.03	\$0.22
2022/2023	(\$0.12)	\$0.11	(\$0.03)	(\$0.04)	(\$0.06)	\$0.28	\$0.21	\$0.41	\$0.05	\$0.10	(\$0.04)	\$0.12	\$0.09
2023/2024	\$0.03	(\$0.00)	\$0.01	(\$0.06)	(\$0.01)	\$0.06	\$0.29	\$0.33	\$0.14	(\$0.05)	\$0.11	\$0.27	\$0.10
2024/2025	\$0.21	\$0.03	\$0.08	(\$0.00)	\$0.05	\$0.22	\$0.35	\$0.48	(\$0.04)	(\$0.04)	(\$0.29)	(\$0.20)	\$0.09
Planning Period	Pennsylvania (MET-ED)												
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
2012/2013	\$1.01	(\$0.40)	\$0.14	(\$0.09)	\$0.05	\$2.33	(\$0.09)	\$0.99	\$0.54	\$0.59	\$2.29	\$1.02	\$0.70
2013/2014	\$43.03	\$3.49	\$5.91	(\$0.39)	(\$4.43)	\$1.03	\$2.44	\$1.32	\$1.93	(\$0.11)	\$1.27	\$1.45	\$5.37
2014/2015	\$2.47	\$21.80	\$0.45	(\$3.73)	\$1.20	(\$1.56)	\$1.31	(\$3.12)	(\$4.10)	(\$3.28)	\$1.86	(\$2.36)	\$1.14
2015/2016	(\$2.72)	(\$3.80)	(\$4.47)	(\$5.42)	(\$2.32)	(\$5.65)	(\$5.57)	(\$2.78)	(\$3.09)	(\$4.16)	(\$5.23)	(\$5.46)	(\$4.20)
2016/2017	\$0.24	(\$1.48)	\$0.15	\$1.29	(\$0.43)	(\$2.16)	(\$0.15)	(\$2.39)	(\$4.63)	(\$7.17)	(\$3.72)	(\$0.51)	(\$1.69)
2017/2018	\$14.94	(\$0.13)	(\$4.58)	(\$3.01)	(\$8.77)	(\$0.35)	\$0.32	(\$1.76)	(\$0.58)	(\$3.93)	(\$0.47)	\$3.78	(\$0.10)
2018/2019	\$1.47	(\$0.14)	(\$0.76)	(\$0.85)	(\$2.23)	(\$4.91)	(\$1.07)	\$0.77	(\$4.06)	(\$2.38)	(\$0.23)	\$1.07	(\$1.02)
2019/2020	\$0.34	(\$0.64)	(\$1.23)	(\$0.70)	(\$1.94)	(\$1.82)	(\$0.64)	(\$1.32)	(\$2.76)	(\$2.62)	(\$1.13)	\$0.41	(\$1.13)
2020/2021	(\$0.55)	(\$1.82)	(\$1.70)	(\$2.17)	(\$0.98)	(\$0.87)	(\$1.41)	\$2.93	(\$2.66)	(\$5.33)	\$0.52	(\$0.46)	(\$1.10)
2021/2022	\$13.65	\$1.82	(\$0.98)	(\$0.66)	(\$0.17)	(\$0.43)	\$0.71	\$4.81	\$1.95	\$2.16	\$1.66	\$3.88	\$2.59
2022/2023	\$0.68	\$0.80	(\$0.86)	(\$3.14)	(\$2.67)	(\$5.88)	\$3.12	\$20.71	(\$1.29)	(\$1.10)	(\$0.90)	\$4.71	\$1.56
2023/2024	\$2.41	(\$0.67)	(\$0.40)	\$0.15	(\$6.47)	(\$3.53)	(\$5.04)	(\$7.60)	(\$6.84)	(\$1.81)	(\$1.04)	(\$2.03)	(\$2.79)
2024/2025	\$4.18	(\$0.98)	\$1.23	(\$4.52)	(\$2.47)	(\$3.23)	(\$8.30)	(\$5.76)	(\$4.39)	(\$7.88)	(\$1.39)	(\$0.91)	(\$2.85)

Table 30 shows the day-ahead monthly load-weighted average CLMP components of LMP for PJM and for Pennsylvania (PECO) for the 2012/2013 through 2024/2025 planning period.

Table 30 PJM and Pennsylvania (PECO) day-ahead monthly load-weighted average CLMP component (Dollars per MWh): 2012/2013 through 2024/2025 planning period

PJM													
Planning Period	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
2012/2013	\$0.12	\$0.04	\$0.03	\$0.03	\$0.10	\$0.17	\$0.20	\$0.10	\$0.18	\$0.03	\$0.09	\$0.05	\$0.10
2013/2014	\$0.76	\$0.30	\$0.19	\$0.02	\$0.14	\$0.18	\$0.29	\$0.09	\$0.34	\$0.06	\$0.07	\$0.20	\$0.23
2014/2015	\$0.38	\$0.77	\$0.29	(\$0.06)	\$0.20	\$0.23	\$0.23	\$0.12	\$0.18	\$0.27	\$0.36	\$0.14	\$0.27
2015/2016	\$0.19	\$0.17	\$0.07	\$0.04	\$0.06	\$0.30	\$0.18	\$0.12	\$0.23	\$0.10	\$0.09	\$0.09	\$0.14
2016/2017	\$0.08	\$0.01	\$0.01	(\$0.02)	(\$0.06)	\$0.16	\$0.26	\$0.29	\$0.19	\$0.06	(\$0.01)	\$0.13	\$0.10
2017/2018	\$0.56	\$0.06	(\$0.07)	(\$0.01)	(\$0.05)	\$0.10	\$0.13	\$0.03	\$0.03	\$0.02	\$0.06	\$0.16	\$0.09
2018/2019	\$0.22	\$0.03	\$0.06	\$0.02	(\$0.01)	\$0.11	\$0.05	\$0.17	\$0.15	\$0.27	\$0.24	\$0.33	\$0.14
2019/2020	\$0.01	\$0.01	(\$0.06)	(\$0.08)	(\$0.03)	\$0.02	\$0.19	\$0.08	\$0.06	\$0.03	\$0.02	\$0.15	\$0.04
2020/2021	\$0.05	\$0.35	\$0.17	(\$0.10)	(\$0.04)	\$0.04	\$0.28	\$0.27	\$0.06	(\$0.00)	(\$0.05)	\$0.17	\$0.11
2021/2022	\$1.39	\$0.39	(\$0.04)	(\$0.08)	\$0.06	\$0.27	\$0.22	\$0.40	\$0.09	(\$0.11)	(\$0.30)	\$0.03	\$0.22
2022/2023	(\$0.12)	\$0.11	(\$0.03)	(\$0.04)	(\$0.06)	\$0.28	\$0.21	\$0.41	\$0.05	\$0.10	(\$0.04)	\$0.12	\$0.09
2023/2024	\$0.03	(\$0.00)	\$0.01	(\$0.06)	(\$0.01)	\$0.06	\$0.29	\$0.33	\$0.14	(\$0.05)	\$0.11	\$0.27	\$0.10
2024/2025	\$0.21	\$0.03	\$0.08	(\$0.00)	\$0.05	\$0.22	\$0.35	\$0.48	(\$0.04)	(\$0.04)	(\$0.29)	(\$0.20)	\$0.09
Pennsylvania (PECO)													
Planning Period	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
2012/2013	\$0.47	(\$2.08)	(\$0.57)	(\$0.60)	(\$0.15)	\$2.48	\$3.83	\$1.09	\$0.69	\$0.54	\$2.46	\$0.35	\$0.82
2013/2014	\$44.61	\$2.83	\$5.64	\$0.01	(\$4.07)	\$1.20	\$1.64	\$1.21	\$0.55	(\$0.28)	\$1.10	\$0.55	\$5.11
2014/2015	\$3.11	\$24.34	\$0.52	(\$4.22)	(\$1.90)	(\$1.42)	\$1.87	(\$3.18)	(\$3.20)	(\$3.80)	\$2.37	(\$2.27)	\$1.25
2015/2016	(\$3.16)	(\$4.01)	(\$5.68)	(\$6.12)	(\$2.61)	(\$5.38)	(\$5.03)	(\$3.38)	(\$2.30)	(\$4.50)	(\$5.55)	(\$5.32)	(\$4.38)
2016/2017	(\$0.71)	(\$1.86)	(\$0.70)	(\$0.48)	(\$0.94)	(\$2.94)	\$0.87	(\$2.45)	(\$6.85)	(\$8.97)	(\$4.33)	(\$1.53)	(\$2.47)
2017/2018	\$13.56	(\$0.88)	(\$4.57)	(\$1.69)	(\$8.52)	(\$2.58)	(\$1.60)	(\$2.36)	(\$6.28)	(\$4.24)	(\$2.43)	\$3.58	(\$1.26)
2018/2019	\$1.65	(\$1.58)	(\$1.92)	(\$1.36)	(\$3.74)	(\$4.63)	(\$2.18)	(\$1.96)	(\$5.32)	(\$3.21)	(\$3.22)	(\$0.73)	(\$2.30)
2019/2020	(\$0.56)	(\$1.64)	(\$1.70)	(\$0.93)	(\$2.98)	(\$2.47)	(\$1.89)	(\$2.56)	(\$6.53)	(\$5.59)	(\$3.46)	(\$1.16)	(\$2.59)
2020/2021	(\$2.29)	(\$3.07)	(\$3.88)	(\$6.02)	(\$5.50)	(\$2.34)	(\$1.72)	(\$3.48)	(\$4.45)	(\$4.80)	(\$1.99)	(\$1.22)	(\$3.29)
2021/2022	\$3.39	(\$4.16)	(\$5.18)	(\$8.53)	(\$18.46)	(\$3.20)	(\$2.95)	(\$2.67)	(\$6.50)	(\$13.62)	(\$15.49)	(\$4.69)	(\$6.35)
2022/2023	(\$6.75)	(\$1.71)	(\$3.94)	(\$5.20)	(\$11.10)	(\$23.03)	(\$8.82)	(\$5.00)	(\$18.24)	(\$13.18)	(\$12.46)	(\$2.58)	(\$9.27)
2023/2024	(\$3.59)	(\$3.76)	(\$3.60)	(\$4.59)	(\$10.44)	(\$8.33)	(\$5.74)	(\$9.25)	(\$9.39)	(\$14.59)	(\$7.32)	(\$6.81)	(\$7.22)
2024/2025	\$1.42	(\$1.10)	(\$7.05)	(\$8.11)	(\$8.87)	(\$3.64)	(\$0.58)	(\$4.30)	(\$7.93)	(\$7.68)	(\$2.79)	(\$2.37)	(\$4.09)

Table 31 shows the day-ahead monthly load-weighted average CLMP components of LMP for PJM and for Pennsylvania (PENELEC) for the 2012/2013 through 2024/2025 planning period.

Table 31 PJM and Pennsylvania (PENELEC) day-ahead monthly load-weighted average CLMP component (Dollars per MWh): 2012/2013 through 2024/2025 planning period

Planning Period	PJM												Annual
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	
2012/2013	\$0.12	\$0.04	\$0.03	\$0.03	\$0.10	\$0.17	\$0.20	\$0.10	\$0.18	\$0.03	\$0.09	\$0.05	\$0.10
2013/2014	\$0.76	\$0.30	\$0.19	\$0.02	\$0.14	\$0.18	\$0.29	\$0.09	\$0.34	\$0.06	\$0.07	\$0.20	\$0.23
2014/2015	\$0.38	\$0.77	\$0.29	(\$0.06)	\$0.20	\$0.23	\$0.23	\$0.12	\$0.18	\$0.27	\$0.36	\$0.14	\$0.27
2015/2016	\$0.19	\$0.17	\$0.07	\$0.04	\$0.06	\$0.30	\$0.18	\$0.12	\$0.23	\$0.10	\$0.09	\$0.09	\$0.14
2016/2017	\$0.08	\$0.01	\$0.01	(\$0.02)	(\$0.06)	\$0.16	\$0.26	\$0.29	\$0.19	\$0.06	(\$0.01)	\$0.13	\$0.10
2017/2018	\$0.56	\$0.06	(\$0.07)	(\$0.01)	(\$0.05)	\$0.10	\$0.13	\$0.03	\$0.03	\$0.02	\$0.06	\$0.16	\$0.09
2018/2019	\$0.22	\$0.03	\$0.06	\$0.02	(\$0.01)	\$0.11	\$0.05	\$0.17	\$0.15	\$0.27	\$0.24	\$0.33	\$0.14
2019/2020	\$0.01	\$0.01	(\$0.06)	(\$0.08)	(\$0.03)	\$0.02	\$0.19	\$0.08	\$0.06	\$0.03	\$0.02	\$0.15	\$0.04
2020/2021	\$0.05	\$0.35	\$0.17	(\$0.10)	(\$0.04)	\$0.04	\$0.28	\$0.27	\$0.06	(\$0.00)	(\$0.05)	\$0.17	\$0.11
2021/2022	\$1.39	\$0.39	(\$0.04)	(\$0.08)	\$0.06	\$0.27	\$0.22	\$0.40	\$0.09	(\$0.11)	(\$0.30)	\$0.03	\$0.22
2022/2023	(\$0.12)	\$0.11	(\$0.03)	(\$0.04)	(\$0.06)	\$0.28	\$0.21	\$0.41	\$0.05	\$0.10	(\$0.04)	\$0.12	\$0.09
2023/2024	\$0.03	(\$0.00)	\$0.01	(\$0.06)	(\$0.01)	\$0.06	\$0.29	\$0.33	\$0.14	(\$0.05)	\$0.11	\$0.27	\$0.10
2024/2025	\$0.21	\$0.03	\$0.08	(\$0.00)	\$0.05	\$0.22	\$0.35	\$0.48	(\$0.04)	(\$0.04)	(\$0.29)	(\$0.20)	\$0.09
Planning Period	Pennsylvania (PENELEC)												Annual
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	
2012/2013	(\$0.59)	\$0.28	(\$0.51)	(\$0.16)	\$0.03	\$1.04	(\$0.69)	\$0.14	\$0.58	\$0.56	\$0.19	(\$0.16)	\$0.05
2013/2014	(\$12.03)	\$1.64	\$0.67	\$0.20	\$2.88	\$0.21	\$1.11	\$0.08	(\$0.65)	\$0.34	\$0.24	\$0.63	(\$0.37)
2014/2015	(\$0.99)	(\$1.69)	\$1.43	(\$0.73)	(\$0.02)	\$0.11	(\$0.14)	(\$0.49)	(\$0.64)	(\$0.66)	\$0.33	(\$0.15)	(\$0.32)
2015/2016	(\$1.97)	(\$1.78)	(\$1.36)	(\$1.54)	(\$0.50)	(\$1.48)	(\$0.40)	(\$0.27)	(\$0.59)	(\$1.08)	(\$2.16)	(\$1.97)	(\$1.26)
2016/2017	(\$1.13)	(\$0.46)	(\$0.37)	\$0.00	(\$0.46)	(\$0.70)	(\$1.09)	(\$0.95)	(\$1.81)	(\$2.62)	(\$1.25)	(\$0.88)	(\$0.97)
2017/2018	(\$3.50)	\$2.45	(\$1.04)	(\$0.16)	(\$1.62)	(\$1.13)	(\$1.00)	(\$0.65)	(\$1.61)	(\$0.56)	\$1.74	(\$2.08)	(\$0.82)
2018/2019	\$0.10	\$0.03	(\$0.28)	(\$0.51)	(\$0.34)	(\$1.85)	(\$1.12)	(\$0.03)	(\$0.18)	(\$1.17)	(\$0.44)	\$3.10	(\$0.20)
2019/2020	(\$0.61)	(\$0.11)	\$0.27	\$0.29	(\$0.46)	(\$0.57)	(\$0.88)	(\$0.59)	(\$1.33)	(\$0.92)	\$0.09	(\$0.33)	(\$0.44)
2020/2021	\$0.04	\$0.05	(\$1.13)	(\$2.59)	(\$1.97)	(\$1.18)	\$0.42	\$0.14	(\$0.85)	(\$1.33)	(\$0.41)	\$0.12	(\$0.66)
2021/2022	\$6.29	(\$0.81)	(\$0.24)	\$0.12	(\$6.73)	(\$1.69)	(\$1.06)	\$0.65	(\$0.48)	(\$1.50)	\$0.51	\$2.17	(\$0.06)
2022/2023	\$0.78	\$1.58	(\$0.19)	(\$0.94)	(\$0.83)	(\$4.64)	(\$4.36)	(\$8.33)	(\$2.53)	(\$1.10)	(\$1.66)	(\$3.29)	(\$2.19)
2023/2024	\$0.77	(\$0.11)	\$2.32	\$0.53	(\$2.62)	(\$1.11)	(\$0.22)	(\$2.49)	(\$1.27)	(\$1.04)	\$5.64	\$2.35	\$0.26
2024/2025	(\$2.08)	\$0.92	\$2.77	(\$0.38)	(\$3.98)	(\$0.14)	(\$4.81)	(\$1.90)	(\$1.59)	(\$2.02)	(\$2.12)	(\$5.36)	(\$1.80)

Table 32 shows the day-ahead monthly load-weighted average CLMP components of LMP for PJM and for Pennsylvania (PPL) for the 2012/2013 through 2024/2025 planning period.

Table 32 PJM and Pennsylvania (PPL) day-ahead monthly load-weighted average CLMP component (Dollars per MWh): 2012/2013 through 2024/2025 planning period

Planning Period	PJM												
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
2012/2013	\$0.12	\$0.04	\$0.03	\$0.03	\$0.10	\$0.17	\$0.20	\$0.10	\$0.18	\$0.03	\$0.09	\$0.05	\$0.10
2013/2014	\$0.76	\$0.30	\$0.19	\$0.02	\$0.14	\$0.18	\$0.29	\$0.09	\$0.34	\$0.06	\$0.07	\$0.20	\$0.23
2014/2015	\$0.38	\$0.77	\$0.29	(\$0.06)	\$0.20	\$0.23	\$0.23	\$0.12	\$0.18	\$0.27	\$0.36	\$0.14	\$0.27
2015/2016	\$0.19	\$0.17	\$0.07	\$0.04	\$0.06	\$0.30	\$0.18	\$0.12	\$0.23	\$0.10	\$0.09	\$0.09	\$0.14
2016/2017	\$0.08	\$0.01	\$0.01	(\$0.02)	(\$0.06)	\$0.16	\$0.26	\$0.29	\$0.19	\$0.06	(\$0.01)	\$0.13	\$0.10
2017/2018	\$0.56	\$0.06	(\$0.07)	(\$0.01)	(\$0.05)	\$0.10	\$0.13	\$0.03	\$0.03	\$0.02	\$0.06	\$0.16	\$0.09
2018/2019	\$0.22	\$0.03	\$0.06	\$0.02	(\$0.01)	\$0.11	\$0.05	\$0.17	\$0.15	\$0.27	\$0.24	\$0.33	\$0.14
2019/2020	\$0.01	\$0.01	(\$0.06)	(\$0.08)	(\$0.03)	\$0.02	\$0.19	\$0.08	\$0.06	\$0.03	\$0.02	\$0.15	\$0.04
2020/2021	\$0.05	\$0.35	\$0.17	(\$0.10)	(\$0.04)	\$0.04	\$0.28	\$0.27	\$0.06	(\$0.00)	(\$0.05)	\$0.17	\$0.11
2021/2022	\$1.39	\$0.39	(\$0.04)	(\$0.08)	\$0.06	\$0.27	\$0.22	\$0.40	\$0.09	(\$0.11)	(\$0.30)	\$0.03	\$0.22
2022/2023	(\$0.12)	\$0.11	(\$0.03)	(\$0.04)	(\$0.06)	\$0.28	\$0.21	\$0.41	\$0.05	\$0.10	(\$0.04)	\$0.12	\$0.09
2023/2024	\$0.03	(\$0.00)	\$0.01	(\$0.06)	(\$0.01)	\$0.06	\$0.29	\$0.33	\$0.14	(\$0.05)	\$0.11	\$0.27	\$0.10
2024/2025	\$0.21	\$0.03	\$0.08	(\$0.00)	\$0.05	\$0.22	\$0.35	\$0.48	(\$0.04)	(\$0.04)	(\$0.29)	(\$0.20)	\$0.09
Planning Period	Pennsylvania (PPL)												
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
2012/2013	\$1.15	(\$0.94)	(\$0.56)	(\$0.16)	\$0.20	\$1.81	(\$1.37)	\$0.80	\$0.65	\$0.36	\$2.22	\$0.65	\$0.38
2013/2014	\$45.40	\$4.43	\$5.97	(\$0.37)	(\$3.60)	\$1.04	\$2.19	\$1.21	\$0.63	\$0.06	\$1.13	\$1.39	\$5.95
2014/2015	\$2.46	\$25.54	\$0.24	(\$3.78)	(\$0.93)	(\$1.47)	\$0.79	(\$2.98)	(\$3.88)	(\$3.56)	\$1.91	(\$2.33)	\$1.49
2015/2016	(\$2.41)	(\$3.51)	(\$4.90)	(\$5.49)	(\$2.46)	(\$5.62)	(\$5.34)	(\$3.17)	(\$3.01)	(\$4.20)	(\$5.11)	(\$5.01)	(\$4.16)
2016/2017	(\$0.26)	(\$1.17)	\$0.09	(\$0.27)	(\$1.24)	(\$2.34)	(\$1.65)	(\$2.98)	(\$6.27)	(\$7.64)	(\$3.70)	(\$0.91)	(\$2.27)
2017/2018	\$13.48	(\$1.87)	(\$6.08)	(\$2.89)	(\$8.83)	(\$1.54)	(\$1.94)	(\$2.46)	(\$3.16)	(\$4.26)	(\$2.93)	\$3.81	(\$1.15)
2018/2019	(\$0.75)	(\$1.31)	(\$2.09)	(\$1.42)	(\$3.21)	(\$4.93)	(\$2.15)	(\$1.51)	(\$4.64)	(\$1.94)	(\$2.50)	(\$1.17)	(\$2.23)
2019/2020	(\$1.37)	(\$1.46)	(\$1.63)	(\$0.84)	(\$2.57)	(\$2.48)	(\$2.31)	(\$2.03)	(\$4.27)	(\$3.74)	(\$3.46)	(\$0.60)	(\$2.19)
2020/2021	(\$1.53)	(\$2.30)	(\$2.99)	(\$3.83)	(\$2.88)	(\$1.35)	(\$2.05)	(\$1.59)	(\$3.70)	(\$5.22)	(\$0.73)	(\$1.22)	(\$2.37)
2021/2022	\$4.85	(\$1.30)	(\$2.73)	(\$3.26)	(\$7.19)	(\$1.76)	(\$2.25)	(\$0.50)	(\$2.78)	(\$3.38)	(\$5.01)	(\$0.68)	(\$1.94)
2022/2023	(\$3.34)	(\$0.62)	(\$1.67)	(\$4.71)	(\$4.63)	(\$10.39)	(\$2.34)	\$5.60	(\$7.50)	(\$4.49)	(\$5.06)	\$1.26	(\$2.90)
2023/2024	(\$2.72)	(\$2.52)	(\$3.18)	(\$1.87)	(\$9.22)	(\$5.18)	(\$6.43)	(\$8.57)	(\$9.06)	(\$5.60)	(\$2.47)	(\$3.59)	(\$5.01)
2024/2025	(\$0.21)	(\$3.32)	(\$4.07)	(\$6.09)	(\$6.95)	(\$5.10)	(\$5.18)	(\$5.18)	(\$5.81)	(\$7.70)	(\$2.48)	(\$5.22)	(\$4.63)

Table 33 shows the real-time monthly load-weighted average LMP for PJM and for Pennsylvania for the 2012/2013 through 2024/2025 planning period.

Table 33 PJM and Pennsylvania real-time monthly load-weighted average LMP (Dollars per MWh): 2012/2013 through 2024/2025 planning period

Planning Period	PJM												
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
2012/2013	\$37.20	\$35.16	\$39.83	\$38.52	\$39.50	\$30.43	\$50.03	\$37.06	\$36.19	\$36.54	\$40.94	\$30.65	\$37.87
2013/2014	\$126.76	\$70.82	\$75.90	\$39.73	\$44.49	\$37.74	\$51.61	\$35.20	\$41.22	\$34.58	\$33.60	\$37.54	\$54.05
2014/2015	\$38.42	\$72.16	\$42.02	\$30.44	\$34.09	\$44.02	\$38.31	\$34.42	\$36.37	\$36.58	\$37.91	\$33.22	\$40.23
2015/2016	\$30.15	\$26.65	\$22.90	\$29.14	\$24.46	\$32.16	\$34.16	\$30.08	\$33.65	\$28.22	\$26.64	\$24.95	\$28.80
2016/2017	\$32.25	\$25.73	\$32.30	\$28.40	\$31.30	\$28.52	\$32.26	\$35.59	\$31.09	\$28.13	\$25.68	\$32.34	\$30.57
2017/2018	\$81.95	\$26.31	\$33.13	\$35.24	\$38.33	\$28.32	\$32.90	\$27.73	\$33.57	\$28.69	\$28.60	\$40.09	\$36.98
2018/2019	\$32.14	\$28.15	\$29.88	\$26.44	\$24.19	\$31.33	\$32.95	\$34.26	\$35.14	\$33.95	\$36.73	\$32.78	\$31.67
2019/2020	\$22.05	\$19.36	\$17.85	\$17.59	\$18.28	\$23.05	\$29.82	\$24.18	\$29.42	\$27.92	\$27.89	\$23.78	\$23.72
2020/2021	\$25.33	\$40.93	\$26.31	\$26.74	\$29.40	\$20.46	\$26.92	\$25.21	\$19.67	\$22.24	\$21.40	\$26.25	\$26.02
2021/2022	\$69.06	\$46.76	\$43.56	\$63.91	\$83.16	\$34.13	\$37.34	\$47.40	\$49.63	\$58.42	\$63.01	\$38.92	\$52.44
2022/2023	\$35.75	\$26.04	\$28.42	\$29.32	\$28.44	\$97.89	\$92.48	\$113.74	\$78.29	\$55.90	\$52.93	\$142.22	\$68.07
2023/2024	\$42.78	\$24.86	\$23.15	\$27.17	\$36.16	\$27.29	\$37.20	\$31.33	\$31.55	\$34.77	\$32.94	\$27.97	\$31.70
2024/2025	\$62.87	\$48.90	\$42.11	\$45.42	\$36.34	\$33.35	\$47.17	\$36.29	\$31.81	\$31.87	\$28.26	\$34.98	\$40.53

Planning Period	Pennsylvania												
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
2012/2013	\$36.68	\$34.71	\$39.49	\$38.01	\$39.20	\$30.54	\$50.21	\$37.57	\$36.30	\$37.08	\$43.67	\$31.30	\$38.04
2013/2014	\$136.28	\$74.45	\$77.79	\$39.15	\$39.54	\$39.17	\$53.90	\$35.96	\$37.61	\$35.16	\$34.19	\$38.69	\$55.56
2014/2015	\$39.68	\$85.10	\$42.33	\$28.01	\$34.27	\$42.84	\$38.99	\$32.07	\$34.62	\$32.46	\$39.10	\$31.15	\$40.70
2015/2016	\$28.47	\$24.21	\$19.85	\$24.78	\$23.33	\$26.44	\$30.66	\$28.13	\$31.95	\$25.14	\$22.37	\$20.95	\$25.70
2016/2017	\$32.20	\$24.47	\$32.66	\$28.72	\$30.78	\$26.21	\$31.37	\$33.71	\$25.65	\$22.54	\$23.79	\$31.89	\$28.94
2017/2018	\$89.65	\$26.13	\$28.58	\$34.25	\$32.07	\$26.84	\$30.54	\$26.69	\$30.45	\$25.36	\$27.83	\$44.41	\$36.23
2018/2019	\$32.64	\$27.30	\$28.80	\$25.64	\$22.42	\$28.56	\$32.28	\$33.62	\$33.47	\$32.25	\$35.74	\$32.28	\$30.61
2019/2020	\$21.12	\$18.74	\$17.11	\$17.15	\$17.18	\$21.33	\$28.57	\$22.47	\$25.63	\$23.73	\$25.53	\$23.66	\$22.09
2020/2021	\$23.35	\$37.44	\$22.74	\$22.61	\$26.69	\$19.16	\$26.58	\$23.88	\$16.27	\$18.65	\$20.61	\$25.95	\$23.88
2021/2022	\$73.54	\$44.85	\$41.66	\$59.42	\$68.64	\$31.83	\$35.25	\$45.87	\$45.75	\$53.93	\$59.03	\$36.90	\$49.52
2022/2023	\$34.27	\$24.73	\$25.93	\$25.43	\$23.99	\$86.87	\$88.26	\$113.35	\$68.28	\$51.71	\$47.78	\$132.71	\$63.05
2023/2024	\$40.08	\$22.19	\$22.19	\$26.84	\$29.51	\$23.47	\$32.85	\$23.70	\$26.51	\$29.56	\$32.04	\$25.69	\$28.08
2024/2025	\$59.47	\$48.04	\$39.51	\$39.01	\$30.98	\$29.78	\$44.91	\$32.47	\$26.05	\$27.34	\$28.37	\$32.74	\$37.29

Table 34 shows the real-time monthly load-weighted average LMP for PJM and for Pennsylvania (APS) for the 2012/2013 through 2024/2025 planning period.

Table 34 PJM and Pennsylvania (APS) real-time monthly load-weighted average LMP (Dollars per MWh): 2012/2013 through 2024/2025 planning period

Planning Period	PJM												
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
2012/2013	\$37.20	\$35.16	\$39.83	\$38.52	\$39.50	\$30.43	\$50.03	\$37.06	\$36.19	\$36.54	\$40.94	\$30.65	\$37.87
2013/2014	\$126.76	\$70.82	\$75.90	\$39.73	\$44.49	\$37.74	\$51.61	\$35.20	\$41.22	\$34.58	\$33.60	\$37.54	\$54.05
2014/2015	\$38.42	\$72.16	\$42.02	\$30.44	\$34.09	\$44.02	\$38.31	\$34.42	\$36.37	\$36.58	\$37.91	\$33.22	\$40.23
2015/2016	\$30.15	\$26.65	\$22.90	\$29.14	\$24.46	\$32.16	\$34.16	\$30.08	\$33.65	\$28.22	\$26.64	\$24.95	\$28.80
2016/2017	\$32.25	\$25.73	\$32.30	\$28.40	\$31.30	\$28.52	\$32.26	\$35.59	\$31.09	\$28.13	\$25.68	\$32.34	\$30.57
2017/2018	\$81.95	\$26.31	\$33.13	\$35.24	\$38.33	\$28.32	\$32.90	\$27.73	\$33.57	\$28.69	\$28.60	\$40.09	\$36.98
2018/2019	\$32.14	\$28.15	\$29.88	\$26.44	\$24.19	\$31.33	\$32.95	\$34.26	\$35.14	\$33.95	\$36.73	\$32.78	\$31.67
2019/2020	\$22.05	\$19.36	\$17.85	\$17.59	\$18.28	\$23.05	\$29.82	\$24.18	\$29.42	\$27.92	\$27.89	\$23.78	\$23.72
2020/2021	\$25.33	\$40.93	\$26.31	\$26.74	\$29.40	\$20.46	\$26.92	\$25.21	\$19.67	\$22.24	\$21.40	\$26.25	\$26.02
2021/2022	\$69.06	\$46.76	\$43.56	\$63.91	\$83.16	\$34.13	\$37.34	\$47.40	\$49.63	\$58.42	\$63.01	\$38.92	\$52.44
2022/2023	\$35.75	\$26.04	\$28.42	\$29.32	\$28.44	\$97.89	\$92.48	\$113.74	\$78.29	\$55.90	\$52.93	\$142.22	\$68.07
2023/2024	\$42.78	\$24.86	\$23.15	\$27.17	\$36.16	\$27.29	\$37.20	\$31.33	\$31.55	\$34.77	\$32.94	\$27.97	\$31.70
2024/2025	\$62.87	\$48.90	\$42.11	\$45.42	\$36.34	\$33.35	\$47.17	\$36.29	\$31.81	\$31.87	\$28.26	\$34.98	\$40.53

Planning Period	Pennsylvania (APS)												
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
2012/2013	\$34.43	\$34.06	\$39.49	\$37.70	\$38.00	\$29.06	\$48.02	\$35.29	\$35.38	\$37.50	\$39.73	\$29.75	\$36.60
2013/2014	\$102.26	\$73.11	\$69.31	\$39.24	\$44.03	\$36.96	\$50.26	\$34.09	\$35.23	\$34.26	\$33.19	\$36.84	\$50.66
2014/2015	\$37.71	\$75.99	\$44.12	\$31.15	\$34.36	\$42.78	\$36.82	\$33.61	\$35.18	\$35.26	\$37.09	\$32.93	\$40.29
2015/2016	\$29.09	\$25.88	\$23.30	\$29.37	\$24.15	\$31.22	\$35.35	\$29.92	\$33.39	\$28.31	\$25.87	\$24.54	\$28.45
2016/2017	\$31.39	\$25.73	\$32.52	\$28.51	\$30.83	\$27.66	\$31.58	\$36.09	\$29.85	\$27.52	\$25.60	\$31.96	\$30.15
2017/2018	\$82.97	\$26.84	\$34.00	\$37.04	\$36.60	\$27.41	\$31.62	\$28.48	\$33.32	\$28.39	\$29.77	\$38.09	\$37.07
2018/2019	\$30.86	\$28.41	\$29.83	\$26.12	\$24.54	\$30.54	\$32.80	\$34.11	\$40.71	\$33.20	\$36.97	\$33.03	\$31.87
2019/2020	\$21.53	\$19.41	\$18.05	\$18.09	\$22.82	\$22.58	\$29.00	\$24.36	\$29.51	\$28.66	\$28.52	\$23.00	\$23.87
2020/2021	\$24.25	\$37.92	\$24.80	\$25.22	\$28.77	\$21.33	\$35.17	\$24.68	\$19.03	\$21.44	\$21.10	\$24.60	\$25.99
2021/2022	\$57.64	\$45.09	\$43.90	\$65.19	\$73.60	\$34.91	\$36.17	\$46.16	\$48.09	\$59.81	\$67.63	\$38.29	\$50.92
2022/2023	\$37.11	\$26.40	\$28.18	\$28.40	\$29.47	\$96.74	\$88.49	\$100.77	\$75.78	\$55.89	\$51.85	\$137.90	\$65.06
2023/2024	\$40.30	\$25.21	\$24.27	\$28.57	\$34.60	\$27.08	\$35.86	\$29.31	\$31.72	\$37.13	\$36.37	\$29.02	\$31.76
2024/2025	\$62.15	\$48.77	\$44.08	\$44.31	\$32.26	\$32.70	\$44.70	\$33.32	\$30.43	\$31.98	\$29.53	\$34.01	\$39.69

Table 35 shows the real-time monthly load-weighted average LMP for PJM and for Pennsylvania (ATSI) for the 2012/2013 through 2024/2025 planning period.

Table 35 PJM and Pennsylvania (ATSI) real-time monthly load-weighted average LMP (Dollars per MWh): 2012/2013 through 2024/2025 planning period

Planning Period	PJM												
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
2012/2013	\$37.20	\$35.16	\$39.83	\$38.52	\$39.50	\$30.43	\$50.03	\$37.06	\$36.19	\$36.54	\$40.94	\$30.65	\$37.87
2013/2014	\$126.76	\$70.82	\$75.90	\$39.73	\$44.49	\$37.74	\$51.61	\$35.20	\$41.22	\$34.58	\$33.60	\$37.54	\$54.05
2014/2015	\$38.42	\$72.16	\$42.02	\$30.44	\$34.09	\$44.02	\$38.31	\$34.42	\$36.37	\$36.58	\$37.91	\$33.22	\$40.23
2015/2016	\$30.15	\$26.65	\$22.90	\$29.14	\$24.46	\$32.16	\$34.16	\$30.08	\$33.65	\$28.22	\$26.64	\$24.95	\$28.80
2016/2017	\$32.25	\$25.73	\$32.30	\$28.40	\$31.30	\$28.52	\$32.26	\$35.59	\$31.09	\$28.13	\$25.68	\$32.34	\$30.57
2017/2018	\$81.95	\$26.31	\$33.13	\$35.24	\$38.33	\$28.32	\$32.90	\$27.73	\$33.57	\$28.69	\$28.60	\$40.09	\$36.98
2018/2019	\$32.14	\$28.15	\$29.88	\$26.44	\$24.19	\$31.33	\$32.95	\$34.26	\$35.14	\$33.95	\$36.73	\$32.78	\$31.67
2019/2020	\$22.05	\$19.36	\$17.85	\$17.59	\$18.28	\$23.05	\$29.82	\$24.18	\$29.42	\$27.92	\$27.89	\$23.78	\$23.72
2020/2021	\$25.33	\$40.93	\$26.31	\$26.74	\$29.40	\$20.46	\$26.92	\$25.21	\$19.67	\$22.24	\$21.40	\$26.25	\$26.02
2021/2022	\$69.06	\$46.76	\$43.56	\$63.91	\$83.16	\$34.13	\$37.34	\$47.40	\$49.63	\$58.42	\$63.01	\$38.92	\$52.44
2022/2023	\$35.75	\$26.04	\$28.42	\$29.32	\$28.44	\$97.89	\$92.48	\$113.74	\$78.29	\$55.90	\$52.93	\$142.22	\$68.07
2023/2024	\$42.78	\$24.86	\$23.15	\$27.17	\$36.16	\$27.29	\$37.20	\$31.33	\$31.55	\$34.77	\$32.94	\$27.97	\$31.70
2024/2025	\$62.87	\$48.90	\$42.11	\$45.42	\$36.34	\$33.35	\$47.17	\$36.29	\$31.81	\$31.87	\$28.26	\$34.98	\$40.53
Planning Period	Pennsylvania (ATSI)												
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
2012/2013	\$32.85	\$33.09	\$38.41	\$37.19	\$38.26	\$29.65	\$48.60	\$35.21	\$35.77	\$37.92	\$38.36	\$29.04	\$36.35
2013/2014	\$91.08	\$65.01	\$63.69	\$39.24	\$45.23	\$36.81	\$62.49	\$34.25	\$86.68	\$34.16	\$32.34	\$34.98	\$53.07
2014/2015	\$34.65	\$53.55	\$39.93	\$32.05	\$35.16	\$43.47	\$36.41	\$34.96	\$35.35	\$35.70	\$36.28	\$33.92	\$38.01
2015/2016	\$28.37	\$25.13	\$24.32	\$29.70	\$24.15	\$32.19	\$34.28	\$30.23	\$33.96	\$28.90	\$26.31	\$25.30	\$28.48
2016/2017	\$30.86	\$25.88	\$33.73	\$28.87	\$32.52	\$29.66	\$32.02	\$39.55	\$32.74	\$28.08	\$25.77	\$32.44	\$31.26
2017/2018	\$74.90	\$26.54	\$34.59	\$38.58	\$55.13	\$28.18	\$35.13	\$29.32	\$36.50	\$29.62	\$29.36	\$35.73	\$38.76
2018/2019	\$30.90	\$28.50	\$30.22	\$26.74	\$24.72	\$34.90	\$34.54	\$36.72	\$44.88	\$36.50	\$38.06	\$32.84	\$33.33
2019/2020	\$21.89	\$19.79	\$18.50	\$18.70	\$20.44	\$22.97	\$29.83	\$24.72	\$30.83	\$30.35	\$28.79	\$23.49	\$24.36
2020/2021	\$24.02	\$36.64	\$24.79	\$25.17	\$27.86	\$20.20	\$30.27	\$24.51	\$19.84	\$21.78	\$20.92	\$24.14	\$25.22
2021/2022	\$50.66	\$43.58	\$44.44	\$65.29	\$76.84	\$33.58	\$37.86	\$46.12	\$48.17	\$59.74	\$65.28	\$38.08	\$50.31
2022/2023	\$35.97	\$25.25	\$28.14	\$29.33	\$29.43	\$100.15	\$88.77	\$99.70	\$75.00	\$56.01	\$51.58	\$130.43	\$63.68
2023/2024	\$38.21	\$25.35	\$22.91	\$27.91	\$31.51	\$27.27	\$36.30	\$29.48	\$31.81	\$37.87	\$33.02	\$29.33	\$31.02
2024/2025	\$53.48	\$47.57	\$43.34	\$45.56	\$31.41	\$31.49	\$45.46	\$33.95	\$30.66	\$32.22	\$29.62	\$33.15	\$38.57

Table 36 shows the real-time monthly load-weighted average LMP for PJM and for Pennsylvania (DUQ) for the 2012/2013 through 2024/2025 planning period.

