2021 Ohio State Infrastructure Report

(January 1, 2021 – December 31, 2021)

May 2022

(updated July 2022)

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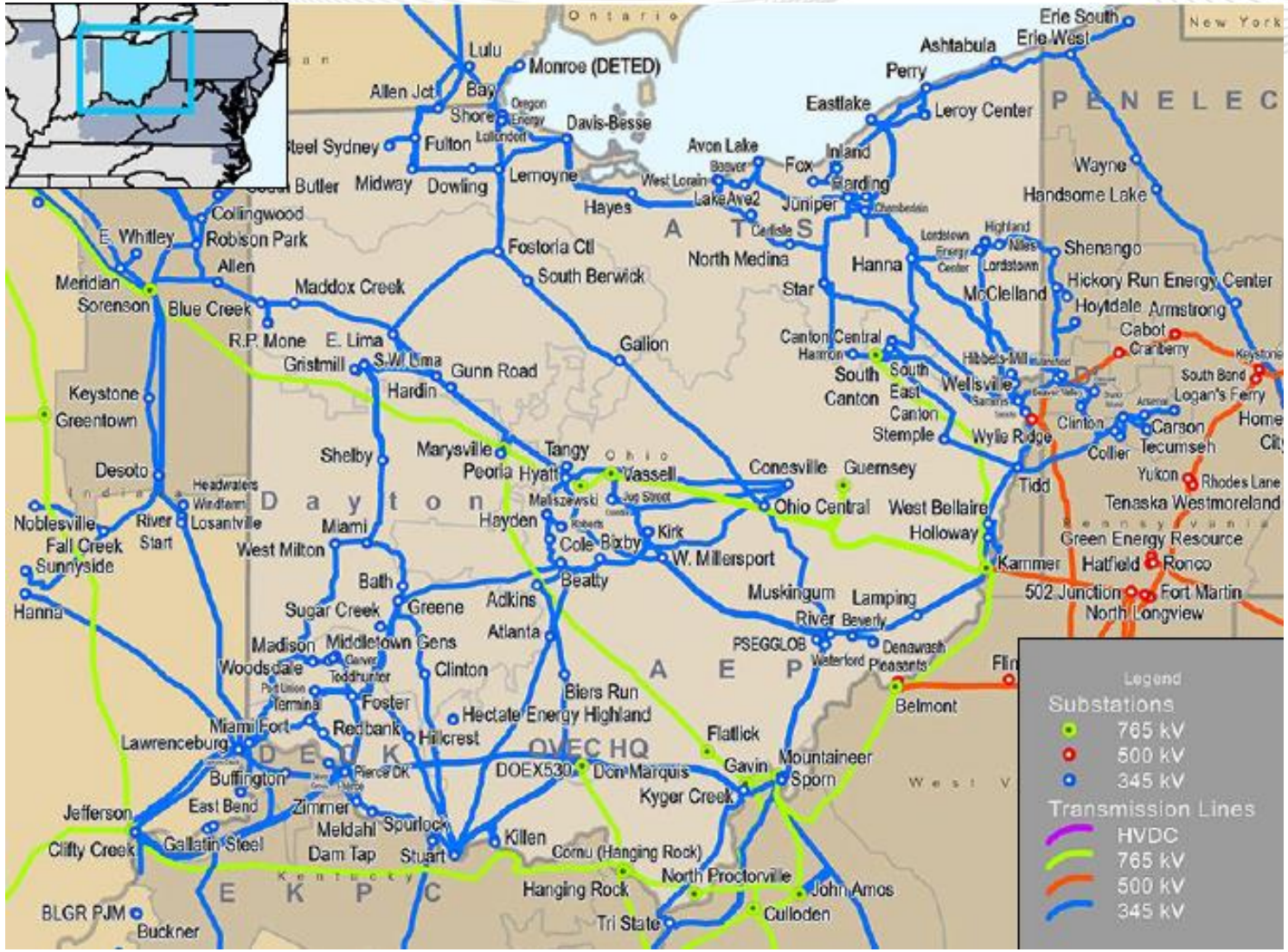
- **Existing Capacity:** Natural gas represents approximately 50.1 percent of the total installed capacity in Ohio while coal represents approximately 38.3 percent. Comparatively, in PJM natural gas and coal are 44.2 and 26.6 percent of total installed capacity.
- **Interconnection Requests:** Solar represents 60.3 percent of new interconnection requests in Ohio, while natural gas represents approximately 20.2 percent of new requests and storage 18.3 percent of new requests.
- **Deactivations:** 1,968 MW of generation in Ohio gave notice of deactivation in 2021.
- **RTEP 2021:** Ohio's 2021 RTEP projects total approximately $1.63 billion in investment.

