2021 Pennsylvania State Infrastructure Report

(January 1, 2021 – December 31, 2021)

May 2022

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- **Existing Capacity:** Natural gas represents approximately 44.8 percent of the total installed capacity in the Pennsylvania service territory while coal represents approximately 21 percent and nuclear 19.1 percent. In PJM natural gas and coal are 44.2 and 26.6 percent of total installed capacity, while nuclear represents 17.5 percent.

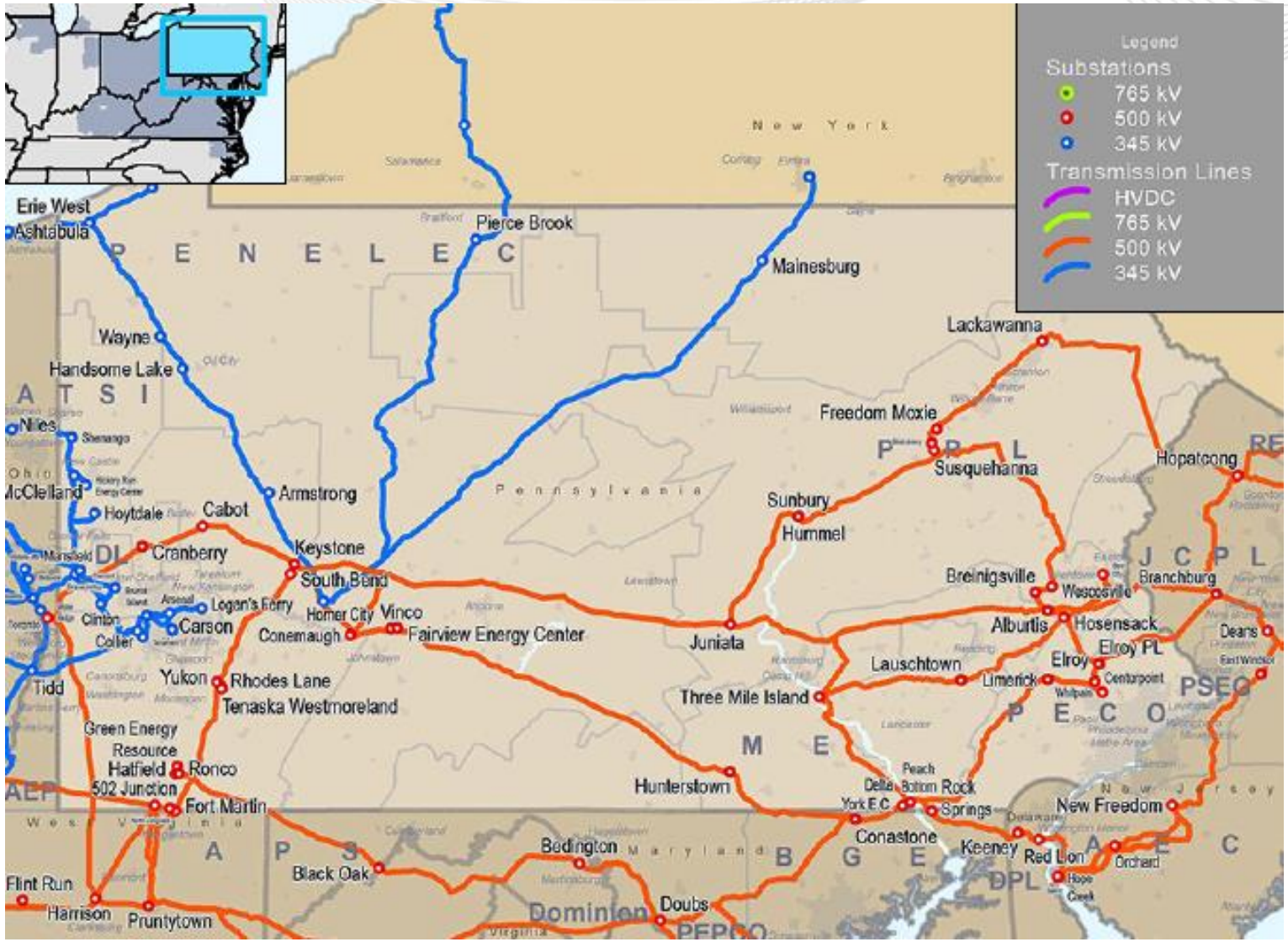
- **Interconnection Requests:** Solar represents 62 percent of new interconnection requests in Pennsylvania, while natural gas represents approximately 20.2 percent and storage 19.8 percent of new requests.

- **Deactivations:** 920.8 MW in Pennsylvania gave notification of deactivation in 2021.

- **RTEP 2021:** Pennsylvania's 2021 RTEP project total represents approximately $176.9 million in investment.

- **Load Forecast:** Pennsylvania's summer peak load growth is projected to range between -0.1 and 0.4 percent annually over the next ten years, based on the service territory. The overall PJM RTO projected load growth rate is 0.4 percent.
- **2022/23 Capacity Market:** 45,886 MW in Pennsylvania cleared in the 2022/23 Base Residual Auction.
- **1/1/21 – 12/31/21 Market Performance:** Pennsylvania's average hourly LMPs were below the PJM average hourly LMP.
- **Emissions:** Pennsylvania's average CO2 emissions slightly increased in 2021 compared to 2020 levels.