Table 36 PJM and Pennsylvania (DUQ) real-time monthly load-weighted average LMP (Dollars per MWh): 2012/2013 through 2024/2025 planning period

Planning Period	PJM												
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
2012/2013	\$37.20	\$35.16	\$39.83	\$38.52	\$39.50	\$30.43	\$50.03	\$37.06	\$36.19	\$36.54	\$40.94	\$30.65	\$37.87
2013/2014	\$126.76	\$70.82	\$75.90	\$39.73	\$44.49	\$37.74	\$51.61	\$35.20	\$41.22	\$34.58	\$33.60	\$37.54	\$54.05
2014/2015	\$38.42	\$72.16	\$42.02	\$30.44	\$34.09	\$44.02	\$38.31	\$34.42	\$36.37	\$36.58	\$37.91	\$33.22	\$40.23
2015/2016	\$30.15	\$26.65	\$22.90	\$29.14	\$24.46	\$32.16	\$34.16	\$30.08	\$33.65	\$28.22	\$26.64	\$24.95	\$28.80
2016/2017	\$32.25	\$25.73	\$32.30	\$28.40	\$31.30	\$28.52	\$32.26	\$35.59	\$31.09	\$28.13	\$25.68	\$32.34	\$30.57
2017/2018	\$81.95	\$26.31	\$33.13	\$35.24	\$38.33	\$28.32	\$32.90	\$27.73	\$33.57	\$28.69	\$28.60	\$40.09	\$36.98
2018/2019	\$32.14	\$28.15	\$29.88	\$26.44	\$24.19	\$31.33	\$32.95	\$34.26	\$35.14	\$33.95	\$36.73	\$32.78	\$31.67
2019/2020	\$22.05	\$19.36	\$17.85	\$17.59	\$18.28	\$23.05	\$29.82	\$24.18	\$29.42	\$27.92	\$27.89	\$23.78	\$23.72
2020/2021	\$25.33	\$40.93	\$26.31	\$26.74	\$29.40	\$20.46	\$26.92	\$25.21	\$19.67	\$22.24	\$21.40	\$26.25	\$26.02
2021/2022	\$69.06	\$46.76	\$43.56	\$63.91	\$83.16	\$34.13	\$37.34	\$47.40	\$49.63	\$58.42	\$63.01	\$38.92	\$52.44
2022/2023	\$35.75	\$26.04	\$28.42	\$29.32	\$28.44	\$97.89	\$92.48	\$113.74	\$78.29	\$55.90	\$52.93	\$142.22	\$68.07
2023/2024	\$42.78	\$24.86	\$23.15	\$27.17	\$36.16	\$27.29	\$37.20	\$31.33	\$31.55	\$34.77	\$32.94	\$27.97	\$31.70
2024/2025	\$62.87	\$48.90	\$42.11	\$45.42	\$36.34	\$33.35	\$47.17	\$36.29	\$31.81	\$31.87	\$28.26	\$34.98	\$40.53
Planning Period	Pennsylvania (DUQ)												
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
2012/2013	\$31.40	\$32.59	\$37.38	\$36.10	\$36.48	\$28.93	\$46.81	\$33.54	\$35.10	\$36.92	\$36.95	\$27.95	\$35.18
2013/2014	\$80.73	\$54.48	\$58.77	\$36.56	\$44.02	\$35.59	\$49.14	\$32.77	\$34.59	\$33.66	\$31.62	\$34.72	\$44.40
2014/2015	\$36.25	\$36.47	\$37.88	\$31.20	\$34.88	\$42.91	\$34.26	\$32.82	\$34.27	\$35.46	\$37.46	\$32.40	\$35.59
2015/2016	\$27.53	\$25.06	\$24.15	\$29.48	\$23.83	\$32.00	\$33.85	\$29.17	\$33.13	\$28.58	\$25.87	\$24.82	\$28.38
2016/2017	\$30.39	\$25.57	\$32.65	\$28.38	\$32.02	\$28.60	\$30.96	\$38.48	\$32.40	\$28.03	\$25.92	\$31.34	\$30.71
2017/2018	\$70.17	\$26.27	\$34.56	\$41.07	\$53.99	\$28.21	\$32.94	\$29.22	\$35.10	\$29.12	\$28.65	\$34.17	\$37.24
2018/2019	\$30.23	\$28.22	\$29.77	\$26.35	\$25.06	\$33.12	\$33.54	\$34.97	\$41.64	\$37.23	\$39.02	\$32.12	\$32.82
2019/2020	\$21.81	\$19.92	\$18.77	\$19.04	\$21.65	\$23.09	\$29.82	\$24.87	\$32.15	\$30.82	\$28.56	\$23.11	\$24.74
2020/2021	\$24.11	\$36.92	\$24.80	\$25.81	\$28.57	\$21.28	\$32.63	\$25.26	\$20.33	\$22.29	\$21.02	\$24.23	\$25.82
2021/2022	\$49.25	\$43.56	\$43.52	\$65.31	\$76.56	\$35.41	\$36.51	\$46.11	\$48.40	\$60.33	\$65.84	\$37.31	\$49.95
2022/2023	\$35.90	\$25.20	\$28.10	\$29.25	\$29.70	\$100.32	\$88.23	\$98.32	\$75.97	\$56.18	\$51.48	\$129.37	\$64.95
2023/2024	\$37.03	\$25.16	\$23.05	\$27.91	\$45.56	\$27.40	\$35.95	\$30.04	\$31.95	\$37.82	\$35.65	\$27.67	\$32.23
2024/2025	\$51.92	\$46.71	\$42.27	\$44.78	\$30.81	\$32.43	\$44.97	\$33.74	\$31.11	\$32.33	\$29.34	\$32.85	\$37.99

Table 37 shows the real-time monthly load-weighted average LMP for PJM and for Pennsylvania (MET-ED) for the 2012/2013 through 2024/2025 planning period.

Table 37 PJM and Pennsylvania (MET-ED) real-time monthly load-weighted average LMP (Dollars per MWh): 2012/2013 through 2024/2025 planning period

Planning Period	PJM												
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
2012/2013	\$37.20	\$35.16	\$39.83	\$38.52	\$39.50	\$30.43	\$50.03	\$37.06	\$36.19	\$36.54	\$40.94	\$30.65	\$37.87
2013/2014	\$126.76	\$70.82	\$75.90	\$39.73	\$44.49	\$37.74	\$51.61	\$35.20	\$41.22	\$34.58	\$33.60	\$37.54	\$54.05
2014/2015	\$38.42	\$72.16	\$42.02	\$30.44	\$34.09	\$44.02	\$38.31	\$34.42	\$36.37	\$36.58	\$37.91	\$33.22	\$40.23
2015/2016	\$30.15	\$26.65	\$22.90	\$29.14	\$24.46	\$32.16	\$34.16	\$30.08	\$33.65	\$28.22	\$26.64	\$24.95	\$28.80
2016/2017	\$32.25	\$25.73	\$32.30	\$28.40	\$31.30	\$28.52	\$32.26	\$35.59	\$31.09	\$28.13	\$25.68	\$32.34	\$30.57
2017/2018	\$81.95	\$26.31	\$33.13	\$35.24	\$38.33	\$28.32	\$32.90	\$27.73	\$33.57	\$28.69	\$28.60	\$40.09	\$36.98
2018/2019	\$32.14	\$28.15	\$29.88	\$26.44	\$24.19	\$31.33	\$32.95	\$34.26	\$35.14	\$33.95	\$36.73	\$32.78	\$31.67
2019/2020	\$22.05	\$19.36	\$17.85	\$17.59	\$18.28	\$23.05	\$29.82	\$24.18	\$29.42	\$27.92	\$27.89	\$23.78	\$23.72
2020/2021	\$25.33	\$40.93	\$26.31	\$26.74	\$29.40	\$20.46	\$26.92	\$25.21	\$19.67	\$22.24	\$21.40	\$26.25	\$26.02
2021/2022	\$69.06	\$46.76	\$43.56	\$63.91	\$83.16	\$34.13	\$37.34	\$47.40	\$49.63	\$58.42	\$63.01	\$38.92	\$52.44
2022/2023	\$35.75	\$26.04	\$28.42	\$29.32	\$28.44	\$97.89	\$92.48	\$113.74	\$78.29	\$55.90	\$52.93	\$142.22	\$68.07
2023/2024	\$42.78	\$24.86	\$23.15	\$27.17	\$36.16	\$27.29	\$37.20	\$31.33	\$31.55	\$34.77	\$32.94	\$27.97	\$31.70
2024/2025	\$62.87	\$48.90	\$42.11	\$45.42	\$36.34	\$33.35	\$47.17	\$36.29	\$31.81	\$31.87	\$28.26	\$34.98	\$40.53
Planning Period	Pennsylvania (MET-ED)												
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
2012/2013	\$37.97	\$35.86	\$40.48	\$38.45	\$39.99	\$31.42	\$50.86	\$38.97	\$36.37	\$37.07	\$46.22	\$32.98	\$39.06
2013/2014	\$155.86	\$78.64	\$84.08	\$38.82	\$35.73	\$40.60	\$55.39	\$37.39	\$37.69	\$34.33	\$35.12	\$40.24	\$58.70
2014/2015	\$41.02	\$95.39	\$42.78	\$26.30	\$38.36	\$42.61	\$39.48	\$31.17	\$33.71	\$31.07	\$40.17	\$29.89	\$41.76
2015/2016	\$28.57	\$23.26	\$18.20	\$22.46	\$22.85	\$23.63	\$28.39	\$27.47	\$31.50	\$23.59	\$21.02	\$18.83	\$24.34
2016/2017	\$33.31	\$23.82	\$33.32	\$30.51	\$31.12	\$25.81	\$32.71	\$32.94	\$24.09	\$20.61	\$23.08	\$32.65	\$28.96
2017/2018	\$98.61	\$26.52	\$25.73	\$31.60	\$24.67	\$27.84	\$31.87	\$26.24	\$34.52	\$22.68	\$28.37	\$47.14	\$36.68
2018/2019	\$34.81	\$28.19	\$29.60	\$25.41	\$23.16	\$27.07	\$32.22	\$34.29	\$30.02	\$32.33	\$36.73	\$33.69	\$30.87
2019/2020	\$22.16	\$19.10	\$16.67	\$16.81	\$15.54	\$21.42	\$29.02	\$22.23	\$26.47	\$23.53	\$25.72	\$24.32	\$22.20
2020/2021	\$23.97	\$38.13	\$23.29	\$24.04	\$28.21	\$19.92	\$24.42	\$31.13	\$15.35	\$16.84	\$22.92	\$27.54	\$24.90
2021/2022	\$89.09	\$46.19	\$42.04	\$62.44	\$73.63	\$32.31	\$37.62	\$53.22	\$50.94	\$59.98	\$67.54	\$40.62	\$54.56
2022/2023	\$37.36	\$25.03	\$26.24	\$24.56	\$27.39	\$91.62	\$96.92	\$137.71	\$73.40	\$55.26	\$50.84	\$139.09	\$68.92
2023/2024	\$42.73	\$23.24	\$22.86	\$27.64	\$26.84	\$23.61	\$31.91	\$22.38	\$24.66	\$32.56	\$32.30	\$26.00	\$28.25
2024/2025	\$60.79	\$47.25	\$43.18	\$37.67	\$36.39	\$28.49	\$42.26	\$32.28	\$25.65	\$24.60	\$28.54	\$33.48	\$37.43

Table 38 shows the real-time monthly load-weighted average LMP for PJM and for Pennsylvania (PECO) for the 2012/2013 through 2024/2025 planning period.

Table 38 PJM and Pennsylvania (PECO) real-time monthly load-weighted average LMP (Dollars per MWh): 2012/2013 through 2024/2025 planning period

Planning Period	PJM												
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
2012/2013	\$37.20	\$35.16	\$39.83	\$38.52	\$39.50	\$30.43	\$50.03	\$37.06	\$36.19	\$36.54	\$40.94	\$30.65	\$37.87
2013/2014	\$126.76	\$70.82	\$75.90	\$39.73	\$44.49	\$37.74	\$51.61	\$35.20	\$41.22	\$34.58	\$33.60	\$37.54	\$54.05
2014/2015	\$38.42	\$72.16	\$42.02	\$30.44	\$34.09	\$44.02	\$38.31	\$34.42	\$36.37	\$36.58	\$37.91	\$33.22	\$40.23
2015/2016	\$30.15	\$26.65	\$22.90	\$29.14	\$24.46	\$32.16	\$34.16	\$30.08	\$33.65	\$28.22	\$26.64	\$24.95	\$28.80
2016/2017	\$32.25	\$25.73	\$32.30	\$28.40	\$31.30	\$28.52	\$32.26	\$35.59	\$31.09	\$28.13	\$25.68	\$32.34	\$30.57
2017/2018	\$81.95	\$26.31	\$33.13	\$35.24	\$38.33	\$28.32	\$32.90	\$27.73	\$33.57	\$28.69	\$28.60	\$40.09	\$36.98
2018/2019	\$32.14	\$28.15	\$29.88	\$26.44	\$24.19	\$31.33	\$32.95	\$34.26	\$35.14	\$33.95	\$36.73	\$32.78	\$31.67
2019/2020	\$22.05	\$19.36	\$17.85	\$17.59	\$18.28	\$23.05	\$29.82	\$24.18	\$29.42	\$27.92	\$27.89	\$23.78	\$23.72
2020/2021	\$25.33	\$40.93	\$26.31	\$26.74	\$29.40	\$20.46	\$26.92	\$25.21	\$19.67	\$22.24	\$21.40	\$26.25	\$26.02
2021/2022	\$69.06	\$46.76	\$43.56	\$63.91	\$83.16	\$34.13	\$37.34	\$47.40	\$49.63	\$58.42	\$63.01	\$38.92	\$52.44
2022/2023	\$35.75	\$26.04	\$28.42	\$29.32	\$28.44	\$97.89	\$92.48	\$113.74	\$78.29	\$55.90	\$52.93	\$142.22	\$68.07
2023/2024	\$42.78	\$24.86	\$23.15	\$27.17	\$36.16	\$27.29	\$37.20	\$31.33	\$31.55	\$34.77	\$32.94	\$27.97	\$31.70
2024/2025	\$62.87	\$48.90	\$42.11	\$45.42	\$36.34	\$33.35	\$47.17	\$36.29	\$31.81	\$31.87	\$28.26	\$34.98	\$40.53

Planning Period	Pennsylvania (PECO)												
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
2012/2013	\$37.12	\$34.57	\$39.95	\$38.10	\$39.89	\$31.85	\$54.42	\$40.01	\$37.51	\$36.74	\$46.15	\$32.05	\$39.37
2013/2014	\$156.95	\$77.56	\$84.97	\$39.97	\$36.59	\$40.85	\$55.22	\$37.20	\$36.69	\$37.66	\$34.84	\$39.31	\$58.35
2014/2015	\$41.11	\$95.84	\$42.30	\$26.07	\$32.59	\$43.31	\$41.62	\$31.26	\$35.21	\$30.85	\$40.41	\$30.06	\$41.52
2015/2016	\$28.28	\$23.49	\$17.18	\$21.77	\$23.21	\$24.35	\$28.85	\$27.43	\$31.57	\$23.11	\$20.43	\$18.99	\$24.40
2016/2017	\$32.37	\$23.48	\$32.11	\$28.41	\$31.19	\$25.01	\$32.52	\$32.28	\$22.74	\$19.20	\$22.52	\$31.73	\$28.16
2017/2018	\$97.33	\$25.63	\$26.49	\$32.83	\$26.88	\$25.84	\$30.19	\$25.94	\$25.82	\$24.16	\$26.28	\$49.10	\$35.68
2018/2019	\$35.97	\$26.39	\$28.29	\$25.83	\$20.46	\$26.93	\$32.11	\$32.85	\$29.38	\$30.57	\$34.46	\$31.62	\$29.84
2019/2020	\$21.39	\$18.47	\$16.52	\$16.43	\$14.50	\$20.78	\$29.18	\$21.11	\$21.30	\$19.14	\$23.33	\$22.38	\$20.83
2020/2021	\$22.46	\$36.91	\$21.15	\$19.90	\$24.05	\$17.47	\$24.13	\$20.51	\$14.46	\$17.30	\$19.02	\$26.78	\$22.19
2021/2022	\$85.50	\$44.68	\$39.20	\$51.64	\$60.29	\$30.82	\$34.29	\$43.28	\$42.51	\$44.65	\$45.48	\$33.93	\$46.33
2022/2023	\$31.20	\$23.53	\$23.41	\$23.14	\$15.81	\$73.01	\$84.99	\$113.28	\$58.62	\$44.54	\$41.51	\$126.52	\$59.16
2023/2024	\$39.72	\$18.66	\$20.67	\$25.32	\$24.20	\$19.95	\$31.64	\$20.24	\$24.09	\$19.10	\$26.43	\$21.51	\$24.63
2024/2025	\$60.51	\$47.88	\$33.66	\$34.47	\$28.92	\$29.74	\$49.04	\$32.95	\$22.18	\$25.09	\$27.43	\$31.82	\$36.34

Table 39 shows the real-time monthly load-weighted average LMP for PJM and for Pennsylvania (PENELEC) for the 2012/2013 through 2024/2025 planning period.

Table 39 PJM and Pennsylvania (PENELEC) real-time monthly load-weighted average LMP (Dollars per MWh): 2012/2013 through 2024/2025 planning period

Planning Period	PJM												
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
2012/2013	\$37.20	\$35.16	\$39.83	\$38.52	\$39.50	\$30.43	\$50.03	\$37.06	\$36.19	\$36.54	\$40.94	\$30.65	\$37.87
2013/2014	\$126.76	\$70.82	\$75.90	\$39.73	\$44.49	\$37.74	\$51.61	\$35.20	\$41.22	\$34.58	\$33.60	\$37.54	\$54.05
2014/2015	\$38.42	\$72.16	\$42.02	\$30.44	\$34.09	\$44.02	\$38.31	\$34.42	\$36.37	\$36.58	\$37.91	\$33.22	\$40.23
2015/2016	\$30.15	\$26.65	\$22.90	\$29.14	\$24.46	\$32.16	\$34.16	\$30.08	\$33.65	\$28.22	\$26.64	\$24.95	\$28.80
2016/2017	\$32.25	\$25.73	\$32.30	\$28.40	\$31.30	\$28.52	\$32.26	\$35.59	\$31.09	\$28.13	\$25.68	\$32.34	\$30.57
2017/2018	\$81.95	\$26.31	\$33.13	\$35.24	\$38.33	\$28.32	\$32.90	\$27.73	\$33.57	\$28.69	\$28.60	\$40.09	\$36.98
2018/2019	\$32.14	\$28.15	\$29.88	\$26.44	\$24.19	\$31.33	\$32.95	\$34.26	\$35.14	\$33.95	\$36.73	\$32.78	\$31.67
2019/2020	\$22.05	\$19.36	\$17.85	\$17.59	\$18.28	\$23.05	\$29.82	\$24.18	\$29.42	\$27.92	\$27.89	\$23.78	\$23.72
2020/2021	\$25.33	\$40.93	\$26.31	\$26.74	\$29.40	\$20.46	\$26.92	\$25.21	\$19.67	\$22.24	\$21.40	\$26.25	\$26.02
2021/2022	\$69.06	\$46.76	\$43.56	\$63.91	\$83.16	\$34.13	\$37.34	\$47.40	\$49.63	\$58.42	\$63.01	\$38.92	\$52.44
2022/2023	\$35.75	\$26.04	\$28.42	\$29.32	\$28.44	\$97.89	\$92.48	\$113.74	\$78.29	\$55.90	\$52.93	\$142.22	\$68.07
2023/2024	\$42.78	\$24.86	\$23.15	\$27.17	\$36.16	\$27.29	\$37.20	\$31.33	\$31.55	\$34.77	\$32.94	\$27.97	\$31.70
2024/2025	\$62.87	\$48.90	\$42.11	\$45.42	\$36.34	\$33.35	\$47.17	\$36.29	\$31.81	\$31.87	\$28.26	\$34.98	\$40.53
Planning Period	Pennsylvania (PENELEC)												
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
2012/2013	\$38.60	\$36.14	\$39.46	\$38.57	\$39.20	\$29.63	\$48.46	\$36.36	\$36.37	\$38.10	\$42.29	\$31.48	\$37.97
2013/2014	\$111.68	\$75.34	\$74.17	\$40.14	\$45.98	\$37.82	\$52.69	\$35.41	\$36.45	\$35.46	\$34.24	\$39.03	\$53.14
2014/2015	\$39.19	\$76.43	\$45.36	\$30.40	\$33.74	\$43.14	\$38.99	\$33.61	\$35.76	\$34.29	\$37.59	\$33.44	\$40.64
2015/2016	\$28.29	\$25.05	\$22.14	\$27.87	\$24.03	\$28.83	\$34.10	\$30.00	\$33.11	\$27.26	\$23.82	\$22.49	\$27.31
2016/2017	\$31.66	\$25.39	\$31.83	\$29.49	\$30.53	\$26.70	\$31.18	\$34.47	\$27.43	\$25.27	\$24.79	\$31.46	\$29.36
2017/2018	\$79.72	\$28.44	\$31.18	\$35.75	\$35.54	\$26.75	\$30.16	\$26.66	\$30.58	\$27.45	\$32.39	\$40.96	\$36.23
2018/2019	\$30.16	\$28.13	\$29.46	\$25.65	\$24.13	\$29.66	\$32.88	\$34.62	\$34.61	\$32.94	\$36.26	\$36.05	\$31.36
2019/2020	\$20.97	\$19.08	\$18.16	\$17.27	\$17.93	\$21.76	\$28.28	\$23.55	\$26.52	\$25.29	\$27.17	\$22.72	\$22.50
2020/2021	\$24.71	\$39.36	\$23.62	\$22.08	\$27.02	\$18.94	\$27.52	\$24.73	\$17.43	\$20.72	\$20.28	\$24.37	\$24.42
2021/2022	\$68.80	\$47.73	\$43.68	\$62.61	\$68.97	\$30.48	\$35.38	\$44.73	\$45.98	\$55.51	\$64.96	\$39.22	\$50.55
2022/2023	\$36.08	\$25.56	\$27.57	\$27.22	\$26.76	\$91.82	\$85.91	\$100.18	\$71.97	\$53.69	\$50.44	\$124.71	\$61.55
2023/2024	\$43.58	\$25.92	\$25.82	\$27.70	\$33.59	\$26.66	\$37.28	\$26.91	\$32.76	\$33.82	\$38.66	\$31.44	\$32.18
2024/2025	\$61.88	\$58.96	\$45.90	\$42.16	\$31.22	\$32.46	\$42.42	\$33.69	\$29.44	\$30.19	\$29.21	\$40.58	\$40.45

Table 40 shows the real-time monthly load-weighted average LMP for PJM and for Pennsylvania (PPL) for the 2012/2013 through 2024/2025 planning period.

Table 40 PJM and Pennsylvania (PPL) real-time monthly load-weighted average LMP (Dollars per MWh): 2012/2013 through 2024/2025 planning period

Planning Period	PJM												
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
2012/2013	\$37.20	\$35.16	\$39.83	\$38.52	\$39.50	\$30.43	\$50.03	\$37.06	\$36.19	\$36.54	\$40.94	\$30.65	\$37.87
2013/2014	\$126.76	\$70.82	\$75.90	\$39.73	\$44.49	\$37.74	\$51.61	\$35.20	\$41.22	\$34.58	\$33.60	\$37.54	\$54.05
2014/2015	\$38.42	\$72.16	\$42.02	\$30.44	\$34.09	\$44.02	\$38.31	\$34.42	\$36.37	\$36.58	\$37.91	\$33.22	\$40.23
2015/2016	\$30.15	\$26.65	\$22.90	\$29.14	\$24.46	\$32.16	\$34.16	\$30.08	\$33.65	\$28.22	\$26.64	\$24.95	\$28.80
2016/2017	\$32.25	\$25.73	\$32.30	\$28.40	\$31.30	\$28.52	\$32.26	\$35.59	\$31.09	\$28.13	\$25.68	\$32.34	\$30.57
2017/2018	\$81.95	\$26.31	\$33.13	\$35.24	\$38.33	\$28.32	\$32.90	\$27.73	\$33.57	\$28.69	\$28.60	\$40.09	\$36.98
2018/2019	\$32.14	\$28.15	\$29.88	\$26.44	\$24.19	\$31.33	\$32.95	\$34.26	\$35.14	\$33.95	\$36.73	\$32.78	\$31.67
2019/2020	\$22.05	\$19.36	\$17.85	\$17.59	\$18.28	\$23.05	\$29.82	\$24.18	\$29.42	\$27.92	\$27.89	\$23.78	\$23.72
2020/2021	\$25.33	\$40.93	\$26.31	\$26.74	\$29.40	\$20.46	\$26.92	\$25.21	\$19.67	\$22.24	\$21.40	\$26.25	\$26.02
2021/2022	\$69.06	\$46.76	\$43.56	\$63.91	\$83.16	\$34.13	\$37.34	\$47.40	\$49.63	\$58.42	\$63.01	\$38.92	\$52.44
2022/2023	\$35.75	\$26.04	\$28.42	\$29.32	\$28.44	\$97.89	\$92.48	\$113.74	\$78.29	\$55.90	\$52.93	\$142.22	\$68.07
2023/2024	\$42.78	\$24.86	\$23.15	\$27.17	\$36.16	\$27.29	\$37.20	\$31.33	\$31.55	\$34.77	\$32.94	\$27.97	\$31.70
2024/2025	\$62.87	\$48.90	\$42.11	\$45.42	\$36.34	\$33.35	\$47.17	\$36.29	\$31.81	\$31.87	\$28.26	\$34.98	\$40.53

Planning Period	Pennsylvania (PPL)												
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
2012/2013	\$38.23	\$35.01	\$39.54	\$38.46	\$40.01	\$30.73	\$48.64	\$37.75	\$35.95	\$36.69	\$45.82	\$32.00	\$38.33
2013/2014	\$159.65	\$77.93	\$82.48	\$38.93	\$36.21	\$40.14	\$55.10	\$36.71	\$36.67	\$34.01	\$34.82	\$39.99	\$59.41
2014/2015	\$40.63	\$98.14	\$41.64	\$26.31	\$34.28	\$42.23	\$38.99	\$31.24	\$33.61	\$30.86	\$40.03	\$30.05	\$41.76
2015/2016	\$28.66	\$23.69	\$18.27	\$22.71	\$22.65	\$23.51	\$28.14	\$26.89	\$30.65	\$23.56	\$20.76	\$19.35	\$24.22
2016/2017	\$32.94	\$24.09	\$33.22	\$28.19	\$29.69	\$25.39	\$29.62	\$31.58	\$23.09	\$20.27	\$22.99	\$32.02	\$28.07
2017/2018	\$94.25	\$25.02	\$25.02	\$31.69	\$24.92	\$26.60	\$28.60	\$25.52	\$29.82	\$23.23	\$25.65	\$47.74	\$35.55
2018/2019	\$31.66	\$26.47	\$27.69	\$24.89	\$21.00	\$26.82	\$31.22	\$32.69	\$30.17	\$30.66	\$34.33	\$30.41	\$29.21
2019/2020	\$20.06	\$17.88	\$16.17	\$16.60	\$15.10	\$20.19	\$26.99	\$21.44	\$24.14	\$21.43	\$23.88	\$25.48	\$21.00
2020/2021	\$22.61	\$36.88	\$21.68	\$22.06	\$26.61	\$18.70	\$22.70	\$23.20	\$14.71	\$16.71	\$20.91	\$26.63	\$23.02
2021/2022	\$76.88	\$43.73	\$40.76	\$58.24	\$68.30	\$30.19	\$34.08	\$45.85	\$44.48	\$53.66	\$58.09	\$36.23	\$49.25
2022/2023	\$32.93	\$24.32	\$25.25	\$23.72	\$23.60	\$84.89	\$89.16	\$121.86	\$66.95	\$51.84	\$47.37	\$137.77	\$63.39
2023/2024	\$39.08	\$20.65	\$20.37	\$26.16	\$25.17	\$21.82	\$29.73	\$20.63	\$21.77	\$28.39	\$30.73	\$24.32	\$25.95
2024/2025	\$58.80	\$44.33	\$37.08	\$36.89	\$30.15	\$26.53	\$42.49	\$30.44	\$23.75	\$24.50	\$27.75	\$29.57	\$35.24

Table 41 shows the day-ahead monthly load-weighted average LMP for PJM and for Pennsylvania for the 2012/2013 through 2024/2025 planning period.

Table 41 PJM and Pennsylvania day-ahead monthly load-weighted average LMP (Dollars per MWh): 2012/2013 through 2024/2025 planning period

Planning Period	PJM												
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
2012/2013	\$36.22	\$35.86	\$39.74	\$39.76	\$40.03	\$35.73	\$45.54	\$35.15	\$33.68	\$34.64	\$39.14	\$32.57	\$37.44
2013/2014	\$136.12	\$72.93	\$69.74	\$42.14	\$43.21	\$38.22	\$50.90	\$35.61	\$37.73	\$35.46	\$35.63	\$40.05	\$54.59
2014/2015	\$39.05	\$77.34	\$39.44	\$30.95	\$35.67	\$42.34	\$38.91	\$35.31	\$35.45	\$35.53	\$40.41	\$33.50	\$40.74
2015/2016	\$30.73	\$27.97	\$24.58	\$28.37	\$24.32	\$32.52	\$34.40	\$31.00	\$31.67	\$29.97	\$27.23	\$24.82	\$29.15
2016/2017	\$31.79	\$26.67	\$32.35	\$29.67	\$30.67	\$27.31	\$35.21	\$34.30	\$31.26	\$29.13	\$26.18	\$33.00	\$30.86
2017/2018	\$77.15	\$27.45	\$32.19	\$34.68	\$35.08	\$28.60	\$32.06	\$28.38	\$31.66	\$29.54	\$29.75	\$37.89	\$35.94
2018/2019	\$34.36	\$27.21	\$30.13	\$26.48	\$25.03	\$32.04	\$35.22	\$34.42	\$34.33	\$35.72	\$37.70	\$33.69	\$32.37
2019/2020	\$22.36	\$19.79	\$17.93	\$16.98	\$17.58	\$23.34	\$29.68	\$25.40	\$26.30	\$25.00	\$28.43	\$23.86	\$23.38
2020/2021	\$25.59	\$44.04	\$24.99	\$27.48	\$29.34	\$19.83	\$26.45	\$24.31	\$19.89	\$21.21	\$21.03	\$25.76	\$25.94
2021/2022	\$64.80	\$50.35	\$45.50	\$64.18	\$83.24	\$33.56	\$38.98	\$45.72	\$46.29	\$57.93	\$61.07	\$37.82	\$51.94
2022/2023	\$36.58	\$31.22	\$28.41	\$29.81	\$28.80	\$90.54	\$96.38	\$106.07	\$82.80	\$58.37	\$55.24	\$93.39	\$63.72
2023/2024	\$48.66	\$23.70	\$21.93	\$26.75	\$32.90	\$27.82	\$40.56	\$30.54	\$30.91	\$35.17	\$33.40	\$28.00	\$32.05
2024/2025	\$67.74	\$49.02	\$40.74	\$44.35	\$37.40	\$32.62	\$44.69	\$36.31	\$30.77	\$33.26	\$29.82	\$37.05	\$40.86
Planning Period	Pennsylvania												
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
2012/2013	\$36.40	\$35.15	\$39.14	\$39.59	\$39.76	\$36.90	\$45.67	\$35.57	\$34.01	\$35.49	\$41.15	\$33.20	\$37.73
2013/2014	\$154.57	\$74.47	\$72.29	\$41.59	\$40.53	\$38.60	\$51.98	\$36.04	\$36.76	\$35.52	\$36.30	\$40.90	\$56.45
2014/2015	\$39.54	\$87.47	\$39.38	\$28.57	\$34.62	\$40.82	\$38.92	\$32.69	\$32.43	\$32.49	\$41.25	\$31.66	\$40.56
2015/2016	\$28.31	\$25.04	\$21.30	\$24.73	\$22.54	\$28.44	\$31.04	\$28.85	\$29.58	\$27.33	\$23.42	\$21.20	\$26.12
2016/2017	\$31.10	\$25.71	\$32.25	\$29.71	\$29.77	\$25.30	\$34.35	\$32.13	\$26.87	\$23.50	\$23.48	\$31.81	\$29.08
2017/2018	\$84.42	\$27.21	\$28.75	\$33.67	\$30.03	\$26.67	\$30.41	\$26.74	\$28.51	\$26.71	\$28.42	\$39.70	\$34.99
2018/2019	\$34.52	\$26.39	\$28.92	\$25.49	\$22.83	\$28.30	\$33.75	\$33.53	\$31.80	\$33.62	\$36.09	\$33.40	\$30.91
2019/2020	\$21.52	\$18.84	\$16.95	\$16.68	\$16.48	\$21.43	\$27.84	\$23.63	\$22.96	\$22.13	\$26.28	\$22.99	\$21.72
2020/2021	\$24.30	\$40.67	\$22.51	\$24.07	\$26.36	\$18.34	\$25.49	\$22.81	\$17.14	\$17.52	\$20.42	\$24.74	\$23.86
2021/2022	\$67.82	\$50.07	\$43.51	\$61.36	\$73.69	\$31.21	\$36.81	\$44.61	\$43.38	\$53.74	\$56.79	\$36.99	\$49.78
2022/2023	\$34.59	\$30.65	\$26.69	\$26.62	\$24.30	\$78.41	\$92.42	\$105.49	\$74.05	\$53.46	\$50.30	\$91.62	\$59.35
2023/2024	\$45.95	\$22.10	\$20.64	\$25.59	\$26.23	\$23.13	\$36.02	\$23.52	\$24.86	\$30.44	\$32.59	\$25.53	\$28.34
2024/2025	\$67.43	\$47.32	\$39.23	\$40.52	\$31.31	\$29.71	\$41.64	\$32.53	\$26.11	\$28.15	\$28.56	\$34.13	\$37.93

Table 42 shows the day-ahead monthly load-weighted average LMP for PJM and for Pennsylvania (APS) for the 2012/2013 through 2024/2025 planning period.