- **Load Forecast:** Ohio's summer peak load is projected to grow between 0.0 and 0.4 percent annually over the next ten years, based on the service territory. Comparatively, the overall PJM RTO projected summer peak load growth rate is 0.4 percent.
- **2022/23 Capacity Market:** 24,847 MW in Ohio cleared in the 2022/23 Base Residual Auction.
- **1/1/21 – 12/31/21 Market Performance:** Ohio's average hourly LMPs generally aligned with PJM average hourly LMPs.
- **Emissions:** Ohio's average CO2 emissions slightly increased in 2021 compared to 2020 levels.

PJM Service Area – Ohio

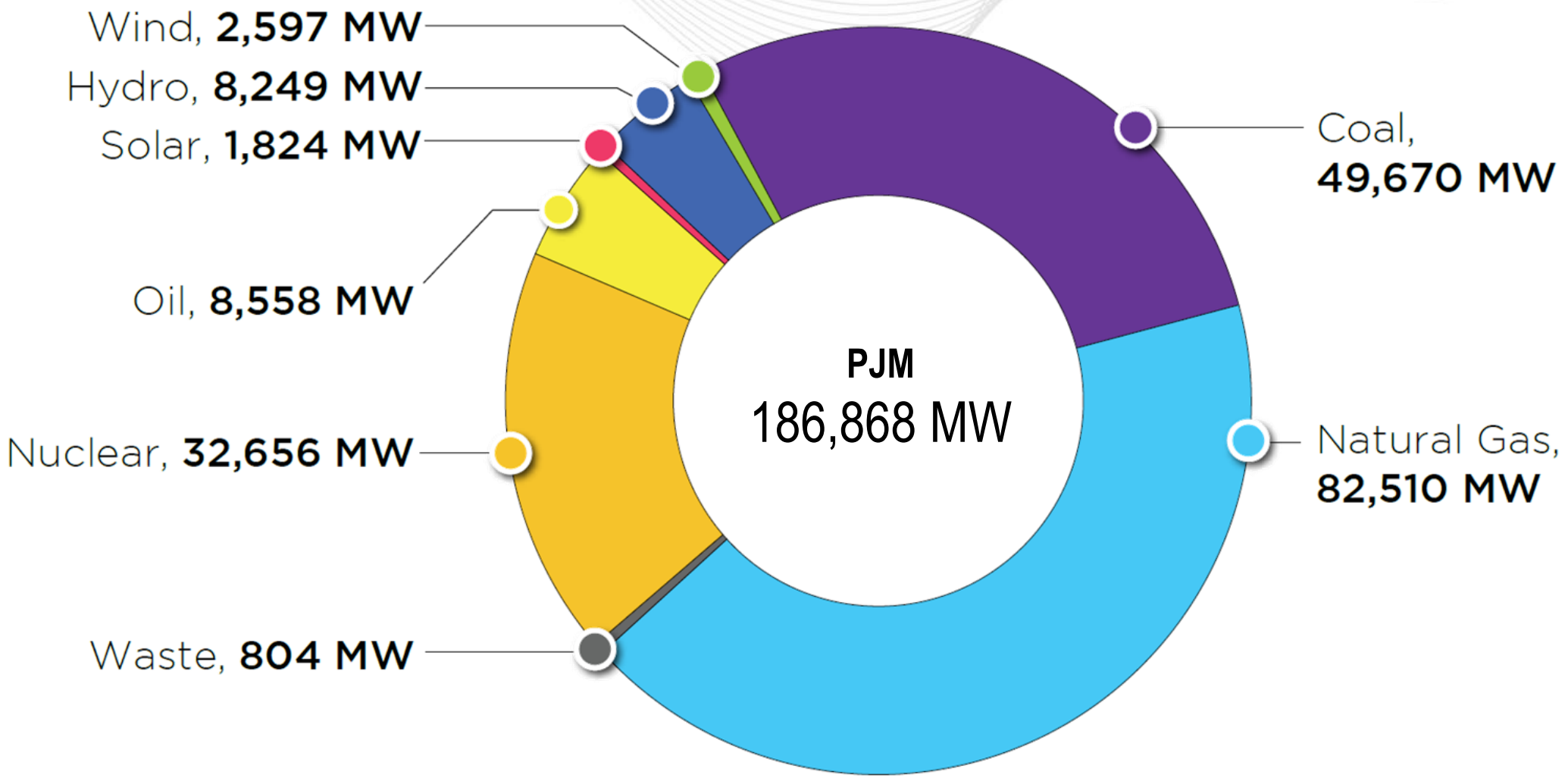


Planning

Generation Portfolio Analysis

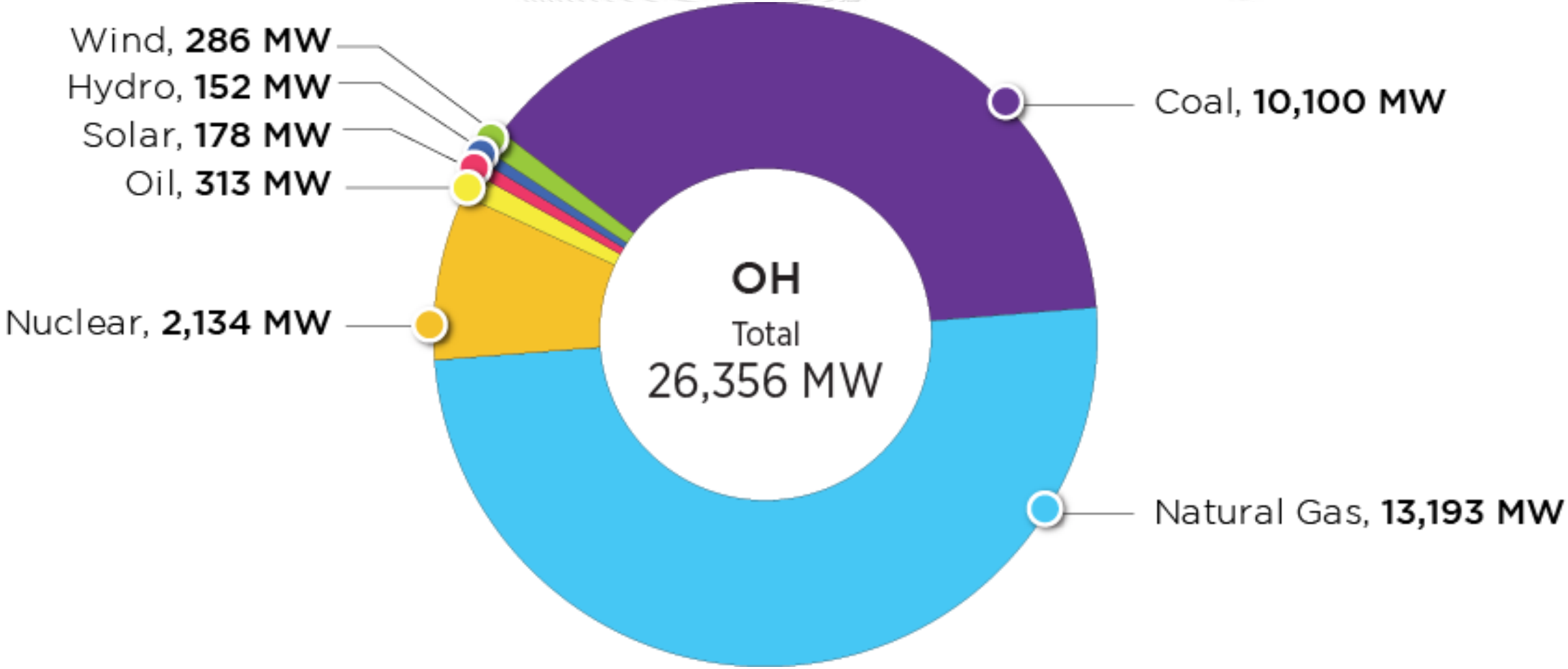
PJM – Existing Installed Capacity

(CIRs – as of Dec. 31, 2021)