PJM Service Area – Pennsylvania

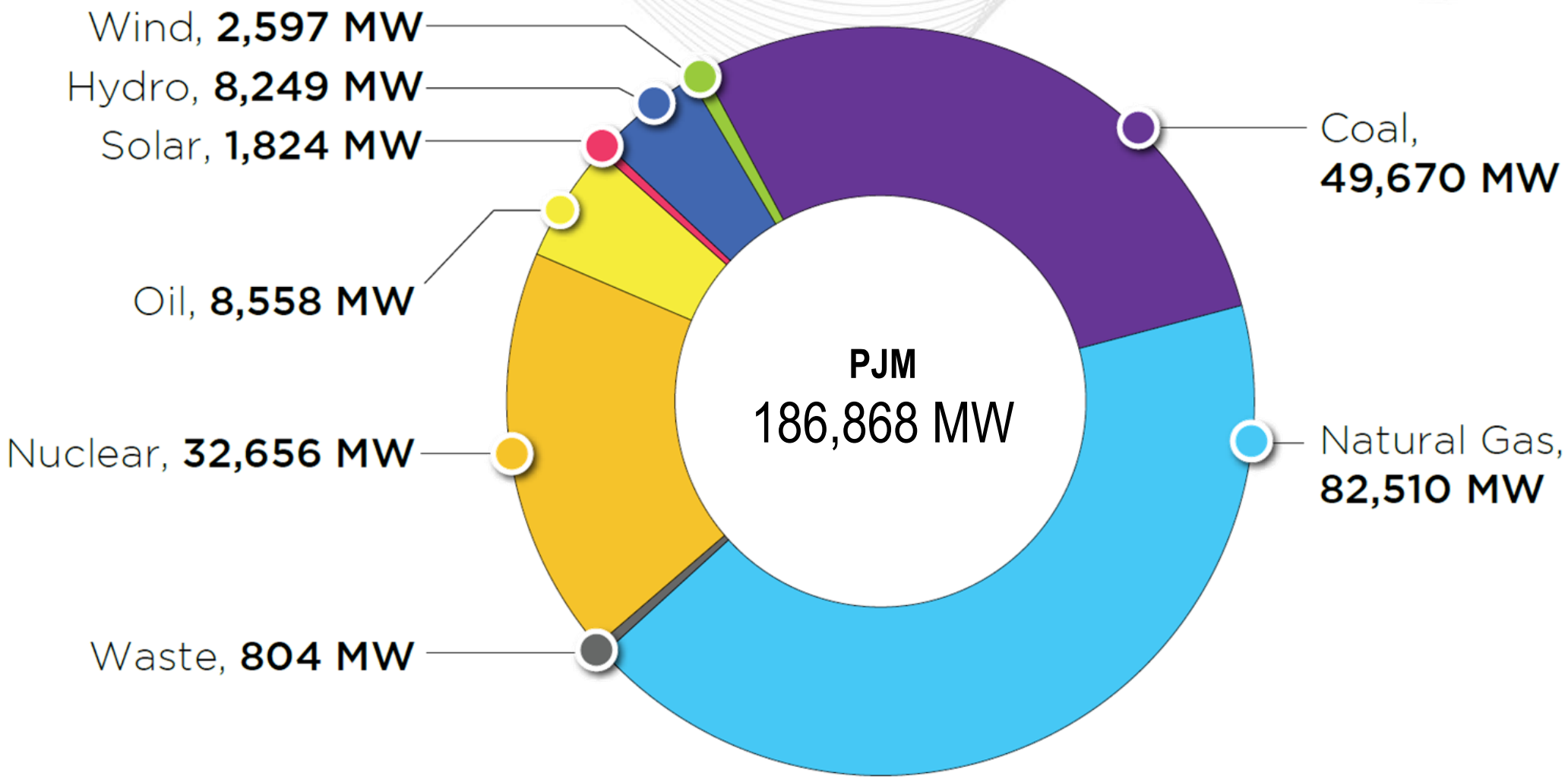


Planning

Generation Portfolio Analysis

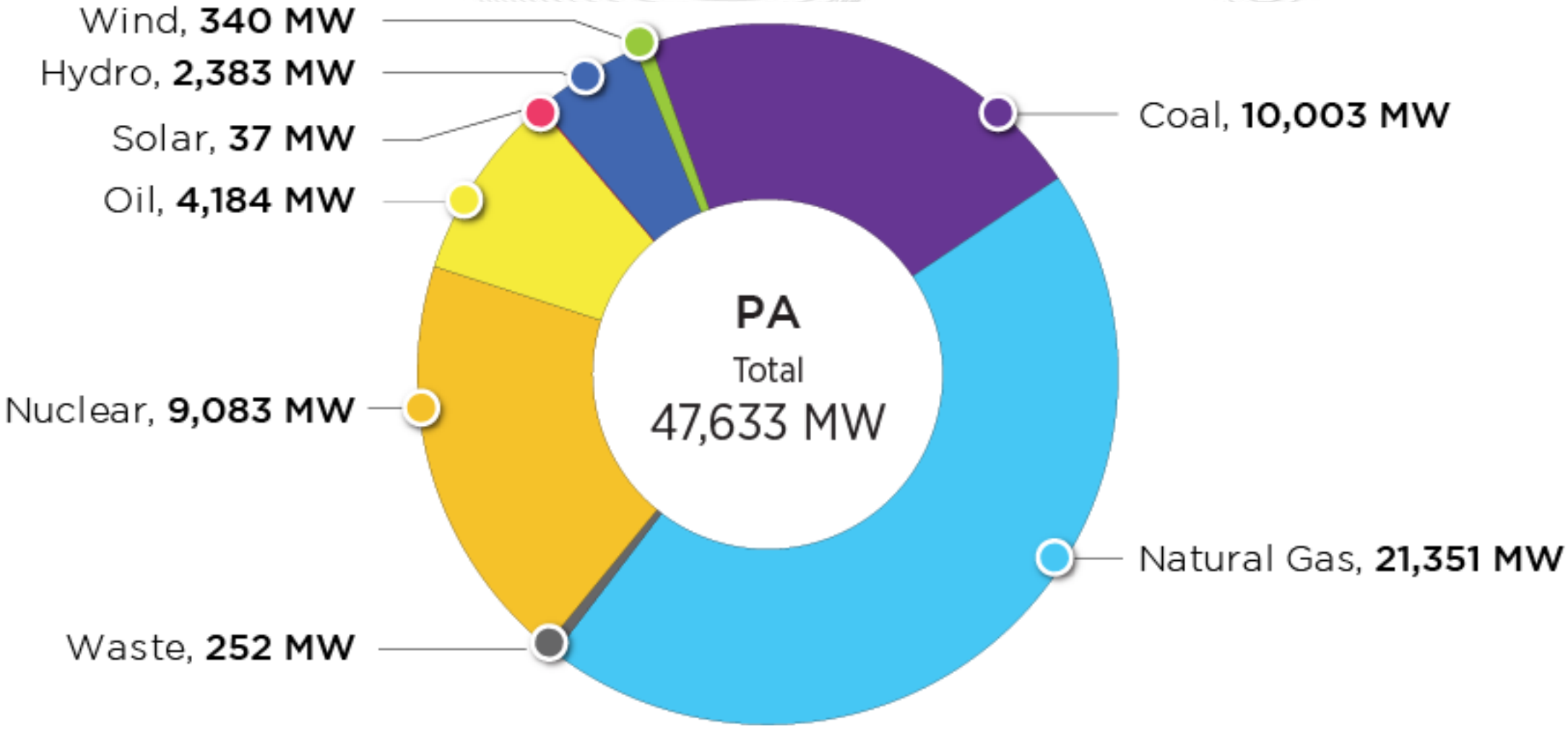
PJM – Existing Installed Capacity

(CIRs – as of Dec. 31, 2021)



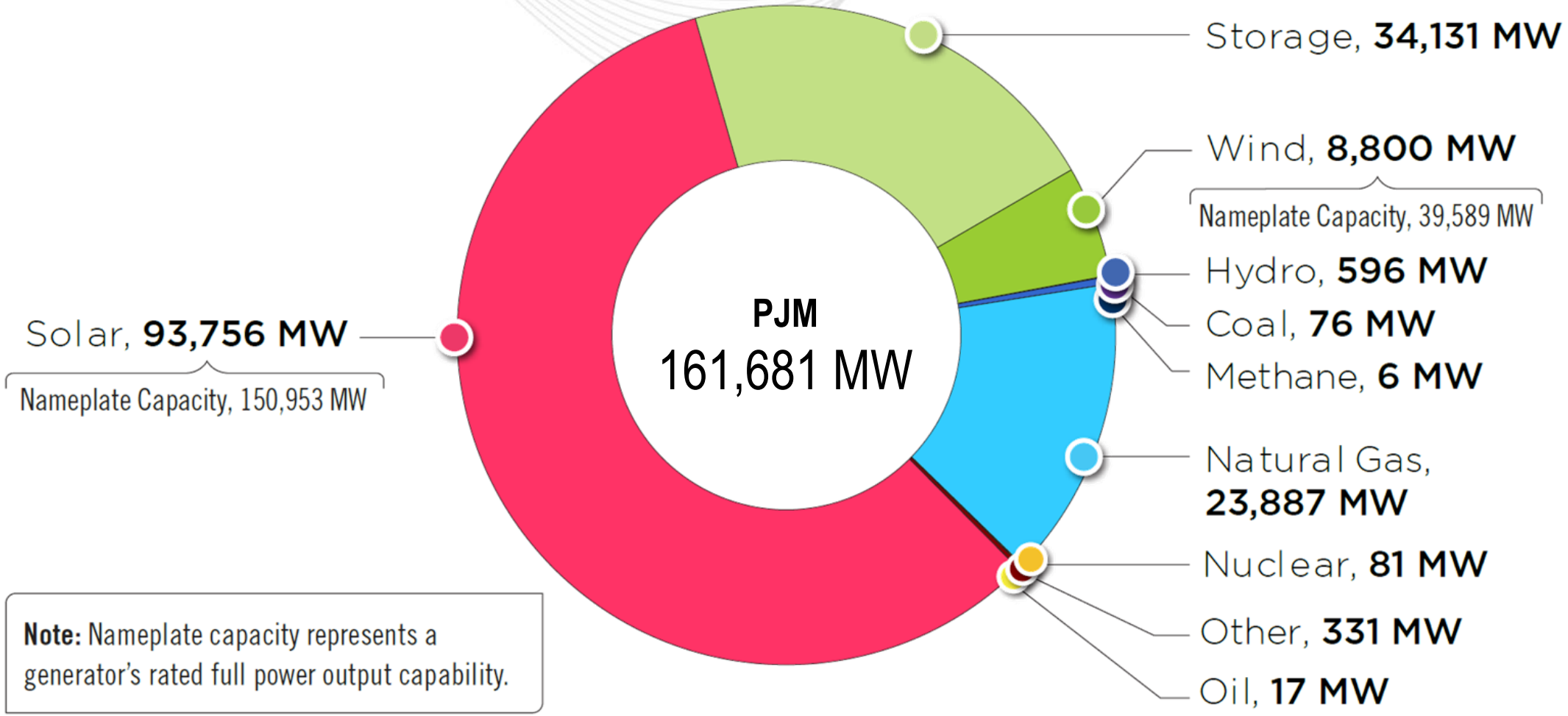
Pennsylvania – Existing Installed Capacity

(CIRs – as of Dec. 31, 2021)



PJM – Queued Capacity (MW) by Fuel Type

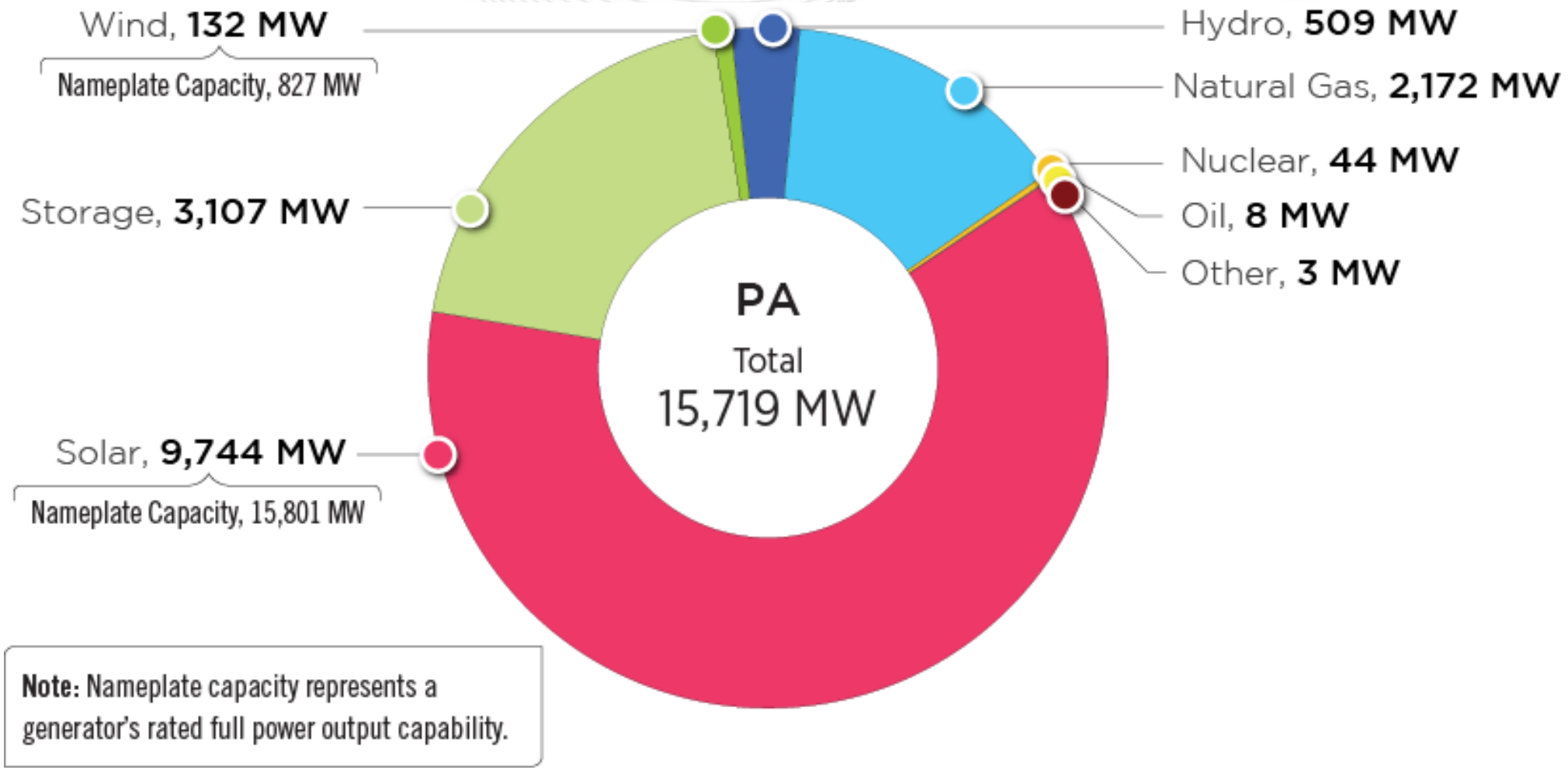
(Requested CIRs – as of Dec. 31, 2021)



Note: Nameplate capacity represents a generator's rated full power output capability.