Table 42 PJM and Pennsylvania (APS) day-ahead monthly load-weighted average LMP (Dollars per MWh): 2012/2013 through 2024/2025 planning period

Planning Period	PJM												Annual
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	
2012/2013	\$36.22	\$35.86	\$39.74	\$39.76	\$40.03	\$35.73	\$45.54	\$35.15	\$33.68	\$34.64	\$39.14	\$32.57	\$37.44
2013/2014	\$136.12	\$72.93	\$69.74	\$42.14	\$43.21	\$38.22	\$50.90	\$35.61	\$37.73	\$35.46	\$35.63	\$40.05	\$54.59
2014/2015	\$39.05	\$77.34	\$39.44	\$30.95	\$35.67	\$42.34	\$38.91	\$35.31	\$35.45	\$35.53	\$40.41	\$33.50	\$40.74
2015/2016	\$30.73	\$27.97	\$24.58	\$28.37	\$24.32	\$32.52	\$34.40	\$31.00	\$31.67	\$29.97	\$27.23	\$24.82	\$29.15
2016/2017	\$31.79	\$26.67	\$32.35	\$29.67	\$30.67	\$27.31	\$35.21	\$34.30	\$31.26	\$29.13	\$26.18	\$33.00	\$30.86
2017/2018	\$77.15	\$27.45	\$32.19	\$34.68	\$35.08	\$28.60	\$32.06	\$28.38	\$31.66	\$29.54	\$29.75	\$37.89	\$35.94
2018/2019	\$34.36	\$27.21	\$30.13	\$26.48	\$25.03	\$32.04	\$35.22	\$34.42	\$34.33	\$35.72	\$37.70	\$33.69	\$32.37
2019/2020	\$22.36	\$19.79	\$17.93	\$16.98	\$17.58	\$23.34	\$29.68	\$25.40	\$26.30	\$25.00	\$28.43	\$23.86	\$23.38
2020/2021	\$25.59	\$44.04	\$24.99	\$27.48	\$29.34	\$19.83	\$26.45	\$24.31	\$19.89	\$21.21	\$21.03	\$25.76	\$25.94
2021/2022	\$64.80	\$50.35	\$45.50	\$64.18	\$83.24	\$33.56	\$38.98	\$45.72	\$46.29	\$57.93	\$61.07	\$37.82	\$51.94
2022/2023	\$36.58	\$31.22	\$28.41	\$29.81	\$28.80	\$90.54	\$96.38	\$106.07	\$82.80	\$58.37	\$55.24	\$93.39	\$63.72
2023/2024	\$48.66	\$23.70	\$21.93	\$26.75	\$32.90	\$27.82	\$40.56	\$30.54	\$30.91	\$35.17	\$33.40	\$28.00	\$32.05
2024/2025	\$67.74	\$49.02	\$40.74	\$44.35	\$37.40	\$32.62	\$44.69	\$36.31	\$30.77	\$33.26	\$29.82	\$37.05	\$40.86
Planning Period	Pennsylvania (APS)												Annual
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	
2012/2013	\$33.66	\$34.47	\$39.18	\$39.15	\$39.13	\$34.16	\$44.06	\$34.02	\$33.28	\$35.03	\$38.53	\$31.92	\$36.42
2013/2014	\$109.74	\$72.16	\$67.20	\$41.41	\$42.58	\$37.24	\$49.80	\$34.70	\$35.33	\$35.31	\$35.20	\$40.04	\$51.75
2014/2015	\$36.49	\$74.91	\$39.74	\$31.51	\$35.66	\$41.34	\$36.99	\$34.01	\$33.84	\$34.44	\$39.65	\$32.86	\$39.83
2015/2016	\$29.44	\$26.86	\$24.85	\$28.51	\$24.01	\$31.67	\$34.71	\$30.97	\$31.21	\$30.18	\$26.56	\$24.31	\$28.69
2016/2017	\$31.06	\$26.68	\$32.45	\$29.80	\$30.36	\$26.76	\$34.23	\$33.72	\$30.56	\$28.44	\$26.05	\$32.41	\$30.36
2017/2018	\$74.97	\$28.40	\$33.14	\$36.06	\$35.27	\$27.52	\$31.04	\$28.35	\$31.45	\$29.44	\$30.73	\$36.02	\$35.83
2018/2019	\$33.64	\$27.39	\$30.33	\$26.26	\$25.11	\$30.81	\$34.52	\$34.67	\$36.63	\$34.90	\$38.07	\$33.98	\$32.33
2019/2020	\$21.87	\$19.96	\$18.12	\$17.73	\$20.92	\$22.98	\$28.81	\$25.28	\$26.77	\$25.43	\$29.13	\$23.57	\$23.50
2020/2021	\$24.81	\$40.98	\$24.46	\$27.39	\$28.71	\$19.38	\$29.00	\$23.82	\$20.02	\$20.45	\$21.32	\$24.99	\$25.64
2021/2022	\$59.78	\$49.37	\$45.84	\$65.81	\$79.34	\$32.09	\$38.25	\$45.17	\$46.16	\$59.76	\$64.70	\$38.31	\$51.61
2022/2023	\$38.16	\$30.32	\$28.85	\$30.35	\$29.92	\$88.55	\$93.20	\$98.00	\$80.54	\$59.42	\$55.28	\$87.71	\$61.17
2023/2024	\$47.39	\$24.19	\$23.19	\$27.76	\$30.77	\$27.70	\$39.61	\$28.93	\$30.51	\$37.42	\$37.47	\$29.12	\$32.25
2024/2025	\$66.19	\$49.02	\$43.86	\$46.52	\$33.32	\$32.36	\$41.97	\$34.53	\$29.88	\$33.65	\$30.57	\$35.88	\$40.54

Table 43 shows the day-ahead monthly load-weighted average LMP for PJM and for Pennsylvania (ATSI) for the 2012/2013 through 2024/2025 planning period.

Table 43 PJM and Pennsylvania (ATSI) day-ahead monthly load-weighted average LMP (Dollars per MWh): 2012/2013 through 2024/2025 planning period

Planning Period	PJM												Annual
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	
2012/2013	\$36.22	\$35.86	\$39.74	\$39.76	\$40.03	\$35.73	\$45.54	\$35.15	\$33.68	\$34.64	\$39.14	\$32.57	\$37.44
2013/2014	\$136.12	\$72.93	\$69.74	\$42.14	\$43.21	\$38.22	\$50.90	\$35.61	\$37.73	\$35.46	\$35.63	\$40.05	\$54.59
2014/2015	\$39.05	\$77.34	\$39.44	\$30.95	\$35.67	\$42.34	\$38.91	\$35.31	\$35.45	\$35.53	\$40.41	\$33.50	\$40.74
2015/2016	\$30.73	\$27.97	\$24.58	\$28.37	\$24.32	\$32.52	\$34.40	\$31.00	\$31.67	\$29.97	\$27.23	\$24.82	\$29.15
2016/2017	\$31.79	\$26.67	\$32.35	\$29.67	\$30.67	\$27.31	\$35.21	\$34.30	\$31.26	\$29.13	\$26.18	\$33.00	\$30.86
2017/2018	\$77.15	\$27.45	\$32.19	\$34.68	\$35.08	\$28.60	\$32.06	\$28.38	\$31.66	\$29.54	\$29.75	\$37.89	\$35.94
2018/2019	\$34.36	\$27.21	\$30.13	\$26.48	\$25.03	\$32.04	\$35.22	\$34.42	\$34.33	\$35.72	\$37.70	\$33.69	\$32.37
2019/2020	\$22.36	\$19.79	\$17.93	\$16.98	\$17.58	\$23.34	\$29.68	\$25.40	\$26.30	\$25.00	\$28.43	\$23.86	\$23.38
2020/2021	\$25.59	\$44.04	\$24.99	\$27.48	\$29.34	\$19.83	\$26.45	\$24.31	\$19.89	\$21.21	\$21.03	\$25.76	\$25.94
2021/2022	\$64.80	\$50.35	\$45.50	\$64.18	\$83.24	\$33.56	\$38.98	\$45.72	\$46.29	\$57.93	\$61.07	\$37.82	\$51.94
2022/2023	\$36.58	\$31.22	\$28.41	\$29.81	\$28.80	\$90.54	\$96.38	\$106.07	\$82.80	\$58.37	\$55.24	\$93.39	\$63.72
2023/2024	\$48.66	\$23.70	\$21.93	\$26.75	\$32.90	\$27.82	\$40.56	\$30.54	\$30.91	\$35.17	\$33.40	\$28.00	\$32.05
2024/2025	\$67.74	\$49.02	\$40.74	\$44.35	\$37.40	\$32.62	\$44.69	\$36.31	\$30.77	\$33.26	\$29.82	\$37.05	\$40.86

Planning Period	Pennsylvania (ATSI)												Annual
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	
2012/2013	\$32.78	\$33.69	\$38.12	\$38.09	\$37.97	\$32.82	\$42.97	\$33.05	\$32.55	\$35.15	\$38.51	\$31.23	\$35.57
2013/2014	\$93.85	\$65.75	\$59.55	\$41.10	\$42.06	\$36.40	\$49.68	\$34.33	\$34.03	\$35.87	\$34.23	\$38.01	\$48.35
2014/2015	\$34.11	\$52.20	\$37.14	\$33.06	\$35.65	\$41.31	\$35.57	\$34.55	\$33.34	\$34.72	\$38.38	\$33.23	\$37.05
2015/2016	\$28.38	\$25.92	\$25.59	\$29.07	\$23.91	\$31.70	\$33.65	\$30.25	\$31.13	\$30.36	\$26.59	\$24.55	\$28.32
2016/2017	\$31.00	\$26.82	\$33.22	\$30.27	\$31.73	\$27.22	\$33.90	\$34.62	\$31.84	\$29.39	\$26.31	\$32.33	\$30.83
2017/2018	\$66.68	\$28.79	\$33.48	\$38.02	\$42.34	\$28.30	\$32.27	\$29.95	\$33.48	\$31.73	\$31.02	\$34.74	\$36.70
2018/2019	\$33.48	\$28.27	\$30.98	\$27.60	\$25.71	\$36.65	\$38.30	\$37.10	\$41.53	\$39.24	\$39.80	\$34.86	\$34.49
2019/2020	\$22.32	\$20.45	\$19.00	\$18.22	\$19.51	\$23.37	\$29.57	\$25.81	\$28.20	\$27.18	\$29.94	\$23.91	\$24.20
2020/2021	\$24.47	\$43.54	\$24.36	\$27.43	\$28.15	\$19.27	\$26.49	\$23.76	\$20.25	\$20.89	\$21.16	\$24.31	\$25.44
2021/2022	\$51.88	\$47.41	\$45.95	\$66.05	\$79.06	\$32.36	\$37.90	\$44.24	\$45.34	\$59.55	\$63.56	\$36.60	\$50.33
2022/2023	\$36.83	\$27.74	\$28.75	\$30.92	\$30.13	\$95.63	\$92.92	\$95.82	\$79.35	\$59.98	\$54.05	\$84.89	\$60.20
2023/2024	\$44.88	\$24.01	\$21.78	\$27.27	\$28.60	\$27.43	\$39.53	\$29.50	\$29.74	\$38.02	\$31.48	\$28.76	\$31.10
2024/2025	\$59.92	\$46.46	\$42.71	\$46.42	\$32.29	\$31.20	\$40.48	\$34.07	\$30.01	\$33.75	\$30.50	\$34.69	\$38.92

Table 44 shows the day-ahead monthly load-weighted average LMP for PJM and for Pennsylvania (DUQ) for the 2012/2013 through 2024/2025 planning period.

Table 44 PJM and Pennsylvania (DUQ) day-ahead monthly load-weighted average LMP (Dollars per MWh): 2012/2013 through 2024/2025 planning period

Planning Period	PJM												
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
2012/2013	\$36.22	\$35.86	\$39.74	\$39.76	\$40.03	\$35.73	\$45.54	\$35.15	\$33.68	\$34.64	\$39.14	\$32.57	\$37.44
2013/2014	\$136.12	\$72.93	\$69.74	\$42.14	\$43.21	\$38.22	\$50.90	\$35.61	\$37.73	\$35.46	\$35.63	\$40.05	\$54.59
2014/2015	\$39.05	\$77.34	\$39.44	\$30.95	\$35.67	\$42.34	\$38.91	\$35.31	\$35.45	\$35.53	\$40.41	\$33.50	\$40.74
2015/2016	\$30.73	\$27.97	\$24.58	\$28.37	\$24.32	\$32.52	\$34.40	\$31.00	\$31.67	\$29.97	\$27.23	\$24.82	\$29.15
2016/2017	\$31.79	\$26.67	\$32.35	\$29.67	\$30.67	\$27.31	\$35.21	\$34.30	\$31.26	\$29.13	\$26.18	\$33.00	\$30.86
2017/2018	\$77.15	\$27.45	\$32.19	\$34.68	\$35.08	\$28.60	\$32.06	\$28.38	\$31.66	\$29.54	\$29.75	\$37.89	\$35.94
2018/2019	\$34.36	\$27.21	\$30.13	\$26.48	\$25.03	\$32.04	\$35.22	\$34.42	\$34.33	\$35.72	\$37.70	\$33.69	\$32.37
2019/2020	\$22.36	\$19.79	\$17.93	\$16.98	\$17.58	\$23.34	\$29.68	\$25.40	\$26.30	\$25.00	\$28.43	\$23.86	\$23.38
2020/2021	\$25.59	\$44.04	\$24.99	\$27.48	\$29.34	\$19.83	\$26.45	\$24.31	\$19.89	\$21.21	\$21.03	\$25.76	\$25.94
2021/2022	\$64.80	\$50.35	\$45.50	\$64.18	\$83.24	\$33.56	\$38.98	\$45.72	\$46.29	\$57.93	\$61.07	\$37.82	\$51.94
2022/2023	\$36.58	\$31.22	\$28.41	\$29.81	\$28.80	\$90.54	\$96.38	\$106.07	\$82.80	\$58.37	\$55.24	\$93.39	\$63.72
2023/2024	\$48.66	\$23.70	\$21.93	\$26.75	\$32.90	\$27.82	\$40.56	\$30.54	\$30.91	\$35.17	\$33.40	\$28.00	\$32.05
2024/2025	\$67.74	\$49.02	\$40.74	\$44.35	\$37.40	\$32.62	\$44.69	\$36.31	\$30.77	\$33.26	\$29.82	\$37.05	\$40.86
Planning Period	Pennsylvania (DUQ)												
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
2012/2013	\$31.12	\$32.29	\$37.08	\$37.13	\$38.30	\$33.18	\$42.38	\$32.31	\$31.90	\$34.26	\$36.16	\$30.15	\$34.78
2013/2014	\$89.71	\$59.54	\$54.76	\$38.88	\$41.71	\$35.92	\$48.93	\$33.51	\$33.82	\$34.68	\$33.48	\$37.71	\$45.71
2014/2015	\$33.38	\$41.18	\$36.05	\$31.82	\$36.80	\$40.50	\$34.57	\$33.14	\$32.82	\$34.64	\$40.10	\$32.67	\$35.68
2015/2016	\$28.24	\$25.95	\$25.63	\$28.87	\$23.93	\$32.36	\$34.01	\$30.39	\$30.99	\$30.29	\$26.95	\$24.50	\$28.71
2016/2017	\$30.67	\$26.47	\$32.26	\$29.81	\$31.19	\$26.86	\$33.46	\$34.27	\$31.42	\$29.22	\$26.31	\$31.74	\$30.51
2017/2018	\$67.25	\$28.17	\$33.35	\$38.25	\$40.78	\$28.54	\$31.67	\$29.41	\$33.31	\$30.78	\$30.27	\$34.29	\$35.71
2018/2019	\$32.56	\$27.50	\$30.40	\$26.79	\$25.72	\$34.01	\$37.24	\$35.67	\$40.14	\$38.25	\$40.05	\$33.46	\$33.73
2019/2020	\$22.09	\$20.85	\$19.07	\$18.35	\$20.40	\$23.54	\$29.85	\$26.23	\$28.79	\$27.39	\$29.47	\$23.58	\$24.40
2020/2021	\$24.60	\$41.64	\$24.31	\$28.02	\$29.30	\$20.05	\$28.89	\$25.00	\$21.59	\$21.40	\$21.17	\$24.37	\$25.89
2021/2022	\$51.72	\$47.24	\$44.89	\$65.93	\$80.37	\$33.08	\$38.45	\$45.05	\$45.74	\$60.26	\$64.21	\$36.46	\$50.30
2022/2023	\$37.01	\$28.21	\$28.63	\$30.82	\$30.69	\$93.80	\$93.29	\$96.34	\$79.98	\$59.74	\$54.24	\$85.21	\$61.13
2023/2024	\$43.65	\$23.75	\$21.87	\$27.14	\$33.74	\$27.81	\$39.71	\$30.02	\$30.58	\$38.60	\$36.63	\$28.72	\$32.13
2024/2025	\$58.97	\$46.12	\$41.89	\$45.96	\$32.51	\$34.69	\$41.53	\$35.53	\$30.85	\$34.06	\$30.36	\$34.73	\$39.11

Table 45 shows the day-ahead monthly load-weighted average LMP for PJM and for Pennsylvania (MET-ED) for the 2012/2013 through 2024/2025 planning period.

Table 45 PJM and Pennsylvania (MET-ED) day-ahead monthly load-weighted average LMP (Dollars per MWh): 2012/2013 through 2024/2025 planning period

Planning Period	PJM												
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
2012/2013	\$36.22	\$35.86	\$39.74	\$39.76	\$40.03	\$35.73	\$45.54	\$35.15	\$33.68	\$34.64	\$39.14	\$32.57	\$37.44
2013/2014	\$136.12	\$72.93	\$69.74	\$42.14	\$43.21	\$38.22	\$50.90	\$35.61	\$37.73	\$35.46	\$35.63	\$40.05	\$54.59
2014/2015	\$39.05	\$77.34	\$39.44	\$30.95	\$35.67	\$42.34	\$38.91	\$35.31	\$35.45	\$35.53	\$40.41	\$33.50	\$40.74
2015/2016	\$30.73	\$27.97	\$24.58	\$28.37	\$24.32	\$32.52	\$34.40	\$31.00	\$31.67	\$29.97	\$27.23	\$24.82	\$29.15
2016/2017	\$31.79	\$26.67	\$32.35	\$29.67	\$30.67	\$27.31	\$35.21	\$34.30	\$31.26	\$29.13	\$26.18	\$33.00	\$30.86
2017/2018	\$77.15	\$27.45	\$32.19	\$34.68	\$35.08	\$28.60	\$32.06	\$28.38	\$31.66	\$29.54	\$29.75	\$37.89	\$35.94
2018/2019	\$34.36	\$27.21	\$30.13	\$26.48	\$25.03	\$32.04	\$35.22	\$34.42	\$34.33	\$35.72	\$37.70	\$33.69	\$32.37
2019/2020	\$22.36	\$19.79	\$17.93	\$16.98	\$17.58	\$23.34	\$29.68	\$25.40	\$26.30	\$25.00	\$28.43	\$23.86	\$23.38
2020/2021	\$25.59	\$44.04	\$24.99	\$27.48	\$29.34	\$19.83	\$26.45	\$24.31	\$19.89	\$21.21	\$21.03	\$25.76	\$25.94
2021/2022	\$64.80	\$50.35	\$45.50	\$64.18	\$83.24	\$33.56	\$38.98	\$45.72	\$46.29	\$57.93	\$61.07	\$37.82	\$51.94
2022/2023	\$36.58	\$31.22	\$28.41	\$29.81	\$28.80	\$90.54	\$96.38	\$106.07	\$82.80	\$58.37	\$55.24	\$93.39	\$63.72
2023/2024	\$48.66	\$23.70	\$21.93	\$26.75	\$32.90	\$27.82	\$40.56	\$30.54	\$30.91	\$35.17	\$33.40	\$28.00	\$32.05
2024/2025	\$67.74	\$49.02	\$40.74	\$44.35	\$37.40	\$32.62	\$44.69	\$36.31	\$30.77	\$33.26	\$29.82	\$37.05	\$40.86
Planning Period	Pennsylvania (MET-ED)												
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
2012/2013	\$37.89	\$36.05	\$40.21	\$40.36	\$40.20	\$38.44	\$45.84	\$36.69	\$34.37	\$35.83	\$42.95	\$34.59	\$38.67
2013/2014	\$181.89	\$77.13	\$76.79	\$41.51	\$37.54	\$39.45	\$53.90	\$37.07	\$38.95	\$35.54	\$37.30	\$41.93	\$60.45
2014/2015	\$41.60	\$99.80	\$39.40	\$26.95	\$36.38	\$40.27	\$40.08	\$31.81	\$30.73	\$31.35	\$42.14	\$30.74	\$41.51
2015/2016	\$28.02	\$23.91	\$19.82	\$22.86	\$21.97	\$26.39	\$28.71	\$28.07	\$28.20	\$25.77	\$21.90	\$19.22	\$24.71
2016/2017	\$32.07	\$25.36	\$32.90	\$31.30	\$30.01	\$24.87	\$35.10	\$31.61	\$26.43	\$21.62	\$22.43	\$32.53	\$29.10
2017/2018	\$92.85	\$27.24	\$27.20	\$31.38	\$25.83	\$27.78	\$32.16	\$26.61	\$30.56	\$25.26	\$28.76	\$42.31	\$35.67
2018/2019	\$35.86	\$26.93	\$29.30	\$25.59	\$22.53	\$26.12	\$33.91	\$35.02	\$29.36	\$32.37	\$37.09	\$34.25	\$30.93
2019/2020	\$22.52	\$18.83	\$16.46	\$16.14	\$15.34	\$21.09	\$28.54	\$23.47	\$22.77	\$21.61	\$26.73	\$23.97	\$21.75
2020/2021	\$25.25	\$40.81	\$23.09	\$24.93	\$28.11	\$18.76	\$24.66	\$26.78	\$16.69	\$15.34	\$21.84	\$25.34	\$24.45
2021/2022	\$79.98	\$54.56	\$45.06	\$63.57	\$82.57	\$32.50	\$39.30	\$50.03	\$47.96	\$59.89	\$63.03	\$41.96	\$54.83
2022/2023	\$37.93	\$32.48	\$27.44	\$26.44	\$26.02	\$82.58	\$101.03	\$128.91	\$81.30	\$57.12	\$55.26	\$98.18	\$64.29
2023/2024	\$51.07	\$23.28	\$21.70	\$27.37	\$26.47	\$23.92	\$35.38	\$22.07	\$24.07	\$33.70	\$33.32	\$26.19	\$29.30
2024/2025	\$73.15	\$48.14	\$42.57	\$40.08	\$35.12	\$29.34	\$38.02	\$31.15	\$26.40	\$25.42	\$29.25	\$36.99	\$38.59

Table 46 shows the day-ahead monthly load-weighted average LMP for PJM and for Pennsylvania (PECO) for the 2012/2013 through 2024/2025 planning period.

Table 46 PJM and Pennsylvania (PECO) day-ahead monthly load-weighted average LMP (Dollars per MWh): 2012/2013 through 2024/2025 planning period

PJM													
Planning Period	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
2012/2013	\$36.22	\$35.86	\$39.74	\$39.76	\$40.03	\$35.73	\$45.54	\$35.15	\$33.68	\$34.64	\$39.14	\$32.57	\$37.44
2013/2014	\$136.12	\$72.93	\$69.74	\$42.14	\$43.21	\$38.22	\$50.90	\$35.61	\$37.73	\$35.46	\$35.63	\$40.05	\$54.59
2014/2015	\$39.05	\$77.34	\$39.44	\$30.95	\$35.67	\$42.34	\$38.91	\$35.31	\$35.45	\$35.53	\$40.41	\$33.50	\$40.74
2015/2016	\$30.73	\$27.97	\$24.58	\$28.37	\$24.32	\$32.52	\$34.40	\$31.00	\$31.67	\$29.97	\$27.23	\$24.82	\$29.15
2016/2017	\$31.79	\$26.67	\$32.35	\$29.67	\$30.67	\$27.31	\$35.21	\$34.30	\$31.26	\$29.13	\$26.18	\$33.00	\$30.86
2017/2018	\$77.15	\$27.45	\$32.19	\$34.68	\$35.08	\$28.60	\$32.06	\$28.38	\$31.66	\$29.54	\$29.75	\$37.89	\$35.94
2018/2019	\$34.36	\$27.21	\$30.13	\$26.48	\$25.03	\$32.04	\$35.22	\$34.42	\$34.33	\$35.72	\$37.70	\$33.69	\$32.37
2019/2020	\$22.36	\$19.79	\$17.93	\$16.98	\$17.58	\$23.34	\$29.68	\$25.40	\$26.30	\$25.00	\$28.43	\$23.86	\$23.38
2020/2021	\$25.59	\$44.04	\$24.99	\$27.48	\$29.34	\$19.83	\$26.45	\$24.31	\$19.89	\$21.21	\$21.03	\$25.76	\$25.94
2021/2022	\$64.80	\$50.35	\$45.50	\$64.18	\$83.24	\$33.56	\$38.98	\$45.72	\$46.29	\$57.93	\$61.07	\$37.82	\$51.94
2022/2023	\$36.58	\$31.22	\$28.41	\$29.81	\$28.80	\$90.54	\$96.38	\$106.07	\$82.80	\$58.37	\$55.24	\$93.39	\$63.72
2023/2024	\$48.66	\$23.70	\$21.93	\$26.75	\$32.90	\$27.82	\$40.56	\$30.54	\$30.91	\$35.17	\$33.40	\$28.00	\$32.05
2024/2025	\$67.74	\$49.02	\$40.74	\$44.35	\$37.40	\$32.62	\$44.69	\$36.31	\$30.77	\$33.26	\$29.82	\$37.05	\$40.86
Pennsylvania (PECO)													
Planning Period	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
2012/2013	\$38.08	\$34.94	\$39.57	\$39.92	\$40.25	\$39.72	\$51.18	\$37.44	\$35.24	\$36.20	\$43.37	\$34.06	\$39.43
2013/2014	\$185.04	\$77.33	\$77.31	\$42.50	\$38.25	\$40.21	\$54.11	\$37.43	\$38.22	\$35.62	\$37.18	\$41.63	\$60.44
2014/2015	\$42.65	\$102.84	\$39.84	\$26.46	\$33.47	\$40.91	\$41.24	\$31.92	\$32.03	\$30.73	\$42.58	\$30.83	\$41.85
2015/2016	\$27.71	\$23.93	\$18.44	\$22.00	\$21.65	\$27.09	\$29.44	\$27.70	\$29.27	\$25.27	\$21.44	\$19.36	\$24.75
2016/2017	\$31.10	\$24.85	\$31.68	\$29.32	\$29.60	\$24.23	\$36.45	\$31.88	\$24.31	\$19.73	\$21.68	\$31.36	\$28.42
2017/2018	\$92.77	\$26.51	\$26.98	\$32.70	\$26.01	\$25.52	\$30.21	\$25.83	\$24.66	\$24.91	\$26.75	\$42.23	\$34.47
2018/2019	\$36.17	\$25.45	\$28.10	\$24.89	\$21.04	\$26.74	\$32.95	\$32.46	\$28.28	\$31.64	\$33.87	\$32.55	\$29.77
2019/2020	\$21.58	\$17.81	\$15.89	\$15.75	\$14.09	\$20.62	\$27.39	\$22.45	\$19.00	\$18.55	\$24.13	\$22.06	\$20.37
2020/2021	\$23.36	\$39.68	\$20.79	\$20.89	\$23.34	\$17.09	\$24.19	\$20.10	\$14.82	\$15.89	\$18.98	\$24.51	\$22.13
2021/2022	\$70.00	\$48.49	\$40.45	\$55.14	\$63.33	\$30.04	\$35.64	\$42.41	\$39.12	\$43.35	\$44.68	\$32.75	\$45.33
2022/2023	\$29.91	\$29.83	\$23.99	\$23.99	\$17.02	\$64.21	\$88.39	\$102.26	\$63.87	\$44.18	\$42.27	\$92.66	\$55.46
2023/2024	\$44.55	\$19.91	\$18.20	\$22.41	\$22.05	\$18.75	\$34.53	\$20.18	\$21.59	\$20.39	\$26.16	\$20.73	\$24.58
2024/2025	\$70.97	\$48.14	\$33.78	\$35.78	\$28.71	\$28.84	\$45.80	\$32.45	\$22.43	\$25.18	\$27.47	\$35.17	\$37.14

Table 47 shows the day-ahead monthly load-weighted average LMP for PJM and for Pennsylvania (PENELEC) for the 2012/2013 through 2024/2025 planning period.

Table 47 PJM and Pennsylvania (PENELEC) day-ahead monthly load-weighted average LMP (Dollars per MWh): 2012/2013 through 2024/2025 planning period

Planning Period	PJM												
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
2012/2013	\$36.22	\$35.86	\$39.74	\$39.76	\$40.03	\$35.73	\$45.54	\$35.15	\$33.68	\$34.64	\$39.14	\$32.57	\$37.44
2013/2014	\$136.12	\$72.93	\$69.74	\$42.14	\$43.21	\$38.22	\$50.90	\$35.61	\$37.73	\$35.46	\$35.63	\$40.05	\$54.59
2014/2015	\$39.05	\$77.34	\$39.44	\$30.95	\$35.67	\$42.34	\$38.91	\$35.31	\$35.45	\$35.53	\$40.41	\$33.50	\$40.74
2015/2016	\$30.73	\$27.97	\$24.58	\$28.37	\$24.32	\$32.52	\$34.40	\$31.00	\$31.67	\$29.97	\$27.23	\$24.82	\$29.15
2016/2017	\$31.79	\$26.67	\$32.35	\$29.67	\$30.67	\$27.31	\$35.21	\$34.30	\$31.26	\$29.13	\$26.18	\$33.00	\$30.86
2017/2018	\$77.15	\$27.45	\$32.19	\$34.68	\$35.08	\$28.60	\$32.06	\$28.38	\$31.66	\$29.54	\$29.75	\$37.89	\$35.94
2018/2019	\$34.36	\$27.21	\$30.13	\$26.48	\$25.03	\$32.04	\$35.22	\$34.42	\$34.33	\$35.72	\$37.70	\$33.69	\$32.37
2019/2020	\$22.36	\$19.79	\$17.93	\$16.98	\$17.58	\$23.34	\$29.68	\$25.40	\$26.30	\$25.00	\$28.43	\$23.86	\$23.38
2020/2021	\$25.59	\$44.04	\$24.99	\$27.48	\$29.34	\$19.83	\$26.45	\$24.31	\$19.89	\$21.21	\$21.03	\$25.76	\$25.94
2021/2022	\$64.80	\$50.35	\$45.50	\$64.18	\$83.24	\$33.56	\$38.98	\$45.72	\$46.29	\$57.93	\$61.07	\$37.82	\$51.94
2022/2023	\$36.58	\$31.22	\$28.41	\$29.81	\$28.80	\$90.54	\$96.38	\$106.07	\$82.80	\$58.37	\$55.24	\$93.39	\$63.72
2023/2024	\$48.66	\$23.70	\$21.93	\$26.75	\$32.90	\$27.82	\$40.56	\$30.54	\$30.91	\$35.17	\$33.40	\$28.00	\$32.05
2024/2025	\$67.74	\$49.02	\$40.74	\$44.35	\$37.40	\$32.62	\$44.69	\$36.31	\$30.77	\$33.26	\$29.82	\$37.05	\$40.86
Planning Period	Pennsylvania (PENELEC)												
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
2012/2013	\$36.04	\$36.48	\$39.01	\$39.72	\$39.64	\$36.03	\$42.85	\$34.71	\$33.73	\$35.39	\$40.12	\$32.95	\$37.20
2013/2014	\$122.35	\$74.95	\$70.51	\$42.12	\$45.81	\$37.52	\$49.80	\$34.90	\$35.62	\$35.93	\$36.22	\$40.82	\$51.10
2014/2015	\$37.45	\$73.33	\$40.61	\$30.10	\$34.07	\$41.76	\$38.08	\$34.07	\$34.50	\$34.69	\$40.40	\$33.13	\$39.67
2015/2016	\$28.72	\$26.40	\$23.33	\$26.79	\$23.31	\$29.62	\$33.86	\$30.50	\$30.98	\$29.27	\$24.88	\$22.78	\$27.54
2016/2017	\$30.30	\$26.12	\$31.55	\$29.66	\$29.61	\$25.91	\$32.84	\$32.12	\$28.67	\$26.13	\$24.77	\$31.55	\$29.29
2017/2018	\$72.16	\$30.22	\$31.37	\$35.13	\$33.67	\$26.56	\$29.81	\$27.23	\$29.43	\$28.58	\$31.97	\$36.84	\$34.52
2018/2019	\$35.24	\$27.43	\$30.16	\$26.03	\$24.82	\$29.76	\$33.93	\$34.04	\$34.13	\$34.53	\$37.38	\$37.05	\$32.21
2019/2020	\$21.74	\$19.93	\$18.48	\$17.65	\$17.37	\$22.42	\$28.38	\$24.41	\$25.05	\$24.28	\$28.67	\$23.59	\$22.78
2020/2021	\$25.64	\$43.52	\$23.89	\$24.78	\$27.13	\$18.95	\$26.80	\$24.42	\$18.93	\$20.10	\$20.97	\$25.90	\$25.17
2021/2022	\$71.20	\$50.91	\$45.62	\$64.92	\$75.82	\$31.13	\$37.22	\$46.12	\$45.89	\$57.24	\$62.65	\$40.78	\$52.88
2022/2023	\$38.00	\$33.75	\$28.26	\$28.78	\$27.47	\$84.01	\$92.79	\$98.28	\$79.88	\$57.92	\$54.45	\$88.71	\$60.54
2023/2024	\$47.76	\$23.98	\$24.69	\$27.73	\$30.11	\$25.85	\$39.94	\$27.10	\$29.30	\$34.99	\$39.73	\$30.58	\$32.01
2024/2025	\$63.94	\$48.93	\$44.75	\$44.52	\$33.28	\$31.99	\$39.99	\$33.56	\$28.72	\$31.47	\$28.42	\$32.48	\$38.93

Table 48 shows the day-ahead monthly load-weighted average LMP for PJM and for Pennsylvania (PPL) for the 2012/2013 through 2024/2025 planning period.

Table 48 PJM and Pennsylvania (PPL) day-ahead monthly load-weighted average LMP (Dollars per MWh): 2012/2013 through 2024/2025 planning period

PJM													
Planning Period	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
2012/2013	\$36.22	\$35.86	\$39.74	\$39.76	\$40.03	\$35.73	\$45.54	\$35.15	\$33.68	\$34.64	\$39.14	\$32.57	\$37.44
2013/2014	\$136.12	\$72.93	\$69.74	\$42.14	\$43.21	\$38.22	\$50.90	\$35.61	\$37.73	\$35.46	\$35.63	\$40.05	\$54.59
2014/2015	\$39.05	\$77.34	\$39.44	\$30.95	\$35.67	\$42.34	\$38.91	\$35.31	\$35.45	\$35.53	\$40.41	\$33.50	\$40.74
2015/2016	\$30.73	\$27.97	\$24.58	\$28.37	\$24.32	\$32.52	\$34.40	\$31.00	\$31.67	\$29.97	\$27.23	\$24.82	\$29.15
2016/2017	\$31.79	\$26.67	\$32.35	\$29.67	\$30.67	\$27.31	\$35.21	\$34.30	\$31.26	\$29.13	\$26.18	\$33.00	\$30.86
2017/2018	\$77.15	\$27.45	\$32.19	\$34.68	\$35.08	\$28.60	\$32.06	\$28.38	\$31.66	\$29.54	\$29.75	\$37.89	\$35.94
2018/2019	\$34.36	\$27.21	\$30.13	\$26.48	\$25.03	\$32.04	\$35.22	\$34.42	\$34.33	\$35.72	\$37.70	\$33.69	\$32.37
2019/2020	\$22.36	\$19.79	\$17.93	\$16.98	\$17.58	\$23.34	\$29.68	\$25.40	\$26.30	\$25.00	\$28.43	\$23.86	\$23.38
2020/2021	\$25.59	\$44.04	\$24.99	\$27.48	\$29.34	\$19.83	\$26.45	\$24.31	\$19.89	\$21.21	\$21.03	\$25.76	\$25.94
2021/2022	\$64.80	\$50.35	\$45.50	\$64.18	\$83.24	\$33.56	\$38.98	\$45.72	\$46.29	\$57.93	\$61.07	\$37.82	\$51.94
2022/2023	\$36.58	\$31.22	\$28.41	\$29.81	\$28.80	\$90.54	\$96.38	\$106.07	\$82.80	\$58.37	\$55.24	\$93.39	\$63.72
2023/2024	\$48.66	\$23.70	\$21.93	\$26.75	\$32.90	\$27.82	\$40.56	\$30.54	\$30.91	\$35.17	\$33.40	\$28.00	\$32.05
2024/2025	\$67.74	\$49.02	\$40.74	\$44.35	\$37.40	\$32.62	\$44.69	\$36.31	\$30.77	\$33.26	\$29.82	\$37.05	\$40.86
Pennsylvania (PPL)													
Planning Period	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Annual
2012/2013	\$38.21	\$35.47	\$39.25	\$40.18	\$40.32	\$37.63	\$44.01	\$36.11	\$34.21	\$35.48	\$42.71	\$34.02	\$38.15
2013/2014	\$184.31	\$77.82	\$77.02	\$41.58	\$38.32	\$39.41	\$52.84	\$36.81	\$37.47	\$35.49	\$37.00	\$41.74	\$61.78
2014/2015	\$41.56	\$103.37	\$39.25	\$26.92	\$33.97	\$40.10	\$39.44	\$31.84	\$31.02	\$30.95	\$41.85	\$30.64	\$42.07
2015/2016	\$28.14	\$24.29	\$19.51	\$22.75	\$21.68	\$26.31	\$28.74	\$27.55	\$27.99	\$25.62	\$21.73	\$19.56	\$24.60
2016/2017	\$31.43	\$25.54	\$32.82	\$29.38	\$28.92	\$24.59	\$33.10	\$30.69	\$24.44	\$21.01	\$22.23	\$31.82	\$28.27
2017/2018	\$91.29	\$25.32	\$25.44	\$31.31	\$25.45	\$26.21	\$29.24	\$25.30	\$27.41	\$24.55	\$25.92	\$41.92	\$34.59
2018/2019	\$33.39	\$25.51	\$27.55	\$24.64	\$21.20	\$25.54	\$32.20	\$32.10	\$28.22	\$32.36	\$34.29	\$31.78	\$29.28
2019/2020	\$20.58	\$17.84	\$15.85	\$15.91	\$14.54	\$20.21	\$26.36	\$22.53	\$21.09	\$20.30	\$24.00	\$22.61	\$20.38
2020/2021	\$23.86	\$39.46	\$21.50	\$22.84	\$25.73	\$17.86	\$23.33	\$21.72	\$15.24	\$15.19	\$20.14	\$24.26	\$22.85
2021/2022	\$69.98	\$50.83	\$42.64	\$60.04	\$73.47	\$30.65	\$35.45	\$43.63	\$42.15	\$53.30	\$55.02	\$36.59	\$49.39
2022/2023	\$33.20	\$30.48	\$26.14	\$24.29	\$23.14	\$76.21	\$92.80	\$110.86	\$73.08	\$52.74	\$49.74	\$93.98	\$59.12
2023/2024	\$44.58	\$20.96	\$18.49	\$24.83	\$22.83	\$21.47	\$32.50	\$20.18	\$20.84	\$28.86	\$31.02	\$23.84	\$26.19
2024/2025	\$67.85	\$45.18	\$36.51	\$37.42	\$29.67	\$26.37	\$39.52	\$30.37	\$24.10	\$24.85	\$27.52	\$31.95	\$36.13

Congestion Results

Load pays congestion. Congestion is the difference between what load pays for energy and what generation is paid for energy due to binding transmission constraints. Generation does not pay congestion. Some generation receives a price lower than SMP and some generation receives a price greater than SMP due to transmission constraints but that does not mean that generation is paying congestion. It means that generation is being paid an LMP that is higher or lower than the system load-weighted average LMP.

While PJM accounting focuses on CLMPs, the individual CLMP values at any bus are irrelevant to the calculation of congestion, as CLMPs are just an artificial deconstruction of LMP based on a selected reference bus. Holding aside the marginal loss component of LMP, differences in the LMPs are caused by binding constraints in the least cost security constrained dispatch market solution and total congestion is the net surplus revenue that remains after all sources and sinks are credited or charged their LMPs. Changing the components of LMP by electing a different reference bus does not change the LMPs

or the difference between LMPs for a given market solution, it merely changes the components of the LMP.

In PJM's two settlement system, there is a day-ahead market and a real-time, or balancing, market that make up a market day. Congestion is the sum of all congestion related charges and credits from both the day-ahead and balancing market.

In a two settlement system, all virtual bids have net zero MW after their day-ahead and balancing positions are cleared, which means that virtual bids are fully settled in terms of CLMP credits and charges at the close of each market day, with either a net loss or profit due to differences between day-ahead and real-time prices. With a zero net position (zero MW at the close of the day), virtual bids do not pay congestion, they have net payouts. Net payouts (negative credits) to virtual bids are negative adjustments to either day-ahead or balancing congestion and net charges to virtual bids are positive adjustments to either day-ahead or balancing congestion.