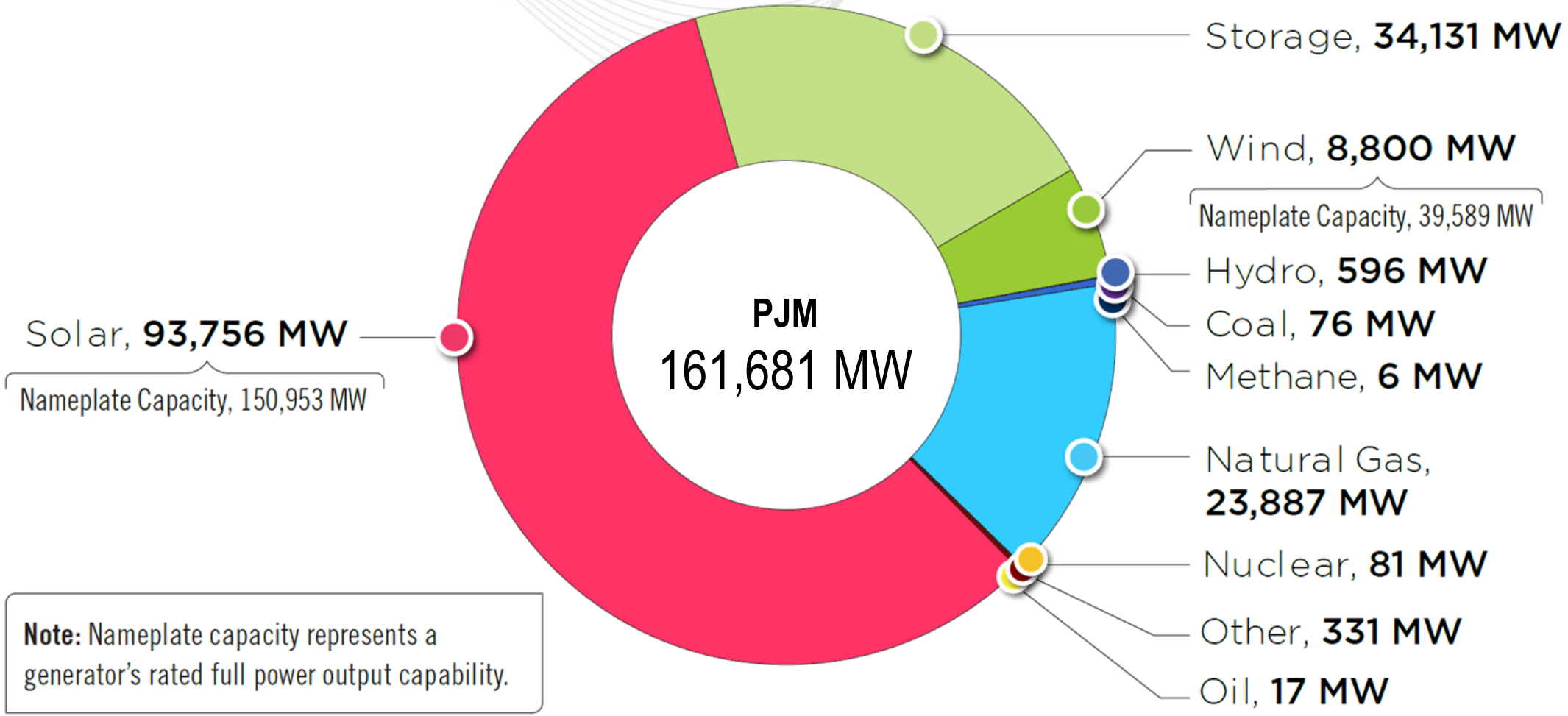
Ohio – Existing Installed Capacity

(CIRs – as of Dec. 31, 2021)



PJM – Queued Capacity (MW) by Fuel Type

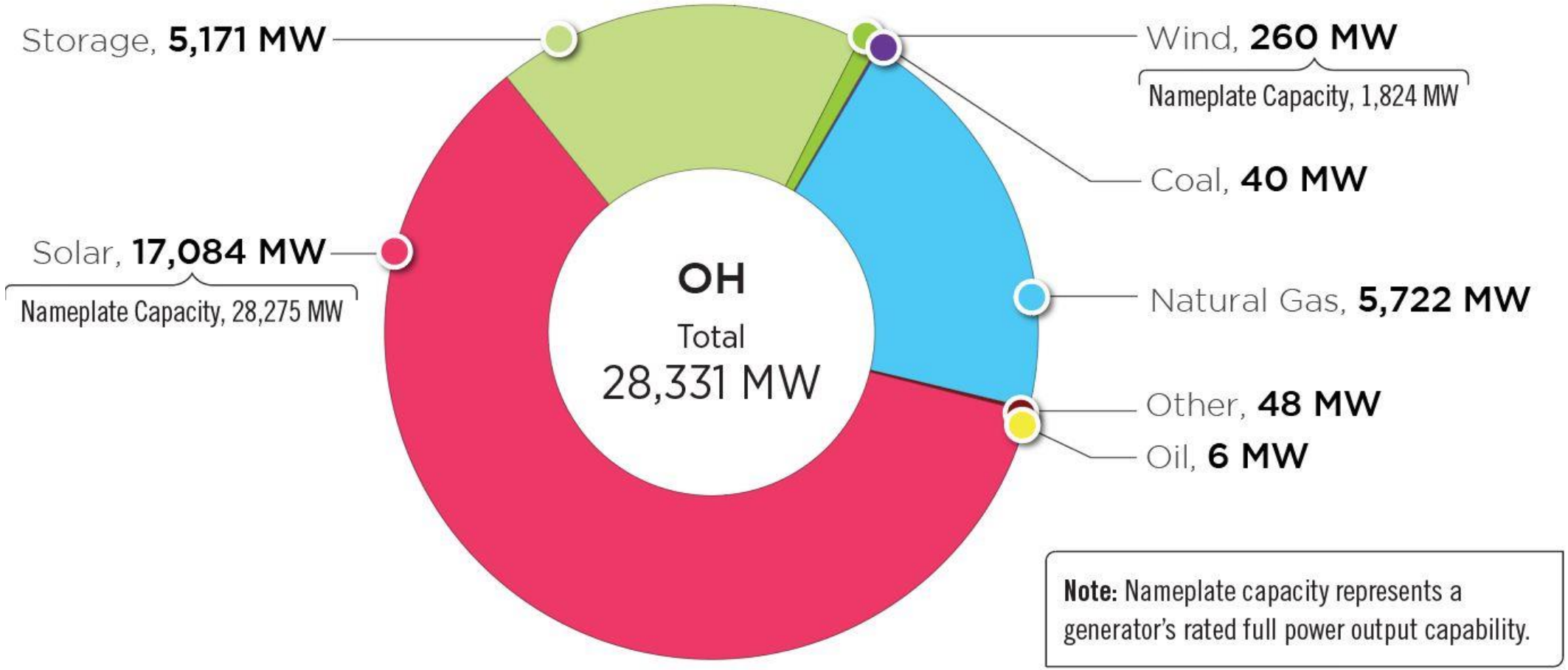
(Requested CIRs – as of Dec. 31, 2021)