Pennsylvania – Queued Capacity (MW) by Fuel Type

(Requested CIRs – as of Dec. 31, 2021)



Pennsylvania – Historical Interconnection Requests by Fuel Type

(as of Dec. 31, 2021)

		In Queue						Complete					
		Active		Suspended		Under Construction		In Service		Withdrawn		Grand Total	
		Projects	Capacity (MW)	Projects	Capacity (MW)	Projects	Capacity (MW)	Projects	Capacity (MW)	Projects	Capacity (MW)	Projects	Capacity (MW)
Non-Renewable	Coal	0	0.0	0	0.0	0	0.0	17	229.0	28	14,354.6	45	14,583.6
	Diesel	0	0.0	0	0.0	0	0.0	4	37.4	12	51.5	16	88.9
	Natural Gas	6	295.5	4	1,028.0	19	848.4	107	21,209.9	249	90,886.0	385	114,267.8
	Nuclear	2	0.0	0	0.0	1	44.0	14	2,565.0	12	1,731.0	29	4,340.0
	Oil	0	0.0	0	0.0	6	7.5	3	9.4	9	1,307.0	18	1,323.9
	Other	5	2.9	0	0.0	0	0.0	2	306.5	8	344.0	15	653.4
	Storage	61	3,095.0	3	11.8	0	0.0	5	0.0	48	804.0	117	3,910.8
Renewable	Biomass	0	0.0	0	0.0	0	0.0	2	15.4	4	36.5	6	51.9
	Hydro	6	487.8	0	0.0	2	21.5	12	480.8	18	465.4	38	1,455.4
	Methane	0	0.0	0	0.0	0	0.0	24	130.7	37	201.3	61	332.0
	Solar	433	8,853.9	29	280.1	72	609.6	14	56.9	252	4,560.4	800	14,360.9
	Wind	5	91.1	1	8.7	2	32.0	42	295.9	137	1,757.5	187	2,185.2
	Wood	0	0.0	0	0.0	0	0.0	0	0.0	1	16.0	1	16.0
	Grand Total	**518**	**12,826.1**	**37**	**1,328.7**	**102**	**1,563.0**	**246**	**25,336.9**	**815**	**116,515.1**	**1,718**	**157,569.7**

Note: The ”Under Construction” column includes both “Engineering and Procurement” and “Under Construction” project statuses.

Pennsylvania – Progression History of Interconnection Requests

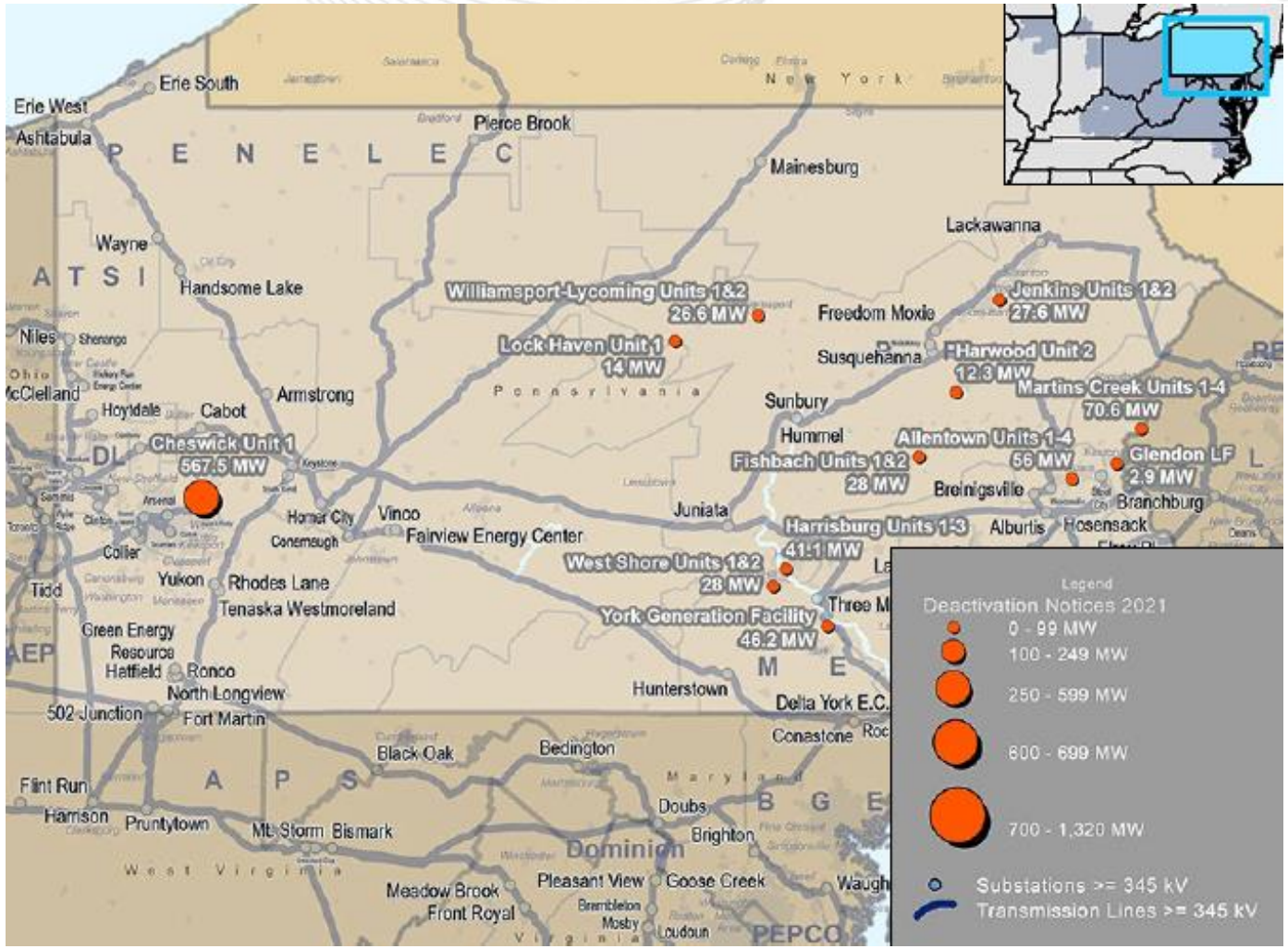
Percentage of planned capacity and projects that have reached commercial operation

17.8%	Requested capacity megawatts
23.2 %	Requested projects

			Capacity	Nameplate
Projects withdrawn after final agreement	59	Interconnection Service Agreements	7,173 MW	9,142 MW
	49	Wholesale Market Participation Agreements	308 MW	423 MW

This graphic shows the final state of generation submitted to the PJM queue that completed the study phase as of Dec. 31, 2021, meaning the generation reached in-service operation, began construction, or was suspended or withdrawn. It does not include projects considered active in the queue as of Dec. 31, 2021.

Pennsylvania – Generation Deactivation Notifications Received in 2021



Pennsylvania – Generation Deactivation Notifications Received in 2021

Unit	TO Zone	Fuel Type	Request Received to Deactivate	Actual or Projected Deactivation Date	Age (Years)	Capacity (MW)
Martins Creek CT 2	PPL	Oil	9/30/2021	5/31/2023	50	17.3
Martins Creek CT 1					50	18
Lock Haven CT 1				4/1/2022	52	14
Jenkins CT 2					52	13.8
Jenkins CT 1					52	13.8
Harrisburg CT 3				6/1/2022	54	13.8
Harrisburg CT 2					54	13.9
Harrisburg CT 1					54	13.4
Fishbach CT 2				4/1/2022	52	14
Fishbach CT 1					52	14
Allentown CT 4				6/1/2022	54	14
Allentown CT 3					54	14
Allentown CT 2					54	14
Allentown CT 1					54	14
Glendon LF	METED	Methane	9/1/2021	6/1/2022	10	2.9
Cheswick 1	DLCO	Coal	6/9/2021	4/1/2022	51	567.5
Martins Creek CT 4	PPL	Natural Gas	2/25/2021	5/31/2023	50	17.3
York Generation Facility	METED		6/22/2021	9/20/2021	31	46.2
Harwood 2	PPL	Oil	4/27/2021	5/31/2022	53	12.3

Pennsylvania – Generation Deactivation Notifications Received in 2021

Unit	TO Zone	Fuel Type	Request Received to Deactivate	Actual or Projected Deactivation Date	Age (Years)	Capacity (MW)
Williamsport-Lycoming CT 2	PPL	Oil	9/30/2021	4/1/2022	54	13.4
Williamsport-Lycoming CT 1					54	13.2
West Shore CT 2					52	14
West Shore CT 1					52	14
Martins Creek CT 3				5/31/2023	50	18