Unlike virtual bids, physical load and generation may have net MW at the close of each market day.

The residual difference between total load charges (day-ahead and balancing) and generation credits (day-ahead and balancing), after virtual bids have settled their day-ahead and balancing positions, is congestion. Congestion is the difference between what withdrawals (load) pay for energy and what injections (generation) are paid for energy due to binding transmission constraints, after virtual bids are settled at the end of the market day.

The total congestion caused by a constraint is equal to the product of the constraint shadow price times the net market flow on the binding constraint. Total congestion caused by the constraint can also be calculated using the CLMPs caused by the constraint at every bus and the net MW injections or MW withdrawals at every affected bus. Congestion associated with a specific constraint is equal to load CLMP charges (CLMP of that specific constraint at each bus times load MW at each bus) caused by that constraint in excess of generation CLMP credits (CLMP of that specific constraint at each bus times generation MW at each bus) caused by that constraint.

Congestion is attributed to the downstream load buses that pay the congestion caused by the constraint, in proportion to the market flow of the load on that constraint. The congestion collected from each load bus due to a constraint is equal to the share of each load bus of the total downstream load contribution to market flow on that constraint. This calculation is done for both day-ahead congestion and balancing congestion.

The system marginal price (SMP) is uniform for all areas, while the total of the congestion components of LMP (CLMP) will either be positive or negative in a specific area, meaning that actual LMPs are above or below the SMP.⁸

Day-ahead CLMP charges and credits are based on MWh and CLMP in the day-ahead energy market. Balancing CLMP charges and credits are based on load or generation deviations between the day-ahead and real-time energy markets and CLMP in the real-time energy market. If a participant has real-time generation or load that is greater than its day-ahead generation or load then the deviation will be positive. If there is a positive load deviation at a bus where real-time CLMP is positive, positive balancing congestion costs will result. Similarly, if there is a positive load deviation at a bus where real-time CLMP is negative, negative balancing congestion costs will result. If a participant has real-time generation or load that is less than its day-ahead generation or load then the deviation will be negative. If there is a negative load deviation at a bus where real-time CLMP is positive, negative balancing congestion costs will result. If there is a negative load deviation at a bus where real-time CLMP is negative, negative balancing congestion costs will result.

A table of the CLMP charges or credits associated with each category is provided (see Table 49).⁹ Total CLMP charges are constraint specific CLMPs at each bus times bus specific MW summed across all buses for all constraints. Pennsylvania congestion is equal to the proportional contribution of the Pennsylvania load to the total load market flow on all constraints. Pennsylvania congestion is the difference between what Pennsylvania load pays for energy due to binding transmission constraints and what generation, whether inside or outside Pennsylvania, is paid to serve Pennsylvania load.

In addition to congestion calculated for network load, there is explicit congestion. The explicit CLMP charges calculated for Pennsylvania represent the charges associated with point to point transactions that source or sink in Pennsylvania. For example, if a transaction is sourced in Pennsylvania and sinks in Pennsylvania, the charges would be based on the MWh of the transaction multiplied by the difference between the sink CLMP and the source CLMP. The resulting CLMP charges are allocated to the zone of the sink location in Pennsylvania. The sink location of the explicit transaction is the buyer's location and reflects the cost to the buyer of the internal purchase or external

⁸ The SMP is the price of the distributed load reference bus. The price at the reference bus is equivalent to the five minute real-time or hourly day-ahead load-weighted PJM LMP.

⁹ For details of CLMP accounting, see *2025 Annual State of the Market Report for PJM*, Vol. 2, Section 11: Congestion and Marginal Losses.

transaction. The resulting network flow and congestion revenue generated is part of the total network flow and associated congestion of each binding constraint in a given market period that is paid by load in the sink zone.

Table 49 shows the combined day-ahead and balancing withdrawal charges, injection credits, and explicit CLMP charges for Pennsylvania for the 2016/2017 through 2024/2025 planning periods. Total congestion is implicit load charges minus implicit generation credits plus explicit load charges minus explicit load credits. Implicit injection credits are negative when the generation MW are multiplied by a negative CLMP. A negative CLMP at generation buses is expected, on average, because the reference bus LMP (SMP) is based on the load-weighted average LMP. In a least cost security constrained dispatch with binding transmission constraints, load always pays more for energy than generation is paid to produce the energy. Average PJM prices at generation source buses are lower than average PJM prices at load buses as a result of transmission constraints.

Table 49 Total congestion (day-ahead plus balancing) costs (Dollars (Millions)) for Pennsylvania by category: 2016/2017 through 2024/2025 planning period

Planning Period	Congestion Costs (Millions)			
	Implicit Withdrawal Charges	Implicit Injection Credits	Explicit Charges	Total
2016/2017	\$34.8	(\$91.7)	(\$3.6)	\$122.9
2017/2018	\$55.4	(\$199.1)	(\$15.0)	\$239.6
2018/2019	\$36.2	(\$101.7)	(\$5.6)	\$132.3
2019/2020	\$33.1	(\$55.6)	(\$7.5)	\$81.1
2020/2021	\$60.0	(\$71.9)	(\$6.7)	\$125.3
2021/2022	\$117.5	(\$229.9)	(\$11.6)	\$335.8
2022/2023	\$148.9	(\$218.0)	(\$39.5)	\$327.5
2023/2024	\$110.4	(\$109.7)	(\$7.7)	\$212.3
2024/2025	\$122.4	(\$250.5)	(\$16.5)	\$356.4

Table 50 through Table 56 show the combined day-ahead and balancing withdrawal charges, injection credits, and explicit CLMP charges for each of the zones in Pennsylvania for the 2016/2017 through 2024/2025 planning periods.

Table 50 shows the combined day-ahead and balancing withdrawal charges, injection credits, and explicit CLMP charges for Pennsylvania (APS) for the 2016/2017 through 2024/2025 planning periods.

Table 50 Total congestion (day-ahead plus balancing) costs (Dollars (Millions)) for Pennsylvania (APS) by category: 2016/2017 through 2024/2025 planning period

Planning Period	Congestion Costs (Millions)			Total
	Implicit Withdrawal Charges	Implicit Injection Credits	Explicit Charges	
2016/2017	\$5.3	(\$9.0)	(\$0.6)	\$13.7
2017/2018	\$8.3	(\$19.4)	(\$2.0)	\$25.7
2018/2019	\$7.2	(\$13.2)	(\$0.8)	\$19.5
2019/2020	\$7.5	(\$7.9)	(\$1.0)	\$14.4
2020/2021	\$9.5	(\$11.7)	(\$1.0)	\$20.1
2021/2022	\$18.6	(\$32.1)	(\$1.6)	\$49.1
2022/2023	\$23.6	(\$29.3)	(\$5.4)	\$47.5
2023/2024	\$19.3	(\$16.1)	(\$0.9)	\$34.6
2024/2025	\$21.4	(\$38.2)	(\$2.1)	\$57.6

Table 51 shows the combined day-ahead and balancing withdrawal charges, injection credits, and explicit CLMP charges for Pennsylvania (ATSI) for the 2016/2017 through 2024/2025 planning periods.

Table 51 Total congestion (day-ahead plus balancing) costs (Dollars (Millions)) for Pennsylvania (ATSI) by category: 2016/2017 through 2024/2025 planning period

Planning Period	Congestion Costs (Millions)			Total
	Implicit Withdrawal Charges	Implicit Injection Credits	Explicit Charges	
2016/2017	\$1.1	(\$2.0)	(\$0.1)	\$2.9
2017/2018	\$1.5	(\$4.3)	(\$0.4)	\$5.4
2018/2019	\$1.1	(\$2.9)	(\$0.1)	\$3.9
2019/2020	\$1.1	(\$2.4)	(\$0.2)	\$3.3
2020/2021	\$1.1	(\$3.5)	(\$0.2)	\$4.3
2021/2022	\$3.7	(\$6.8)	(\$0.4)	\$10.1
2022/2023	\$4.9	(\$8.1)	(\$1.4)	\$11.6
2023/2024	\$4.6	(\$3.6)	(\$0.2)	\$7.9
2024/2025	\$4.0	(\$8.7)	(\$0.7)	\$12.0

Table 52 shows the combined day-ahead and balancing withdrawal charges, injection credits, and explicit CLMP charges for Pennsylvania (DUQ) for the 2016/2017 through 2024/2025 planning periods.

Table 52 Total congestion (day-ahead plus balancing) costs (Dollars (Millions)) for Pennsylvania (DUQ) by category: 2016/2017 through 2024/2025 planning period

Planning Period	Congestion Costs (Millions)			Total
	Implicit Withdrawal Charges	Implicit Injection Credits	Explicit Charges	
2016/2017	\$2.9	(\$6.3)	(\$0.4)	\$8.8
2017/2018	\$3.6	(\$11.5)	(\$1.2)	\$13.9
2018/2019	\$2.1	(\$6.5)	(\$0.7)	\$7.9
2019/2020	\$1.9	(\$4.9)	(\$0.8)	\$5.9
2020/2021	\$1.3	(\$6.8)	(\$1.0)	\$7.1
2021/2022	\$7.1	(\$12.5)	(\$1.4)	\$18.2
2022/2023	\$10.6	(\$14.2)	(\$3.8)	\$21.0
2023/2024	\$9.8	(\$6.7)	(\$1.0)	\$15.6
2024/2025	\$8.8	(\$18.9)	(\$1.5)	\$26.1

Table 53 shows the combined day-ahead and balancing withdrawal charges, injection credits, and explicit CLMP charges for Pennsylvania (MET-ED) for the 2016/2017 through 2024/2025 planning periods.

Table 53 Total congestion (day-ahead plus balancing) costs (Dollars (Millions)) for Pennsylvania (MET-ED) by category: 2016/2017 through 2024/2025 planning period

Planning Period	Congestion Costs (Millions)			Total
	Implicit Withdrawal Charges	Implicit Injection Credits	Explicit Charges	
2016/2017	\$5.9	(\$10.8)	\$0.3	\$16.9
2017/2018	\$5.3	(\$24.8)	(\$1.7)	\$28.5
2018/2019	\$3.7	(\$11.9)	(\$0.9)	\$14.6
2019/2020	\$3.7	(\$6.8)	(\$1.1)	\$9.4
2020/2021	\$11.6	(\$6.5)	(\$1.0)	\$17.2
2021/2022	\$14.9	(\$21.8)	(\$1.8)	\$34.9
2022/2023	\$16.9	(\$22.7)	(\$4.2)	\$35.3
2023/2024	\$11.1	(\$12.2)	(\$1.0)	\$22.3
2024/2025	\$14.0	(\$24.5)	(\$1.8)	\$36.7

Table 54 shows the combined day-ahead and balancing withdrawal charges, injection credits, and explicit CLMP charges for Pennsylvania (PECO) for the 2016/2017 through 2024/2025 planning periods.

Table 54 Total congestion (day-ahead plus balancing) costs (Dollars (Millions)) for Pennsylvania (PECO) by category: 2016/2017 through 2024/2025 planning period

Planning Period	Congestion Costs (Millions)			Total
	Implicit Withdrawal Charges	Implicit Injection Credits	Explicit Charges	
2016/2017	\$7.2	(\$26.0)	(\$1.3)	\$31.9
2017/2018	\$13.6	(\$53.3)	(\$4.1)	\$62.9
2018/2019	\$6.1	(\$25.8)	(\$1.5)	\$30.3
2019/2020	\$3.3	(\$13.8)	(\$2.5)	\$14.6
2020/2021	\$10.7	(\$18.1)	(\$2.1)	\$26.7
2021/2022	\$28.2	(\$48.7)	(\$3.6)	\$73.4
2022/2023	\$35.5	(\$57.3)	(\$10.6)	\$82.2
2023/2024	\$20.6	(\$26.0)	(\$2.9)	\$43.7
2024/2025	\$21.9	(\$61.4)	(\$4.6)	\$78.7

Table 55 shows the combined day-ahead and balancing withdrawal charges, injection credits, and explicit CLMP charges for Pennsylvania (PENELEC) for the 2016/2017 through 2024/2025 planning periods.

Table 55 Total congestion (day-ahead plus balancing) costs (Dollars (Millions)) for Pennsylvania (PENELEC) by category: 2016/2017 through 2024/2025 planning period

Planning Period	Congestion Costs (Millions)			Total
	Implicit Withdrawal Charges	Implicit Injection Credits	Explicit Charges	
2016/2017	\$6.4	(\$10.4)	(\$0.3)	\$16.6
2017/2018	\$11.3	(\$22.9)	(\$1.5)	\$32.7
2018/2019	\$7.1	(\$12.6)	(\$0.7)	\$19.0
2019/2020	\$7.3	(\$5.2)	(\$0.9)	\$11.6
2020/2021	\$11.9	(\$6.0)	(\$0.7)	\$17.2
2021/2022	\$15.3	(\$28.3)	(\$1.2)	\$42.5
2022/2023	\$20.4	(\$22.8)	(\$4.8)	\$38.4
2023/2024	\$15.4	(\$14.1)	(\$0.6)	\$28.9
2024/2025	\$17.8	(\$29.0)	(\$1.8)	\$45.0

Table 56 shows the combined day-ahead and balancing withdrawal charges, injection credits, and explicit CLMP charges for Pennsylvania (PPL) for the 2016/2017 through 2024/2025 planning periods.

Table 56 Total congestion (day-ahead plus balancing) costs (Dollars (Millions)) for Pennsylvania (PPL) by category: 2016/2017 through 2024/2025 planning period

Planning Period	Congestion Costs (Millions)			
	Implicit Withdrawal Charges	Implicit Injection Credits	Explicit Charges	Total
2016/2017	\$6.1	(\$27.1)	(\$1.2)	\$32.0
2017/2018	\$11.8	(\$63.0)	(\$4.2)	\$70.6
2018/2019	\$9.0	(\$28.9)	(\$0.9)	\$37.0
2019/2020	\$8.3	(\$14.5)	(\$0.9)	\$21.9
2020/2021	\$13.9	(\$19.4)	(\$0.7)	\$32.7
2021/2022	\$29.7	(\$79.7)	(\$1.6)	\$107.7
2022/2023	\$37.0	(\$63.6)	(\$9.3)	\$91.4
2023/2024	\$29.4	(\$31.1)	(\$1.1)	\$59.4
2024/2025	\$34.5	(\$69.8)	(\$4.0)	\$100.3

Table 57 shows the congestion costs categories for Pennsylvania from Table 49 separated by day-ahead and balancing to show the contributions from both the day-ahead and real-time markets for the 2016/2017 through 2024/2025 planning periods.

Table 57 Total day-ahead and balancing congestion costs (Dollars (Millions)) for Pennsylvania by category: 2016/2017 through 2023/2024 planning period

Planning Period	Congestion Costs (Millions)								
	Day-Ahead				Balancing				Grand Total
	Implicit Withdrawal Charges	Implicit Injection Credits	Explicit Charges	Total	Implicit Withdrawal Charges	Implicit Injection Credits	Explicit Charges	Total	
2016/2017	\$35.8	(\$99.4)	\$1.7	\$136.9	(\$0.9)	\$7.7	(\$5.3)	(\$14.0)	\$122.9
2017/2018	\$48.9	(\$214.5)	(\$16.0)	\$247.4	\$6.5	\$15.4	\$1.0	(\$7.9)	\$239.6
2018/2019	\$38.1	(\$112.3)	\$6.2	\$156.5	(\$1.8)	\$10.6	(\$11.8)	(\$24.2)	\$132.3
2019/2020	\$32.5	(\$63.5)	\$9.4	\$105.4	\$0.6	\$8.0	(\$16.9)	(\$24.3)	\$81.1
2020/2021	\$65.8	(\$86.7)	\$11.7	\$164.3	(\$5.8)	\$14.8	(\$18.4)	(\$39.0)	\$125.3
2021/2022	\$119.7	(\$266.4)	\$16.9	\$403.0	(\$2.2)	\$36.5	(\$28.5)	(\$67.2)	\$335.8
2022/2023	\$145.7	(\$229.1)	\$23.0	\$397.8	\$3.2	\$11.0	(\$62.5)	(\$70.3)	\$327.5
2023/2024	\$112.1	(\$126.8)	\$27.2	\$266.1	(\$1.7)	\$17.1	(\$34.9)	(\$53.7)	\$212.3
2024/2025	\$125.5	(\$287.9)	\$19.7	\$433.1	(\$3.2)	\$37.3	(\$36.3)	(\$76.8)	\$356.4

Table 58 through Table 64 shows the congestion costs categories for each of the zones in Pennsylvania from Table 49 separated by day-ahead and balancing to show the contributions from both the day-ahead and real-time markets for the 2016/2017 through 2024/2025 planning periods.

Table 58 shows the Pennsylvania (APS) congestion costs categories from Table 50 separated by day-ahead and balancing to show the contributions from both the day-ahead and real-time markets for the 2016/2017 through 2024/2025 planning periods.

Table 58 Total day-ahead and balancing congestion costs (Dollars (Millions)) for Pennsylvania (APS) by category: 2016/2017 through 2024/2025 planning period

Planning Period	Congestion Costs (Millions)								
	Day-Ahead				Balancing				Grand Total
	Implicit Withdrawal Charges	Implicit Injection Credits	Explicit Charges	Total	Implicit Withdrawal Charges	Implicit Injection Credits	Explicit Charges	Total	
2016/2017	\$5.3	(\$10.1)	\$0.0	\$15.3	(\$0.0)	\$1.0	(\$0.6)	(\$1.6)	\$13.7
2017/2018	\$7.4	(\$21.1)	(\$2.0)	\$26.5	\$0.9	\$1.7	\$0.0	(\$0.8)	\$25.7
2018/2019	\$7.2	(\$14.5)	\$0.8	\$22.6	(\$0.0)	\$1.4	(\$1.6)	(\$3.0)	\$19.5
2019/2020	\$7.4	(\$9.0)	\$1.2	\$17.6	\$0.1	\$1.1	(\$2.3)	(\$3.2)	\$14.4
2020/2021	\$10.1	(\$13.8)	\$1.5	\$25.4	(\$0.7)	\$2.1	(\$2.4)	(\$5.2)	\$20.1
2021/2022	\$18.1	(\$37.2)	\$2.2	\$57.6	\$0.5	\$5.1	(\$3.8)	(\$8.5)	\$49.1
2022/2023	\$22.5	(\$30.7)	\$3.2	\$56.4	\$1.1	\$1.4	(\$8.6)	(\$8.9)	\$47.5
2023/2024	\$19.1	(\$18.6)	\$4.1	\$41.9	\$0.2	\$2.5	(\$5.0)	(\$7.3)	\$34.6
2024/2025	\$21.1	(\$43.3)	\$3.1	\$67.5	\$0.3	\$5.1	(\$5.1)	(\$9.9)	\$57.6

Table 59 shows the Pennsylvania (ATSI) congestion costs categories from Table 51 separated by day-ahead and balancing to show the contributions from both the day-ahead and real-time markets for the 2016/2017 through 2024/2025 planning periods.

Table 59 Total day-ahead and balancing congestion costs (Dollars (Millions)) for Pennsylvania (ATSI) by category: 2016/2017 through 2024/2025 planning period

Planning Period	Congestion Costs (Millions)								
	Day-Ahead				Balancing				Grand Total
	Implicit Withdrawal Charges	Implicit Injection Credits	Explicit Charges	Total	Implicit Withdrawal Charges	Implicit Injection Credits	Explicit Charges	Total	
2016/2017	\$1.1	(\$2.2)	\$0.0	\$3.3	\$0.0	\$0.2	(\$0.1)	(\$0.4)	\$2.9
2017/2018	\$1.3	(\$4.7)	(\$0.4)	\$5.6	\$0.2	\$0.4	(\$0.0)	(\$0.2)	\$5.4
2018/2019	\$1.1	(\$3.3)	\$0.3	\$4.7	(\$0.0)	\$0.4	(\$0.4)	(\$0.8)	\$3.9
2019/2020	\$1.1	(\$2.6)	\$0.4	\$4.1	\$0.0	\$0.3	(\$0.6)	(\$0.9)	\$3.3
2020/2021	\$1.3	(\$4.0)	\$0.4	\$5.7	(\$0.2)	\$0.5	(\$0.6)	(\$1.4)	\$4.3
2021/2022	\$3.6	(\$8.2)	\$0.6	\$12.3	\$0.1	\$1.3	(\$1.0)	(\$2.2)	\$10.1
2022/2023	\$4.6	(\$8.5)	\$0.9	\$14.0	\$0.3	\$0.4	(\$2.3)	(\$2.4)	\$11.6
2023/2024	\$4.6	(\$4.3)	\$1.1	\$9.9	\$0.1	\$0.7	(\$1.3)	(\$2.0)	\$7.9
2024/2025	\$3.8	(\$10.1)	\$0.7	\$14.6	\$0.2	\$1.3	(\$1.4)	(\$2.5)	\$12.0

Table 60 shows the Pennsylvania (DUQ) congestion costs categories from Table 52 separated by day-ahead and balancing to show the contributions from both the day-ahead and real-time markets for the 2016/2017 through 2024/2025 planning periods.

Table 60 Total day-ahead and balancing congestion costs (Dollars (Millions)) for Pennsylvania (DUQ) by category: 2016/2017 through 2024/2025 planning period

Planning Period	Congestion Costs (Millions)								
	Day-Ahead				Balancing				Grand Total
	Implicit Withdrawal Charges	Implicit Injection Credits	Explicit Charges	Total	Implicit Withdrawal Charges	Implicit Injection Credits	Explicit Charges	Total	
2016/2017	\$2.8	(\$7.1)	\$0.0	\$9.9	\$0.1	\$0.7	(\$0.4)	(\$1.1)	\$8.8
2017/2018	\$3.0	(\$12.5)	(\$1.0)	\$14.5	\$0.6	\$1.0	(\$0.2)	(\$0.5)	\$13.9
2018/2019	\$2.2	(\$7.4)	\$0.4	\$9.9	(\$0.0)	\$0.9	(\$1.1)	(\$2.0)	\$7.9
2019/2020	\$1.8	(\$5.6)	\$0.7	\$8.0	\$0.1	\$0.7	(\$1.5)	(\$2.1)	\$5.9
2020/2021	\$1.7	(\$8.1)	\$0.6	\$10.4	(\$0.4)	\$1.4	(\$1.6)	(\$3.4)	\$7.1
2021/2022	\$6.7	(\$15.5)	\$0.9	\$23.2	\$0.4	\$3.1	(\$2.3)	(\$5.0)	\$18.2
2022/2023	\$9.8	(\$15.2)	\$1.7	\$26.8	\$0.7	\$1.0	(\$5.5)	(\$5.8)	\$21.0
2023/2024	\$9.7	(\$8.4)	\$2.2	\$20.3	\$0.1	\$1.7	(\$3.2)	(\$4.7)	\$15.6
2024/2025	\$8.3	(\$22.0)	\$1.6	\$31.9	\$0.4	\$3.1	(\$3.1)	(\$5.8)	\$26.1

Table 61 shows the Pennsylvania (MET-ED) congestion costs categories from Table 53 separated by day-ahead and balancing to show the contributions from both the day-ahead and real-time markets for the 2016/2017 through 2024/2025 planning periods.

Table 61 Total day-ahead and balancing congestion costs (Dollars (Millions)) for Pennsylvania (MET-ED) by category: 2016/2017 through 2024/2025 planning period

Planning Period	Congestion Costs (Millions)								
	Day-Ahead				Balancing				Grand Total
	Implicit Withdrawal Charges	Implicit Injection Credits	Explicit Charges	Total	Implicit Withdrawal Charges	Implicit Injection Credits	Explicit Charges	Total	
2016/2017	\$6.2	(\$11.3)	\$0.3	\$17.9	(\$0.4)	\$0.5	(\$0.1)	(\$0.9)	\$16.9
2017/2018	\$5.5	(\$26.8)	(\$1.8)	\$30.6	(\$0.2)	\$2.0	\$0.1	(\$2.1)	\$28.5
2018/2019	\$4.0	(\$13.0)	\$0.4	\$17.4	(\$0.4)	\$1.1	(\$1.3)	(\$2.8)	\$14.6
2019/2020	\$3.8	(\$8.0)	\$0.8	\$12.5	(\$0.1)	\$1.2	(\$1.9)	(\$3.1)	\$9.4
2020/2021	\$12.7	(\$7.8)	\$1.2	\$21.7	(\$1.1)	\$1.3	(\$2.2)	(\$4.5)	\$17.2
2021/2022	\$17.3	(\$25.8)	\$1.7	\$44.7	(\$2.4)	\$4.0	(\$3.5)	(\$9.9)	\$34.9
2022/2023	\$17.5	(\$24.0)	\$2.2	\$43.7	(\$0.6)	\$1.3	(\$6.5)	(\$8.3)	\$35.3
2023/2024	\$11.9	(\$14.0)	\$2.6	\$28.5	(\$0.7)	\$1.9	(\$3.5)	(\$6.2)	\$22.3
2024/2025	\$18.0	(\$28.4)	\$1.8	\$48.2	(\$3.9)	\$3.9	(\$3.6)	(\$11.5)	\$36.7

Table 62 shows the Pennsylvania (PECO) congestion costs categories from Table 54 separated by day-ahead and balancing to show the contributions from both the day-ahead and real-time markets for the 2016/2017 through 2024/2025 planning periods.

Table 62 Total day-ahead and balancing congestion costs (Dollars (Millions)) for Pennsylvania (PECO) by category: 2016/2017 through 2024/2025 planning period

Planning Period	Congestion Costs (Millions)								
	Day-Ahead				Balancing				Grand Total
	Implicit Withdrawal Charges	Implicit Injection Credits	Explicit Charges	Total	Implicit Withdrawal Charges	Implicit Injection Credits	Explicit Charges	Total	
2016/2017	\$7.5	(\$28.1)	\$0.1	\$35.8	(\$0.3)	\$2.1	(\$1.4)	(\$3.8)	\$31.9
2017/2018	\$11.5	(\$57.6)	(\$4.3)	\$64.7	\$2.1	\$4.2	\$0.3	(\$1.8)	\$62.9
2018/2019	\$6.2	(\$28.5)	\$1.4	\$36.1	(\$0.1)	\$2.7	(\$2.9)	(\$5.8)	\$30.3
2019/2020	\$3.0	(\$15.7)	\$1.8	\$20.5	\$0.2	\$1.9	(\$4.3)	(\$5.9)	\$14.6
2020/2021	\$11.9	(\$21.5)	\$2.3	\$35.8	(\$1.2)	\$3.4	(\$4.5)	(\$9.1)	\$26.7
2021/2022	\$28.7	(\$57.8)	\$3.5	\$90.1	(\$0.5)	\$9.1	(\$7.1)	(\$16.7)	\$73.4
2022/2023	\$34.1	(\$59.8)	\$4.9	\$98.9	\$1.4	\$2.5	(\$15.6)	(\$16.7)	\$82.2
2023/2024	\$21.4	(\$30.0)	\$5.7	\$57.2	(\$0.9)	\$4.0	(\$8.6)	(\$13.5)	\$43.7
2024/2025	\$21.7	(\$71.2)	\$4.7	\$97.5	\$0.2	\$9.8	(\$9.3)	(\$18.9)	\$78.7

Table 63 shows the Pennsylvania (PENELEC) congestion costs categories from Table 55 separated by day-ahead and balancing to show the contributions from both the day-ahead and real-time markets for the 2016/2017 through 2024/2025 planning periods.

Table 63 Total day-ahead and balancing congestion costs (Dollars (Millions)) for Pennsylvania (PENELEC) by category: 2016/2017 through 2024/2025 planning period

Planning Period	Congestion Costs (Millions)								
	Day-Ahead				Balancing				Grand Total
	Implicit Withdrawal Charges	Implicit Injection Credits	Explicit Charges	Total	Implicit Withdrawal Charges	Implicit Injection Credits	Explicit Charges	Total	
2016/2017	\$6.7	(\$11.3)	\$0.8	\$18.8	(\$0.3)	\$0.9	(\$1.1)	(\$2.2)	\$16.6
2017/2018	\$10.7	(\$24.7)	(\$1.5)	\$33.9	\$0.7	\$1.9	\$0.0	(\$1.2)	\$32.7
2018/2019	\$8.0	(\$14.1)	\$0.9	\$22.9	(\$0.9)	\$1.5	(\$1.6)	(\$3.9)	\$19.0
2019/2020	\$7.3	(\$6.2)	\$1.0	\$14.5	\$0.0	\$1.0	(\$2.0)	(\$2.9)	\$11.6
2020/2021	\$12.8	(\$8.5)	\$1.7	\$22.9	(\$0.9)	\$2.5	(\$2.3)	(\$5.7)	\$17.2
2021/2022	\$15.6	(\$32.6)	\$2.1	\$50.3	(\$0.3)	\$4.3	(\$3.3)	(\$7.9)	\$42.5
2022/2023	\$19.7	(\$24.0)	\$2.4	\$46.1	\$0.7	\$1.2	(\$7.1)	(\$7.6)	\$38.4
2023/2024	\$15.4	(\$16.0)	\$3.3	\$34.8	\$0.0	\$1.9	(\$3.9)	(\$5.9)	\$28.9
2024/2025	\$18.2	(\$32.9)	\$2.1	\$53.3	(\$0.4)	\$3.9	(\$4.0)	(\$8.3)	\$45.0

Table 64 shows the Pennsylvania (PPL) congestion costs categories from Table 56 separated by day-ahead and balancing to show the contributions from both the day-ahead and real-time markets for the 2016/2017 through 2024/2025 planning periods.

Table 64 Total day-ahead and balancing congestion costs (Dollars (Millions)) for Pennsylvania (PPL) by category: 2016/2017 through 2024/2025 planning period

Planning Period	Congestion Costs (Millions)								
	Day-Ahead				Balancing				Grand Total
	Implicit Withdrawal Charges	Implicit Injection Credits	Explicit Charges	Total	Implicit Withdrawal Charges	Implicit Injection Credits	Explicit Charges	Total	
2016/2017	\$6.1	(\$29.4)	\$0.5	\$35.9	\$0.0	\$2.2	(\$1.7)	(\$3.9)	\$32.0
2017/2018	\$9.6	(\$67.2)	(\$5.0)	\$71.8	\$2.2	\$4.2	\$0.8	(\$1.2)	\$70.6
2018/2019	\$9.4	(\$31.6)	\$2.0	\$42.9	(\$0.4)	\$2.6	(\$3.0)	(\$6.0)	\$37.0
2019/2020	\$8.2	(\$16.5)	\$3.4	\$28.1	\$0.1	\$2.0	(\$4.3)	(\$6.1)	\$21.9
2020/2021	\$15.3	(\$23.1)	\$4.0	\$42.3	(\$1.4)	\$3.6	(\$4.6)	(\$9.6)	\$32.7
2021/2022	\$29.7	(\$89.2)	\$5.9	\$124.8	(\$0.0)	\$9.6	(\$7.5)	(\$17.1)	\$107.7
2022/2023	\$37.5	(\$66.9)	\$7.6	\$112.0	(\$0.5)	\$3.3	(\$16.9)	(\$20.6)	\$91.4
2023/2024	\$30.0	(\$35.4)	\$8.2	\$73.5	(\$0.6)	\$4.3	(\$9.3)	(\$14.2)	\$59.4
2024/2025	\$34.4	(\$80.0)	\$5.8	\$120.2	\$0.1	\$10.2	(\$9.8)	(\$19.9)	\$100.3

Table 65 shows the day-ahead and balancing congestion, by month, for Pennsylvania for the 2023/2024 and 2024/2025 planning periods.

Table 65 Monthly congestion costs (Dollars (Millions)) for Pennsylvania: 2023/2024 and 2024/2025 planning period

Month	Congestion Costs (Millions)					
	2023/2024			2024/2025		
	Day-ahead	Balancing	Total	Day-ahead	Balancing	Total
Jun	\$12.9	(\$2.2)	\$10.7	\$25.2	(\$5.1)	\$20.1
Jul	\$23.3	(\$4.6)	\$18.7	\$67.6	(\$7.7)	\$60.0
Aug	\$17.2	(\$3.7)	\$13.4	\$43.2	(\$3.2)	\$40.0
Sep	\$21.6	(\$4.5)	\$17.1	\$19.6	(\$2.2)	\$17.4
Oct	\$26.9	(\$6.0)	\$20.9	\$18.9	(\$3.9)	\$15.0
Nov	\$25.1	(\$5.2)	\$20.0	\$12.5	(\$3.4)	\$9.1
Dec	\$18.6	(\$3.1)	\$15.6	\$38.0	(\$7.0)	\$31.0
Jan	\$36.9	(\$6.0)	\$30.9	\$68.0	(\$23.7)	\$44.2
Feb	\$13.7	(\$2.7)	\$11.0	\$29.7	(\$4.1)	\$25.6
Mar	\$17.0	(\$5.5)	\$11.5	\$37.0	(\$8.4)	\$28.6
Apr	\$19.3	(\$5.4)	\$13.9	\$31.4	(\$4.3)	\$27.1
May	\$33.4	(\$4.8)	\$28.7	\$42.0	(\$3.8)	\$38.2
Total	\$266.1	(\$53.7)	\$212.3	\$433.1	(\$76.8)	\$356.4

Table 66 through Table 72 show the day-ahead and balancing congestion, by month, for each of the zones in Pennsylvania for the 2023/2024 and 2024/2025 planning periods.

Table 66 shows the day-ahead and balancing congestion, by month, for Pennsylvania (APS) for the 2023/2024 and 2024/2025 planning periods.

Table 66 Monthly congestion costs (Dollars (Millions)) for Pennsylvania (APS): 2023/2024 and 2024/2025 planning period

Congestion Costs (Millions)						
Month	2023/2024			2024/2025		
	Day-ahead	Balancing	Total	Day-ahead	Balancing	Total
Jun	\$2.3	(\$0.3)	\$2.0	\$4.7	(\$0.7)	\$4.0
Jul	\$3.1	(\$0.6)	\$2.5	\$9.7	(\$1.0)	\$8.7
Aug	\$3.0	(\$0.5)	\$2.5	\$6.5	(\$0.4)	\$6.1
Sep	\$3.7	(\$0.6)	\$3.2	\$3.5	(\$0.3)	\$3.2
Oct	\$4.2	(\$0.9)	\$3.3	\$3.7	(\$0.5)	\$3.1
Nov	\$3.9	(\$0.7)	\$3.1	\$2.3	(\$0.5)	\$1.8
Dec	\$2.5	(\$0.4)	\$2.1	\$5.5	(\$0.8)	\$4.7
Jan	\$5.6	(\$0.8)	\$4.8	\$11.3	(\$3.3)	\$7.9
Feb	\$2.3	(\$0.4)	\$1.9	\$5.1	(\$0.6)	\$4.5
Mar	\$3.0	(\$0.7)	\$2.3	\$4.9	(\$1.0)	\$3.9
Apr	\$2.7	(\$0.7)	\$2.0	\$4.8	(\$0.5)	\$4.2
May	\$5.6	(\$0.6)	\$4.9	\$5.8	(\$0.3)	\$5.5
Total	\$41.9	(\$7.3)	\$34.6	\$67.5	(\$9.9)	\$57.6

Table 67 shows the day-ahead and balancing congestion, by month, for Pennsylvania (ATSI) for the 2023/2024 and 2024/2025 planning periods.

Table 67 Monthly congestion costs (Dollars (Millions)) for Pennsylvania (ATSI): 2023/2024 and 2024/2025 planning period

Congestion Costs (Millions)						
Month	2023/2024			2024/2025		
	Day-ahead	Balancing	Total	Day-ahead	Balancing	Total
Jun	\$0.6	(\$0.1)	\$0.5	\$0.9	(\$0.2)	\$0.7
Jul	\$0.8	(\$0.2)	\$0.6	\$2.3	(\$0.3)	\$2.0
Aug	\$0.8	(\$0.1)	\$0.7	\$1.4	(\$0.1)	\$1.3
Sep	\$0.9	(\$0.2)	\$0.7	\$0.9	(\$0.1)	\$0.8
Oct	\$1.0	(\$0.2)	\$0.8	\$0.9	(\$0.1)	\$0.8
Nov	\$0.9	(\$0.2)	\$0.7	\$0.6	(\$0.1)	\$0.4
Dec	\$0.6	(\$0.1)	\$0.5	\$1.2	(\$0.2)	\$1.0
Jan	\$1.1	(\$0.2)	\$0.9	\$1.9	(\$0.7)	\$1.2
Feb	\$0.4	(\$0.1)	\$0.3	\$0.9	(\$0.2)	\$0.8
Mar	\$0.6	(\$0.2)	\$0.4	\$1.0	(\$0.3)	\$0.7
Apr	\$0.8	(\$0.2)	\$0.6	\$1.1	(\$0.2)	\$1.0
May	\$1.3	(\$0.2)	\$1.1	\$1.4	(\$0.1)	\$1.3
Total	\$9.9	(\$2.0)	\$7.9	\$14.6	(\$2.5)	\$12.0

Table 68 shows the day-ahead and balancing congestion, by month, for Pennsylvania (DUQ) for the 2023/2024 and 2024/2025 planning periods.

Table 68 Monthly congestion costs (Dollars (Millions)) for Pennsylvania (DUQ): 2023/2024 and 2024/2025 planning period

Month	Congestion Costs (Millions)					
	2023/2024			2024/2025		
	Day-ahead	Balancing	Total	Day-ahead	Balancing	Total
Jun	\$1.3	(\$0.2)	\$1.1	\$2.3	(\$0.5)	\$1.8
Jul	\$1.8	(\$0.4)	\$1.4	\$5.4	(\$0.7)	\$4.7
Aug	\$1.5	(\$0.4)	\$1.2	\$3.6	(\$0.3)	\$3.3
Sep	\$1.6	(\$0.4)	\$1.2	\$1.9	(\$0.2)	\$1.7
Oct	\$2.3	(\$0.6)	\$1.8	\$1.3	(\$0.3)	\$1.0
Nov	\$2.4	(\$0.5)	\$1.9	\$1.3	(\$0.3)	\$1.0
Dec	\$1.4	(\$0.2)	\$1.2	\$2.5	(\$0.4)	\$2.1
Jan	\$2.0	(\$0.4)	\$1.5	\$3.9	(\$1.5)	\$2.4
Feb	\$0.8	(\$0.2)	\$0.6	\$1.8	(\$0.3)	\$1.5
Mar	\$1.2	(\$0.4)	\$0.8	\$2.0	(\$0.6)	\$1.4
Apr	\$1.5	(\$0.5)	\$1.0	\$2.5	(\$0.3)	\$2.2
May	\$2.3	(\$0.5)	\$1.9	\$3.3	(\$0.2)	\$3.1
Total	\$20.3	(\$4.7)	\$15.6	\$31.9	(\$5.8)	\$26.1

Table 69 shows the day-ahead and balancing congestion, by month, for Pennsylvania (MET-ED) for the 2023/2024 and 2024/2025 planning periods.