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

Ohio – Queued Capacity (MW) by Fuel Type

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



Ohio – Historical Interconnection Requests by Fuel Type

(as of Dec. 31, 2021)

		In Queue						Complete				Grand Total	
		Active		Suspended		Under Construction		In Service		Withdrawn			
		Projects	Capacity (MW)	Projects	Capacity (MW)	Projects	Capacity (MW)	Projects	Capacity (MW)	Projects	Capacity (MW)	Projects	Capacity (MW)
Non-Renewable	Coal	1	11.0	0	0.0	2	29.0	11	239.0	16	8,923.0	30	9,202.0
	Diesel	0	0.0	0	0.0	0	0.0	1	7.0	0	0.0	1	7.0
	Natural Gas	8	629.6	4	2,771.0	4	2,321.0	29	5,058.2	35	13,734.4	80	24,514.2
	Nuclear	0	0.0	0	0.0	0	0.0	1	16.0	0	0.0	1	16.0
	Oil	0	0.0	0	0.0	2	5.5	0	0.0	1	5.0	3	10.5
	Other	4	47.9	0	0.0	0	0.0	0	0.0	5	135.0	9	182.9
	Storage	55	5,171.0	0	0.0	1	0.0	5	0.0	28	1,148.5	89	6,319.6
Renewable	Biomass	0	0.0	0	0.0	0	0.0	1	0.0	3	185.0	4	185.0
	Hydro	0	0.0	0	0.0	0	0.0	1	112.0	8	76.2	9	188.2
	Methane	0	0.0	0	0.0	0	0.0	8	40.9	9	26.1	17	67.0
	Solar	274	15,266.2	1	5.4	35	1,812.9	6	178.0	139	4,957.1	455	22,219.5
	Wind	6	221.3	0	0.0	1	38.7	8	197.4	74	1,832.9	89	2,290.3
	Grand Total	**348**	**21,347.1**	**5**	**2,776.4**	**45**	**4,207.1**	**71**	**5,848.4**	**318**	**31,023.2**	**787**	**65,202.2**

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

Ohio – Progression History of Interconnection Requests

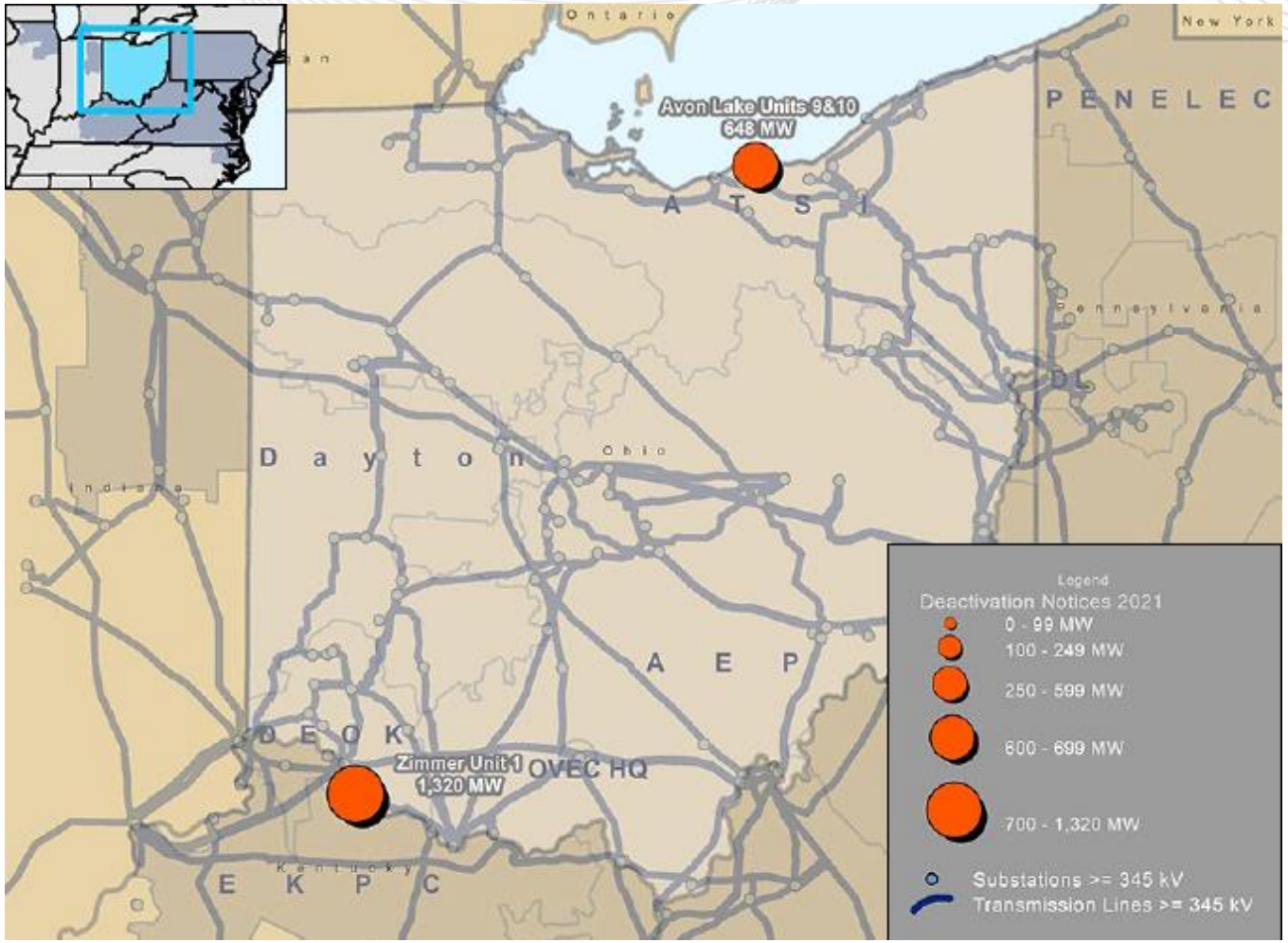
Percentage of planned capacity and projects that have reached commercial operation