Planning

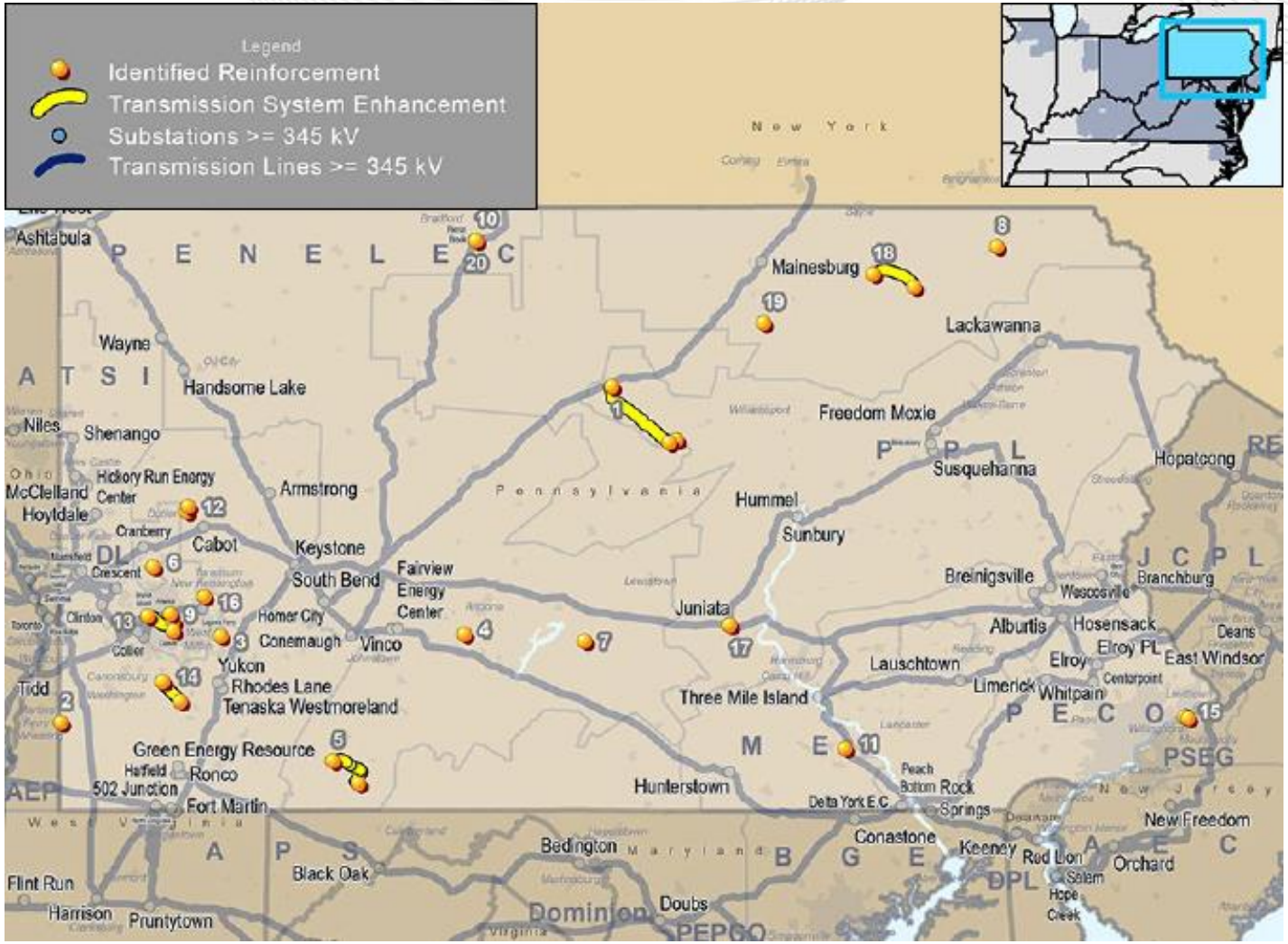
Transmission Infrastructure Analysis

Please note that PJM is now listing all transmission projects in its Annual RTEP and state infrastructure reports, beginning with this year's 2021 Annual RTEP. In previous years only projects above a $10 million threshold were listed in the Annual RTEP Report and projects above a $5 million threshold were listed in the state infrastructure reports. This change may increase the amount of projects listed in these reports going forward now that smaller projects below the previous $5 million cutoff are being included.

The complete list of all RTEP projects in PJM, including those from prior years, can be found at the "RTEP Upgrades & Status – Transmission Construction Status" page on pjm.com.

https://www.pjm.com/planning/project-construction

Pennsylvania – RTEP Baseline Projects



Note: Baseline upgrades are those that resolve a system reliability criteria violation.

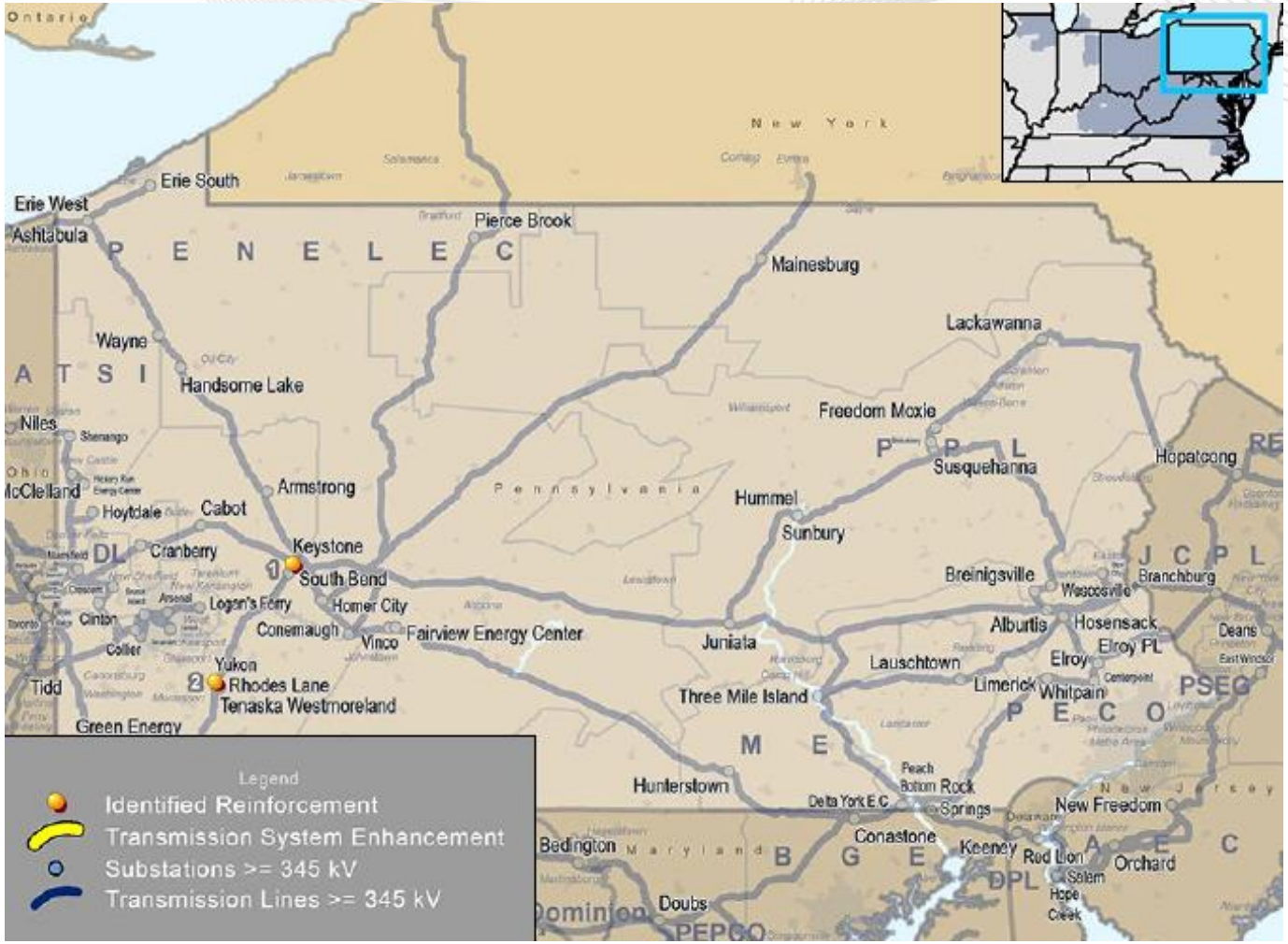
Pennsylvania – RTEP Baseline Projects

Map ID	Project	Description	Required In-Service Date	Project Cost ($M)	TO Zone	TEAC Date
1	b3222	Install one 7.2 MVAR fixed cap bank on the Lock Haven-Reno 69 kV line and one 7.2 MVAR fixed cap bank on the Lock Haven-Flemington 69 kV line near the Flemington 69/12 kV substation.	6/1/2025	$1.90	PPL	11/18/2020
2	b3230	At Enon substation – Install a second 138 kV, 28.8 MVAR nameplate, capacitor and the associated 138 kV capacitor switcher.		$1.80	APS	11/20/2020
3	b3231	Replace the existing No. 2 cap bank breaker at Huntingdon substation with a new breaker with higher interrupting capability.		$0.80	PENELEC	11/18/2020
4	b3232	Replace the existing Williamsburg, ALH (Hollidaysburg) and bus section breaker at the Altoona substation with a new breaker with higher interrupting capability.		$1.70		
5	b3233	Install one 34 MVAR 115 kV shunt reactor and breaker. Install one 115 kV circuit breaker to expand the substation to a four-breaker ring bus.		$4.90		
6	b3234	Extend both the east and west 138 kV buses at Pine substation, and install one 138 kV breaker, associated disconnect switches and one 100 MVAR reactor.		$3.80	ATSI	10/16/2020
7	b3237	Install two 46 kV 6.12 MVAR capacitors effective at Mt Union.		$4.00	PENELEC	11/18/2020
8	b3245	Construct a new breaker-and-a-half substation near Tiffany substation. All transmission assets and lines will be relocated to the new substation. The two distribution transformers will be fed via two dedication 115 kV feeds to the existing Tiffany substation.		$23.20		

Pennsylvania – RTEP Baseline Projects

Map ID	Project	Description	Required In-Service Date	Project Cost ($M)	TO Zone	TEAC Date
9	b3265	Implement slow circulation on existing underground 138 kV high-pressure fluid filled (HPFF) cable between Arsenal and Riazzi substations.	6/1/2025	$2.40	DL	11/20/2020
10	b3306	Install a second 125 MVAR 345 kV shunt reactor and associated equipment at Pierce Brook substation. Install a 345 kV breaker on the high side of the No. 1 345/230 kV transformer.		$8.08	PENELEC	12/1/2020
11	b3311	Install a 120.75 kV, 79.4 MVAR capacitor bank at Yorkana 115 kV.	5/31/2022	$2.20	METED	1/6/2021
12	b3318	Reconductor the Shanor Manor-Butler 138 kV line with an upgraded circuit breaker at Butler.	6/1/2022	$1.50	APS	8/10/2021
13	b3319	Add forced cooling to increase the normal rating of the Brunot Island-Carson (302) 345 kV high-pressure fluid filled (HPFF) underground cable circuit.		$22.00	DL	
14	b3325	Reconductor the Charleroi-Union 138 kV line and upgrade terminal equipment at Charleroi.		$11.00	APS	
15	b3335	Reconductor a 0.76 mile portion of the Croydon-Burlington 230 kV line.		$0.79	PECO	11/2/2021
16	b3340	Replace one Cheswick 138 kV breaker with a 3000A 63 kA breaker: “Z-53 LF_3”.	6/1/2026	$0.35	DL	9/17/2021
17	b3664	Juniata: Replace the limiting 230 kV T2 transformer leads, bay conductor and bus conductor with double-bundle 1590 ACSR. Replace the limiting 1200A MODs on the bus tie breaker with 3000A MODs.		$0.68	PPL	11/2/2021
18	b3665	Replace several pieces of 1033.5 AAC substation conductor at East Towanda 230 kV (on East Towanda-Canyon 230 kV).		$0.41	PENELEC	
19	b3666	Marshall 230 kV substation – Install dual reactors and expand existing ring bus.		$5.83		
20	b3667	Pierce Brook substation – Install second 230/115 kV transformer.		$5.07		