Table 69 Monthly congestion costs (Dollars (Millions)) for Pennsylvania (MET-ED): 2023/2024 and 2024/2025 planning period

Congestion Costs (Millions)						
Month	2023/2024			2024/2025		
	Day-ahead	Balancing	Total	Day-ahead	Balancing	Total
Jun	\$1.3	(\$0.2)	\$1.1	\$2.9	(\$0.7)	\$2.2
Jul	\$2.5	(\$0.5)	\$1.9	\$7.0	(\$0.9)	\$6.1
Aug	\$1.8	(\$0.4)	\$1.4	\$4.4	(\$0.3)	\$4.1
Sep	\$2.2	(\$0.7)	\$1.5	\$1.7	(\$0.2)	\$1.5
Oct	\$3.3	(\$0.7)	\$2.6	\$1.7	(\$0.4)	\$1.3
Nov	\$2.6	(\$0.5)	\$2.0	\$1.2	(\$0.3)	\$0.8
Dec	\$1.9	(\$0.3)	\$1.6	\$3.8	(\$1.6)	\$2.2
Jan	\$4.6	(\$0.7)	\$4.0	\$7.7	(\$2.6)	\$5.2
Feb	\$1.1	(\$0.3)	\$0.8	\$2.8	(\$0.4)	\$2.4
Mar	\$1.8	(\$0.8)	\$1.1	\$5.4	(\$1.6)	\$3.9
Apr	\$2.1	(\$0.6)	\$1.5	\$3.2	(\$0.7)	\$2.5
May	\$3.3	(\$0.5)	\$2.8	\$6.4	(\$1.7)	\$4.7
Total	\$28.5	(\$6.2)	\$22.3	\$48.2	(\$11.5)	\$36.7

Table 70 shows the day-ahead and balancing congestion, by month, for Pennsylvania (PECO) for the 2023/2024 and 2024/2025 planning periods.

Table 70 Monthly congestion costs (Dollars (Millions)) for Pennsylvania (PECO): 2023/2024 and 2024/2025 planning period

Congestion Costs (Millions)						
Month	2023/2024			2024/2025		
	Day-ahead	Balancing	Total	Day-ahead	Balancing	Total
Jun	\$2.7	(\$0.6)	\$2.1	\$5.8	(\$1.3)	\$4.4
Jul	\$5.8	(\$1.3)	\$4.5	\$17.7	(\$2.1)	\$15.6
Aug	\$3.9	(\$1.0)	\$2.8	\$10.2	(\$0.8)	\$9.4
Sep	\$4.9	(\$1.2)	\$3.7	\$3.7	(\$0.6)	\$3.1
Oct	\$5.6	(\$1.4)	\$4.2	\$3.6	(\$1.0)	\$2.6
Nov	\$5.4	(\$1.2)	\$4.2	\$2.4	(\$0.8)	\$1.6
Dec	\$3.5	(\$0.8)	\$2.7	\$8.2	(\$1.4)	\$6.8
Jan	\$7.6	(\$1.5)	\$6.1	\$14.5	(\$6.3)	\$8.2
Feb	\$2.3	(\$0.7)	\$1.7	\$5.5	(\$1.0)	\$4.5
Mar	\$3.2	(\$1.3)	\$1.9	\$8.3	(\$1.9)	\$6.4
Apr	\$4.5	(\$1.3)	\$3.2	\$7.6	(\$1.0)	\$6.7
May	\$7.8	(\$1.2)	\$6.5	\$10.0	(\$0.6)	\$9.4
Total	\$57.2	(\$13.5)	\$43.7	\$97.5	(\$18.9)	\$78.7

Table 71 shows the day-ahead and balancing congestion, by month, for Pennsylvania (PENELEC) for the 2023/2024 and 2024/2025 planning periods.

Table 71 Monthly congestion costs (Dollars (Millions)) for Pennsylvania (PENELEC): 2023/2024 and 2024/2025 planning period

Month	Congestion Costs (Millions)					
	2023/2024			2024/2025		
	Day-ahead	Balancing	Total	Day-ahead	Balancing	Total
Jun	\$1.5	(\$0.2)	\$1.3	\$2.6	(\$0.6)	\$2.1
Jul	\$2.9	(\$0.5)	\$2.5	\$7.1	(\$0.8)	\$6.4
Aug	\$2.2	(\$0.4)	\$1.8	\$5.1	(\$0.3)	\$4.8
Sep	\$2.8	(\$0.5)	\$2.3	\$2.6	(\$0.2)	\$2.4
Oct	\$3.2	(\$0.7)	\$2.5	\$3.2	(\$0.5)	\$2.7
Nov	\$3.2	(\$0.6)	\$2.6	\$1.7	(\$0.4)	\$1.3
Dec	\$3.0	(\$0.3)	\$2.7	\$6.2	(\$1.0)	\$5.2
Jan	\$4.6	(\$0.6)	\$3.9	\$7.7	(\$2.3)	\$5.4
Feb	\$2.2	(\$0.3)	\$1.9	\$4.1	(\$0.5)	\$3.6
Mar	\$2.5	(\$0.6)	\$1.9	\$4.1	(\$1.0)	\$3.2
Apr	\$2.5	(\$0.6)	\$1.8	\$3.9	(\$0.5)	\$3.3
May	\$4.3	(\$0.5)	\$3.8	\$4.9	(\$0.3)	\$4.7
Total	\$34.8	(\$5.9)	\$28.9	\$53.3	(\$8.3)	\$45.0

Table 72 shows the day-ahead and balancing congestion, by month, for Pennsylvania (PPL) for the 2023/2024 and 2024/2025 planning periods.

Table 72 Monthly congestion costs (Dollars (Millions)) for Pennsylvania (PPL): 2023/2024 and 2024/2025 planning period

Month	Congestion Costs (Millions)					
	2023/2024			2024/2025		
	Day-ahead	Balancing	Total	Day-ahead	Balancing	Total
Jun	\$3.2	(\$0.6)	\$2.7	\$6.1	(\$1.2)	\$4.8
Jul	\$6.4	(\$1.2)	\$5.3	\$18.4	(\$1.9)	\$16.5
Aug	\$4.1	(\$0.9)	\$3.1	\$11.9	(\$0.8)	\$11.1
Sep	\$5.5	(\$1.1)	\$4.4	\$5.3	(\$0.6)	\$4.8
Oct	\$7.3	(\$1.6)	\$5.7	\$4.6	(\$1.0)	\$3.6
Nov	\$6.8	(\$1.4)	\$5.4	\$3.1	(\$0.9)	\$2.2
Dec	\$5.6	(\$0.8)	\$4.8	\$10.6	(\$1.6)	\$9.0
Jan	\$11.4	(\$1.7)	\$9.7	\$20.9	(\$7.0)	\$13.9
Feb	\$4.5	(\$0.7)	\$3.8	\$9.5	(\$1.1)	\$8.3
Mar	\$4.5	(\$1.4)	\$3.1	\$11.3	(\$2.0)	\$9.2
Apr	\$5.2	(\$1.4)	\$3.8	\$8.3	(\$1.0)	\$7.3
May	\$8.9	(\$1.2)	\$7.6	\$10.2	(\$0.6)	\$9.6
Total	\$73.5	(\$14.2)	\$59.4	\$120.2	(\$19.9)	\$100.3

Table 73 lists the top 15 constraints affecting Pennsylvania congestion costs for the 2024/2025 planning period, including the type of constraints (Line, Transformer, Flowgate, or Interface), the location of the constraints, and the constraint specific congestion revenue collected from the load in Pennsylvania in the 2024/2025 planning period.¹⁰

Constraint congestion is comprised of internal and external congestion. Internal congestion is congestion paid by PA load that results from a transmission constraint in one of the PA zones (sourced from within a PA zone or sources and sinks within the same PA zone). External congestion is congestion paid by PA load in PA zones that results from a transmission constraint outside that zone (sources outside of that zone). In some cases a listed constraint causes internal and external congestion to be paid by PA load. In this case, the constraint is internal to a PA zone (it sources within that zone or sources and sinks within that zone). The internal congestion is the congestion paid by the host PA zone due to that constraint. The external congestion is the congestion paid by all the other non-host PA zones due to that constraint. If internal congestion is zero,

¹⁰ All the interfaces and the Mid-Atlantic 500 kV system are put in the 500 category for location. The Mid-Atlantic 500 kV system includes equipment that is located in the PE, PPL, BGE, PEPSCO, MEC, PECO, PSEG, JCPLC, DPL and ACEC Zones.

the constraint is external to all of the PA zones. Note that the host zone of the constraint can change based on reversals of flow over time (the source point is the low price side in any given market period), which means that a given constraint can be internal to more than constraint over the course of a year.

Table 73 Congestion cost (Dollars (Millions)) details for the top 15 constraints affecting Pennsylvania congestion costs: 2024/2025 planning period¹¹

Constraint	Type	Location	Day-Ahead			Congestion Costs (Millions)			Total		Grand Total
			Internal	External	Total	Internal	External	Total	Internal	External	
Lenox - North Meshoppen	Line	PE	\$5.5	\$33.3	\$38.9	(\$0.3)	(\$2.0)	(\$2.2)	\$5.3	\$31.4	\$36.6
Dune Acres - Michigan City	Flowgate	MISO	\$0.0	\$17.8	\$17.8	\$0.0	(\$0.1)	(\$0.1)	\$0.0	\$17.7	\$17.7
AP South	Interface	500	\$0.0	\$17.4	\$17.4	\$0.0	(\$1.1)	(\$1.1)	\$0.0	\$16.4	\$16.4
Nottingham	Other	PECO	\$2.5	\$11.6	\$14.1	\$0.2	\$0.8	\$0.9	\$2.7	\$12.4	\$15.1
Pleasant View - Ashburn	Line	DOM	\$0.0	\$17.5	\$17.5	\$0.0	(\$2.5)	(\$2.5)	\$0.0	\$14.9	\$14.9
Goose Creek	Transformer	DOM	\$0.0	\$14.4	\$14.4	\$0.0	(\$0.3)	(\$0.3)	\$0.0	\$14.1	\$14.1
Chaparral - Carson	Line	DOM	\$0.0	\$12.9	\$12.9	\$0.0	\$0.0	\$0.0	\$0.0	\$12.9	\$12.9
Yorkana	Other	MEC	\$1.3	\$11.9	\$13.2	(\$0.0)	(\$0.5)	(\$0.5)	\$1.3	\$11.4	\$12.7
Bedington - Black Oak	Interface	500	\$0.0	\$14.5	\$14.5	\$0.0	(\$1.9)	(\$1.9)	\$0.0	\$12.5	\$12.5
Conastone	Transformer	500	\$0.0	\$11.5	\$11.5	\$0.0	(\$0.3)	(\$0.3)	\$0.0	\$11.2	\$11.2
Pleasant View	Other	DOM	\$0.0	\$10.4	\$10.4	\$0.0	\$0.1	\$0.1	\$0.0	\$10.5	\$10.5
Conastone - Northwest	Line	BGE	\$0.0	\$7.5	\$7.5	\$0.0	\$0.7	\$0.7	\$0.0	\$8.1	\$8.1
Plymouth Meeting - Whitpain	Line	PECO	\$4.0	\$4.1	\$8.1	(\$0.1)	(\$0.0)	(\$0.1)	\$4.0	\$4.0	\$8.0
Dune Acres - Michigan City	Line	MISO	\$0.0	\$0.0	\$0.0	\$0.0	(\$7.7)	(\$7.7)	\$0.0	(\$7.7)	(\$7.7)
Bunsonville - Eugene	Flowgate	MISO	\$0.0	\$6.9	\$6.9	\$0.0	\$0.0	\$0.0	\$0.0	\$6.9	\$6.9
Top 15 Total			\$13.4	\$191.6	\$204.9	(\$0.2)	(\$14.8)	(\$15.0)	\$13.2	\$176.8	\$190.0
All Other Constraints			\$24.4	\$203.7	\$228.2	(\$4.9)	(\$56.9)	(\$61.8)	\$19.5	\$146.9	\$166.4
Total			\$37.8	\$395.3	\$433.1	(\$5.1)	(\$71.7)	(\$76.8)	\$32.7	\$323.6	\$356.4

Table 74 through Table 80 list the top 15 constraints affecting each Pennsylvania zone's congestion costs for the 2024/2025 planning period, including the type of constraints (Line, Transformer, Flowgate, or Interface), the location of the constraints (internal or external to that zone), and the constraint specific congestion revenue collected from the load in Pennsylvania in the 2024/2025 planning period.

Table 74 lists the top 15 constraints affecting Pennsylvania (APS) congestion costs for the 2024/2025 planning period, including the type of constraints (Line, Transformer, Flowgate, or Interface), the location of the constraints, and the constraint specific congestion revenue collected from the load in Pennsylvania (APS) in the 2024/2025 planning period.¹²

¹¹ The top 15 constraints are presented in descending order of absolute value.

¹² All the interfaces and the Mid-Atlantic 500 kV system are put in the 500 category for location. The Mid-Atlantic 500 kV system includes equipment that is located in the PE, PPL, BGE, PEPSCO, MEC, PECO, PSEG, JCPLC, DPL and ACEC Zones.

Table 74 Congestion cost (Dollars (Millions)) details for the top 15 constraints affecting Pennsylvania (APS) congestion costs: 2024/2025 planning period

Constraint	Type	Location	Day-Ahead			Congestion Costs (Millions) Balancing			Total		Grand Total
			Internal	External	Total	Internal	External	Total	Internal	External	
Lenox - North Meshoppen	Line	PE	\$0.0	\$6.3	\$6.3	\$0.0	(\$0.3)	(\$0.3)	\$0.0	\$5.9	\$5.9
Conastone - Northwest	Line	BGE	\$0.0	\$2.7	\$2.7	\$0.0	\$0.2	\$0.2	\$0.0	\$3.0	\$3.0
Nottingham	Other	PECO	\$0.0	\$2.4	\$2.4	\$0.0	\$0.2	\$0.2	\$0.0	\$2.5	\$2.5
Dune Acres - Michigan City	Flowgate	MISO	\$0.0	\$2.4	\$2.4	\$0.0	(\$0.0)	(\$0.0)	\$0.0	\$2.4	\$2.4
Chaparral - Carson	Line	DOM	\$0.0	\$2.3	\$2.3	\$0.0	\$0.0	\$0.0	\$0.0	\$2.3	\$2.3
Goose Creek	Transformer	DOM	\$0.0	\$2.2	\$2.2	\$0.0	(\$0.0)	(\$0.0)	\$0.0	\$2.2	\$2.2
Yorkana	Other	MEC	\$0.0	\$2.2	\$2.2	\$0.0	(\$0.1)	(\$0.1)	\$0.0	\$2.1	\$2.1
AP South	Interface	500	\$0.0	\$2.3	\$2.3	\$0.0	(\$0.1)	(\$0.1)	\$0.0	\$2.1	\$2.1
Pleasant View - Ashburn	Line	DOM	\$0.0	\$2.4	\$2.4	\$0.0	(\$0.4)	(\$0.4)	\$0.0	\$2.1	\$2.1
Conastone	Transformer	500	\$0.0	\$1.9	\$1.9	\$0.0	(\$0.0)	(\$0.0)	\$0.0	\$1.9	\$1.9
Bedington - Black Oak	Interface	500	\$0.0	\$2.0	\$2.0	\$0.0	(\$0.3)	(\$0.3)	\$0.0	\$1.8	\$1.8
Pleasant View	Other	DOM	\$0.0	\$1.3	\$1.3	\$0.0	\$0.0	\$0.0	\$0.0	\$1.3	\$1.3
Dune Acres - Michigan City	Line	MISO	\$0.0	\$0.0	\$0.0	\$0.0	(\$1.0)	(\$1.0)	\$0.0	(\$1.0)	(\$1.0)
East Waynesboro - Ringgold	Line	APS	\$0.2	\$1.0	\$1.2	(\$0.0)	(\$0.1)	(\$0.2)	\$0.2	\$0.8	\$1.0
Bunsonville - Eugene	Flowgate	MISO	\$0.0	\$1.0	\$1.0	\$0.0	\$0.0	\$0.0	\$0.0	\$1.0	\$1.0
Top 15 Total			\$0.2	\$32.4	\$32.6	(\$0.0)	(\$2.1)	(\$2.1)	\$0.2	\$30.3	\$30.6
All Other Constraints			\$1.0	\$33.9	\$34.9	(\$0.1)	(\$7.7)	(\$7.8)	\$0.8	\$26.2	\$27.0
Total			\$1.2	\$66.3	\$67.5	(\$0.1)	(\$9.8)	(\$9.9)	\$1.0	\$56.5	\$57.6

Table 75 lists the top 15 constraints affecting Pennsylvania (ATSI) congestion costs for the 2024/2025 planning period, including the type of constraints (Line, Transformer, Flowgate, or Interface), the location of the constraints, and the constraint specific congestion revenue collected from the load in Pennsylvania (ATSI) in the 2024/2025 planning period.¹³

¹³ All the interfaces and the Mid-Atlantic 500 kV system are put in the 500 category for location. The Mid-Atlantic 500 kV system includes equipment that is located in the PE, PPL, BGE, PEPSCO, MEC, PECO, PSEG, JCPLC, DPL and ACEC Zones.

Table 75 Congestion cost (Dollars (Millions)) details for the top 15 constraints affecting Pennsylvania (ATSI) congestion costs: 2024/2025 planning period

Constraint	Type	Location	Day-Ahead			Congestion Costs (Millions)			Total		Grand Total
			Internal	External	Total	Internal	External	Total	Internal	External	
Lenox - North Meshoppen	Line	PE	\$0.0	\$1.1	\$1.1	\$0.0	(\$0.1)	(\$0.1)	\$0.0	\$1.0	\$1.0
Nottingham	Other	PECO	\$0.0	\$0.7	\$0.7	\$0.0	\$0.0	\$0.0	\$0.0	\$0.7	\$0.7
Conastone - Northwest	Line	BGE	\$0.0	\$0.6	\$0.6	\$0.0	\$0.0	\$0.0	\$0.0	\$0.7	\$0.7
Dune Acres - Michigan City	Flowgate	MISO	\$0.0	\$0.7	\$0.7	\$0.0	(\$0.0)	(\$0.0)	\$0.0	\$0.7	\$0.7
Pleasant View - Ashburn	Line	DOM	\$0.0	\$0.7	\$0.7	\$0.0	(\$0.1)	(\$0.1)	\$0.0	\$0.6	\$0.6
Yorkana	Other	MEC	\$0.0	\$0.6	\$0.6	\$0.0	(\$0.0)	(\$0.0)	\$0.0	\$0.6	\$0.6
Goose Creek	Transformer	DOM	\$0.0	\$0.6	\$0.6	\$0.0	(\$0.0)	(\$0.0)	\$0.0	\$0.6	\$0.6
Conastone	Transformer	500	\$0.0	\$0.5	\$0.5	\$0.0	(\$0.0)	(\$0.0)	\$0.0	\$0.5	\$0.5
AP South	Interface	500	\$0.0	\$0.5	\$0.5	\$0.0	(\$0.0)	(\$0.0)	\$0.0	\$0.4	\$0.4
Bedington - Black Oak	Interface	500	\$0.0	\$0.5	\$0.5	\$0.0	(\$0.1)	(\$0.1)	\$0.0	\$0.4	\$0.4
Pleasant View	Other	DOM	\$0.0	\$0.4	\$0.4	\$0.0	\$0.0	\$0.0	\$0.0	\$0.4	\$0.4
Dune Acres - Michigan City	Line	MISO	\$0.0	\$0.0	\$0.0	\$0.0	(\$0.3)	(\$0.3)	\$0.0	(\$0.3)	(\$0.3)
Bunsonville - Eugene	Flowgate	MISO	\$0.0	\$0.3	\$0.3	\$0.0	\$0.0	\$0.0	\$0.0	\$0.3	\$0.3
East Lima - Haviland	Line	AEP	\$0.0	\$0.3	\$0.3	\$0.0	(\$0.0)	(\$0.0)	\$0.0	\$0.2	\$0.2
Meridian - Twin Branch	Line	AEP	\$0.0	\$0.3	\$0.3	\$0.0	(\$0.0)	(\$0.0)	\$0.0	\$0.2	\$0.2
Top 15 Total			\$0.0	\$7.5	\$7.5	\$0.0	(\$0.6)	(\$0.6)	\$0.0	\$6.9	\$6.9
All Other Constraints			\$0.1	\$7.0	\$7.1	(\$0.0)	(\$1.9)	(\$1.9)	\$0.1	\$5.1	\$5.2
Total			\$0.1	\$14.5	\$14.6	(\$0.0)	(\$2.5)	(\$2.5)	\$0.1	\$12.0	\$12.0

Table 76 lists the top 15 constraints affecting Pennsylvania (DUQ) congestion costs for the 2024/2025 planning period, including the type of constraints (Line, Transformer, Flowgate, or Interface), the location of the constraints, and the constraint specific congestion revenue collected from the load in Pennsylvania (DUQ) in the 2024/2025 planning period.¹⁴

¹⁴ All the interfaces and the Mid-Atlantic 500 kV system are put in the 500 category for location. The Mid-Atlantic 500 kV system includes equipment that is located in the PE, PPL, BGE, PEPSCO, MEC, PECO, PSEG, JCPLC, DPL and ACEC Zones.

Table 76 Congestion cost (Dollars (Millions)) details for the top 15 constraints affecting Pennsylvania (DUQ) congestion costs: 2024/2025 planning period

Constraint	Type	Location	Day-Ahead			Congestion Costs (Millions)			Total		Grand Total
			Internal	External	Total	Internal	External	Total	Internal	External	
Lenox - North Meshoppen	Line	PE	\$0.0	\$2.3	\$2.3	\$0.0	(\$0.2)	(\$0.2)	\$0.0	\$2.1	\$2.1
Nottingham	Other	PECO	\$0.0	\$1.5	\$1.5	\$0.0	\$0.1	\$0.1	\$0.0	\$1.6	\$1.6
Dune Acres - Michigan City	Flowgate	MISO	\$0.0	\$1.5	\$1.5	\$0.0	(\$0.0)	(\$0.0)	\$0.0	\$1.5	\$1.5
Yorkana	Other	MEC	\$0.0	\$1.5	\$1.5	\$0.0	(\$0.0)	(\$0.0)	\$0.0	\$1.5	\$1.5
Pleasant View - Ashburn	Line	DOM	\$0.0	\$1.7	\$1.7	\$0.0	(\$0.2)	(\$0.2)	\$0.0	\$1.4	\$1.4
Goose Creek	Transformer	DOM	\$0.0	\$1.4	\$1.4	\$0.0	(\$0.0)	(\$0.0)	\$0.0	\$1.4	\$1.4
Conastone	Transformer	500	\$0.0	\$1.2	\$1.2	\$0.0	(\$0.0)	(\$0.0)	\$0.0	\$1.2	\$1.2
AP South	Interface	500	\$0.0	\$1.1	\$1.1	\$0.0	(\$0.1)	(\$0.1)	\$0.0	\$1.0	\$1.0
Pleasant View	Other	DOM	\$0.0	\$0.9	\$0.9	\$0.0	\$0.0	\$0.0	\$0.0	\$0.9	\$0.9
Bedington - Black Oak	Interface	500	\$0.0	\$1.0	\$1.0	\$0.0	(\$0.1)	(\$0.1)	\$0.0	\$0.9	\$0.9
Dune Acres - Michigan City	Line	MISO	\$0.0	\$0.0	\$0.0	\$0.0	(\$0.7)	(\$0.7)	\$0.0	(\$0.7)	(\$0.7)
Bunsonville - Eugene	Flowgate	MISO	\$0.0	\$0.6	\$0.6	\$0.0	\$0.0	\$0.0	\$0.0	\$0.6	\$0.6
Plymouth Meeting - Whitpain	Line	PECO	\$0.0	\$0.6	\$0.6	\$0.0	(\$0.0)	(\$0.0)	\$0.0	\$0.6	\$0.6
Dickerson - Dickerson Station	Line	PEPCO	\$0.0	\$0.5	\$0.5	\$0.0	(\$0.0)	(\$0.0)	\$0.0	\$0.5	\$0.5
Meridian - Twin Branch	Line	AEP	\$0.0	\$0.6	\$0.6	\$0.0	(\$0.1)	(\$0.1)	\$0.0	\$0.5	\$0.5
Top 15 Total			\$0.0	\$16.5	\$16.5	\$0.0	(\$1.4)	(\$1.4)	\$0.0	\$15.1	\$15.1
All Other Constraints			\$0.7	\$14.7	\$15.4	(\$0.0)	(\$4.4)	(\$4.4)	\$0.7	\$10.3	\$11.0
Total			\$0.7	\$31.2	\$31.9	(\$0.0)	(\$5.8)	(\$5.8)	\$0.7	\$25.5	\$26.1

Table 77 lists the top 15 constraints affecting Pennsylvania (MET-ED) congestion costs for the 2024/2025 planning period, including the type of constraints (Line, Transformer, Flowgate, or Interface), the location of the constraints, and the constraint specific congestion revenue collected from the load in Pennsylvania (MET-ED) in the 2024/2025 planning period.¹⁵

¹⁵ All the interfaces and the Mid-Atlantic 500 kV system are put in the 500 category for location. The Mid-Atlantic 500 kV system includes equipment that is located in the PE, PPL, BGE, PEPCO, MEC, PECO, PSEG, JCPLC, DPL and ACEC Zones.

Table 77 Congestion cost (Dollars (Millions)) details for the top 15 constraints affecting Pennsylvania (MET-ED) congestion costs: 2024/2025 planning period

Constraint	Type	Location	Day-Ahead			Congestion Costs (Millions) Balancing			Total		Grand Total
			Internal	External	Total	Internal	External	Total	Internal	External	
Lenox - North Meshoppen	Line	PE	\$0.0	\$4.4	\$4.4	\$0.0	(\$0.2)	(\$0.2)	\$0.0	\$4.1	\$4.1
AP South	Interface	500	\$0.0	\$2.0	\$2.0	\$0.0	(\$0.1)	(\$0.1)	\$0.0	\$1.8	\$1.8
Dune Acres - Michigan City	Flowgate	MISO	\$0.0	\$1.8	\$1.8	\$0.0	(\$0.0)	(\$0.0)	\$0.0	\$1.8	\$1.8
Gardners - Texas Eastern	Line	MEC	\$2.2	\$0.0	\$2.2	(\$0.5)	\$0.0	(\$0.5)	\$1.7	\$0.0	\$1.7
Nottingham	Other	PECO	\$0.0	\$1.5	\$1.5	\$0.0	\$0.1	\$0.1	\$0.0	\$1.6	\$1.6
Carlisle Pike - Roxbury	Line	PE	\$0.1	\$0.0	\$0.1	(\$1.7)	(\$0.0)	(\$1.7)	(\$1.6)	\$0.0	(\$1.6)
Chaparral - Carson	Line	DOM	\$0.0	\$1.6	\$1.6	\$0.0	\$0.0	\$0.0	\$0.0	\$1.6	\$1.6
Pleasant View - Ashburn	Line	DOM	\$0.0	\$1.8	\$1.8	\$0.0	(\$0.2)	(\$0.2)	\$0.0	\$1.5	\$1.5
Glendon - Hosensack	Line	MEC	\$0.0	\$1.5	\$1.5	\$0.0	(\$0.1)	(\$0.1)	\$0.0	\$1.4	\$1.4
Bedington - Black Oak	Interface	500	\$0.0	\$1.6	\$1.6	\$0.0	(\$0.2)	(\$0.2)	\$0.0	\$1.4	\$1.4
Conastone	Transformer	500	\$0.0	\$1.3	\$1.3	\$0.0	(\$0.0)	(\$0.0)	\$0.0	\$1.3	\$1.3
Goose Creek	Transformer	DOM	\$0.0	\$1.3	\$1.3	\$0.0	(\$0.0)	(\$0.0)	\$0.0	\$1.3	\$1.3
Pleasant View	Other	DOM	\$0.0	\$1.1	\$1.1	\$0.0	\$0.0	\$0.0	\$0.0	\$1.1	\$1.1
Yorkana	Other	MEC	\$0.1	\$0.8	\$0.8	\$0.0	(\$0.0)	(\$0.0)	\$0.1	\$0.7	\$0.8
Dune Acres - Michigan City	Line	MISO	\$0.0	\$0.0	\$0.0	\$0.0	(\$0.8)	(\$0.8)	\$0.0	(\$0.8)	(\$0.8)
Top 15 Total			\$2.4	\$20.5	\$22.9	(\$2.2)	(\$1.6)	(\$3.9)	\$0.2	\$18.8	\$19.1
All Other Constraints			\$4.0	\$21.3	\$25.3	(\$1.8)	(\$5.8)	(\$7.6)	\$2.2	\$15.4	\$17.6
Total			\$6.4	\$41.8	\$48.2	(\$4.0)	(\$7.5)	(\$11.5)	\$2.4	\$34.3	\$36.7

Table 78 lists the top 15 constraints affecting Pennsylvania (PECO) congestion costs for the 2024/2025 planning period, including the type of constraints (Line, Transformer, Flowgate, or Interface), the location of the constraints, and the constraint specific congestion revenue collected from the load in Pennsylvania (PECO) in the 2024/2025 planning period.

Table 78 Congestion cost (Dollars (Millions)) details for the top 15 constraints affecting Pennsylvania (PECO) congestion costs: 2024/2025 planning period

Constraint	Type	Location	Day-Ahead			Congestion Costs (Millions) Balancing			Total		Grand Total
			Internal	External	Total	Internal	External	Total	Internal	External	
Lenox - North Meshoppen	Line	PE	\$0.0	\$6.7	\$6.7	\$0.0	(\$0.6)	(\$0.6)	\$0.0	\$6.1	\$6.1
AP South	Interface	500	\$0.0	\$4.9	\$4.9	\$0.0	(\$0.3)	(\$0.3)	\$0.0	\$4.6	\$4.6
Dune Acres - Michigan City	Flowgate	MISO	\$0.0	\$4.4	\$4.4	\$0.0	(\$0.0)	(\$0.0)	\$0.0	\$4.4	\$4.4
Plymouth Meeting - Whitpain	Line	PECO	\$4.0	\$0.0	\$4.0	(\$0.1)	\$0.0	(\$0.1)	\$4.0	\$0.0	\$4.0
Chaparral - Carson	Line	DOM	\$0.0	\$3.9	\$3.9	\$0.0	\$0.0	\$0.0	\$0.0	\$3.9	\$3.9
Pleasant View - Ashburn	Line	DOM	\$0.0	\$4.4	\$4.4	\$0.0	(\$0.6)	(\$0.6)	\$0.0	\$3.7	\$3.7
Yorkana	Other	MEC	\$0.0	\$3.7	\$3.7	\$0.0	(\$0.1)	(\$0.1)	\$0.0	\$3.5	\$3.5
Bedington - Black Oak	Interface	500	\$0.0	\$3.8	\$3.8	\$0.0	(\$0.5)	(\$0.5)	\$0.0	\$3.3	\$3.3
Pleasant View	Other	DOM	\$0.0	\$3.0	\$3.0	\$0.0	\$0.0	\$0.0	\$0.0	\$3.0	\$3.0
Nottingham	Other	PECO	\$2.5	\$0.0	\$2.5	\$0.2	\$0.0	\$0.2	\$2.7	\$0.0	\$2.7
Goose Creek	Transformer	DOM	\$0.0	\$2.6	\$2.6	\$0.0	(\$0.1)	(\$0.1)	\$0.0	\$2.5	\$2.5
Conastone	Transformer	500	\$0.0	\$2.3	\$2.3	\$0.0	(\$0.0)	(\$0.0)	\$0.0	\$2.2	\$2.2
Dune Acres - Michigan City	Line	MISO	\$0.0	\$0.0	\$0.0	\$0.0	(\$2.0)	(\$2.0)	\$0.0	(\$2.0)	(\$2.0)
Elk Run D.P. - Rollins Ford	Line	DOM	\$0.0	\$1.9	\$1.9	\$0.0	\$0.0	\$0.0	\$0.0	\$1.9	\$1.9
Cool Spring - Milford	Line	DPL	\$0.0	\$2.1	\$2.1	\$0.0	(\$0.3)	(\$0.3)	\$0.0	\$1.8	\$1.8
Top 15 Total			\$6.6	\$43.6	\$50.1	\$0.1	(\$4.5)	(\$4.4)	\$6.7	\$39.1	\$45.8
All Other Constraints			\$0.7	\$46.7	\$47.4	(\$0.0)	(\$14.5)	(\$14.5)	\$0.7	\$32.1	\$32.9
Total			\$7.3	\$90.2	\$97.5	\$0.1	(\$19.0)	(\$18.9)	\$7.4	\$71.3	\$78.7

Table 79 lists the top 15 constraints affecting Pennsylvania (PENELEC) congestion costs for the 2024/2025 planning period, including the type of constraints (Line, Transformer, Flowgate, or Interface), the location of the constraints, and the constraint specific congestion revenue collected from the load in Pennsylvania (PENELEC) in the 2024/2025 planning period.

Table 79 Congestion cost (Dollars (Millions)) details for the top 15 constraints affecting Pennsylvania (PENELEC) congestion costs: 2024/2025 planning period

Constraint	Type	Location	Day-Ahead			Congestion Costs (Millions)			Total		Grand Total
			Internal	External	Total	Internal	External	Total	Internal	External	
Lenox - North Meshoppen	Line	PE	\$5.5	\$0.0	\$5.5	(\$0.3)	\$0.0	(\$0.3)	\$5.3	\$0.0	\$5.3
Dune Acres - Michigan City	Flowgate	MISO	\$0.0	\$2.0	\$2.0	\$0.0	(\$0.0)	(\$0.0)	\$0.0	\$1.9	\$1.9
Nottingham	Other	PECO	\$0.0	\$1.8	\$1.8	\$0.0	\$0.1	\$0.1	\$0.0	\$1.9	\$1.9
Mehoopany - North Meshoppen	Line	PE	\$1.7	\$0.0	\$1.7	\$0.0	\$0.0	\$0.0	\$1.7	\$0.0	\$1.7
Goose Creek	Transformer	DOM	\$0.0	\$1.7	\$1.7	\$0.0	(\$0.0)	(\$0.0)	\$0.0	\$1.7	\$1.7
Pleasant View - Ashburn	Line	DOM	\$0.0	\$2.0	\$2.0	\$0.0	(\$0.3)	(\$0.3)	\$0.0	\$1.7	\$1.7
AP South	Interface	500	\$0.0	\$1.6	\$1.6	\$0.0	(\$0.1)	(\$0.1)	\$0.0	\$1.5	\$1.5
Conastone - Northwest	Line	BGE	\$0.0	\$1.3	\$1.3	\$0.0	\$0.1	\$0.1	\$0.0	\$1.4	\$1.4
North Meshoppen	Transformer	PE	\$1.3	\$0.0	\$1.3	\$0.0	\$0.0	\$0.0	\$1.3	\$0.0	\$1.3
Yorkana	Other	MEC	\$0.0	\$1.4	\$1.4	\$0.0	(\$0.0)	(\$0.0)	\$0.0	\$1.3	\$1.3
Bedington - Black Oak	Interface	500	\$0.0	\$1.4	\$1.4	\$0.0	(\$0.2)	(\$0.2)	\$0.0	\$1.2	\$1.2
Conastone	Transformer	500	\$0.0	\$1.2	\$1.2	\$0.0	(\$0.0)	(\$0.0)	\$0.0	\$1.2	\$1.2
Gardners - Texas Eastern	Line	MEC	\$0.4	\$0.8	\$1.2	(\$0.0)	(\$0.0)	(\$0.0)	\$0.4	\$0.7	\$1.2
Chaparral - Carson	Line	DOM	\$0.0	\$1.0	\$1.0	\$0.0	\$0.0	\$0.0	\$0.0	\$1.0	\$1.0
Pleasant View	Other	DOM	\$0.0	\$1.0	\$1.0	\$0.0	\$0.0	\$0.0	\$0.0	\$1.0	\$1.0
Top 15 Total			\$9.0	\$17.0	\$26.0	(\$0.3)	(\$0.5)	(\$0.8)	\$8.7	\$16.5	\$25.2
All Other Constraints			\$2.8	\$24.5	\$27.3	(\$0.7)	(\$6.8)	(\$7.5)	\$2.1	\$17.7	\$19.8
Total			\$11.7	\$41.5	\$53.3	(\$1.0)	(\$7.3)	(\$8.3)	\$10.8	\$34.2	\$45.0

Table 80 lists the top 15 constraints affecting Pennsylvania (PPL) congestion costs for the 2024/2025 planning period, including the type of constraints (Line, Transformer, Flowgate, or Interface), the location of the constraints, and the constraint specific congestion revenue collected from the load in Pennsylvania (PPL) in the 2024/2025 planning period.