14.4%	Requested capacity megawatts
15.0%	Requested projects

			Capacity	Nameplate
Projects withdrawn after final agreement	25	Interconnection Service Agreements	3,609 MW	5,799 MW
	12	Wholesale Market Participation Agreements	22 MW	82 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.

Ohio – Generation Deactivation Notifications Received in 2021



Ohio – Generation Deactivation Notifications Received in 2021

Unit	TO Zone	Fuel Type	Request Received to Deactivate	Actual or Projected Deactivation Date	Age (Years)	Capacity (MW)
Zimmer 1	DEO&K	Coal	7/19/2021	5/31/2022	30	1,320
Avon Lake 9	ATSI		6/9/2021	4/1/2022	51	627
Avon Lake 10		Oil			53	21

Planning

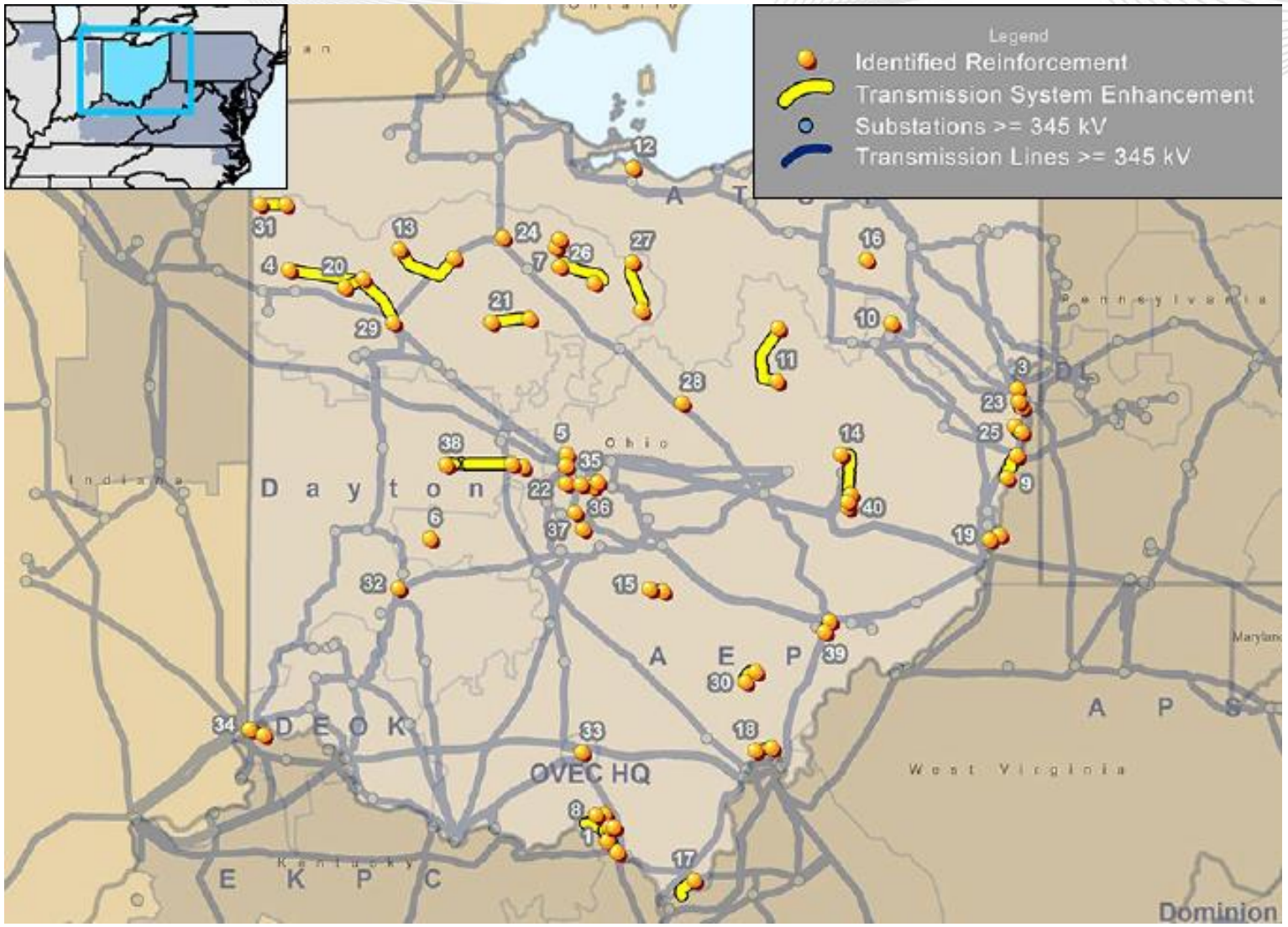
Transmission Infrastructure Analysis

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

Ohio – RTEP Baseline Projects



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

Ohio – RTEP Baseline Projects

Map ID	Project	Description	Required In-Service Date	Project Cost ($M)	TO Zone	TEAC Date
1	b2604.1	Remove ~11.32 miles of the 69 kV line between Millbrook Park and Franklin Furnace.	6/1/2019	$39.18	AEP	2/17/2021
	b2604.2	At Millbrook Park station, add a new 138/69 kV transformer No. 2 (90 MVA) with 3000A 40 kA breakers on the high and low side. Replace the 600A MOAB switch and add a 3000A circuit switcher on the high side of transformer No. 1.				
	b2604.3	Replace Sciotoville 69 kV station with a new 138/12 kV in-out station (Cottrell) with 2000A line MOABs facing Millbrook Park and East Wheelersburg 138 kV.				
	b2604.4	Tie Cottrell switch into the Millbrook Park-East Wheelersburg 138 kV circuit by constructing 0.50 miles of line using 795 ACSR 26/7 Drake (SE 359 MVA).				
	b2604.5	Install a new 2000A three-way phase-over-phase switch outside of Texas Eastern 138 kV substation (Sadiq switch).				
	b2604.6	Replace the Wheelersburg 69 kV station with a new 138/12 kV in-out station (Sweetgum) with a 3000A 40 kA breaker facing Sadiq switch and a 2000A 138 kV MOAB facing Althea.				
	b2604.7	Build ~1.4 miles of new 138 kV line using 795 ACSR 26/7 Drake (SE 359 MVA) between the new Sadiq switch and the new Sweetgum 138 kV stations.				
	b2604.8	Remove the existing 69 kV Hayport Road switch.				