Pennsylvania – RTEP Network Projects

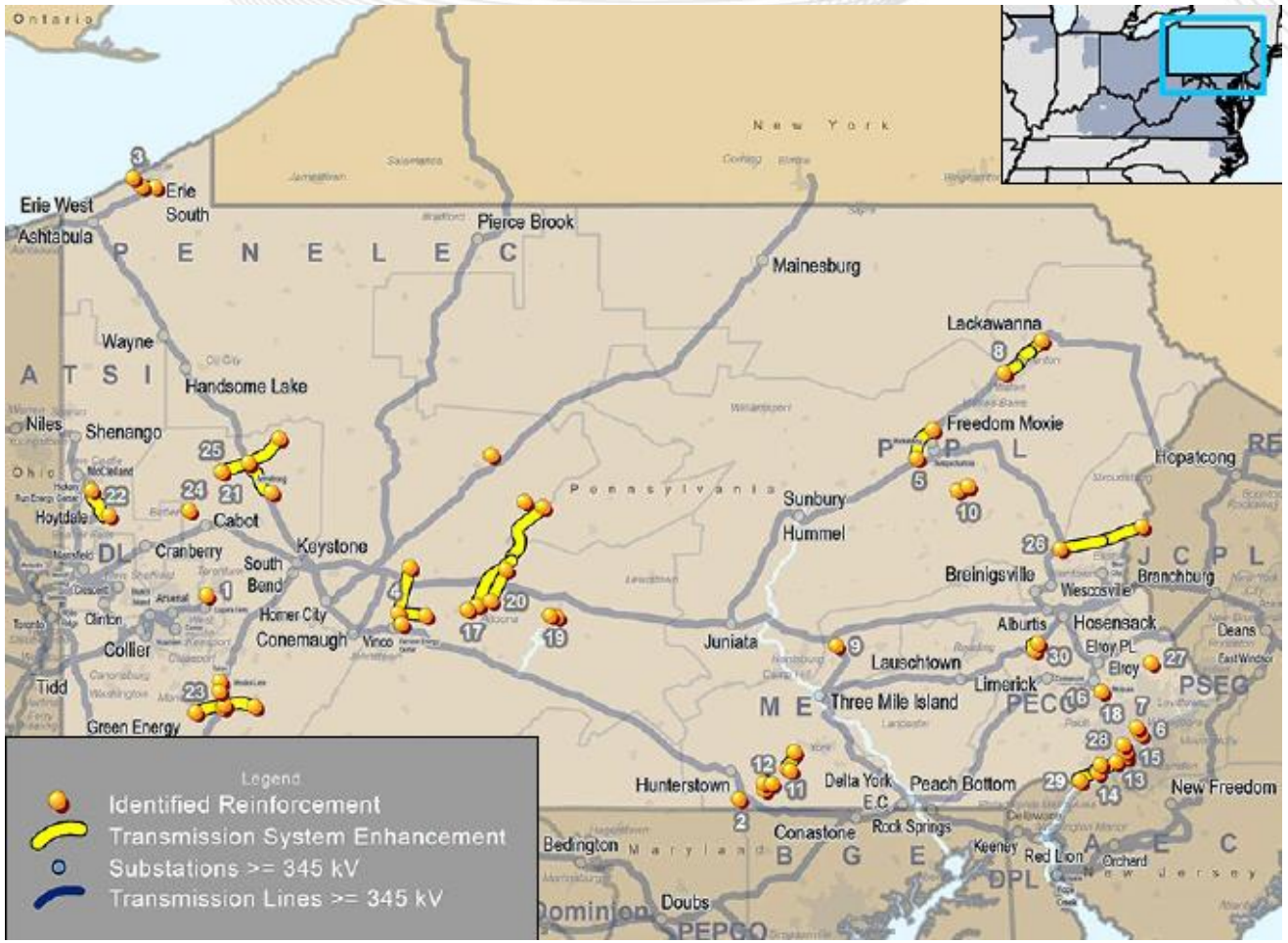


Note: Network upgrades are new or upgraded facilities required primarily to eliminate reliability criteria violations caused by proposed generation, merchant transmission or long term firm transmission service requests, as well as certain direct connection facilities required to interconnect proposed generation projects. The costs of network projects are borne by the interconnection customer.

Pennsylvania – RTEP Network Projects

Map ID	Project	Description	Generation	Required In-Service Date	Project Cost ($M)	TO Zone	TEAC Date
1	n6107	Keystone substation – Revise relay settings on South Bend terminal.	AD2-114	5/31/2022	$0.03	APS	11/30/2021
2	n6108	Yukon substation – Revise relay settings on South Bend terminal.					

Pennsylvania – TO Supplemental Projects



Note: Supplemental projects are transmission expansions or enhancements that are not required for compliance with PJM criteria and are not state public policy projects according to the PJM Operating Agreement. These projects are used as inputs to RTEP models, but are not required for reliability, economic efficiency or operational performance criteria, as determined by PJM.

Pennsylvania – TO Supplemental Projects

Map ID	Project	Description	Projected In-Service Date	Project Cost ($M)	TO Zone	TEAC Date
1	s2400	Replace the two existing 138 kV breakers at Cheswick substation with GE-type DT-1, 145 kV, 63 kA Int., SF6 breaker.	12/31/2021	$0.80	DL	10/16/2020
2	s2409	Add a new 115 kV line terminal to the Germantown 115 kV substation and construct		$10.80	METED	11/18/2020
3	s2411	Replace terminal equipment on the Erie South-Gore junction-Green Garden 115 kV line.	6/1/2022	$2.10	PENELEC	
	s2411.1	Erie South 115 kV substation – Replace line relaying (Erie South-GESG Tap 115 kV line).				
	s2411.2	Gore Junction 115 kV substation – Replace line relaying and disconnect switch (GESG Tap-				
	s2411.3	Green Garden 115 kV Substation – Replace line relaying (GESG Tap-Green Garden 115 kV line).				
4	s2412	Perform Nanty Glo 46 kV substation work.	6/1/2024	$7.90		
	s2412.1	Construct Nanty Glo 46 kV station to six-breaker ring bus.				
	s2412.2	Replace line relaying at Bethlehem 33 46 kV substation on the Nanty Glo-Bethlehem 46 kV				
	s2412.3	Replace line relaying at Jackson Road 46 kV substation on the Nanty Glo-Jackson 46 kV circuit.				
	s2412.4	Adjust line relaying at Spangler 46 kV substation on the Nanty Glo-Spangler 46 kV circuit.				
5	s2416	Construct new Koonsville 66/13.8 kV distribution substation on neighboring UGI property. Loop in the Berwick-Hunlock 69 kV and build ~200 feet of new 66 kV double circuit line and replace existing 66 kV tap and line MOAB with high-side 66 kV line breakers.	4/30/2022	$2.10	UGI	
6	s2417	Replace Waneeta 230 kV circuit breaker No. 285.	6/1/2022	$0.80	PECO	12/1/2020
7	s2418	Replace Tabor 230 kV circuit breaker No. 905.				

Pennsylvania – TO Supplemental Projects

Map ID	Project	Description	Projected In-Service Date	Project Cost ($M)	TO Zone	TEAC Date
8	s2419	Extend a new double circuit 69 kV tap from the existing Lackawanna-Scranton No. 1 and No. 2 69 kV lines to interconnect a new customer 69-12.47 kV substation. Build 0.1 miles of new 69 kV double circuit line using 556 ACSR conductor.	12/30/2021	$1.00	PPL	12/16/2020
9	s2420	Extend a new single 69 kV tap from the existing Hershey Chocolate Tap (fed from the Harwood-Humboldt No. 2) 69 kV line to interconnect a new customer 69-12.47 kV substation. Build 0.75 miles of new 69 kV single circuit line using 556 ACSR conductor.		$1.90		
10	s2421	Extend a new single 69 kV tap from the Harwood-East Hazleton No. 1 69 kV line to interconnect a new customer 69-12.47 kV substation. Build 0.1 miles of new 69 kV single circuit line using 556 ACSR conductor.	2/28/2022	$0.70		
11	s2480	At North Hanover – Replace substation conductor and line relaying (on the North Hanover-Gitts Tap-Fairview 115 kV line).	12/31/2022	$10.80	METED	1/14/2021
12	s2481.1	At Jackson – Replace line trap and line relaying (on the Jackson-Menges Mills 115 kV line).		$1.00		
	s2481.2	At PH Glatfelter – Replace substation conductor, line trap, disconnect switches, circuit breaker and line relaying (on the Menges Mills-PH Glatfelter 115 kV line).				
13	s2484	Replace Passyunk 69 kV circuit breaker No. 235.	6/1/2021	$0.60	PECO	1/6/2021
14	s2485	Replace Eddystone 138 kV circuit breaker No. 255.		$0.80		
15	s2486	Replace the Grays Ferry 230 kV circuit breaker No. 375.		$0.90		
16	s2487	Replace the Whitpain 500 kV circuit breaker No. 575.		$1.60		

Pennsylvania – TO Supplemental Projects

Map ID	Project	Description	Projected In-Service Date	Project Cost ($M)	TO Zone	TEAC Date
17	s2493	Perform Eagle Valley & Thirty-First Street 115 kV anti-islanding.	6/1/2021	$1.30	PENELEC	2/16/2021
	s2493.1	Shawville 115 kV substation – Replace line-side breaker disconnect, line trap, CCVT and line arresters and install new PLC transmitter/receiver (Shawville-Philipsburg 115 kV).				
	s2493.2	Philipsburg 115 kV Substation – Replace bus section breaker, breaker disconnects, line arresters, CCVT and line trap (Shawville-Philipsburg 115 kV).				
	s2493.3	Eagle Valley 115 kV substation – Install PLC transmitter/receive and adjust existing PLC settings.				
	s2493.4	Westfall 115 kV substation – Adjust PLC settings.				
	s2493.5	Thirty-First Street 115 kV substation – Adjust PLC settings.				
18	s2508	Replace the Whitpain 500 kV circuit breaker No. 385.	6/28/2021	$1.30	PECO	1/6/2021
19	s2535	Replace in-line switches A-136, A-137 and A-139 on the Raystown-McConnellstown 46 kV circuits.	12/31/2022	$1.50	PENELEC	4/14/2021
	s2535.1	Replace in-line switch on the Allegheny Hydro Tap-Allegheny Hydro 46 kV line.				
	s2535.2	Replace in-line switch on the Allegheny Hydro Tap-RAM junction 46 kV line.				
	s2535.3	Replace in-line switch on the RAM junction-Piney Ridge 46 kV line.				
20	s2536	Tap the Greenwood-Tipton 46 kV line (Gardner Denver Tap-Gardner Denver 46 kV line segment). Construct one span of 46 kV line. Install one 46 kV revenue-metering package. Install two 1200A SCADA-controlled disconnect switches and add SCADA to one existing switch.	7/1/2021	$1.40		
	s2536.1	Replace in-line switch on the Allegheny Hydro Tap-Allegheny Hydro 46 kV line.	12/31/2022			
	s2536.2	Replace in-line switch on the Allegheny Hydro Tap-RAM junction 46 kV line.				
	s2536.3	Replace in-line switch on the RAM junction-Piney Ridge 46 kV line.				