Table 80 Congestion cost (Dollars (Millions)) details for the top 15 constraints affecting Pennsylvania (PPL) congestion costs: 2024/2025 planning period

Constraint	Type	Location	Day-Ahead			Congestion Costs (Millions) Balancing			Total		Grand Total
			Internal	External	Total	Internal	External	Total	Internal	External	
Lenox - North Meshoppen	Line	PE	\$0.0	\$12.6	\$12.6	\$0.0	(\$0.5)	(\$0.5)	\$0.0	\$12.1	\$12.1
Dune Acres - Michigan City	Flowgate	MISO	\$0.0	\$4.9	\$4.9	\$0.0	(\$0.0)	(\$0.0)	\$0.0	\$4.9	\$4.9
AP South	Interface	500	\$0.0	\$5.1	\$5.1	\$0.0	(\$0.3)	(\$0.3)	\$0.0	\$4.8	\$4.8
Goose Creek	Transformer	DOM	\$0.0	\$4.7	\$4.7	\$0.0	(\$0.1)	(\$0.1)	\$0.0	\$4.6	\$4.6
Chaparral - Carson	Line	DOM	\$0.0	\$4.1	\$4.1	\$0.0	\$0.0	\$0.0	\$0.0	\$4.1	\$4.1
Nottingham	Other	PECO	\$0.0	\$3.8	\$3.8	\$0.0	\$0.3	\$0.3	\$0.0	\$4.1	\$4.1
Pleasant View - Ashburn	Line	DOM	\$0.0	\$4.6	\$4.6	\$0.0	(\$0.7)	(\$0.7)	\$0.0	\$3.9	\$3.9
Bedington - Black Oak	Interface	500	\$0.0	\$4.2	\$4.2	\$0.0	(\$0.6)	(\$0.6)	\$0.0	\$3.6	\$3.6
Conastone	Transformer	500	\$0.0	\$3.0	\$3.0	\$0.0	(\$0.1)	(\$0.1)	\$0.0	\$3.0	\$3.0
Yorkana	Other	MEC	\$1.2	\$1.8	\$3.0	(\$0.0)	(\$0.1)	(\$0.1)	\$1.2	\$1.7	\$2.9
Pleasant View	Other	DOM	\$0.0	\$2.7	\$2.7	\$0.0	\$0.0	\$0.0	\$0.0	\$2.7	\$2.7
Dune Acres - Michigan City	Line	MISO	\$0.0	\$0.0	\$0.0	\$0.0	(\$2.1)	(\$2.1)	\$0.0	(\$2.1)	(\$2.1)
Cumberland	Transformer	PPL	\$1.9	\$0.0	\$1.9	\$0.0	\$0.0	\$0.0	\$1.9	\$0.0	\$1.9
AEP - DOM	Interface	500	\$0.0	\$3.4	\$3.4	\$0.0	(\$5.3)	(\$5.3)	\$0.0	(\$1.9)	(\$1.9)
Bunsonville - Eugene	Flowgate	MISO	\$0.0	\$1.9	\$1.9	\$0.0	\$0.0	\$0.0	\$0.0	\$1.9	\$1.9
Top 15 Total			\$3.1	\$56.8	\$59.9	(\$0.0)	(\$9.5)	(\$9.5)	\$3.1	\$47.3	\$50.4
All Other Constraints			\$7.3	\$52.9	\$60.3	(\$0.1)	(\$10.3)	(\$10.4)	\$7.3	\$42.6	\$49.9
Total			\$10.4	\$109.7	\$120.2	(\$0.1)	(\$19.8)	(\$19.9)	\$10.4	\$89.9	\$100.3

Table 81 lists the top 15 constraints affecting Pennsylvania congestion costs for the 2024/2025 planning period. Table 81 provides the type of constraint (Line, Transformer, Flowgate, or Interface), the location of the constraint, the congestion event hours contributed by the constraints for the period analyzed.

Table 81 Top 15 constraints affecting Pennsylvania congestion costs: 2024/2025 planning period

Constraint	Type	Location	Event Hours	
			Day-Ahead	Real-Time
Lenox - North Meshoppen	Line	PE	4,979	4,128
Dune Acres - Michigan City	Flowgate	MISO	2,494	31
AP South	Interface	500	456	112
Nottingham	Other	PECO	2,980	1,426
Pleasant View - Ashburn	Line	DOM	396	103
Goose Creek	Transformer	DOM	208	102
Chaparral - Carson	Line	DOM	894	0
Yorkana	Other	MEC	811	448
Bedington - Black Oak	Interface	500	313	202
Conastone	Transformer	500	471	273
Pleasant View	Other	DOM	137	80
Conastone - Northwest	Line	BGE	1,045	521
Plymouth Meeting - Whitpain	Line	PECO	131	59
Dune Acres - Michigan City	Line	MISO	0	1,572
Bunsonville - Eugene	Flowgate	MISO	601	0
Top 15 Total			15,916	9,057
All Other Constraints			45,442	19,361
Total			61,358	28,418

Table 82 through Table 88 list the top 15 constraints affecting each Pennsylvania zone for the 2023/2024 planning period and provides the type of constraints (Line, Transformer, Flowgate, or Interface), the location of the constraints and the congestion event hours by the constraints for the period analyzed.

Table 82 lists the top 15 constraints affecting Pennsylvania (APS) congestion costs for the 2024/2025 planning period. Table 82 provides the type of constraint (Line, Transformer, Flowgate, or Interface), the location of the constraint, the congestion event hours contributed by the constraints for the period analyzed.

Table 82 Top 15 constraints affecting Pennsylvania (APS) congestion costs: 2024/2025 planning period

Constraint	Type	Location	Event Hours	
			Day-Ahead	Real-Time
Lenox - North Meshoppen	Line	PE	4,979	4,128
Conastone - Northwest	Line	BGE	1,045	521
Nottingham	Other	PECO	2,979	1,426
Dune Acres - Michigan City	Flowgate	MISO	2,494	31
Chaparral - Carson	Line	DOM	894	0
Goose Creek	Transformer	DOM	208	102
Yorkana	Other	MEC	811	448
AP South	Interface	500	456	112
Pleasant View - Ashburn	Line	DOM	396	103
Conastone	Transformer	500	471	273
Bedington - Black Oak	Interface	500	313	202
Pleasant View	Other	DOM	137	80
Dune Acres - Michigan City	Line	MISO	0	1,572
East Waynesboro - Ringgold	Line	APS	221	82
Bunsonville - Eugene	Flowgate	MISO	601	0
Top 15 Total			16,005	9,080
All Other Constraints			36,347	19,335
Total			52,352	28,415

Table 83 lists the top 15 constraints affecting Pennsylvania (ATSI) congestion costs for the 2024/2025 planning period. Table 83 provides the type of constraint (Line, Transformer, Flowgate, or Interface), the location of the constraint, the congestion event hours contributed by the constraints for the period analyzed.

Table 83 Top 15 constraints affecting Pennsylvania (ATSI) congestion costs: 2024/2025 planning period

Constraint	Type	Location	Event Hours	
			Day-Ahead	Real-Time
Lenox - North Meshoppen	Line	PE	4,754	4,128
Nottingham	Other	PECO	2,978	1,426
Conastone - Northwest	Line	BGE	1,045	521
Dune Acres - Michigan City	Flowgate	MISO	2,494	31
Pleasant View - Ashburn	Line	DOM	396	103
Yorkana	Other	MEC	811	448
Goose Creek	Transformer	DOM	208	102
Conastone	Transformer	500	471	273
AP South	Interface	500	456	112
Bedington - Black Oak	Interface	500	313	202
Pleasant View	Other	DOM	137	80
Dune Acres - Michigan City	Line	MISO	0	1,572
Bunsonville - Eugene	Flowgate	MISO	601	0
East Lima - Haviland	Line	AEP	1,146	376
Meridian - Twin Branch	Line	AEP	391	218
Top 15 Total			16,201	9,592
All Other Constraints			34,666	18,818
Total			50,867	28,410

Table 84 lists the top 15 constraints affecting Pennsylvania (DUQ) congestion costs for the 2024/2025 planning period. Table 84 provides the type of constraint (Line, Transformer, Flowgate, or Interface), the location of the constraint, the congestion event hours contributed by the constraints for the period analyzed.

Table 84 Top 15 constraints affecting Pennsylvania (DUQ) congestion costs: 2024/2025 planning period

Constraint	Type	Location	Event Hours	
			Day-Ahead	Real-Time
Lenox - North Meshoppen	Line	PE	4,420	4,125
Nottingham	Other	PECO	2,974	1,426
Dune Acres - Michigan City	Flowgate	MISO	2,492	31
Yorkana	Other	MEC	811	448
Pleasant View - Ashburn	Line	DOM	395	103
Goose Creek	Transformer	DOM	208	102
Conastone	Transformer	500	412	273
AP South	Interface	500	456	112
Pleasant View	Other	DOM	137	80
Bedington - Black Oak	Interface	500	313	202
Dune Acres - Michigan City	Line	MISO	0	1,572
Bunsonville - Eugene	Flowgate	MISO	601	0
Plymouth Meeting - Whitpain	Line	PECO	131	59
Dickerson - Dickerson Station	Line	PEPCO	454	75
Meridian - Twin Branch	Line	AEP	391	218
Top 15 Total			14,195	8,826
All Other Constraints			26,295	19,549
Total			40,490	28,375

Table 85 lists the top 15 constraints affecting Pennsylvania (MET-ED) congestion costs for the 2024/2025 planning period. Table 85 provides the type of constraint (Line, Transformer, Flowgate, or Interface), the location of the constraint, the congestion event hours contributed by the constraints for the period analyzed.

Table 85 Top 15 constraints affecting Pennsylvania (MET-ED) congestion costs: 2024/2025 planning period

Constraint	Type	Location	Event Hours	
			Day-Ahead	Real-Time
Lenox - North Meshoppen	Line	PE	4,870	4,128
AP South	Interface	500	456	112
Dune Acres - Michigan City	Flowgate	MISO	2,494	31
Gardners - Texas Eastern	Line	MEC	1,206	120
Nottingham	Other	PECO	2,979	1,426
Carlisle Pike - Roxbury	Line	PE	135	67
Chaparral - Carson	Line	DOM	813	0
Pleasant View - Ashburn	Line	DOM	396	103
Glendon - Hosensack	Line	MEC	527	199
Bedington - Black Oak	Interface	500	313	202
Conastone	Transformer	500	471	273
Goose Creek	Transformer	DOM	143	102
Pleasant View	Other	DOM	137	80
Yorkana	Other	MEC	811	448
Dune Acres - Michigan City	Line	MISO	0	1,572
Top 15 Total			15,751	8,863
All Other Constraints			32,131	19,538
Total			47,882	28,401

Table 86 lists the top 15 constraints affecting Pennsylvania (PECO) congestion costs for the 2024/2025 planning period. Table 86 provides the type of constraint (Line, Transformer, Flowgate, or Interface), the location of the constraint, the congestion event hours contributed by the constraints for the period analyzed.

Table 86 Top 15 constraints affecting Pennsylvania (PECO) congestion costs: 2024/2025 planning period

Constraint	Type	Location	Event Hours	
			Day-Ahead	Real-Time
Lenox - North Meshoppen	Line	PE	4,422	4,128
AP South	Interface	500	456	112
Dune Acres - Michigan City	Flowgate	MISO	2,494	31
Plymouth Meeting - Whitpain	Line	PECO	131	59
Chaparral - Carson	Line	DOM	815	0
Pleasant View - Ashburn	Line	DOM	396	103
Yorkana	Other	MEC	811	448
Bedington - Black Oak	Interface	500	313	202
Pleasant View	Other	DOM	137	80
Nottingham	Other	PECO	2,980	1,426
Goose Creek	Transformer	DOM	118	102
Conastone	Transformer	500	471	273
Dune Acres - Michigan City	Line	MISO	0	1,572
Elk Run D.P. - Rollins Ford	Line	DOM	311	6
Cool Spring - Milford	Line	DPL	288	83
Top 15 Total			14,143	8,625
All Other Constraints			31,198	19,778
Total			45,341	28,403

Table 87 lists the top 15 constraints affecting Pennsylvania (PENELEC) congestion costs for the 2024/2025 planning period. Table 87 provides the type of constraint (Line, Transformer, Flowgate, or Interface), the location of the constraint, the congestion event hours contributed by the constraints for the period analyzed.

Table 87 Top 15 constraints affecting Pennsylvania (PENELEC) congestion costs: 2024/2025 planning period

Constraint	Type	Location	Event Hours	
			Day-Ahead	Real-Time
Lenox - North Meshoppen	Line	PE	4,979	4,128
Dune Acres - Michigan City	Flowgate	MISO	2,494	31
Nottingham	Other	PECO	2,980	1,426
Mehoopany - North Meshoppen	Line	PE	658	11
Goose Creek	Transformer	DOM	208	102
Pleasant View - Ashburn	Line	DOM	396	103
AP South	Interface	500	456	112
Conastone - Northwest	Line	BGE	1,045	521
North Meshoppen	Transformer	PE	767	129
Yorkana	Other	MEC	811	448
Bedington - Black Oak	Interface	500	313	202
Conastone	Transformer	500	471	273
Gardners - Texas Eastern	Line	MEC	1,020	120
Chaparral - Carson	Line	DOM	540	0
Pleasant View	Other	DOM	137	80
Top 15 Total			17,275	7,686
All Other Constraints			34,556	20,725
Total			51,831	28,411

Table 88 lists the top 15 constraints affecting Pennsylvania (PPL) congestion costs for the 2024/2025 planning period. Table 88 provides the type of constraint (Line, Transformer, Flowgate, or Interface), the location of the constraint, the congestion event hours contributed by the constraints for the period analyzed.

Table 88 Top 15 constraints affecting Pennsylvania (PPL) congestion costs: 2024/2025 planning period

Constraint	Type	Location	Event Hours	
			Day-Ahead	Real-Time
Lenox - North Meshoppen	Line	PE	4,979	4,128
Dune Acres - Michigan City	Flowgate	MISO	2,494	31
AP South	Interface	500	456	112
Goose Creek	Transformer	DOM	196	102
Chaparral - Carson	Line	DOM	815	0
Nottingham	Other	PECO	2,980	1,426
Pleasant View - Ashburn	Line	DOM	396	103
Bedington - Black Oak	Interface	500	313	202
Conastone	Transformer	500	471	273
Yorkana	Other	MEC	811	448
Pleasant View	Other	DOM	137	80
Dune Acres - Michigan City	Line	MISO	0	1,572
Cumberland	Transformer	PPL	52	13
AEP - DOM	Interface	500	277	221
Bunsonville - Eugene	Flowgate	MISO	601	0
Top 15 Total			14,978	8,711
All Other Constraints			36,576	19,697
Total			51,554	28,408

Table 89 shows the congestion cost details of the top 15 constraints affecting Pennsylvania for the 2023/2024 planning period, including the type of constraints (Line, Transformer, Flowgate, or Interface), the location of the constraints and the constraint specific congestion revenue collected from the load in Pennsylvania in the 2023/2024 planning period. Table 89 shows that 88.9 percent (\$188.7 million of the \$212.4 million congestion paid) of the congestion paid by Pennsylvania load is due to binding transmission constraints outside of Pennsylvania.

Table 89 Congestion cost (Dollars (Millions)) details for the top 15 constraints affecting Pennsylvania: 2023/2024 planning period¹⁶

Constraint	Type	Location	Day-Ahead			Congestion Costs (Millions)			Total		Grand Total
			Internal	External	Total	Internal	External	Total	Internal	External	
Nottingham	Other	PECO	6.2	28.4	34.6	(\$0.3)	(\$1.2)	(\$1.5)	\$5.9	\$27.2	\$33.1
Lenox - North Meshoppen	Line	PE	2.8	16.4	19.2	(\$0.7)	(\$5.5)	(\$6.3)	\$2.1	\$10.9	\$13.0
Graceton - Safe Harbor	Line	BGE	0.0	11.9	11.9	\$0.0	(\$0.3)	(\$0.3)	\$0.0	\$11.6	\$11.6
AP South	Interface	500	0.0	10.4	10.4	\$0.0	(\$0.8)	(\$0.8)	\$0.0	\$9.7	\$9.7
Cool Spring - Milford	Line	DPL	0.0	9.6	9.6	\$0.0	(\$0.7)	(\$0.7)	\$0.0	\$8.8	\$8.8
Possum Point	Transformer	DOM	0.0	8.6	8.6	\$0.0	(\$0.6)	(\$0.6)	\$0.0	\$8.1	\$8.1
Conastone - Northwest	Line	BGE	0.0	6.6	6.6	\$0.0	(\$0.2)	(\$0.2)	\$0.0	\$6.5	\$6.5
Juniata	Transformer	500	1.9	4.5	6.4	\$0.0	\$0.0	\$0.0	\$1.9	\$4.5	\$6.4
Collins	Transformer	COMED	0.0	6.3	6.3	\$0.0	\$0.0	\$0.0	\$0.0	\$6.3	\$6.3
Chaparral - Carson	Line	DOM	0.0	5.9	5.9	\$0.0	\$0.0	\$0.0	\$0.0	\$5.9	\$5.9
East Towanda - Hillside	Line	PE	0.4	5.7	6.1	(\$0.0)	(\$0.3)	(\$0.3)	\$0.4	\$5.4	\$5.8
Pleasant View - Ashburn	Line	DOM	0.0	6.2	6.2	\$0.0	(\$1.1)	(\$1.1)	\$0.0	\$5.1	\$5.1
Gardners - Texas Eastern	Line	MEC	1.4	3.8	5.1	(\$0.0)	(\$0.1)	(\$0.1)	\$1.3	\$3.6	\$5.0
Stillwell - Dumont	Flowgate	MISO	0.0	4.1	4.1	\$0.0	\$0.0	\$0.0	\$0.0	\$4.1	\$4.1
Big Pine - Kiski Valley	Line	APS	0.6	3.1	3.7	\$0.1	\$0.4	\$0.4	\$0.7	\$3.4	\$4.1
Top 15 Total			\$13.3	\$131.5	\$144.8	(\$1.0)	(\$10.4)	(\$11.3)	\$12.4	\$121.2	\$133.5
All Other Constraints			\$12.2	\$109.0	\$121.2	(\$1.0)	(\$41.4)	(\$42.4)	\$11.2	\$67.6	\$78.8
Total			\$25.6	\$240.5	\$266.1	(\$2.0)	(\$51.8)	(\$53.7)	\$23.6	\$188.7	\$212.4

Table 90 through Table 97 show the congestion cost details of the top 15 constraints affecting each Pennsylvania zone for the 2023/2024 planning period, including the type of constraints (Line, Transformer, Flowgate, or Interface), the location of the constraints and the constraint specific congestion revenue collected from the load in each Pennsylvania Zone in the 2023/2024 planning period.

Table 90 shows the congestion cost details of the top 15 constraints affecting Pennsylvania (APS) for the 2023/2024 planning period, including the type of constraints (Line, Transformer, Flowgate, or Interface), the location of the constraints and the constraint specific congestion revenue collected from the load in Pennsylvania (APS) in the 2023/2024 planning period.

¹⁶ The top 15 constraints are presented in descending order of absolute value.

Table 90 Congestion cost (Dollars (Millions)) details for the top 15 constraints affecting Pennsylvania (APS): 2023/2024 planning period

Constraint	Type	Location	Day-Ahead			Congestion Costs (Millions) Balancing			Total		Grand Total
			Internal	External	Total	Internal	External	Total	Internal	External	
Nottingham	Other	PECO	0.0	5.8	5.8	\$0.0	(\$0.3)	(\$0.3)	\$0.0	\$5.5	\$5.5
Lenox - North Meshoppen	Line	PE	0.0	3.2	3.2	\$0.0	(\$0.8)	(\$0.8)	\$0.0	\$2.3	\$2.3
Conastone - Northwest	Line	BGE	0.0	2.4	2.4	\$0.0	(\$0.1)	(\$0.1)	\$0.0	\$2.3	\$2.3
Graceton - Safe Harbor	Line	BGE	0.0	2.0	2.0	\$0.0	(\$0.0)	(\$0.0)	\$0.0	\$1.9	\$1.9
AP South	Interface	500	0.0	1.4	1.4	\$0.0	(\$0.1)	(\$0.1)	\$0.0	\$1.3	\$1.3
Possum Point	Transformer	DOM	0.0	1.3	1.3	\$0.0	(\$0.1)	(\$0.1)	\$0.0	\$1.3	\$1.3
Cool Spring - Milford	Line	DPL	0.0	1.1	1.1	\$0.0	(\$0.1)	(\$0.1)	\$0.0	\$1.0	\$1.0
Chaparral - Carson	Line	DOM	0.0	1.0	1.0	\$0.0	\$0.0	\$0.0	\$0.0	\$1.0	\$1.0
Collins	Transformer	COMED	0.0	0.8	0.8	\$0.0	\$0.0	\$0.0	\$0.0	\$0.8	\$0.8
Juniata	Transformer	500	0.0	0.8	0.8	\$0.0	\$0.0	\$0.0	\$0.0	\$0.8	\$0.8
East Towanda - Hillside	Line	PE	0.0	0.8	0.8	(\$0.0)	(\$0.0)	(\$0.0)	(\$0.0)	\$0.8	\$0.8
Pleasant View - Ashburn	Line	DOM	0.0	0.9	0.9	\$0.0	(\$0.1)	(\$0.1)	\$0.0	\$0.7	\$0.7
Big Pine - Kiski Valley	Line	APS	0.6	0.0	0.6	\$0.1	\$0.0	\$0.1	\$0.7	\$0.0	\$0.7
Elmsport - Sunbury	Line	PPL	0.0	0.6	0.6	\$0.0	\$0.0	\$0.0	\$0.0	\$0.6	\$0.6
Stillwell - Dumont	Flowgate	MISO	0.0	0.6	0.6	\$0.0	\$0.0	\$0.0	\$0.0	\$0.6	\$0.6
Top 15 Total			\$0.6	\$22.6	\$23.3	\$0.1	(\$1.7)	(\$1.6)	\$0.7	\$21.0	\$21.6
All Other Constraints			\$0.3	\$18.3	\$18.6	\$0.0	(\$5.7)	(\$5.7)	\$0.3	\$12.6	\$12.9
Total			\$0.9	\$40.9	\$41.9	\$0.1	(\$7.4)	(\$7.3)	\$1.0	\$33.6	\$34.6

Table 91 shows the congestion cost details of the top 15 constraints affecting Pennsylvania (ATSI) for the 2023/2024 planning period, including the type of constraints (Line, Transformer, Flowgate, or Interface), the location of the constraints and the constraint specific congestion revenue collected from the load in Pennsylvania (ATSI) in the 2023/2024 planning period.

Table 91 Congestion cost (Dollars (Millions)) details for the top 15 constraints affecting Pennsylvania (ATSI): 2023/2024 planning period

Constraint	Type	Location	Day-Ahead			Congestion Costs (Millions) Balancing			Total		Grand Total
			Internal	External	Total	Internal	External	Total	Internal	External	
Nottingham	Other	PECO	0.0	1.6	1.6	\$0.0	(\$0.1)	(\$0.1)	\$0.0	\$1.5	\$1.5
Conastone - Northwest	Line	BGE	0.0	0.6	0.6	\$0.0	(\$0.0)	(\$0.0)	\$0.0	\$0.6	\$0.6
Graceton - Safe Harbor	Line	BGE	0.0	0.5	0.5	\$0.0	(\$0.0)	(\$0.0)	\$0.0	\$0.5	\$0.5
Lenox - North Meshoppen	Line	PE	0.0	0.5	0.5	\$0.0	(\$0.2)	(\$0.2)	\$0.0	\$0.3	\$0.3
Possum Point	Transformer	DOM	0.0	0.3	0.3	\$0.0	(\$0.0)	(\$0.0)	\$0.0	\$0.3	\$0.3
AP South	Interface	500	0.0	0.3	0.3	\$0.0	(\$0.0)	(\$0.0)	\$0.0	\$0.3	\$0.3
Cool Spring - Milford	Line	DPL	0.0	0.3	0.3	\$0.0	(\$0.0)	(\$0.0)	\$0.0	\$0.3	\$0.3
Collins	Transformer	COMED	0.0	0.2	0.2	\$0.0	\$0.0	\$0.0	\$0.0	\$0.2	\$0.2
East Towanda - Hillside	Line	PE	0.0	0.2	0.2	\$0.0	(\$0.0)	(\$0.0)	\$0.0	\$0.2	\$0.2
Pleasant View - Ashburn	Line	DOM	0.0	0.2	0.2	\$0.0	(\$0.0)	(\$0.0)	\$0.0	\$0.2	\$0.2
Juniata	Transformer	500	0.0	0.2	0.2	\$0.0	\$0.0	\$0.0	\$0.0	\$0.2	\$0.2
Salt Springs - Masury	Line	ATSI	0.0	0.2	0.2	\$0.0	(\$0.0)	(\$0.0)	\$0.0	\$0.2	\$0.2
Hoytdale	Transformer	ATSI	0.2	0.0	0.2	(\$0.0)	\$0.0	(\$0.0)	\$0.2	\$0.0	\$0.2
Big Pine - Kiski Valley	Line	APS	0.0	0.1	0.1	\$0.0	\$0.0	\$0.0	\$0.0	\$0.2	\$0.2
Stillwell - Dumont	Flowgate	MISO	0.0	0.2	0.2	\$0.0	\$0.0	\$0.0	\$0.0	\$0.2	\$0.2
Top 15 Total			\$0.2	\$5.4	\$5.6	(\$0.0)	(\$0.5)	(\$0.5)	\$0.2	\$5.0	\$5.2
All Other Constraints			\$0.0	\$4.3	\$4.3	\$0.0	(\$1.5)	(\$1.5)	\$0.0	\$2.7	\$2.8
Total			\$0.2	\$9.7	\$9.9	(\$0.0)	(\$2.0)	(\$2.0)	\$0.2	\$7.7	\$7.9

Table 92 shows the congestion cost details of the top 15 constraints affecting Pennsylvania (DUQ) for the 2023/2024 planning period, including the type of constraints (Line, Transformer, Flowgate, or Interface), the location of the constraints and the constraint specific congestion revenue collected from the load in Pennsylvania (DUQ) in the 2023/2024 planning period.

Table 92 Congestion cost (Dollars (Millions)) details for the top 15 constraints affecting Pennsylvania (DUQ): 2023/2024 planning period

Constraint	Type	Location	Day-Ahead			Congestion Costs (Millions)			Total		Grand Total
			Internal	External	Total	Internal	External	Total	Internal	External	
Nottingham	Other	PECO	0.0	3.7	3.7	\$0.0	(\$0.2)	(\$0.2)	\$0.0	\$3.5	\$3.5
Graceton - Safe Harbor	Line	BGE	0.0	1.1	1.1	\$0.0	(\$0.0)	(\$0.0)	\$0.0	\$1.1	\$1.1
Cool Spring - Milford	Line	DPL	0.0	0.7	0.7	\$0.0	(\$0.1)	(\$0.1)	\$0.0	\$0.7	\$0.7
AP South	Interface	500	0.0	0.6	0.6	\$0.0	(\$0.0)	(\$0.0)	\$0.0	\$0.6	\$0.6
Lenox - North Meshoppen	Line	PE	0.0	1.2	1.2	\$0.0	(\$0.6)	(\$0.6)	\$0.0	\$0.6	\$0.6
Collins	Transformer	COMED	0.0	0.6	0.6	\$0.0	\$0.0	\$0.0	\$0.0	\$0.6	\$0.6
Possum Point	Transformer	DOM	0.0	0.6	0.6	\$0.0	(\$0.1)	(\$0.1)	\$0.0	\$0.6	\$0.6
Collier	Transformer	DLCO	0.6	0.0	0.6	(\$0.1)	\$0.0	(\$0.1)	\$0.5	\$0.0	\$0.5
East Towanda - Hillside	Line	PE	0.0	0.5	0.5	\$0.0	(\$0.0)	(\$0.0)	\$0.0	\$0.5	\$0.5
Pleasant View - Ashburn	Line	DOM	0.0	0.6	0.6	\$0.0	(\$0.1)	(\$0.1)	\$0.0	\$0.5	\$0.5
Juniata	Transformer	500	0.0	0.4	0.4	\$0.0	\$0.0	\$0.0	\$0.0	\$0.4	\$0.4
Big Pine - Kiski Valley	Line	APS	0.0	0.4	0.4	\$0.0	\$0.0	\$0.0	\$0.0	\$0.4	\$0.4
Stillwell - Dumont	Flowgate	MISO	0.0	0.4	0.4	\$0.0	\$0.0	\$0.0	\$0.0	\$0.4	\$0.4
Highland - Commerce	Line	ATSI	0.0	0.3	0.3	\$0.0	\$0.0	\$0.0	\$0.0	\$0.3	\$0.3
Conastone - Peach Bottom	Line	500	0.0	0.3	0.3	\$0.0	(\$0.0)	(\$0.0)	\$0.0	\$0.3	\$0.3
Top 15 Total			\$0.6	\$11.4	\$12.0	(\$0.1)	(\$1.0)	(\$1.1)	\$0.5	\$10.4	\$10.9
All Other Constraints			\$0.3	\$8.0	\$8.3	(\$0.0)	(\$3.6)	(\$3.6)	\$0.3	\$4.4	\$4.7
Total			\$0.9	\$19.4	\$20.3	(\$0.1)	(\$4.6)	(\$4.7)	\$0.8	\$14.8	\$15.6

Table 93 shows the congestion cost details of the top 15 constraints affecting Pennsylvania (MET-ED) for the 2023/2024 planning period, including the type of constraints (Line, Transformer, Flowgate, or Interface), the location of the constraints and the constraint specific congestion revenue collected from the load in Pennsylvania (MET-ED) in the 2023/2024 planning period.

Table 93 Congestion cost (Dollars (Millions)) details for the top 15 constraints affecting Pennsylvania (MET-ED): 2023/2024 planning period

Constraint	Type	Location	Day-Ahead			Congestion Costs (Millions) Balancing			Total		Grand Total
			Internal	External	Total	Internal	External	Total	Internal	External	
Nottingham	Other	PECO	0.0	3.8	3.8	\$0.0	(\$0.2)	(\$0.2)	\$0.0	\$3.6	\$3.6
Gardners - Texas Eastern	Line	MEC	1.3	0.0	1.3	(\$0.0)	\$0.0	(\$0.0)	\$1.3	\$0.0	\$1.3
Lenox - North Meshoppen	Line	PE	0.0	1.9	1.9	\$0.0	(\$0.6)	(\$0.6)	\$0.0	\$1.2	\$1.2
AP South	Interface	500	0.0	1.2	1.2	\$0.0	(\$0.1)	(\$0.1)	\$0.0	\$1.1	\$1.1
Graceton - Safe Harbor	Line	BGE	0.0	1.0	1.0	\$0.0	(\$0.0)	(\$0.0)	\$0.0	\$1.0	\$1.0
Juniata	Transformer	500	0.0	0.9	0.9	\$0.0	\$0.0	\$0.0	\$0.0	\$0.9	\$0.9
Cool Spring - Milford	Line	DPL	0.0	1.0	1.0	\$0.0	(\$0.1)	(\$0.1)	\$0.0	\$0.9	\$0.9
Possum Point	Transformer	DOM	0.0	0.9	0.9	\$0.0	(\$0.1)	(\$0.1)	\$0.0	\$0.8	\$0.8
Chaparral - Carson	Line	DOM	0.0	0.7	0.7	\$0.0	\$0.0	\$0.0	\$0.0	\$0.7	\$0.7
Collins	Transformer	COMED	0.0	0.7	0.7	\$0.0	\$0.0	\$0.0	\$0.0	\$0.7	\$0.7
East Towanda - Hillside	Line	PE	0.0	0.6	0.6	\$0.0	(\$0.0)	(\$0.0)	\$0.0	\$0.6	\$0.6
Middletown Jct - York Haven	Line	MEC	0.5	0.0	0.5	(\$0.0)	\$0.0	(\$0.0)	\$0.5	\$0.0	\$0.5
Pleasant View - Ashburn	Line	DOM	0.0	0.6	0.6	\$0.0	(\$0.1)	(\$0.1)	\$0.0	\$0.5	\$0.5
Elmsport - Sunbury	Line	PPL	0.0	0.5	0.5	\$0.0	\$0.0	\$0.0	\$0.0	\$0.5	\$0.5
Stillwell - Dumont	Flowgate	MISO	0.0	0.4	0.4	\$0.0	\$0.0	\$0.0	\$0.0	\$0.4	\$0.4
Top 15 Total			\$1.9	\$14.2	\$16.0	(\$0.0)	(\$1.2)	(\$1.2)	\$1.9	\$13.0	\$14.9
All Other Constraints			\$1.4	\$11.0	\$12.5	(\$0.8)	(\$4.2)	(\$5.0)	\$0.6	\$6.8	\$7.5
Total			\$3.3	\$25.2	\$28.5	(\$0.8)	(\$5.4)	(\$6.2)	\$2.5	\$19.8	\$22.3

Table 94 shows the congestion cost details of the top 15 constraints affecting Pennsylvania (PECO) for the 2023/2024 planning period, including the type of constraints (Line, Transformer, Flowgate, or Interface), the location of the constraints and the constraint specific congestion revenue collected from the load in Pennsylvania (PECO) in the 2023/2024 planning period.

Table 94 Congestion cost (Dollars (Millions)) details for the top 15 constraints affecting Pennsylvania (PECO): 2023/2024 planning period

Constraint	Type	Location	Day-Ahead			Congestion Costs (Millions) Balancing			Total		Grand Total
			Internal	External	Total	Internal	External	Total	Internal	External	
Nottingham	Other	PECO	6.2	0.0	6.2	(\$0.3)	\$0.0	(\$0.3)	\$5.9	\$0.0	\$5.9
Graceton - Safe Harbor	Line	BGE	0.0	3.1	3.1	\$0.0	(\$0.1)	(\$0.1)	\$0.0	\$3.1	\$3.1
Cool Spring - Milford	Line	DPL	0.0	3.1	3.1	\$0.0	(\$0.2)	(\$0.2)	\$0.0	\$2.8	\$2.8
AP South	Interface	500	0.0	2.9	2.9	\$0.0	(\$0.2)	(\$0.2)	\$0.0	\$2.7	\$2.7
Possum Point	Transformer	DOM	0.0	2.2	2.2	\$0.0	(\$0.1)	(\$0.1)	\$0.0	\$2.0	\$2.0
Chaparral - Carson	Line	DOM	0.0	1.8	1.8	\$0.0	\$0.0	\$0.0	\$0.0	\$1.8	\$1.8
Lenox - North Meshoppen	Line	PE	0.0	3.4	3.4	\$0.0	(\$1.6)	(\$1.6)	\$0.0	\$1.7	\$1.7
Collins	Transformer	COMED	0.0	1.6	1.6	\$0.0	\$0.0	\$0.0	\$0.0	\$1.6	\$1.6
East Towanda - Hillside	Line	PE	0.0	1.5	1.5	\$0.0	(\$0.1)	(\$0.1)	\$0.0	\$1.5	\$1.5
Juniata	Transformer	500	0.0	1.2	1.2	\$0.0	\$0.0	\$0.0	\$0.0	\$1.2	\$1.2
Pleasant View - Ashburn	Line	DOM	0.0	1.5	1.5	\$0.0	(\$0.3)	(\$0.3)	\$0.0	\$1.2	\$1.2
Stillwell - Dumont	Flowgate	MISO	0.0	1.0	1.0	\$0.0	\$0.0	\$0.0	\$0.0	\$1.0	\$1.0
Conastone - Northwest	Line	BGE	0.0	0.9	0.9	\$0.0	(\$0.0)	(\$0.0)	\$0.0	\$0.9	\$0.9
Bedington - Black Oak	Interface	500	0.0	0.9	0.9	\$0.0	\$0.0	\$0.0	\$0.0	\$0.9	\$0.9
Cedar Creek - Silver Run	Line	DPL	0.0	0.9	0.9	\$0.0	(\$0.0)	(\$0.0)	\$0.0	\$0.9	\$0.9
Top 15 Total			\$6.2	\$26.0	\$32.2	(\$0.3)	(\$2.7)	(\$2.9)	\$5.9	\$23.3	\$29.3
All Other Constraints			\$1.4	\$23.6	\$25.0	(\$0.1)	(\$10.5)	(\$10.6)	\$1.4	\$13.1	\$14.4
Total			\$7.6	\$49.6	\$57.2	(\$0.3)	(\$13.2)	(\$13.5)	\$7.3	\$36.4	\$43.7

Table 95 shows the congestion cost details of the top 15 constraints affecting Pennsylvania (PENELEC) for the 2023/2024 planning period, including the type of constraints (Line, Transformer, Flowgate, or Interface), the location of the constraints and the constraint specific congestion revenue collected from the load in Pennsylvania (PENELEC) in the 2023/2024 planning period.

Table 95 Congestion cost (Dollars (Millions)) details for the top 15 constraints affecting Pennsylvania (PENELEC): 2023/2024 planning period

Constraint	Type	Location	Day-Ahead			Congestion Costs (Millions)			Total		Grand Total
			Internal	External	Total	Internal	External	Total	Internal	External	
Nottingham	Other	PECO	0.0	4.4	4.4	\$0.0	(\$0.2)	(\$0.2)	\$0.0	\$4.2	\$4.2
Lenox - North Meshoppen	Line	PE	2.8	0.0	2.8	(\$0.7)	\$0.0	(\$0.7)	\$2.1	\$0.0	\$2.1
Gracetown - Safe Harbor	Line	BGE	0.0	1.5	1.5	\$0.0	(\$0.0)	(\$0.0)	\$0.0	\$1.4	\$1.4
Mehoopany - North Meshoppen	Line	PE	1.2	0.0	1.2	(\$0.0)	\$0.0	(\$0.0)	\$1.2	\$0.0	\$1.2
Conastone - Northwest	Line	BGE	0.0	1.2	1.2	\$0.0	(\$0.0)	(\$0.0)	\$0.0	\$1.1	\$1.1
Possum Point	Transformer	DOM	0.0	1.0	1.0	\$0.0	(\$0.1)	(\$0.1)	\$0.0	\$1.0	\$1.0
AP South	Interface	500	0.0	1.0	1.0	\$0.0	(\$0.1)	(\$0.1)	\$0.0	\$0.9	\$0.9
Juniata	Transformer	500	0.0	0.9	0.9	\$0.0	\$0.0	\$0.0	\$0.0	\$0.9	\$0.9
Cool Spring - Milford	Line	DPL	0.0	0.9	0.9	\$0.0	(\$0.1)	(\$0.1)	\$0.0	\$0.9	\$0.9
Gardners - Texas Eastern	Line	MEC	0.0	0.8	0.8	\$0.0	(\$0.0)	(\$0.0)	\$0.0	\$0.8	\$0.8
East Towanda - Asylum	Line	PE	0.8	0.0	0.8	\$0.0	\$0.0	\$0.0	\$0.8	\$0.0	\$0.8
Big Pine - Kiski Valley	Line	APS	0.0	0.7	0.7	\$0.0	\$0.1	\$0.1	\$0.0	\$0.7	\$0.7
Collins	Transformer	COMED	0.0	0.7	0.7	\$0.0	\$0.0	\$0.0	\$0.0	\$0.7	\$0.7
East Towanda - Hillside	Line	PE	0.4	0.2	0.7	(\$0.0)	(\$0.0)	(\$0.0)	\$0.4	\$0.2	\$0.6
Pleasant View - Ashburn	Line	DOM	0.0	0.7	0.7	\$0.0	(\$0.1)	(\$0.1)	\$0.0	\$0.6	\$0.6
Top 15 Total			\$5.3	\$14.0	\$19.3	(\$0.8)	(\$0.5)	(\$1.3)	\$4.5	\$13.4	\$18.0
All Other Constraints			\$0.7	\$14.8	\$15.5	\$0.0	(\$4.6)	(\$4.6)	\$0.7	\$10.2	\$10.9
Total			\$6.0	\$28.8	\$34.8	(\$0.7)	(\$5.1)	(\$5.9)	\$5.3	\$23.7	\$28.9

Table 96 shows the congestion cost details of the top 15 constraints affecting Pennsylvania (PPL) for the 2023/2024 planning period, including the type of constraints (Line, Transformer, Flowgate, or Interface), the location of the constraints and the constraint specific congestion revenue collected from the load in Pennsylvania (PPL) in the 2023/2024 planning period.