	b2604.9	Rebuild ~2.3 miles along existing ROW from Sweetgum to the Hayport Rd. switch 69 kV location as 138 kV single circuit and rebuild ~2 miles from the Hayport Road switch to Althea 69 kV with double-circuit 138 kV construction, one side operated at 69 kV to continue service to K.O. Wheelersburg, using 795 ACSR 26/7 Drake (SE 359 MVA).				
	b2604.10	Build a new station (Althea) with a 138/69 kV 90 MVA transformer. The 138 kV side will have a single 2000A 40 kA circuit breaker, and the 69 kV side will be a 2000A 40 kA three- breaker ring bus.				
	b2604.11	Perform remote end work at Hanging Rock, East Wheelersburg and North Haverhill 138 kV.				

Ohio – RTEP Baseline Projects

Map ID	Project	Description	Required In-Service Date	Project Cost ($M)	TO Zone	TEAC Date
2	b2779.6	Construct a 345 kV ring bus at Dunton Lake to serve SDI load at 345 kV via two circuits.	6/1/2016	$24.80	AEP	12/1/2020
	b2779.7	Retire Collingwood 345 kV station.				
3	b3123	At Sammis 345 kV station – Install a new control building in the switchyard, construct a new station access road, install new switchyard power supply to separate from existing generating station power service, separate all communications circuits, and separate all protection and controls schemes	6/1/2022	$15.30	ATSI	7/11/2019
4	b3131.1	Rebuild ~12.3 miles of remaining Lark conductor on the double circuit line between Haviland and East Lima with 1033 54/7 ACSR conductor.	12/1/2024	$27.40	AEP	1/15/2021
5	b3235	Extend 138 kV bus work to the west of Tangy substation for the addition of the 100 MVAR reactor bay and one 138 kV 40 kA circuit breaker.	6/1/2025	$3.70	ATSI	10/16/2020
6	b3236	Extend the 138 kV Bus by adding two new breakers and associated equipment and install a 75 MVAR Reactor		$4.50		
7	b3249	Rebuild the Chatfield-Melmore 138kV line (~10 miles) to 1033 ACSR conductor.		$27.20	AEP	2/17/2021
8	b3253	Install a 3000A 40 kA 138 kV breaker on high side of 138/69 kV transformer No. 5 at Millbrook Park station. The transformer and associated bus protection will be upgraded accordingly.		$0.63		11/20/2020
9	b3256	Upgrade 500 MCM Cu risers at Tidd 138 kV station toward Wheeling Steel; replace with 1272 AAC conductor.		$0.07		
10	b3258	Install a 3000A 63 kA 138 kV breaker on high side of 138/69 kV transformer No. 2 at Wagenhals station. The transformer and associated bus protection will be upgraded accordingly.		$1.10		
11	b3259	At West Millersburg station, replace the 138 kV MOAB on the West Millersburg-Wooster 138 kV line with a 3000A 40 kA breaker.		$0.68		