Pennsylvania – TO Supplemental Projects

Map ID	Project	Description	Projected In-Service Date	Project Cost ($M)	TO Zone	TEAC Date
21	**s2542**	At Karns City 138 kV substation – Install a 138 kV bus tie breaker disconnect switches. Install 138 kV CVTs and support structure. Replace/add 25 kV VTs. Upgrade relaying and protection.	12/22/2023	$1.30	APS	3/19/2021
22	**s2546**	Tap the Frisco-New Castle Y-205 69 kV line between New Castle and Cemex Cement. Install two 69 kV disconnect switches with SCADA. Construct ~1 span of 69 kV into new substation. Replace two 69 kV disconnect switches at Frisco substation. Adjust relaying at Frisco and New Castle substations.	12/17/2021	$1.05	ATSI	4/16/2021
23	**s2549**	Allenport-Frazier 138 kV line (new ratings: 294/360 SN/SE): Allenport 138 kV substation – Replace line disconnect switches, CCVT, line trap, line tuner, coax; replace substation conductor, install AMETEK Smart-Gap in-line tuner.Frazier-Layton junction 138 kV line (new ratings: 292/359 SN/SE).Yukon-Smithton Tap 138 kV line (new ratings: 285/351 SN/SE): Yukon 138 kV substation – Replace line disconnect switches, CCVT, line trap, line tuner, coaxial cable; install AMETEK Smart-Gap in-line tuner.Smithton Tap-Layton junction 138 kV line (new ratings: 236/299 SN/SE).Iron Bridge-Layton junction 138 kV line (new ratings: 268/333 SN/SE): Iron Bridge 138 kV substation – Replace line disconnect switch, CCVT, line trap, line tuner, coaxial cable, substation conductor; install AMETEK SmartGap in-line tuner.	4/5/2021	$3.80	APS	2/17/2021
24	**s2550**	At Karns City 138 kV substation – Replace breaker, disconnect switches, line trap, line tuner, coax, CVT and substation conductor. Install MCOV surge arrestors and AMETEK Smart-Gap in-line tuner. At Butler 138 kV substation – Replace breaker, disconnect switches, line trap, line tuner, coax, CVT and substation conductor. Install MCOV surge arrestors and AMETEK Smart-Gap in-line tuner.	12/22/2023	$3.04		3/19/2021

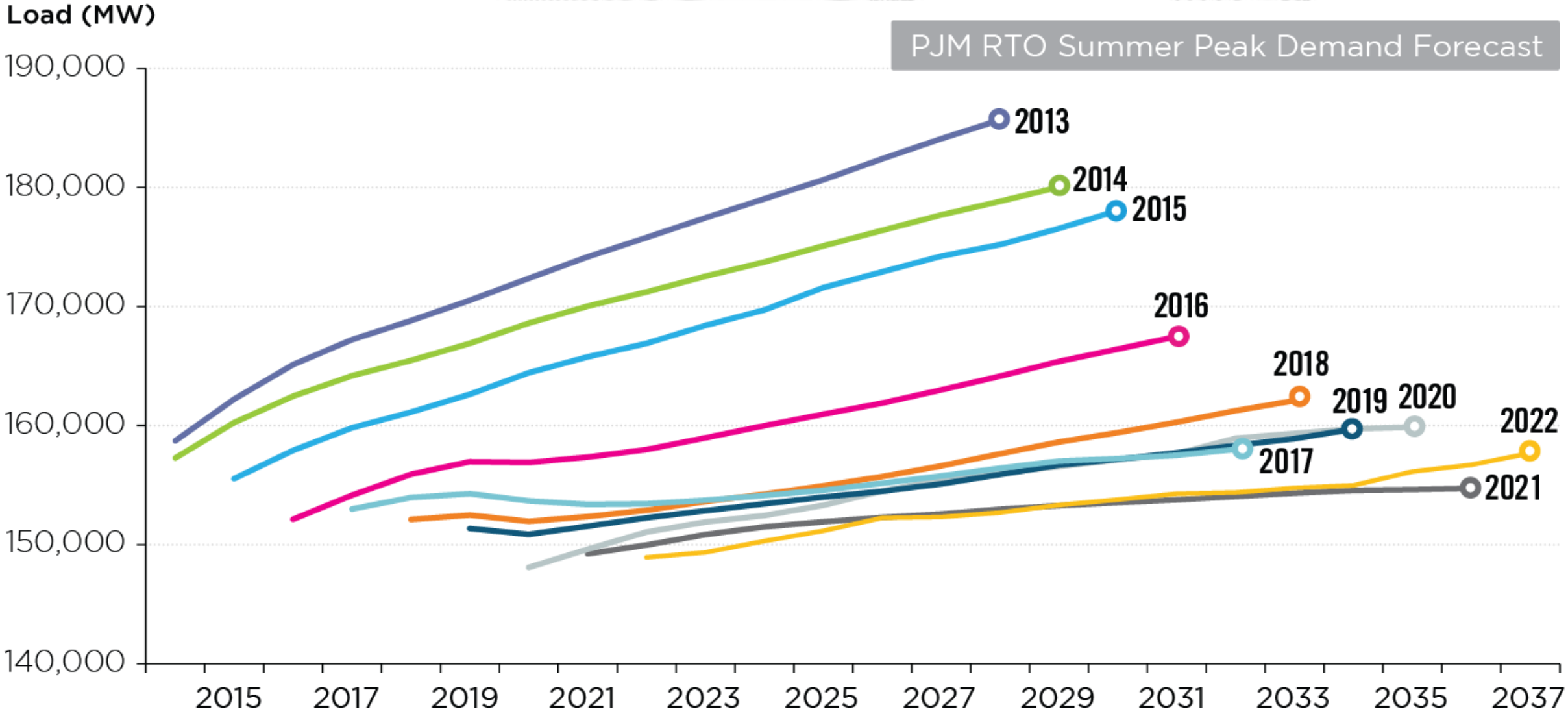
Pennsylvania – TO Supplemental Projects

Map ID	Project	Description	Projected In-Service Date	Project Cost ($M)	TO Zone	TEAC Date
25	s2551	Karns City-Kissinger junction 138 kV line: At Karns City 138 kV substation – Replace breaker, line trap, line tuner, coax and CVT. Install MCOV surge arrestors and AMETEK Smart-Gap in-line tuner. Armstrong-Kissinger junction 138 kV line: At Armstrong 138 kV substation – Install AMETEK Smart-Gap in-line tuner. Burma-Kissinger junction 138 kV line: At Burma 138 kV substation – Replace breaker, disconnect switches, line trap, CVT and substation conductor. Install MCOV surge arrestors and AMETEK Smart-Gap in-line tuner.	12/12/2023	$1.80	APS	3/19/2021
26	s2557	Construct a new 230 kV ring bus adjacent to the existing Martins Creek-Siegfried No. 2 230 kV line, and loop the PPL Martins Creek-Siegfried 230 kV line into the new customer substation.	6/1/2022	$9.20	METED	3/9/2021
27	s2558	Replace Buckingham 230 kV circuit breaker No. 220.	12/1/2021	$0.80	PECO	
	s2559	Replace Buckingham 230 kV circuit breaker No. 230.		$0.80		
	s2560	Replace Buckingham 230 kV circuit breaker No. 240.		$0.80		
28	s2561	Replace Parrish 230 kV circuit breaker No. 905.		$0.80		
29	s2562	Upgrade Eddystone 230 kV substation equipment.		$1.60		
	s2562.1	Replace relays & remove wave trap at Eddystone on the Eddystone-Island Road 230 kV line.				
	s2562.2	Replace CT & relays at Eddystone on the EddystoneChichester 230 kV line.				
	s2562.3	Replace meters and relays at Eddystone on the Eddystone-Printz 230 kV line.				
	s2562.4	Replace relays at Eddystone on the Eddystone No. 8 230/138 kV transformer.				
30	s2566	At North Boyertown – Replace substation conductor, circuit breaker, disconnect switches and line relaying on the North Boyertown-West Boyertown 69 kV line.	11/20/2022	$0.16	METED	5/20/2021
	s2566.1	At West Boyertown – Replace substation conductor, circuit breaker, disconnect switches and line relaying on the North Boyertown-West Boyertown 69 kV line.				

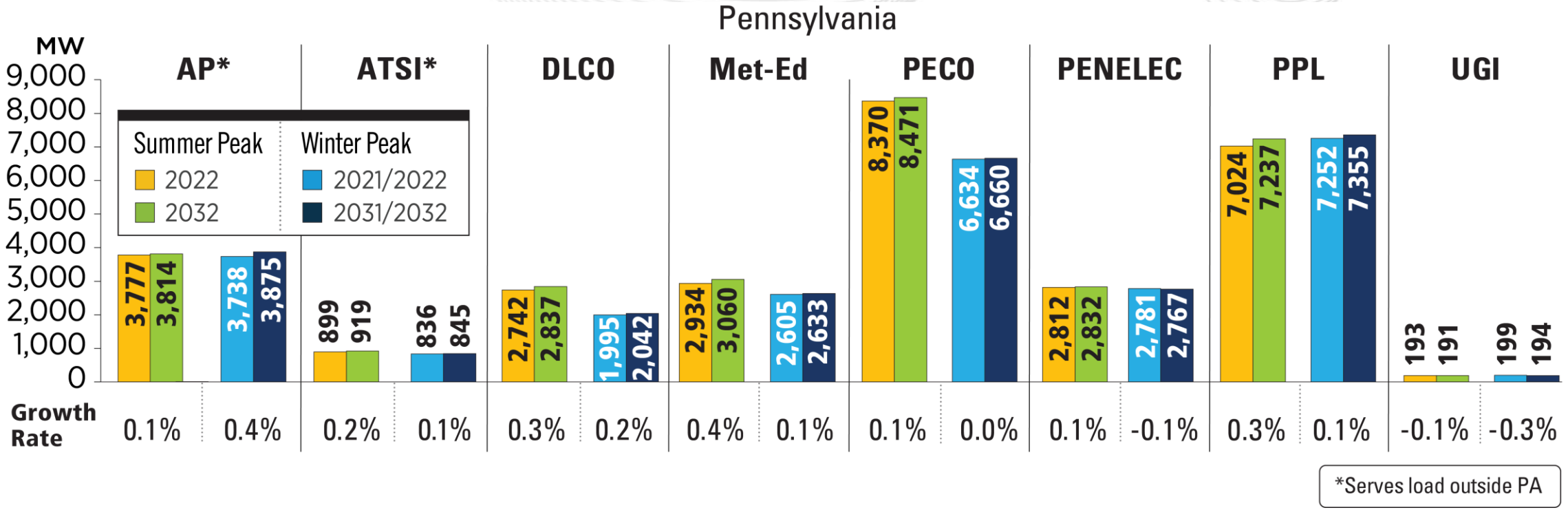
Planning
Load Forecast

PJM Annual Load Forecasts

(Jan. 2022)