Table 96 Congestion cost (Dollars (Millions)) details for the top 15 constraints affecting Pennsylvania (PPL): 2023/2024 planning period

Constraint	Type	Location	Day-Ahead			Congestion Costs (Millions)			Total		Grand Total
			Internal	External	Total	Internal	External	Total	Internal	External	
Nottingham	Other	PECO	0.0	9.3	9.3	\$0.0	(\$0.4)	(\$0.4)	\$0.0	\$8.9	\$8.9
Lenox - North Meshoppen	Line	PE	0.0	6.3	6.3	\$0.0	(\$1.6)	(\$1.6)	\$0.0	\$4.7	\$4.7
AP South	Interface	500	0.0	3.1	3.1	\$0.0	(\$0.2)	(\$0.2)	\$0.0	\$2.8	\$2.8
Graceton - Safe Harbor	Line	BGE	0.0	2.7	2.7	\$0.0	(\$0.1)	(\$0.1)	\$0.0	\$2.6	\$2.6
Cool Spring - Milford	Line	DPL	0.0	2.5	2.5	\$0.0	(\$0.2)	(\$0.2)	\$0.0	\$2.3	\$2.3
Possum Point	Transformer	DOM	0.0	2.3	2.3	\$0.0	(\$0.1)	(\$0.1)	\$0.0	\$2.1	\$2.1
Juniata	Transformer	500	1.9	0.0	1.9	\$0.0	\$0.0	\$0.0	\$1.9	\$0.0	\$1.9
Chaparral - Carson	Line	DOM	0.0	1.8	1.8	\$0.0	\$0.0	\$0.0	\$0.0	\$1.8	\$1.8
Collins	Transformer	COMED	0.0	1.7	1.7	\$0.0	\$0.0	\$0.0	\$0.0	\$1.7	\$1.7
Gardners - Texas Eastern	Line	MEC	0.0	1.7	1.7	\$0.0	(\$0.0)	(\$0.0)	\$0.0	\$1.7	\$1.7
East Towanda - Hillside	Line	PE	0.0	1.6	1.6	(\$0.0)	(\$0.1)	(\$0.1)	(\$0.0)	\$1.5	\$1.5
Pleasant View - Ashburn	Line	DOM	0.0	1.7	1.7	\$0.0	(\$0.3)	(\$0.3)	\$0.0	\$1.4	\$1.4
Elmsport - Sunbury	Line	PPL	1.3	0.0	1.3	\$0.0	\$0.0	\$0.0	\$1.3	\$0.0	\$1.3
Big Pine - Kiski Valley	Line	APS	0.0	1.2	1.2	\$0.0	\$0.1	\$0.1	\$0.0	\$1.3	\$1.3
Stillwell - Dumont	Flowgate	MISO	0.0	1.1	1.1	\$0.0	\$0.0	\$0.0	\$0.0	\$1.1	\$1.1
Top 15 Total			\$3.2	\$36.8	\$40.0	\$0.0	(\$2.9)	(\$2.9)	\$3.2	\$33.9	\$37.1
All Other Constraints			\$3.4	\$30.1	\$33.5	(\$0.1)	(\$11.2)	(\$11.3)	\$3.3	\$18.9	\$22.2
Total			\$6.6	\$66.9	\$73.5	(\$0.1)	(\$14.1)	(\$14.2)	\$6.6	\$52.8	\$59.4

Table 97 lists the top 15 constraints affecting Pennsylvania congestion costs for the 2023/2024 planning period and provides the type of constraints (Line, Transformer, Flowgate, or Interface), the location of the constraints and the congestion event hours by the constraints for the period analyzed.

Table 97 Top 15 constraints affecting Pennsylvania congestion costs: 2023/2024 planning period

Constraint	Type	Location	Event Hours	
			Day-Ahead	Real-Time
Nottingham	Other	PECO	5,677	3,408
Lenox - North Meshoppen	Line	PE	3,257	3,329
Graceton - Safe Harbor	Line	BGE	2,821	1,627
AP South	Interface	500	284	110
Cool Spring - Milford	Line	DPL	393	127
Possum Point	Transformer	DOM	424	102
Conastone - Northwest	Line	BGE	923	553
Juniata	Transformer	500	444	9
Collins	Transformer	COMED	1,510	0
Chaparral - Carson	Line	DOM	513	0
East Towanda - Hillside	Line	PE	1,483	1,236
Pleasant View - Ashburn	Line	DOM	345	67
Gardners - Texas Eastern	Line	MEC	1,742	76
Stillwell - Dumont	Flowgate	MISO	626	0
Big Pine - Kiski Valley	Line	APS	1,577	448
Top 15 Total			22,019	11,092
All Other Constraints			34,029	15,395
Total			56,048	26,487

Table 98 through Table 104 list the top 15 constraints affecting each of the Pennsylvania zones for the 2023/2024 planning period and provides the type of constraints (Line, Transformer, Flowgate, or Interface), the location of the constraints and the congestion event hours by the constraints for the period analyzed.

Table 98 lists the top 15 constraints affecting Pennsylvania (APS) congestion costs for the 2023/2024 planning period and provides the type of constraints (Line, Transformer, Flowgate, or Interface), the location of the constraints and the congestion event hours by the constraints for the period analyzed.

Table 98 Top 15 constraints affecting Pennsylvania (APS) congestion costs: 2023/2024 planning period

Constraint	Type	Location	Event Hours	
			Day-Ahead	Real-Time
Nottingham	Other	PECO	5,676	3,407
Lenox - North Meshoppen	Line	PE	3,257	3,329
Conastone - Northwest	Line	BGE	923	553
Graceton - Safe Harbor	Line	BGE	2,821	1,627
AP South	Interface	500	284	110
Possum Point	Transformer	DOM	424	102
Cool Spring - Milford	Line	DPL	352	127
Chaparral - Carson	Line	DOM	513	0
Collins	Transformer	COMED	1,510	0
Juniata	Transformer	500	444	9
East Towanda - Hillside	Line	PE	1,483	1,236
Pleasant View - Ashburn	Line	DOM	345	67
Big Pine - Kiski Valley	Line	APS	1,577	448
Elimsport - Sunbury	Line	PPL	170	96
Stillwell - Dumont	Flowgate	MISO	626	0
Top 15 Total			20,405	11,111
All Other Constraints			26,424	15,368
Total			46,829	26,479

Table 99 lists the top 15 constraints affecting Pennsylvania (ATSI) congestion costs for the 2023/2024 planning period and provides the type of constraints (Line, Transformer, Flowgate, or Interface), the location of the constraints and the congestion event hours by the constraints for the period analyzed.

Table 99 Top 15 constraints affecting Pennsylvania (ATSI) congestion costs: 2023/2024 planning period

Constraint	Type	Location	Event Hours	
			Day-Ahead	Real-Time
Nottingham	Other	PECO	5,676	3,406
Conastone - Northwest	Line	BGE	923	553
Graceton - Safe Harbor	Line	BGE	2,821	1,627
Lenox - North Meshoppen	Line	PE	3,188	3,329
Possum Point	Transformer	DOM	350	102
AP South	Interface	500	284	110
Cool Spring - Milford	Line	DPL	342	127
Collins	Transformer	COMED	1,510	0
East Towanda - Hillside	Line	PE	1,483	1,236
Pleasant View - Ashburn	Line	DOM	345	67
Juniata	Transformer	500	439	9
Salt Springs - Masury	Line	ATSI	717	378
Hoytdale	Transformer	ATSI	38	15
Big Pine - Kiski Valley	Line	APS	1,553	448
Stillwell - Dumont	Flowgate	MISO	626	0
Top 15 Total			20,295	11,407
All Other Constraints			24,702	15,067
Total			44,997	26,474

Table 100 lists the top 15 constraints affecting Pennsylvania (DUQ) congestion costs for the 2023/2024 planning period and provides the type of constraints (Line, Transformer, Flowgate, or Interface), the location of the constraints and the congestion event hours by the constraints for the period analyzed.

Table 100 Top 15 constraints affecting Pennsylvania (DUQ) congestion costs: 2023/2024 planning period

Constraint	Type	Location	Event Hours	
			Day-Ahead	Real-Time
Nottingham	Other	PECO	5,651	3,405
Graceton - Safe Harbor	Line	BGE	2,373	1,625
Cool Spring - Milford	Line	DPL	337	127
AP South	Interface	500	284	110
Lenox - North Meshoppen	Line	PE	2,864	3,328
Collins	Transformer	COMED	1,508	0
Possum Point	Transformer	DOM	273	102
Collier	Transformer	DLCO	214	66
East Towanda - Hillside	Line	PE	1,465	1,234
Pleasant View - Ashburn	Line	DOM	345	67
Juniata	Transformer	500	436	9
Big Pine - Kiski Valley	Line	APS	1,571	448
Stillwell - Dumont	Flowgate	MISO	626	0
Highland - Commerce	Line	ATSI	250	201
Conastone - Peach Bottom	Line	500	445	255
Top 15 Total			18,642	10,977
All Other Constraints			18,654	15,471
Total			37,296	26,448

Table 101 lists the top 15 constraints affecting Pennsylvania (MET-ED) congestion costs for the 2023/2024 planning period and provides the type of constraints (Line, Transformer, Flowgate, or Interface), the location of the constraints and the congestion event hours by the constraints for the period analyzed.

Table 101 Top 15 constraints affecting Pennsylvania (MET-ED) congestion costs: 2023/2024 planning period

Constraint	Type	Location	Event Hours	
			Day-Ahead	Real-Time
Nottingham	Other	PECO	5,676	3,408
Gardners - Texas Eastern	Line	MEC	1,742	76
Lenox - North Meshoppen	Line	PE	3,100	3,329
AP South	Interface	500	284	110
Graceton - Safe Harbor	Line	BGE	2,821	1,627
Juniata	Transformer	500	444	9
Cool Spring - Milford	Line	DPL	375	127
Possum Point	Transformer	DOM	424	102
Chaparral - Carson	Line	DOM	477	0
Collins	Transformer	COMED	1,510	0
East Towanda - Hillside	Line	PE	1,483	1,236
Middletown Jct - York Haven	Line	MEC	252	17
Pleasant View - Ashburn	Line	DOM	345	67
Elmsport - Sunbury	Line	PPL	201	96
Stillwell - Dumont	Flowgate	MISO	626	0
Top 15 Total			19,760	10,204
All Other Constraints			23,585	16,268
Total			43,345	26,472

Table 102 lists the top 15 constraints affecting Pennsylvania (PECO) congestion costs for the 2023/2024 planning period and provides the type of constraints (Line, Transformer, Flowgate, or Interface), the location of the constraints and the congestion event hours by the constraints for the period analyzed.

Table 102 Top 15 constraints affecting Pennsylvania (PECO) congestion costs: 2023/2024 planning period

Constraint	Type	Location	Event Hours	
			Day-Ahead	Real-Time
Nottingham	Other	PECO	5,677	3,408
Graceton - Safe Harbor	Line	BGE	2,821	1,627
Cool Spring - Milford	Line	DPL	393	127
AP South	Interface	500	284	110
Possum Point	Transformer	DOM	424	102
Chaparral - Carson	Line	DOM	505	0
Lenox - North Meshoppen	Line	PE	2,880	3,329
Collins	Transformer	COMED	1,510	0
East Towanda - Hillside	Line	PE	1,470	1,235
Juniata	Transformer	500	444	9
Pleasant View - Ashburn	Line	DOM	345	67
Stillwell - Dumont	Flowgate	MISO	626	0
Conastone - Northwest	Line	BGE	923	553
Bedington - Black Oak	Interface	500	149	0
Cedar Creek - Silver Run	Line	DPL	593	43
Top 15 Total			19,044	10,610
All Other Constraints			22,784	15,860
Total			41,828	26,470

Table 103 lists the top 15 constraints affecting Pennsylvania (PENELEC) congestion costs for the 2023/2024 planning period and provides the type of constraints (Line, Transformer, Flowgate, or Interface), the location of the constraints and the congestion event hours by the constraints for the period analyzed.

Table 103 Top 15 constraints affecting Pennsylvania (PENELEC) congestion costs: 2023/2024 planning period

Constraint	Type	Location	Event Hours	
			Day-Ahead	Real-Time
Nottingham	Other	PECO	5,677	3,408
Lenox - North Meshoppen	Line	PE	3,257	3,329
Graceton - Safe Harbor	Line	BGE	2,821	1,627
Mehoopany - North Meshoppe	Line	PE	1,038	9
Conastone - Northwest	Line	BGE	923	553
Possum Point	Transformer	DOM	424	102
AP South	Interface	500	284	110
Juniata	Transformer	500	444	9
Cool Spring - Milford	Line	DPL	370	127
Gardners - Texas Eastern	Line	MEC	1,627	76
East Towanda - Asylum	Line	PE	101	0
Big Pine - Kiski Valley	Line	APS	1,577	448
Collins	Transformer	COMED	1,510	0
East Towanda - Hillside	Line	PE	1,483	1,236
Pleasant View - Ashburn	Line	DOM	345	67
Top 15 Total			21,881	11,101
All Other Constraints			26,234	15,374
Total			48,115	26,475

Table 104 lists the top 15 constraints affecting Pennsylvania (PPL) congestion costs for the 2023/2024 planning period and provides the type of constraints (Line, Transformer, Flowgate, or Interface), the location of the constraints and the congestion event hours by the constraints for the period analyzed.

Table 104 Top 15 constraints affecting Pennsylvania (PPL) congestion costs: 2023/2024 planning period

Constraint	Type	Location	Event Hours	
			Day-Ahead	Real-Time
Nottingham	Other	PECO	5,677	3,408
Lenox - North Meshoppen	Line	PE	3,257	3,329
AP South	Interface	500	284	110
Graceton - Safe Harbor	Line	BGE	2,821	1,627
Cool Spring - Milford	Line	DPL	375	127
Possum Point	Transformer	DOM	424	102
Juniata	Transformer	500	444	9
Chaparral - Carson	Line	DOM	496	0
Collins	Transformer	COMED	1,510	0
Gardners - Texas Eastern	Line	MEC	1,608	76
East Towanda - Hillside	Line	PE	1,483	1,236
Pleasant View - Ashburn	Line	DOM	345	67
Elimsport - Sunbury	Line	PPL	280	96
Big Pine - Kiski Valley	Line	APS	1,559	448
Stillwell - Dumont	Flowgate	MISO	626	0
Top 15 Total			21,189	10,635
All Other Constraints			26,866	15,841
Total			48,055	26,476

Location of Constraints Affecting Congestion in Pennsylvania

Table 105 shows the share of ARR MW, by stage, for ARRs with paths that source inside or outside the zones in Pennsylvania, and congestion that is caused by constraints that are inside or outside each zone. Table 105 shows that almost all of the congestion paid by load in Pennsylvania zones comes from constraints (and generation) outside those zones, while almost all of the ARR paths available to Pennsylvania zones are sourced and sink entirely within those zones. Table 105 shows the proportion of congestion and the proportion of ARR MW that sink and source entirely within the listed zones, not just the portions of the zones that are within the boundary of the state of Pennsylvania. In PJM, the load at every bus in a zone (load aggregate) pays the zonal load (load aggregate) weighted average LMP (the nodal load-weighted average LMP) at every bus. While each constraint contributes a nodal specific CLMP effect, constraint specific CLMP effects are calculated on the same zone wide basis. This means that just as there is a zonal LMP paid by load, there is a zonal load-weighted average CLMP for each constraint that is paid by zonal load. Load at a specific load bus in the zone contributes

to the total congestion collected by a constraint in proportion to the load at that bus relative to all other load buses in the zone. Where the listed zone serves more than just PA load (ATSI and APS), the amount of congestion paid by the PA load in that zone is equal to the load ratio share of the PA zonal load to total load of that zone. ARR revenues (whether ARR target allocations or self scheduled ARRs) are also credited on in the same way (on a load ratio basis within a zone).

Table 105 illustrates one of the fundamental issues with the path based approach which originated (in 1999) in a cost of service design where most load was served by, or assumed to be served by, generation in the same zone as load. In fact, in the PJM market, which operates as an integrated network, a significant proportion of congestion is based on constraints that are not in the same zone as load. The path based approach cannot reflect the actual congestion paid by load. Paths do not reflect the way that load is actually served in a network system like PJM.

Table 105 Share of ARRs and congestion that source in/out of Pennsylvania Zones

Zone	Planning Period	Stage 1A		Stage 1B		Stage 2		Total ARRs		Congestion	
		Out of Zone	In Zone	Out of Zone	In Zone	Out of Zone	In Zone	Out of Zone	In Zone	Out of Zone	In Zone
APS	2020/2021	8.6%	51.8%	0.8%	35.8%	0.2%	3.0%	9.5%	90.5%	89.0%	11.0%
	2021/2022	7.8%	52.8%	2.6%	35.5%	0.1%	1.2%	10.5%	89.5%	93.9%	6.1%
	2022/2023	11.8%	80.2%	0.0%	0.2%	0.8%	7.0%	12.6%	87.4%	96.2%	3.8%
	2023/2024	8.4%	73.8%	4.4%	6.2%	4.4%	2.7%	17.3%	82.7%	94.2%	5.8%
	2024/2025	9.4%	66.3%	5.3%	15.5%	1.3%	2.3%	15.9%	84.1%	91.9%	8.1%
ATSI	2020/2021	26.3%	58.5%	2.6%	9.9%	1.1%	1.6%	30.1%	69.9%	99.2%	0.8%
	2021/2022	16.6%	50.6%	1.9%	14.8%	2.7%	13.4%	21.2%	78.8%	98.4%	1.6%
	2022/2023	19.5%	45.1%	5.4%	21.5%	0.1%	8.3%	25.1%	74.9%	98.7%	1.3%
	2023/2024	19.5%	45.1%	5.4%	21.5%	0.1%	8.3%	25.1%	74.9%	95.8%	4.2%
	2024/2025	29.5%	52.0%	2.4%	4.1%	1.3%	10.6%	33.2%	66.8%	96.7%	3.3%
DUQ	2020/2021	73.3%	0.3%	6.5%	2.1%	8.3%	9.5%	88.1%	11.9%	99.4%	0.6%
	2021/2022	52.7%	0.0%	19.7%	2.0%	10.2%	15.4%	82.6%	17.4%	98.9%	1.1%
	2022/2023	47.2%	0.3%	2.0%	0.8%	28.5%	21.3%	77.7%	22.3%	99.8%	0.2%
	2023/2024	77.5%	1.2%	3.3%	0.0%	15.5%	2.6%	96.2%	3.8%	99.8%	0.2%
	2024/2025	73.3%	0.0%	4.0%	0.0%	19.7%	3.0%	97.0%	3.0%	97.4%	2.6%
MET-ED	2020/2021	23.2%	65.7%	0.1%	3.5%	0.4%	7.1%	23.7%	76.3%	58.9%	41.1%
	2021/2022	29.1%	55.8%	1.2%	8.8%	0.0%	5.0%	30.3%	69.7%	85.4%	14.6%
	2022/2023	40.6%	55.5%	0.0%	1.8%	0.5%	1.5%	41.1%	58.9%	89.5%	10.5%
	2023/2024	33.0%	39.7%	5.0%	0.3%	0.8%	21.2%	38.8%	61.2%	91.1%	8.9%
	2024/2025	23.8%	46.4%	6.2%	0.4%	8.7%	14.5%	38.7%	61.3%	93.4%	6.6%
PECO	2020/2021	11.1%	44.1%	2.9%	29.6%	2.1%	10.2%	16.1%	83.9%	94.1%	5.9%
	2021/2022	2.5%	58.2%	7.5%	29.0%	0.3%	2.5%	10.3%	89.7%	86.6%	13.4%
	2022/2023	13.4%	38.2%	0.0%	45.2%	0.2%	3.0%	18.7%	81.3%	86.7%	13.3%
	2023/2024	14.9%	65.5%	0.8%	5.0%	5.9%	7.9%	21.6%	78.4%	90.2%	9.8%
	2024/2025	3.2%	85.7%	2.8%	0.8%	0.8%	6.7%	6.9%	93.1%	90.6%	9.4%
PENELEC	2020/2021	15.2%	61.8%	0.0%	13.6%	1.1%	8.3%	16.3%	83.7%	81.2%	18.8%
	2021/2022	16.8%	62.6%	0.1%	16.7%	0.0%	3.8%	16.9%	83.1%	86.3%	13.7%
	2022/2023	18.6%	74.4%	0.0%	0.3%	0.0%	6.6%	13.5%	86.5%	96.2%	3.8%
	2023/2024	13.5%	53.0%	0.1%	11.8%	2.6%	19.1%	16.2%	83.8%	86.2%	13.8%
	2024/2025	23.2%	30.1%	0.3%	3.7%	1.1%	41.6%	24.6%	75.4%	76.0%	24.0%
PPL	2020/2021	0.0%	77.5%	0.0%	8.9%	0.0%	13.6%	0.1%	99.9%	72.9%	27.1%
	2021/2022	0.0%	69.0%	0.0%	20.4%	1.3%	9.3%	1.3%	98.7%	62.3%	37.7%
	2022/2023	0.1%	75.3%	0.0%	0.1%	0.0%	24.5%	0.1%	99.9%	87.2%	12.8%
	2023/2024	0.0%	79.3%	2.3%	5.4%	0.2%	12.8%	2.6%	97.4%	92.0%	8.0%
	2024/2025	0.0%	56.4%	0.6%	7.8%	5.2%	30.0%	5.8%	94.2%	89.7%	10.3%

Issues with ARR/FTRs as a Congestion Offset in Pennsylvania

Load pays 100 percent of congestion revenues. FTRs, and later ARRs, were intended to return congestion revenues to load to offset an unintended consequence of locational marginal pricing. With the implementation of the current, path based FTR/ARR design, the purpose of FTRs has been subverted. The inconsistencies between actual network solutions used to serve load and path based rights available to load cause a misalignment of congestion paid by load and the congestion paid to load, in aggregate and on a specific load basis. These inconsistencies between actual network use and path based rights cause cross subsidies between ARR holders and FTR holders and among ARR holders. One result of this misalignment is that individual zones have very different offsets due to the location of their path based ARRs compared to their actual congestion costs from actual network use.

ARRs are allocated to zonal load based on historical generation to load transmission paths, in many cases based on information that is significantly out of date and was never an accurate measure of the source of generation for a zone or subzone. ARRs are allocated within zones based on zonal base load (Stage 1A) and zonal peak loads (other Stages). ARR revenue is the result of the prices that result from the sale of FTRs through the FTR auctions. ARR revenue for each zone is the revenue for the ARRs that sink in each zone.¹⁷

Congestion paid by load in a zone is the total difference between what the zonal load pays and payments to the generation that serves the zonal load.

The results shown in Table 106 and Table 115 illustrate some of the fundamental issues with the FTR/ARR design in PJM. If the FTR/ARR design were implemented correctly, the congestion offsets to load would equal congestion payments by load.

Table 106 through Table 113 show the congestion offsets paid to load in Pennsylvania and to each zone in Pennsylvania (APS, ATSI, DUQ, MET-ED, PECO, PENELEC, and PPL), including ARR revenue; self-scheduled FTR revenue; and the allocation of end of planning period surplus. Table 106 also shows payments by load in Pennsylvania and

¹⁷ For a more complete description of the ARR allocation process and issues, see: *2023 Annual State of the Market Report for PJM*, Vol. 2, Section 13: Financial Transmission and Auction Revenue Rights.

each zone in Pennsylvania including the allocation of balancing congestion and the allocation of M2M payments.¹⁸

The offset percentage in Table 106 is the share of the congestion payments made by load in Pennsylvania that is returned to load in Pennsylvania. Table 106 through Table 113 show that Pennsylvania, in aggregate, received less congestion revenue than it paid congestion in the five planning year period from 2020/2021 through 2024/2025. The results varied significantly across zones and across planning years. On a zonal basis, only ATSI received more congestion revenue than they paid for the five planning year period from 2020/2021 through 2024/2025. Several other zones received more congestion revenue than they paid for one or more years during the 2020/2021 through 2024/2025 period. Offsets can be negative if the net ARR/FTR revenue received, after the allocation of negative balancing congestion (charged to load on a load ratio share), is negative. A negative offset means that load in such zones paid more than 100 percent of congestion.

Table 106 Pennsylvania ARR and FTR total congestion offset (in millions) for ARR holders: 2020/2021 through 2024/2025 planning period

Planning Period	Balancing+					Day Ahead Congestion	Balancing Congestion	M2M Payments	Total Congestion	Offset
	ARR Credits	FTR Credits	M2M Charge	Surplus Allocation	Total Offset					
2020/2021	\$75.8	\$16.0	(\$47.0)	(\$2.5)	\$42.2	\$164.2	(\$38.9)	(\$8.1)	\$117.2	36.1%
2021/2022	\$100.7	\$47.0	(\$86.3)	\$0.0	\$61.4	\$403.0	(\$67.3)	(\$19.0)	\$316.7	19.4%
2022/2023	\$288.5	\$51.7	(\$102.5)	\$73.1	\$310.9	\$397.9	(\$70.3)	(\$32.2)	\$295.4	105.2%
2023/2024	\$203.1	\$32.8	(\$62.5)	\$20.9	\$194.4	\$266.1	(\$53.8)	(\$8.7)	\$203.6	95.4%
2024/2025	\$217.3	\$32.4	(\$89.8)	(\$0.0)	\$159.9	\$433.2	(\$76.8)	(\$13.0)	\$343.4	46.6%
Total	\$885.4	\$179.9	(\$388.1)	\$91.6	\$768.8	\$1,664.4	(\$307.1)	(\$81.0)	\$1,276.3	60.2%

Table 107 Pennsylvania (APS) ARR and FTR total congestion offset (in millions) for ARR holders: 2020/2021 through 2024/2025 planning period

Planning Period	Balancing+					Day Ahead Congestion	Balancing Congestion	M2M Payments	Total Congestion	Offset
	ARR Credits	FTR Credits	M2M Charge	Surplus Allocation	Total Offset					
2020/2021	\$14.4	\$6.5	(\$6.2)	(\$0.6)	\$14.1	\$25.4	(\$5.2)	(\$1.0)	\$19.2	73.4%
2021/2022	\$15.6	\$16.8	(\$11.1)	\$0.0	\$21.2	\$57.6	(\$8.5)	(\$2.6)	\$46.5	45.7%
2022/2023	\$35.1	\$14.9	(\$13.5)	\$9.0	\$45.5	\$56.4	(\$8.9)	(\$4.6)	\$42.9	106.2%
2023/2024	\$23.1	\$10.1	(\$8.0)	\$2.5	\$27.7	\$41.9	(\$7.3)	(\$0.7)	\$33.9	81.6%
2024/2025	\$27.8	\$16.9	(\$11.5)	(\$0.0)	\$33.2	\$67.5	(\$9.9)	(\$1.6)	\$56.0	59.3%
Total	\$115.9	\$65.3	(\$50.3)	\$10.9	\$141.8	\$248.8	(\$39.8)	(\$10.5)	\$198.5	71.4%

¹⁸ See 2023 *Annual State of the Market Report for PJM*, Vol 2, Section 11: Congestion and Marginal Losses.

Table 108 Pennsylvania (ATSI) ARR and FTR total congestion offset (in millions) for ARR holders: 2020/2021 through 2024/2025 planning period

Planning Period	ARR	Balancing+		Surplus	Total	Day Ahead Congestion	Balancing Congestion	M2M Payments	Total Congestion	Offset
	Credits	FTR Credits	M2M Charge	Allocation	Offset					
2020/2021	\$6.8	\$0.1	(\$2.4)	(\$0.2)	\$4.2	\$5.7	(\$1.4)	(\$1.0)	\$3.3	128.7%
2021/2022	\$7.0	\$0.3	(\$4.6)	\$0.0	\$2.7	\$12.3	(\$2.2)	(\$2.4)	\$7.7	35.3%
2022/2023	\$12.9	\$0.3	(\$6.5)	\$2.2	\$8.9	\$14.0	(\$2.4)	(\$4.1)	\$7.5	118.5%
2023/2024	\$15.7	\$0.3	(\$2.8)	\$1.2	\$14.4	\$9.9	(\$2.0)	(\$0.8)	\$7.1	201.3%
2024/2025	\$17.5	\$0.4	(\$4.0)	(\$0.0)	\$13.8	\$14.6	(\$2.5)	(\$1.5)	\$10.6	130.5%
Total	\$59.8	\$1.3	(\$20.2)	\$3.2	\$44.1	\$56.5	(\$10.5)	(\$9.7)	\$36.3	121.5%

Table 109 Pennsylvania (DUQ) ARR and FTR total congestion offset (in millions) for ARR holders: 2020/2021 through 2024/2025 planning period

Planning Period	ARR	Balancing+		Surplus	Total	Day Ahead Congestion	Balancing Congestion	M2M Payments	Total Congestion	Offset
	Credits	FTR Credits	M2M Charge	Allocation	Offset					
2020/2021	\$5.6	\$0.2	(\$4.3)	(\$0.2)	\$1.4	\$10.4	(\$3.4)	(\$0.9)	\$6.1	23.0%
2021/2022	\$5.8	\$0.2	(\$7.0)	\$0.0	(\$1.0)	\$23.2	(\$5.0)	(\$2.0)	\$16.2	-6.4%
2022/2023	\$11.1	\$0.2	(\$8.3)	\$16.3	\$19.3	\$26.8	(\$5.8)	(\$2.5)	\$18.5	104.4%
2023/2024	\$8.5	\$0.3	(\$5.2)	\$5.1	\$8.7	\$20.3	(\$4.7)	(\$0.5)	\$15.1	57.4%
2024/2025	\$11.8	\$0.3	(\$6.9)	(\$0.0)	\$5.2	\$31.9	(\$5.8)	(\$1.1)	\$25.0	20.8%
Total	\$42.8	\$1.2	(\$31.6)	\$21.2	\$33.6	\$112.6	(\$24.7)	(\$6.9)	\$81.0	41.4%

Table 110 Pennsylvania (MET-ED) ARR and FTR total congestion offset (in millions) for ARR holders: 2020/2021 through 2024/2025 planning period

Planning Period	ARR	Balancing+		Surplus	Total	Day Ahead Congestion	Balancing Congestion	M2M Payments	Total Congestion	Offset
	Credits	FTR Credits	M2M Charge	Allocation	Offset					
2020/2021	\$3.5	\$0.7	(\$5.2)	(\$0.1)	(\$1.2)	\$21.7	(\$4.5)	(\$0.7)	\$16.5	-7.1%
2021/2022	\$7.9	\$2.7	(\$11.6)	\$0.0	(\$1.0)	\$44.7	(\$9.9)	(\$1.7)	\$33.1	-2.9%
2022/2023	\$46.7	\$3.3	(\$11.2)	\$8.6	\$47.3	\$43.7	(\$8.3)	(\$2.9)	\$32.5	145.7%
2023/2024	\$44.9	(\$0.0)	(\$9.5)	\$3.3	\$38.7	\$28.5	(\$6.2)	(\$3.3)	\$19.0	203.6%
2024/2025	\$22.8	\$1.3	(\$12.7)	(\$0.0)	\$11.4	\$48.2	(\$11.5)	(\$1.2)	\$35.5	32.2%
Total	\$125.8	\$8.0	(\$50.2)	\$11.7	\$95.3	\$186.8	(\$40.4)	(\$9.8)	\$136.6	69.8%

Table 111 Pennsylvania (PECO) ARR and FTR total congestion offset (in millions) for ARR holders: 2020/2021 through 2024/2025 planning period

Planning Period	ARR	Balancing+		Surplus	Total	Day Ahead Congestion	Balancing Congestion	M2M Payments	Total Congestion	Offset
	Credits	FTR Credits	M2M Charge	Allocation	Offset					
2020/2021	\$15.0	\$0.2	(\$10.9)	(\$0.4)	\$3.8	\$35.8	(\$9.1)	(\$1.8)	\$24.9	15.2%
2021/2022	\$20.7	\$0.1	(\$20.9)	\$0.0	(\$0.1)	\$90.1	(\$16.7)	(\$4.2)	\$69.2	-0.1%
2022/2023	\$26.3	\$12.5	(\$24.0)	\$6.3	\$21.2	\$98.9	(\$16.7)	(\$7.3)	\$74.9	28.2%
2023/2024	\$16.0	\$9.4	(\$14.9)	\$1.5	\$12.0	\$57.2	(\$13.5)	(\$1.4)	\$42.3	28.5%
2024/2025	\$29.0	\$0.1	(\$22.0)	(\$0.0)	\$7.1	\$97.5	(\$18.9)	(\$3.1)	\$75.5	9.4%
Total	\$106.9	\$22.4	(\$92.6)	\$7.4	\$44.0	\$379.5	(\$74.9)	(\$17.7)	\$286.9	15.3%

Table 112 Pennsylvania (PENELEC) ARR and FTR total congestion offset (in millions) for ARR holders: 2020/2021 through 2024/2025 planning period

Planning Period	ARR	Balancing+		Surplus Allocation	Total Offset	Day Ahead Congestion	Balancing Congestion	M2M Payments	Total Congestion	Offset
	Credits	FTR Credits	M2M Charge							
2020/2021	\$6.3	\$4.9	(\$6.5)	(\$0.3)	\$4.4	\$22.9	(\$5.7)	(\$0.8)	\$16.4	27.1%
2021/2022	\$10.5	\$11.6	(\$9.7)	\$0.0	\$12.4	\$50.3	(\$7.9)	(\$1.8)	\$40.6	30.7%
2022/2023	\$19.2	\$8.7	(\$10.8)	\$4.9	\$22.1	\$46.1	(\$7.6)	(\$3.2)	\$35.3	62.4%
2023/2024	\$16.9	\$11.6	(\$6.5)	\$1.6	\$23.6	\$34.8	(\$5.9)	(\$0.6)	\$28.3	83.3%
2024/2025	\$42.2	\$10.2	(\$9.6)	(\$0.0)	\$42.8	\$53.3	(\$8.3)	(\$1.3)	\$43.7	98.0%
Total	\$95.1	\$47.1	(\$43.1)	\$6.2	\$105.3	\$207.4	(\$35.4)	(\$7.7)	\$164.3	64.1%

Table 113 Pennsylvania (PPL) ARR and FTR total congestion offset (in millions) for ARR holders: 2020/2021 through 2024/2025 planning period

Planning Period	ARR	Balancing+		Surplus Allocation	Total Offset	Day Ahead Congestion	Balancing Congestion	M2M Payments	Total Congestion	Offset
	Credits	FTR Credits	M2M Charge							
2020/2021	\$24.3	\$3.4	(\$11.5)	(\$0.7)	\$15.4	\$42.3	(\$9.6)	(\$1.9)	\$30.8	50.1%
2021/2022	\$33.2	\$15.3	(\$21.5)	\$0.0	\$27.0	\$124.8	(\$17.1)	(\$4.4)	\$103.3	26.2%
2022/2023	\$137.2	\$11.8	(\$28.2)	\$25.9	\$146.6	\$112.0	(\$20.6)	(\$7.6)	\$83.8	175.0%
2023/2024	\$78.1	\$1.1	(\$15.7)	\$5.9	\$69.3	\$73.5	(\$14.2)	(\$1.5)	\$57.8	119.9%
2024/2025	\$66.2	\$3.2	(\$23.1)	(\$0.0)	\$46.3	\$120.2	(\$19.9)	(\$3.2)	\$97.1	47.7%
Total	\$339.0	\$34.7	(\$100.0)	\$31.0	\$304.7	\$472.8	(\$81.4)	(\$18.6)	\$372.8	81.7%

It is not possible for load to directly recover the actual network congestion that they pay under the current ARR/FTR design in which the rights to congestion revenues are assigned based on fictitious contract paths. Due to the mismatch between actual network sources of generation used to serve PA load and fictitious contract path defined sources of generation used in congestion right assignments to load, path based congestion rights are not and cannot be made consistent with how load is actually served by the wholesale electricity market based on actual network use. Due to this inconsistency between actual network sources of congestion paid by load and path based congestion rights available to load, load can, from year to year, over or under collect congestion that they actually pay on a network basis.

The use of generation to load contract paths, rather than the direct calculation of congestion, led to an increased divergence between FTR target allocations on the generation to load contract paths and actual total congestion. There is no such thing as excess congestion. The overlay of ARRs on the FTR concept did not change the fundamental logic of congestion, but permitted the introduction of a system in which the divergence was formally created between the amount of congestion paid by load and the amount of congestion returned to load. Congestion belongs to the load, by definition. The introduction of ARRs based on a contract path fiction undermined the assignment of all congestion rights to load.

The contract path fiction is also the source of the incorrect definition of the product that is bought and sold as FTRs, the available supply of the product and the price paid to the buyers of the product. The product is defined as the difference in congestion prices

across specific transmission contract paths. The difference in congestion prices across contract paths is not congestion and is not equal to congestion revenues. The quantity of the product made available for sale in the FTR auctions is defined as system capability, meaning the capacity of the transmission system to deliver power. However, system capability is not congestion and system capability is not the difference in congestion prices across transmission contract paths nor the potential for such difference. The definition of ARR based on contract paths led to the mistaken idea that some transmission system capacity was used by ARRs but some was not and that both the ARR capability and the excess capacity was available for sale as FTRs. This fundamental confusion in the design of the market is the source of so called revenue shortfalls, of the redesign of the market to exclude balancing congestion, and of the need for PJM to intervene in the market. PJM has had to regularly intervene in the market because the market as designed cannot reach equilibrium based on the economic fundamentals. The product, the quantity of the product, and the price of the product are all incorrectly defined.

The overall misalignment of congestion payments and congestion revenue rights results in dramatically different congestion offset results by zone. Load in some zones receives congestion revenues well in excess of the congestion they pay while the reverse is true for other zones.

The FERC order of September 15, 2016, introduced an additional subsidy to FTR holders at the expense of ARR holders.¹⁹ The order requires PJM to ignore balancing congestion (which is generally negative) when calculating total congestion dollars available to fund FTRs. The result is that congestion dollars paid to FTRs are overstated by the amount of negative balancing congestion. As a result of the FERC order, balancing congestion and M2M payments are assigned to load, rather than to FTR holders, as of the 2017/2018 planning period. This approach ignores the fact that load pays both day-ahead and balancing congestion, and that congestion is defined to equal the sum of day-ahead and balancing congestion. Eliminating balancing congestion from the FTR revenue calculation requires load to pay twice for congestion. Load pays total congestion and pays negative balancing congestion again.