Pennsylvania – 2022 Load Forecast Report



PJM RTO Summer Peak

2022	2032
149,938 MW	154,381 MW

Growth Rate 0.4%

PJM RTO Winter Peak

2021/2022	2031/2032
132,102 MW	141,516 MW

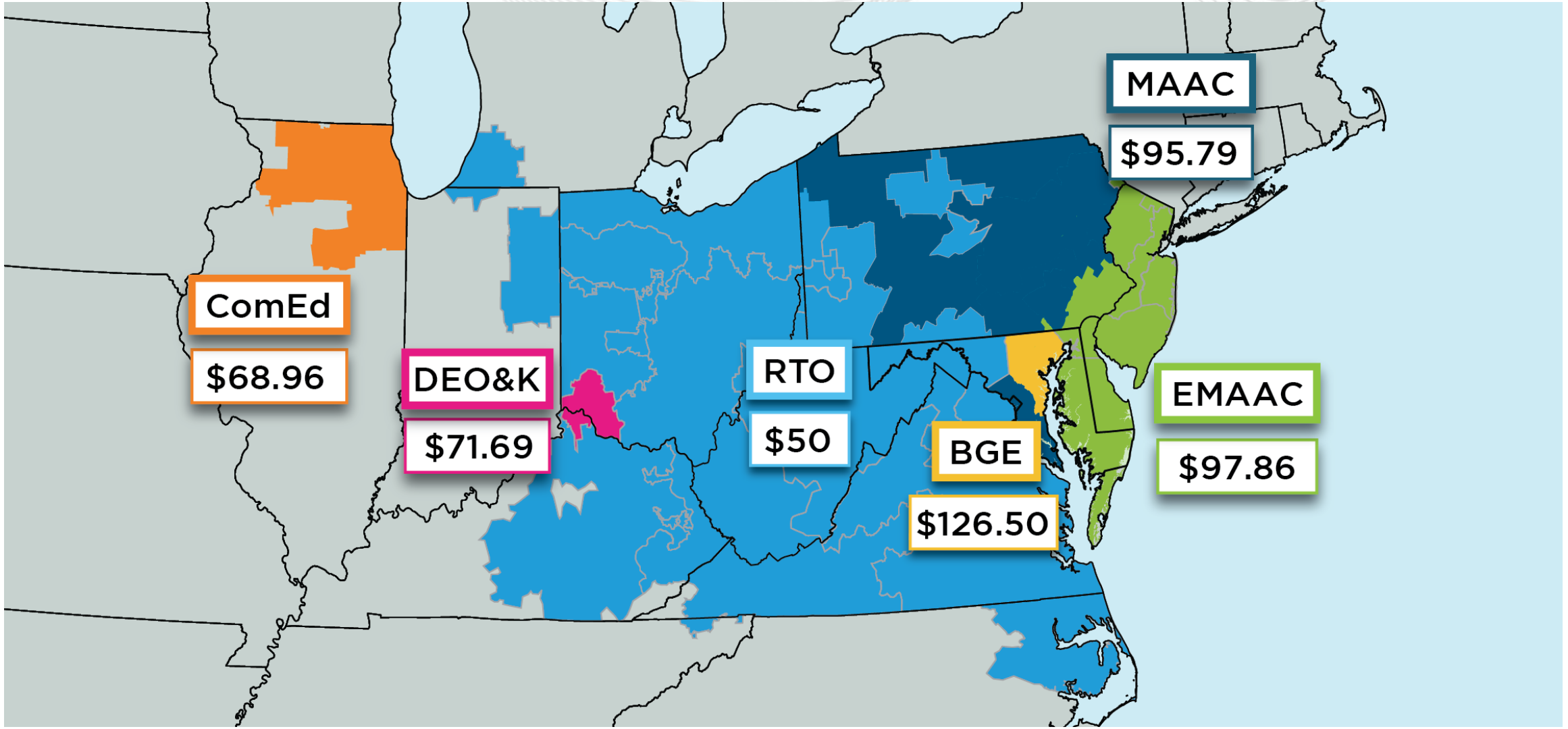
Growth Rate 0.7%

The summer and winter peak megawatt values reflect the estimated amount of forecasted load to be served by each transmission owner in the noted state/district. Estimated amounts were calculated based on the average share of each transmission owner's real-time summer and winter peak load in those areas over the past five years.

Markets

Capacity Market Results

2022/2023 Base Residual Auction Clearing Prices ($/MW-Day)



PJM – 2022/2023 Cleared MW (UCAP) by Resource Type

	ANNUAL	SUMMER	WINTER	Total (MW)
Generation	130,844.9	9.9	686.8	131,541.6
DR	8,369.9	442.0	0.0	8,811.9
EE	4,575.7	234.9	0.0	4,810.6
Total (MW)	143,790.5	686.8	686.8	

Pennsylvania – Cleared Resources in 2022/23 Auction

(June 2, 2021)

	Cleared MW (Unforced Capacity)	Change from 2022/22 Auction
Generation	42,871	+1,336
Demand Response	2,064	-467
Energy Efficiency	951	+670
Total	45,886	+1,539

RTO Clearing Prices	EMAAC Clearing Prices	MAAC Clearing Prices
$50	$97.86	$95.79

NOTE: Demand Response and Energy Efficiency are reported to PJM by Transmission Zone. The numbers above reflect the state's pro-rata share of cross-state zones for illustrative purposes.

Pennsylvania – Offered and Cleared Resources in 2022/23 Auction

(June 2, 2021)

		Unforced Capacity
Generation	Offered MW	44,974
	Cleared MW	42,871
Demand Response	Offered MW	2,369
	Cleared MW	2,064
Energy Efficiency	Offered MW	957
	Cleared MW	951
Total Offered MW		48,300
Total Cleared MW		45,886

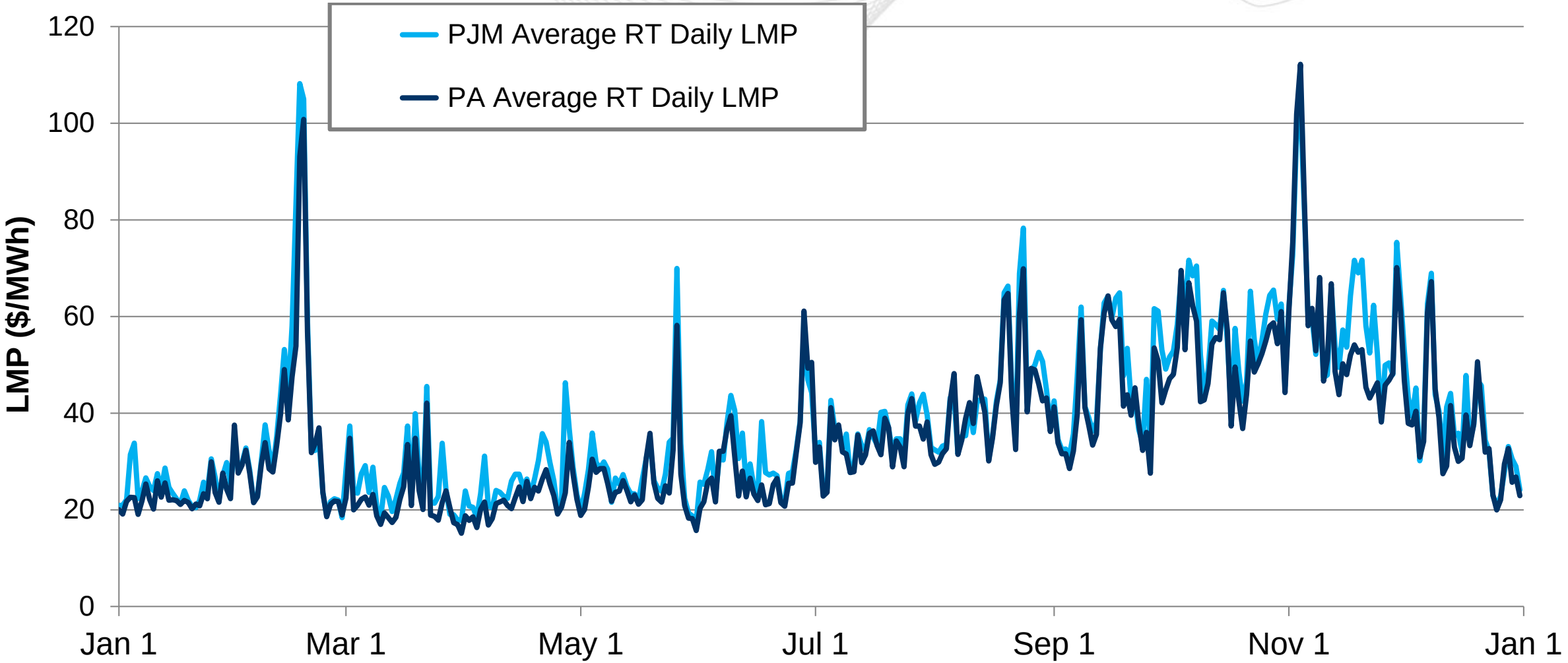
NOTE: Demand Response and Energy Efficiency are reported to PJM by Transmission Zone. The numbers above reflect the state's pro-rata share of cross-state zones for illustrative purposes.

Markets

Market Analysis

Pennsylvania – Average Daily LMP

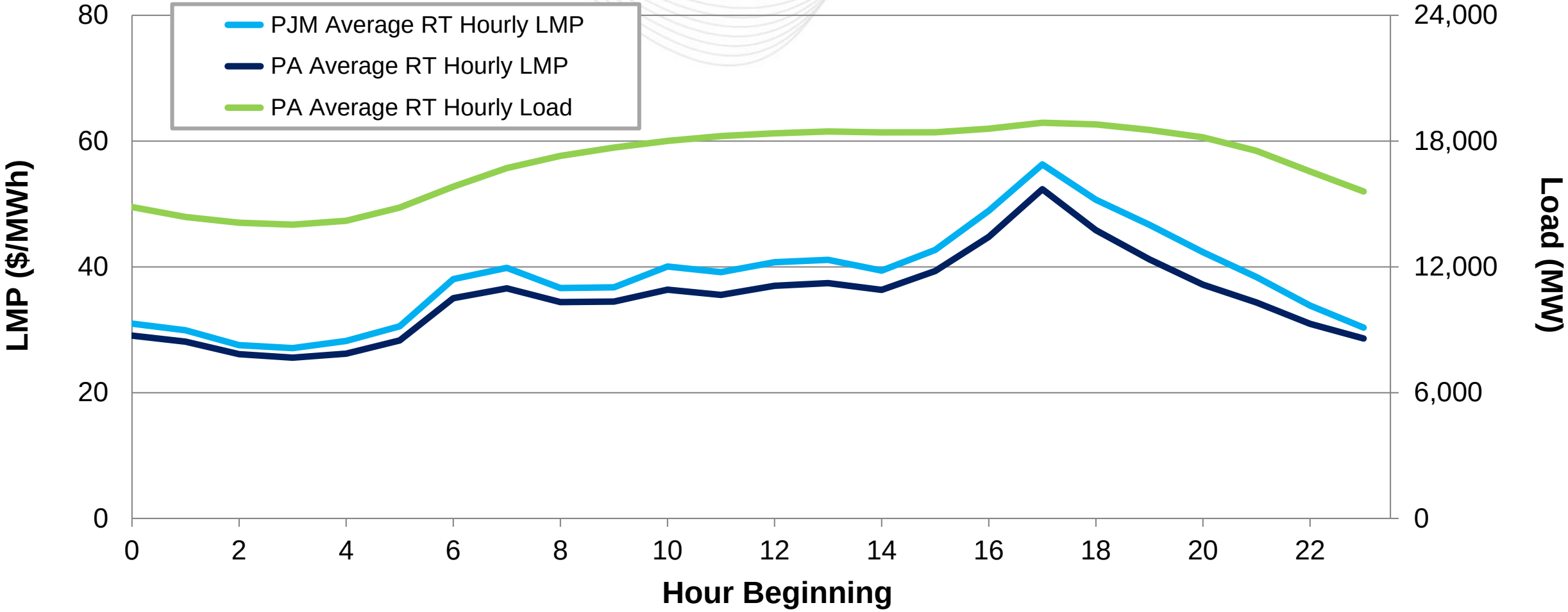
(Jan. 1, 2021 – Dec. 31, 2021)



Pennsylvania – Average Hourly LMP and Load

(Jan. 1, 2021 – Dec. 31, 2021)

Pennsylvania's average hourly LMPs were below the PJM average hourly LMP.



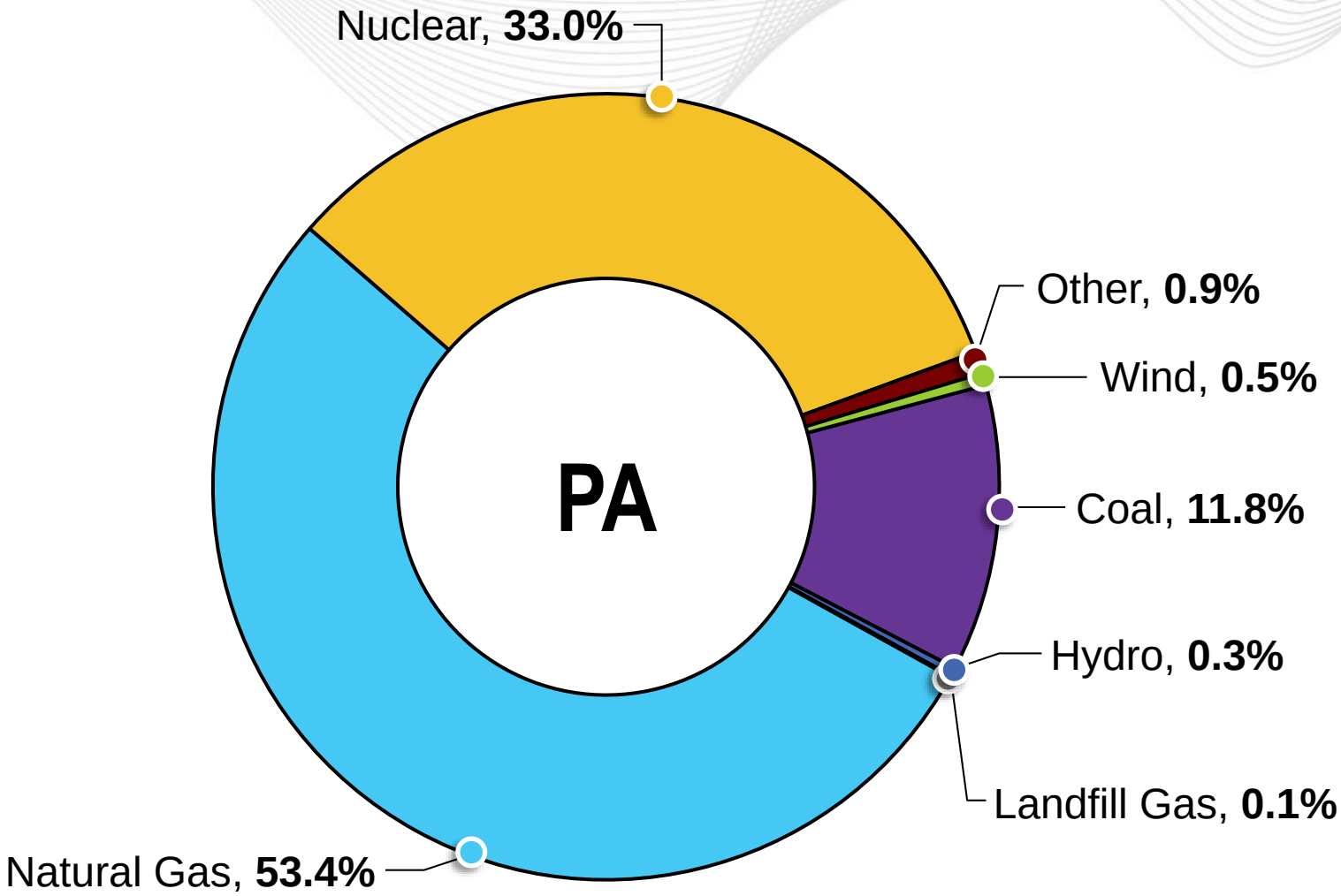
Pennsylvania – Net Energy Import/Export Trend

(Jan. 2021 – Dec. 2021)

Positive values represent exports and negative values represent imports.

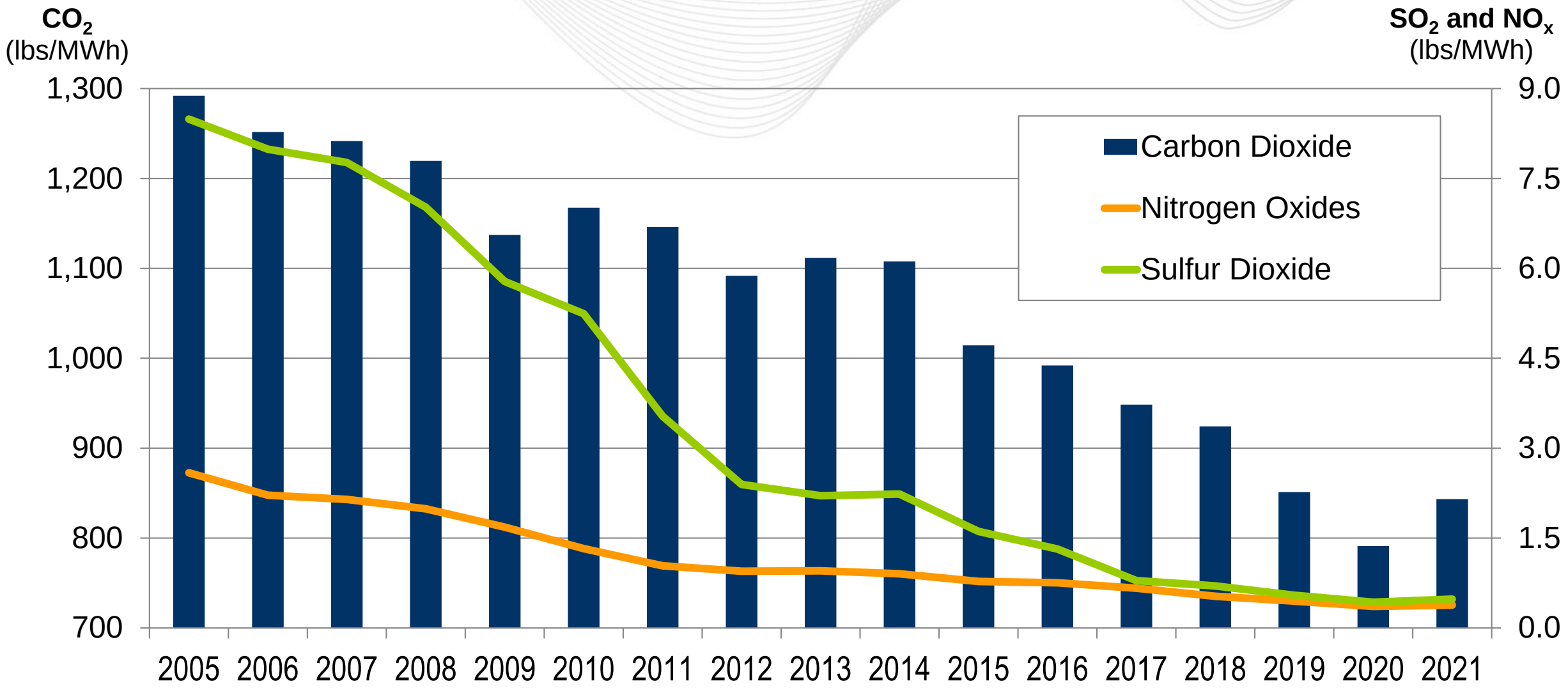
Operations

Pennsylvania – 2021 Generator Production



The data in this chart comes from EIA Form 923 (2021).

2005 – 2021 PJM Average Emissions



Pennsylvania – Average Emissions (lbs/MWh)

(Feb. 2022)