Stage 1A Overallocation of ARRs

ARR Stage 1A overallocations are a significant contributor to the misalignment of congestion rights relative to actual network use. Stage 1A ARR MW are awarded regardless of whether the physical transmission system can support the path based

¹⁹ See 156 FERC ¶ 61,180 (2016), *reh'g denied*, 158 FERC ¶ 61,093 (2017).

flows from the Stage 1A source and sink points. In the case where Stage 1A ARR MW path based flows exceed physical transmission limits, PJM modifies the transmission limits in the ARR/FTR market model to accommodate the flow. This artificial increase in the transmission limits is then made available in the FTR auctions. FTRs on these paths will have FTR target allocations that exceed the amount of actual congestion. As a result, Stage 1A related overallocations have to be made up elsewhere in PJM's FTR market model, in the form of reduced system capability, in order for PJM to achieve its goal of fully funding FTRs. The net effect of the Stage 1A overallocations and reductions in ARR allocations made to balance them elsewhere can be positive or negative for a particular ARR holder.

Table 114 shows the Stage 1A overallocated ARR MW for the zones in Pennsylvania, based on whether the source point is inside or outside of the zone, by planning period (2020/2021 through 2024/2025). This includes the portion of the APS and ATSI Zones that are outside of Pennsylvania. The DUQ, MET-ED, PECO, PENELEC, and PPL Zones are entirely within Pennsylvania.

Table 114 Stage 1A overallocated ARR MW by source in/out of Pennsylvania related zones

Zone	Planning Period	Out of Zone MW	In Zone MW	Total MW
APS	2020/2021	511.6	21.4	533.0
	2021/2022	258.3	579.4	837.7
	2022/2023	447.9	1.8	449.7
	2023/2024	478.0	0.0	478.0
	2024/2025	486.0	19.0	505.0
ATSI	2020/2021	814.1	0.2	814.3
	2021/2022	676.8	579.4	1,256.2
	2022/2023	1,271.7	1,920.1	3,191.8
	2023/2024	1,985.7	2,783.3	4,769.0
	2024/2025	1,840.3	1,327.2	3,167.5
DUQ	2020/2021	131.9	0.0	131.9
	2021/2022	74.8	0.0	74.8
	2022/2023	161.4	0.0	161.4
	2023/2024	177.7	0.0	177.7
	2024/2025	178.9	0.0	178.9
MET-ED	2020/2021	8.2	60.9	69.1
	2021/2022	187.6	0.0	187.6
	2022/2023	408.9	236.9	645.8
	2023/2024	5.1	0.0	5.1
	2024/2025	10.9	19.5	30.4
PECO	2020/2021	0.0	3.2	3.2
	2021/2022	85.7	0.0	85.7
	2022/2023	179.1	0.0	179.1
	2023/2024	0.0	223.7	223.7
	2024/2025	0.0	424.1	424.1
PENELEC	2020/2021	28.8	0.0	28.8
	2021/2022	326.8	705.8	1,032.6
	2022/2023	78.3	138.4	216.7
	2023/2024	220.5	582.6	803.1
	2024/2025	369.7	174.5	544.2
PPL	2020/2021	0.0	5.6	5.6
	2021/2022	0.6	0.0	0.6
	2022/2023	0.8	1,548.0	1,548.8
	2023/2024	916.0	0.0	916.0
	2024/2025	0.0	0.0	0.0

Self Scheduling All ARR as FTRs

The results shown in Table 115 through Table 122 are not consistent with a rational FTR/ARR design based on the fundamentals of the way that congestion costs are paid. Under a rational design the total offset available to ARR holders if they were to self schedule all of their ARRs as FTRs should equal the total congestion paid by those ARR holders. If ARRs were assigned correctly, based on actual zonal congestion, and if balancing congestion were appropriately included in total congestion, the zonal offsets to load would equal zonal congestion payments by load. Table 115 through Table 122 show hypothetical congestion revenue that would be paid to Pennsylvania ARR holders if all of their ARRs were self scheduled as FTRs (Self Scheduled FTRs or SS FTR) in each zone. Bal+M2M shows the balancing plus market to market costs that are charged to Pennsylvania load on a load ratio share. Congestion+M2M shows the congestion plus market to market costs paid by Pennsylvania load. The total net offset against congestion charges if Pennsylvania load self scheduled all their ARRs is equal to SS FTR – (Bal + M2M) – (Congestion + M2M). The last column, Offset, shows the percentage of congestion related costs offset by the SS FTR revenue. This analysis assumes that the self scheduled FTRs are revenue adequate (FTR target allocations equals revenue received). Table 115 through Table 122 shows that the proportion of congestion paid that could be returned to the load that paid it via path based rights varies significantly by zone and by planning year. In some cases self scheduling all ARRs results in the return of less congestion revenue than in than just accepting the ARR target allocations. This occurs in the case where some of the zone's ARR paths have a positive value in the auction but the associated FTRs have a negative value or where the zone's ARR paths have a higher ARR target allocation value than the FTR target allocation for the planning year.

Table 115 Offset available to Pennsylvania load if all ARRs self-scheduled

Planning Period	SS FTR	Residual ARR		Congestion+		Offset
		Credits	Bal+M2M	M2M		
2020/2021	\$116.7	\$1.6	(\$47.0)	\$117.2		60.9%
2021/2022	\$297.4	\$1.7	(\$86.3)	\$316.7		67.2%
2022/2023	\$269.8	\$4.5	(\$102.5)	\$295.4		58.2%
2023/2024	\$194.9	\$0.3	(\$62.5)	\$203.6		65.2%
2024/2025	\$340.5	\$4.6	(\$89.8)	\$343.4		74.3%
Total	\$1,219.4	\$12.6	(\$388.1)	\$1,276.3		66.1%

Table 116 Offset available to Pennsylvania (APS) load if all ARR's self scheduled

Planning Period	SS FTR	Residual ARR		Congestion+	
		Credits	Bal+M2M	M2M	Offset
2020/2021	\$18.4	\$0.1	(\$6.2)	\$19.2	63.9%
2021/2022	\$47.0	\$0.8	(\$11.1)	\$46.5	79.0%
2022/2023	\$35.6	\$4.0	(\$13.5)	\$42.9	60.9%
2023/2024	\$31.1	\$0.2	(\$8.0)	\$33.9	68.7%
2024/2025	\$54.3	\$3.4	(\$11.5)	\$56.0	82.4%
Total	\$186.3	\$8.5	(\$50.3)	\$198.5	72.8%

Table 117 Offset available to Pennsylvania (ATSI) load if all ARR's self scheduled

Planning Period	SS FTR	Residual ARR		Congestion+	
		Credits	Bal+M2M	M2M	Offset
2020/2021	\$10.2	\$0.0	(\$2.4)	\$3.3	236.5%
2021/2022	\$15.9	\$0.0	(\$4.6)	\$7.7	146.2%
2022/2023	\$27.9	\$0.2	(\$6.5)	\$7.5	289.0%
2023/2024	\$26.7	\$0.0	(\$2.8)	\$7.1	335.1%
2024/2025	\$21.4	\$0.0	(\$4.0)	\$10.6	164.3%
Total	\$102.0	\$0.3	(\$20.2)	\$36.3	226.5%

Table 118 Offset available to Pennsylvania (DUQ) load if all ARR's self scheduled

Planning Period	SS FTR	Residual ARR		Congestion+	
		Credits	Bal+M2M	M2M	Offset
2020/2021	\$8.9	\$0.0	(\$4.3)	\$6.1	76.2%
2021/2022	\$7.0	\$0.0	(\$7.0)	\$16.2	-0.2%
2022/2023	\$15.0	\$0.0	(\$8.3)	\$18.5	36.3%
2023/2024	\$19.7	\$0.0	(\$5.2)	\$15.1	96.3%
2024/2025	\$12.7	\$0.0	(\$6.9)	\$25.0	23.4%
Total	\$63.4	\$0.0	(\$31.6)	\$81.0	39.2%

Table 119 Offset available to Pennsylvania (MET-ED) load if all ARR's self scheduled

Planning Period	SS FTR	Residual ARR		Congestion+	
		Credits	Bal+M2M	M2M	Offset
2020/2021	\$8.0	\$0.0	(\$5.2)	\$16.5	16.9%
2021/2022	\$31.3	\$0.0	(\$11.6)	\$33.1	59.6%
2022/2023	\$46.5	\$0.0	(\$11.2)	\$32.5	108.6%
2023/2024	\$5.4	\$0.0	(\$9.5)	\$19.0	-21.8%
2024/2025	\$18.6	\$0.3	(\$12.7)	\$35.5	17.5%
Total	\$109.8	\$0.3	(\$50.2)	\$136.6	43.9%

Table 120 Offset available to Pennsylvania (PECO) load if all ARRs self scheduled

Planning Period	SS FTR	Residual ARR		Congestion+	
		Credits	Bal+M2M	M2M	Offset
2020/2021	\$14.0	\$0.3	(\$10.9)	\$24.9	13.3%
2021/2022	\$6.2	\$0.8	(\$20.9)	\$69.2	-20.1%
2022/2023	\$6.8	\$0.0	(\$24.0)	\$74.9	-22.8%
2023/2024	\$29.0	\$0.0	(\$14.9)	\$42.3	33.4%
2024/2025	\$119.8	\$0.0	(\$22.0)	\$75.5	129.6%
Total	\$175.8	\$1.1	(\$92.6)	\$286.9	29.4%

Table 121 Offset available to Pennsylvania (PENELEC) load if all ARRs self scheduled

Planning Period	SS FTR	Residual ARR		Congestion+	
		Credits	Bal+M2M	M2M	Offset
2020/2021	\$13.5	\$0.0	(\$6.5)	\$16.4	43.0%
2021/2022	\$29.7	\$0.1	(\$9.7)	\$40.6	49.5%
2022/2023	\$20.5	\$0.2	(\$10.8)	\$35.3	28.3%
2023/2024	\$46.0	\$0.0	(\$6.5)	\$28.3	139.4%
2024/2025	\$6.4	\$0.2	(\$9.6)	\$43.7	-6.9%
Total	\$116.2	\$0.5	(\$43.1)	\$164.3	44.8%

Table 122 Offset available to Pennsylvania (PPL) load if all ARRs self scheduled

Planning Period	SS FTR	Residual ARR		Congestion+	
		Credits	Bal+M2M	M2M	Offset
2020/2021	\$43.7	\$1.3	(\$11.5)	\$30.8	108.7%
2021/2022	\$160.3	\$0.0	(\$21.5)	\$103.3	134.4%
2022/2023	\$117.4	\$0.0	(\$28.2)	\$83.8	106.4%
2023/2024	\$37.1	\$0.0	(\$15.7)	\$57.8	37.1%
2024/2025	\$107.3	\$0.6	(\$23.1)	\$97.1	87.4%
Total	\$465.8	\$2.0	(\$100.0)	\$372.8	98.7%

Summary of Results

Pennsylvania generates more power than it consumes. PA generation is, on average, lower cost than generation in MD and VA, among other states. Average LMPs in PA have been, on average, lower than the PJM's system average since 2015/2016 (Table 1 and Table 123). Significant transmission constraints separate PA from the rest of PJM (Table 123). Eliminating these constraints would increase prices in PA. Prices in the PECO and PPL zones have been consistently lower than the PJM system average since 2015/2016 (Table 6). Prices in the other zones (APS, ATSI, DUQ, METED, and PENELEC)

were generally but not always lower than the PJM system average price since 2015/2016 (Table 123).

Table 123 Annual Load weighted LMP for PJM, PA and each PA zone: 2012/2013 through 2024/2025

Planning Period	PJM			PA		APS		ATSI		DUQ		MET-ED		PECO		PENELEC		PPL	
	RT LMP	RT LMP	Difference	RT LMP	Difference	RT LMP	Difference	RT LMP	Difference	RT LMP	Difference	RT LMP	Difference	RT LMP	Difference	RT LMP	Difference	RT LMP	Difference
2012/2013	\$37.87	\$38.04	\$0.17	\$36.60	(\$1.28)	\$36.35	(\$1.52)	\$35.18	(\$2.69)	\$39.06	\$1.18	\$39.37	\$1.49	\$37.97	\$0.10	\$38.33	\$0.46		
2013/2014	\$54.05	\$55.56	\$1.50	\$50.66	(\$3.39)	\$53.07	(\$0.98)	\$44.40	(\$9.65)	\$58.70	\$4.64	\$58.35	\$4.30	\$53.14	(\$0.91)	\$59.41	\$5.36		
2014/2015	\$40.23	\$40.70	\$0.46	\$40.29	\$0.06	\$38.01	(\$2.22)	\$35.59	(\$4.64)	\$41.76	\$1.53	\$41.52	\$1.29	\$40.64	\$0.41	\$41.76	\$1.53		
2015/2016	\$28.80	\$25.70	(\$3.10)	\$28.45	(\$0.35)	\$28.48	(\$0.32)	\$28.38	(\$0.42)	\$24.34	(\$4.46)	\$24.40	(\$4.40)	\$27.31	(\$1.50)	\$24.22	(\$4.58)		
2016/2017	\$30.57	\$28.94	(\$1.62)	\$30.15	(\$0.42)	\$31.26	\$0.69	\$30.71	\$0.14	\$28.96	(\$1.60)	\$28.16	(\$2.40)	\$29.36	(\$1.21)	\$28.07	(\$2.50)		
2017/2018	\$36.98	\$36.23	(\$0.74)	\$37.07	\$0.10	\$38.76	\$1.78	\$37.24	\$0.27	\$36.68	(\$0.30)	\$35.68	(\$1.30)	\$36.23	(\$0.75)	\$35.55	(\$1.43)		
2018/2019	\$31.67	\$30.61	(\$1.05)	\$31.87	\$0.20	\$33.33	\$1.66	\$32.82	\$1.15	\$30.87	(\$0.79)	\$29.84	(\$1.83)	\$31.36	(\$0.31)	\$29.21	(\$2.46)		
2019/2020	\$23.72	\$22.09	(\$1.62)	\$23.87	\$0.15	\$24.36	\$0.64	\$24.74	\$1.02	\$22.20	(\$1.51)	\$20.83	(\$2.89)	\$22.50	(\$1.21)	\$21.00	(\$2.72)		
2020/2021	\$26.02	\$23.88	(\$2.14)	\$25.99	(\$0.04)	\$25.22	(\$0.80)	\$25.82	(\$0.20)	\$24.90	(\$1.13)	\$22.19	(\$3.83)	\$24.42	(\$1.60)	\$23.02	(\$3.00)		
2021/2022	\$52.44	\$49.52	(\$2.93)	\$50.92	(\$1.52)	\$50.31	(\$2.13)	\$49.95	(\$2.50)	\$54.56	\$2.11	\$46.33	(\$6.12)	\$50.55	(\$1.89)	\$49.25	(\$3.20)		
2022/2023	\$68.07	\$63.05	(\$5.03)	\$65.06	(\$3.02)	\$63.68	(\$4.40)	\$64.95	(\$3.12)	\$68.92	\$0.85	\$59.16	(\$8.91)	\$61.55	(\$6.52)	\$63.39	(\$4.69)		
2023/2024	\$31.70	\$28.08	(\$3.62)	\$31.76	\$0.06	\$31.02	(\$0.68)	\$32.23	\$0.53	\$28.25	(\$3.45)	\$24.63	(\$7.07)	\$32.18	\$0.48	\$25.95	(\$5.75)		
2024/2025	\$40.53	\$37.29	(\$3.24)	\$39.69	(\$0.83)	\$38.57	(\$1.96)	\$37.99	(\$2.54)	\$37.43	(\$3.10)	\$36.34	(\$4.19)	\$40.45	(\$0.08)	\$35.24	(\$5.28)		

The use of generation to load contract paths in the allocation of ARRs (ARR paths), rather than the direct calculation of congestion, led to an increased divergence between FTR target allocations on the generation to load contract paths and actual total congestion. This divergence between actual network use and historic contract paths was exacerbated as new zones were added with their own historic generation to load contract paths and as significant numbers of generating units retired and new units were added.²⁰

Almost all of the congestion paid by load in Pennsylvania zones comes (Table 105) from constraints (and generation) outside those zones, while almost all of the ARR paths available to Pennsylvania zones are sourced and sink entirely within those zones. For example, Table 105 shows that 90.6 percent of the PECO zone's congestion was caused by constraints outside of the PECO Zone, but 93.1 percent of PECO's ARRs are sourced and sink within the PECO Zone.

Table 124 lists the top 20 constraints that are internal to PA affecting Pennsylvania congestion costs for the 2024/2025 planning period, including the type of constraints (Line, Transformer, Flowgate, or Interface), the location of the constraints, and the

²⁰ Cite to first 10 pages of FTR section for Q1 2026. For a more complete discussion of these issues, see:

constraint specific congestion revenue collected from the load in Pennsylvania in the 2024/2025 planning period.²¹

Congestion for each internal constraint in Table 124 is separated into internal and external congestion. The internal congestion is the congestion paid by the PA zone where the constraint is located due to that constraint. The external congestion is the congestion paid by all the other PA zones due to that constraint. If internal congestion is zero, the constraint is external to all of the PA zones (and is included as a separate line item that totals all congestion from external to PA constraints). Note that the host zone of the constraint can change based on reversals of market flow over time (the source point is the low price side in any given market period), which means that a given constraint can be internal to more than one zone over the course of the period. Table 124 shows that 38.2 percent of the congestion paid by load in PA is due to constraints within the state of PA. Of the congestion paid by PA load due to constraints located within PA zones (\$136.61 million), 24.0 percent (\$32.74 million) of the congestion was collected from load in the same zone as the constraint and 76.0 percent (\$103.86 million) was collected from load in a zone other than the zone that contains the constraint.

²¹ All the interfaces and the Mid-Atlantic 500 kV system are put in the 500 category for location. The Mid-Atlantic 500 kV system includes equipment that is located in the PE, PPL, BGE, PEPCO, MEC, PECO, PSEG, JCPLC, DPL and ACEC Zones.

Table 124 Congestion cost (Dollars (Millions)) details for the top 20 constraint internal (to PA) constraints affecting Pennsylvania: 2024/2025 planning period

Constraint	Type	Location	Rank Order of Internal PA Constraints	Rank Order of Internal PA Constraints in Order of Total Congestion Cost on PA Load among All Constraints	Congestion Costs (Millions)									Total	Grand Total
					Day-Ahead			Balancing			Total				
					Internal	External	Total	Internal	External	Total	Internal	External	Total		
					Internal	External	Total	Internal	External	Total	Internal	External	Total		
					Internal	External	Total	Internal	External	Total	Internal	External	Total		
Lenox - North Meshoppen	Line	PENELEC	1	1	\$5.5	\$33.3	\$38.9	(\$0.3)	(\$2.0)	(\$2.2)	\$5.3	\$31.4	\$36.6		
Nottingham	Other	PECO	2	4	\$2.5	\$11.6	\$14.1	\$0.2	\$0.8	\$0.9	\$2.7	\$12.4	\$15.1		
Yorkana	Other	METED	3	8	\$1.3	\$11.9	\$13.2	(\$0.0)	(\$0.5)	(\$0.5)	\$1.3	\$11.4	\$12.7		
Plymouth Meeting - Whippain	Line	PECO	4	13	\$4.0	\$4.1	\$8.1	(\$0.1)	(\$0.0)	(\$0.1)	\$4.0	\$4.0	\$8.0		
Gardners - Texas Eastern	Line	METED	5	21	\$2.7	\$3.1	\$5.8	(\$0.5)	(\$0.1)	(\$0.6)	\$2.1	\$3.0	\$5.1		
East Towanda - Hillside	Line	PENELEC	6	22	\$0.4	\$3.9	\$4.3	\$0.1	\$0.6	\$0.7	\$0.4	\$4.5	\$4.9		
Cumberland	Transformer	PPL	7	25	\$1.9	\$2.7	\$4.6	\$0.0	\$0.0	\$0.0	\$1.9	\$2.7	\$4.6		
Juniata	Transformer	500	8	29	\$1.2	\$3.1	\$4.3	(\$0.0)	(\$0.2)	(\$0.2)	\$1.2	\$2.9	\$4.1		
Glendon - Hosensack	Line	METED	9	34	\$0.0	\$3.3	\$3.3	\$0.0	(\$0.4)	(\$0.4)	\$0.0	\$2.9	\$2.9		
Graceton - Manor	Line	BGE	10	35	\$0.0	\$2.7	\$2.7	(\$0.0)	\$0.1	\$0.1	(\$0.0)	\$2.8	\$2.8		
Eldred - Sunbury	Line	PPL	11	36	\$1.3	\$1.4	\$2.7	\$0.0	\$0.0	\$0.0	\$1.3	\$1.4	\$2.7		
Carlisle Pike - Roxbury	Line	PENELEC	12	41	\$0.2	\$0.1	\$0.3	(\$2.3)	(\$0.0)	(\$2.3)	(\$2.1)	\$0.1	(\$2.0)		
All Dam - Kittanning	Line	APS	13	43	\$0.4	\$1.5	\$1.9	(\$0.0)	(\$0.0)	(\$0.0)	\$0.4	\$1.5	\$1.9		
North Meshoppen	Transformer	PENELEC	14	44	\$1.3	\$0.4	\$1.7	\$0.0	\$0.1	\$0.1	\$1.3	\$0.5	\$1.8		
Mehoopany - North Meshoppen	Line	PENELEC	15	46	\$1.7	\$0.0	\$1.7	\$0.0	\$0.0	\$0.0	\$1.7	\$0.0	\$1.7		
Saxton - Three Springs	Line	PENELEC	16	53	\$0.3	\$1.4	\$1.7	(\$0.0)	(\$0.2)	(\$0.2)	\$0.3	\$1.2	\$1.5		
Williams Grove	Line	PPL	17	61	\$0.4	\$0.9	\$1.3	\$0.0	\$0.0	\$0.0	\$0.4	\$0.9	\$1.3		
Aspen Road - Roxbury	Line	PENELEC	18	68	\$1.1	\$0.7	\$1.8	(\$0.1)	(\$0.6)	(\$0.7)	\$1.0	\$0.0	\$1.1		
Shelocla	Transformer	PENELEC	19	70	\$0.3	\$0.8	\$1.0	(\$0.0)	(\$0.0)	(\$0.0)	\$0.3	\$0.8	\$1.0		
Butler - Kams City	Line	APS	20	72	\$0.2	\$0.8	\$1.0	(\$0.0)	(\$0.0)	(\$0.0)	\$0.2	\$0.8	\$1.0		
Sum of PA congestion from the top 20 Constraint Internal to PA					\$26.55	\$87.92	\$114.48	-\$3.07	-\$2.47	-\$5.54	\$23.49	\$85.45	\$108.94		
Sum of PA congestion from Other constraints Internal to PA					\$11.3	\$21.3	\$32.6	(\$2.0)	(\$2.9)	(\$4.9)	\$9.3	\$18.4	\$27.7		
Sum of PA congestion from all PA Internal constraints					\$37.83	\$109.24	\$147.07	-\$5.08	-\$5.38	-\$10.46	\$32.74	\$103.86	\$136.61		
Sum of PA congestion from constraint external to PA					\$0.0	\$289.1	\$289.1	\$0.0	(\$68.2)	(\$68.2)	\$0.0	\$220.9	\$220.9		
Total Congestion paid by PA load					\$37.83	\$398.36	\$436.19	-\$5.08	-\$73.55	-\$78.63	\$32.74	\$324.81	\$357.56		
Proportion of Congestion Due to Internal Constraints					100.0%	27.4%	33.7%	100.0%	7.3%	13.3%	100.0%	32.0%	38.2%		

ARR Stage 1A overallocations are a significant contributor to the misalignment of congestion revenue rights relative to actual congestion payments. Stage 1A ARR MW are awarded regardless of whether the physical transmission system can support the path based flows between the Stage 1A source and sink points. As peak load increases over time, stage 1A ARR MW also increase, while portions of transmission system that connect historic generation sources and the zonal load remain unchanged. In the case where Stage 1A ARR MW path based flows exceed physical transmission limits, PJM artificially increases the transmission limits in the ARR/FTR market model to accommodate the overallocated ARR flow. This artificial increase in the transmission limits is then made available in the FTR auctions. FTRs on these paths have total FTR target allocations that exceed the amount of actual congestion because more FTRs are sold than the actual transmission system can support. The result is that Stage 1A overallocations increase payments to ARR holders (ARR rent) for the affected zone because more FTR MW are sold than consistent with system capability within that zone. Holding other things constant, the result is payments FTRs on overallocated ARR paths are greater than the actual congestion paid by those ARR holders on the constraints affected by the overallocation.

Stage 1 A overallocation results in ARR and FTR underallocation elsewhere in the system. In order for PJM to achieve its goal of fully funding FTRs, meaning that congestion revenues paid must cover the obligations to pay FTR holders, Stage 1A

related overallocations have to be made up elsewhere in PJM's FTR market model, in the form of artificially reduced transmission system capability (done through line rating deductions or outage selection or both). FTRs on these paths have FTR target allocations based on MW that are less than the actual transmission system can support and therefore less than the amount of actual congestion. The result is that the underallocations reduce payments to ARR holders (ARR rent) for the affected zone because fewer FTR MW are sold than consistent with system capability. Holding other things constant, the result is that FTR target allocations to FTRs on underallocated ARR paths are less than the actual congestion paid by those ARR holders.

The net effect of the Stage 1A ARR overallocations and resultant ARR underallocations is positive for ARR holders in some zones and negative for ARR holders in other zones, although the net result for the system is that ARR holders do not receive the full amount of congestion that they pay. The net effect of the Stage 1A overallocations and reductions in ARR allocations made to balance them elsewhere can be positive or negative for ARR holders in a specific zone, and it can change from positive to negative or from negative to positive from year to year.

Another source of misalignment between ARR revenues and actual congestion is the treatment of transmission system outages. Total FTR supply in each auction as defined by PJM is limited by the definition of the transmission system capacity included in the PJM FTR market model as modified, for example, by PJM assumptions about transmission outages, for which there are no clear rules.²²

The FTR auction process does not account for the fact that significant transmission outages, which have not been provided to PJM by transmission owners prior to the auction date, will occur during the periods covered by the auctions. Such transmission outages may or may not be planned in advance or may be emergency outages.²³ In addition, it is difficult to model in an annual auction two outages of similar significance and similar duration in different areas which do not overlap in time. The choice of which to model will generally have significant distributional consequences; they will affect different areas very differently. The fact that outages are modeled at significantly lower than historical levels results in selling too much FTR capacity.

Table 124 shows, by zone, Stage 1A overallocated ARR MW, ARR and FTR total congestion offset (in millions) for ARR holders for each planning year from 2020/2021

²² See Cite to first FTR section for Q1 2026

²³ See the *2022 Annual State of the Market Report for PJM*, Volume 2, Section 12: Transmission Facility Outages: Transmission Facility Outages Analysis for the FTR Market.

through 2024/2025. Table 124 shows that the amount of ARR overallocation in Pennsylvania can vary significantly by zone and by year. Table 124 also shows that Stage 1A overallocations are one of the factors that can increase ARR payments, everything else held constant. However, Stage 1A overallocation (and associated increased in ARR rent) does not ensure overcollection of congestion by the ARR holders. Stage 1A overallocations only ensure that the FTR target allocations associated with the overallocated ARR path will be greater than the congestion caused by the overallocated constraints in the day ahead market. Stage 1A overallocations increase ARR rent for the affected zone and can decrease ARR rent in or between other zones. Overallocated and underallocated paths can exist in the same zone.

The links among the allocation of ARRs and the FTR market and the network causes of congestion are also affected by other elements of the FTR model, including transmission outages modeled in the ARR/FTR market that back into service mid year, actual transmission outages that not modeled in the ARR/FTR market, and line deratings.

Most of the congestion paid by load results from constraints outside of the load's zone. These constraints are not generally subject to Stage 1A overallocations by the zone paying the congestion, but they may be subject to overallocation by the host zone (which does not benefit the downstream zone).

ARR overallocations are generally associated with increased ARR revenue, all else held equal, but the relationship is not linear. Overallocations increase the proportion of congestion that can be recovered from affected constraints, but they do not increase the recovery of congestion from the unaffected constraints that are usually external to the zone. The net effect of any ARR overallocations depends on the price of the FTRs in the planning year, the amount of balancing congestion, whether the increased ARRs are associated with positive or negatively valued paths, and how much of the congestion paid by the ARR holders due to external constraints is correlated with the ARR target allocations on Stage 1A paths.

Table 125 Stage 1A overallocated ARR MW, ARR and FTR total congestion offset (in millions) for ARR holders by zone: 2020/2021 through 2024/2025 planning period

Zone	Planning Period	Total Overallocated MW	ARR Credits	FTR Credits	Balancing + M2M Charge	Surplus Allocation	Total Offset	Day Ahead Congestion	Balancing Congestion	M2M Payments	Total Congestion	Offset
APS	2020/2021	533.0	\$14.4	\$6.5	(\$6.2)	(\$0.6)	\$14.1	\$25.4	(\$5.2)	(\$1.0)	\$19.2	73.4%
	2021/2022	837.7	\$15.6	\$16.8	(\$11.1)	\$0.0	\$21.2	\$57.6	(\$8.5)	(\$2.6)	\$46.5	45.7%
	2022/2023	449.7	\$35.1	\$14.9	(\$13.5)	\$9.0	\$45.5	\$56.4	(\$8.9)	(\$4.6)	\$42.9	106.2%
	2023/2024	478.0	\$23.1	\$10.1	(\$8.0)	\$2.5	\$27.7	\$41.9	(\$7.3)	(\$0.7)	\$33.9	81.6%
	2024/2025	505.0	\$27.8	\$16.9	(\$11.5)	(\$0.0)	\$33.2	\$67.5	(\$9.9)	(\$1.6)	\$56.0	59.3%
ATSI	2020/2021	814.3	\$6.8	\$0.1	(\$2.4)	(\$0.2)	\$4.2	\$5.7	(\$1.4)	(\$1.0)	\$3.3	128.7%
	2021/2022	1,256.2	\$7.0	\$0.3	(\$4.6)	\$0.0	\$2.7	\$12.3	(\$2.2)	(\$2.4)	\$7.7	35.3%
	2022/2023	3,191.8	\$12.9	\$0.3	(\$6.5)	\$2.2	\$8.9	\$14.0	(\$2.4)	(\$4.1)	\$7.5	118.5%
	2023/2024	4,769.0	\$15.7	\$0.3	(\$2.8)	\$1.2	\$14.4	\$9.9	(\$2.0)	(\$0.8)	\$7.1	201.3%
	2024/2025	3,167.5	\$17.5	\$0.4	(\$4.0)	(\$0.0)	\$13.8	\$14.6	(\$2.5)	(\$1.5)	\$10.6	130.5%
DUQ	2020/2021	131.9	\$5.6	\$0.2	(\$4.3)	(\$0.2)	\$1.4	\$10.4	(\$3.4)	(\$0.9)	\$6.1	23.0%
	2021/2022	74.8	\$5.8	\$0.2	(\$7.0)	\$0.0	(\$1.0)	\$23.2	(\$5.0)	(\$2.0)	\$16.2	-6.4%
	2022/2023	161.4	\$11.1	\$0.2	(\$8.3)	\$16.3	\$19.3	\$26.8	(\$5.8)	(\$2.5)	\$18.5	104.4%
	2023/2024	177.7	\$8.5	\$0.3	(\$5.2)	\$5.1	\$8.7	\$20.3	(\$4.7)	(\$0.5)	\$15.1	57.4%
	2024/2025	178.9	\$11.8	\$0.3	(\$6.9)	(\$0.0)	\$5.2	\$31.9	(\$5.8)	(\$1.1)	\$25.0	20.8%
MET-ED	2020/2021	69.1	\$3.5	\$0.7	(\$5.2)	(\$0.1)	(\$1.2)	\$21.7	(\$4.5)	(\$0.7)	\$16.5	-7.1%
	2021/2022	187.6	\$7.9	\$2.7	(\$11.6)	\$0.0	(\$1.0)	\$44.7	(\$9.9)	(\$1.7)	\$33.1	-2.9%
	2022/2023	645.8	\$46.7	\$3.3	(\$11.2)	\$8.6	\$47.3	\$43.7	(\$8.3)	(\$2.9)	\$32.5	145.7%
	2023/2024	5.1	\$44.9	(\$0.0)	(\$9.5)	\$3.3	\$38.7	\$28.5	(\$6.2)	(\$3.3)	\$19.0	203.6%
	2024/2025	30.4	\$22.8	\$1.3	(\$12.7)	(\$0.0)	\$11.4	\$48.2	(\$11.5)	(\$1.2)	\$35.5	32.2%
PECO	2020/2021	3.2	\$15.0	\$0.2	(\$10.9)	(\$0.4)	\$3.8	\$35.8	(\$9.1)	(\$1.8)	\$24.9	15.2%
	2021/2022	85.7	\$20.7	\$0.1	(\$20.9)	\$0.0	(\$0.1)	\$90.1	(\$16.7)	(\$4.2)	\$69.2	-0.1%
	2022/2023	179.1	\$26.3	\$12.5	(\$24.0)	\$6.3	\$21.2	\$98.9	(\$16.7)	(\$7.3)	\$74.9	28.2%
	2023/2024	223.7	\$16.0	\$9.4	(\$14.9)	\$1.5	\$12.0	\$57.2	(\$13.5)	(\$1.4)	\$42.3	28.5%
	2024/2025	424.1	\$29.0	\$0.1	(\$22.0)	(\$0.0)	\$7.1	\$97.5	(\$18.9)	(\$3.1)	\$75.5	9.4%
PENELEC	2020/2021	28.8	\$6.3	\$4.9	(\$6.5)	(\$0.3)	\$4.4	\$22.9	(\$5.7)	(\$0.8)	\$16.4	27.1%
	2021/2022	1,032.6	\$10.5	\$11.6	(\$9.7)	\$0.0	\$12.4	\$50.3	(\$7.9)	(\$1.8)	\$40.6	30.7%
	2022/2023	216.7	\$19.2	\$8.7	(\$10.8)	\$4.9	\$22.1	\$46.1	(\$7.6)	(\$3.2)	\$35.3	62.4%
	2023/2024	803.1	\$16.9	\$11.6	(\$6.5)	\$1.6	\$23.6	\$34.8	(\$5.9)	(\$0.6)	\$28.3	83.3%
	2024/2025	544.2	\$42.2	\$10.2	(\$9.6)	(\$0.0)	\$42.8	\$53.3	(\$8.3)	(\$1.3)	\$43.7	98.0%
PPL	2020/2021	5.6	\$24.3	\$3.4	(\$11.5)	(\$0.7)	\$15.4	\$42.3	(\$9.6)	(\$1.9)	\$30.8	50.1%
	2021/2022	0.6	\$33.2	\$15.3	(\$21.5)	\$0.0	\$27.0	\$124.8	(\$17.1)	(\$4.4)	\$103.3	26.2%
	2022/2023	1,548.8	\$137.2	\$11.8	(\$28.2)	\$25.9	\$146.6	\$112.0	(\$20.6)	(\$7.6)	\$83.8	175.0%
	2023/2024	916.0	\$78.1	\$1.1	(\$15.7)	\$5.9	\$69.3	\$73.5	(\$14.2)	(\$1.5)	\$57.8	119.9%
	2024/2025	0.0	\$66.2	\$3.2	(\$23.1)	(\$0.0)	\$46.3	\$120.2	(\$19.9)	(\$3.2)	\$97.1	47.7%

Table 124 shows that ATSI was overallocated ARR MW in every planning year from 2020/2021 through 2024/2025. ATSI overallocated MW ranged from 814.3 MW to 4,769.0 MW between 2020/2021 and 2024/2025. These overallocations were an important factor that contributed to ATSI (Table 108) collecting 121.5 percent of congestion in the period from 2020/2021 through 2024/2025. In 2020/2021, ATSI was overallocated 814.3 MW and collected 128.7 percent of congestion. In 2021/2022, ATSI was overallocated 1,256.2 MW but collected only 35.3 percent of congestion (2020/2021). While the increase in overallocation between 2020/2021 and 2021/2022 did not result in an increase in the percent of congestion collected, it did result in an increase in ARR related revenue. In 2020/2021, ATSI collected \$6.8 million in ARR related revenue and in 2021/2022 ATSI collected \$7.3 million in ARR related revenue. However, balancing congestion and M2M charges allocated to ATSI increased by more than the ARR related revenue increased between 2020/2021 and 2021/2022. The balancing congestion and M2M allocation charged to ATSI increased from \$2.4 million to \$4.6 million. The total congestion paid by

ATSI (98.4 percent of which is due to constraints external to ATSI) increased from \$3.3 million to \$7.7 million between 2020/2021 and 2021/2022.

PECO (Table 124) had overallocations ranging from 0.0 MW to 1,548.0 MW, while PECO's ARRs and self scheduled FTR returned 15.3 percent of the total congestion paid by PECO load in the period from 2020/2021 through 2024/2025. PECO had annual overcollections ranging from -0.1 percent in 2021/2022 to 28.5 percent in 2022/2023. Again, the greater the size of the overallocations, usually the greater the ARR revenue. The net effect, relative to congestion paid by the ARR holders, is dependent on the price of the FTRs in the planning year and a number of other factors. In 2022/2023, PECO was overallocated 179.1 MW and only collected 28.2 percent of the congestion revenue. In 2023/2024, PECO was overallocated 223.7 MW and collected 28.5 percent of the congestion paid. While the increase in overallocation between 2020/2021 and 2021/2022 resulted in a relatively small increase in the proportion of congestion returned, there was a bigger increase in ARR. In 2020/2021 PECO collected \$15.1 million in ARR related revenue and in 2021/2022 PECO collected \$18.1 million in ARR related revenue. However, the balancing and M2M charges allocated to PECO increased by more than the ARR related revenue increased between 2020/2021 and 2021/2022. The balancing and M2M allocation charged to PECO increased from \$10.9 million to \$20.9 million. Total congestion paid by PECO (86.6 percent of which is due to constraints external to PECO) increased from \$24.9 million to \$69.2 million.

In the 2023/2024 planning period, Pennsylvania load received an offset of 95.4 percent of the congestion paid by Pennsylvania load. Load in Pennsylvania paid \$9.2 million more in ARR/FTR revenues than it paid congestion in the 2023/2024 planning period.

In the 2024/2025 planning period, Pennsylvania load received an offset of 46.6 percent of the congestion paid by Pennsylvania load. Load in Pennsylvania paid \$183.5 million more in congestion than it collected from ARR/FTRs in the 2024/2025 planning period.

While Pennsylvania, in aggregate, received less congestion revenue than it paid in the five planning year period from 2020/2021 through 2024/2025, this result varied significantly across zones and planning years (Table 106 through Table 113, Table 124). On a zonal basis, only ATSI (Table 108 and Table 124) received more congestion revenue than zonal load paid in the five planning year period from 2020/2021 through 2024/2025.