Ohio – RTEP Baseline Projects

Map ID	Project	Description	Required In-Service Date	Project Cost ($M)	TO Zone	TEAC Date
12	b3260	Replace the existing breaker 501-B-251 with a new 69 kV breaker with a higher (40 kA) interrupting capability.	12/1/2021	$0.86	ATSI	12/18/2020
13	b3273.1	Rebuild and convert the existing 17.6 miles East Leipsic-New Liberty 34.5 kV circuit to 138 kV using 795 ACSR.	6/1/2025	$34.42	AEP	12/1/2020
	b3273.2	Convert the existing 34.5 kV equipment to 138 kV and expanded the existing McComb station to the north and east to allow for new equipment to be installed. Install two new 138 kV box bays to allow for line positions and two new 138/12 kV transformers.				
	b3273.3	Expand the existing East Leipsic 138 kV station to the north to allow for another 138 kV line exit to be installed. The new line exit will involve installing a new 138 kV circuit breaker, disconnect switches and new dead end structure along with extending existing 138 kV bus work.				
	b3273.4	Add one 138 kV circuit breaker and disconnect switches in order to add an additional line position at New Liberty 138 kV station. Install line relaying potential devices and retire the 34.5 kV breaker F.				
14	b3274	Rebuild ~8.9 miles of 69 kV line between Newcomerstown and Salt Fork switch with 556 ACSR conductor.		$15.89		
15	b3276.1	Rebuild the 2/0 Copper section of the Lancaster-South Lancaster 69 kV line, ~2.9 miles of the 3.2 mile total length with 556 ACSR conductor. The remaining section has 336 ACSR conductor.		$11.15		
	b3276.2	Rebuild the 1/0 Copper section of the line between Lancaster Junction and Ralston station 69 kV, ~2.3 miles of the 3.1 mile total length.				
	b3276.3	Rebuild the 2/0 Copper portion of the line between East Lancaster Tap and Lancaster 69 kV, ~0.81 miles.				
16	b3277	Replace the existing East Akron 138 kV breaker B-22 with 3000A continuous, 40 kA momentary current interrupting rating circuit breaker.	6/1/2021	$0.55	ATSI	5/22/2020

Ohio – RTEP Baseline Projects

Map ID	Project	Description	Required In-Service Date	Project Cost ($M)	TO Zone	TEAC Date
17	b3282.1	Install a second 138 kV circuit utilizing 795 ACSR conductor on the open position of the existing double circuit towers from East Huntington-North Proctorville. Remove the existing 34.5 kV line from East Huntington-North Chesapeake and rebuild this section to 138 kV served from a new PoP switch off the new East Huntington-North Proctorville 138 kV No. 2 line	6/1/2025	$10.40	AEP	2/17/2021
	b3282.2	Install a 138 kV 40 kA circuit breaker at North Proctorville.				
	b3282.3	Install a 138 kV 40 kA circuit breaker at East Huntington.				
	b3282.4	Convert the existing 34/12 kV North Chesapeake to a 138/12 kV station.				
18	b3285	Replace the Meigs 69 kV 4/0 Cu station riser toward Gavin and rebuild the section of the Meigs-Hemlock 69 kV circuit from Meigs to ~structure No. 40 (~4 miles) replacing the line conductor 4/0 ACSR with the line conductor size 556.5 ACSR.		$12.14		1/15/2021
19	b3287	Upgrade 69 kV risers at Moundsville station toward George Washington.		$0.05		
20	b3290.1	Build 9.4 miles of single circuit 69 kV line from Roselms to near East Ottoville 69 kV switch.		$38.90		
	b3290.2	Rebuild 7.5 miles of double circuit 69kV line between East Ottoville switch and Kalida Station (combining with the new Roselms to Kalida 69 kV circuit).				
	b3290.3	At Roselms switch, install a new three way 69kV, 1200 A phase-over-phase switch, with sectionalizing capability.				
	b3290.4	At Kalida 69 kV station, terminate the new line from Roselms switch. Move the CS XT2 from high side of T2 to the high side of T1. Remove existing T2 transformer.				
21	b3293	Replace 2/0 Cu entrance span conductor on the South Upper Sandusky 69 kV line and 4/0 Cu Risers/Bus conductors on the Forest line at Upper Sandusky 69 kV station.		$0.54		

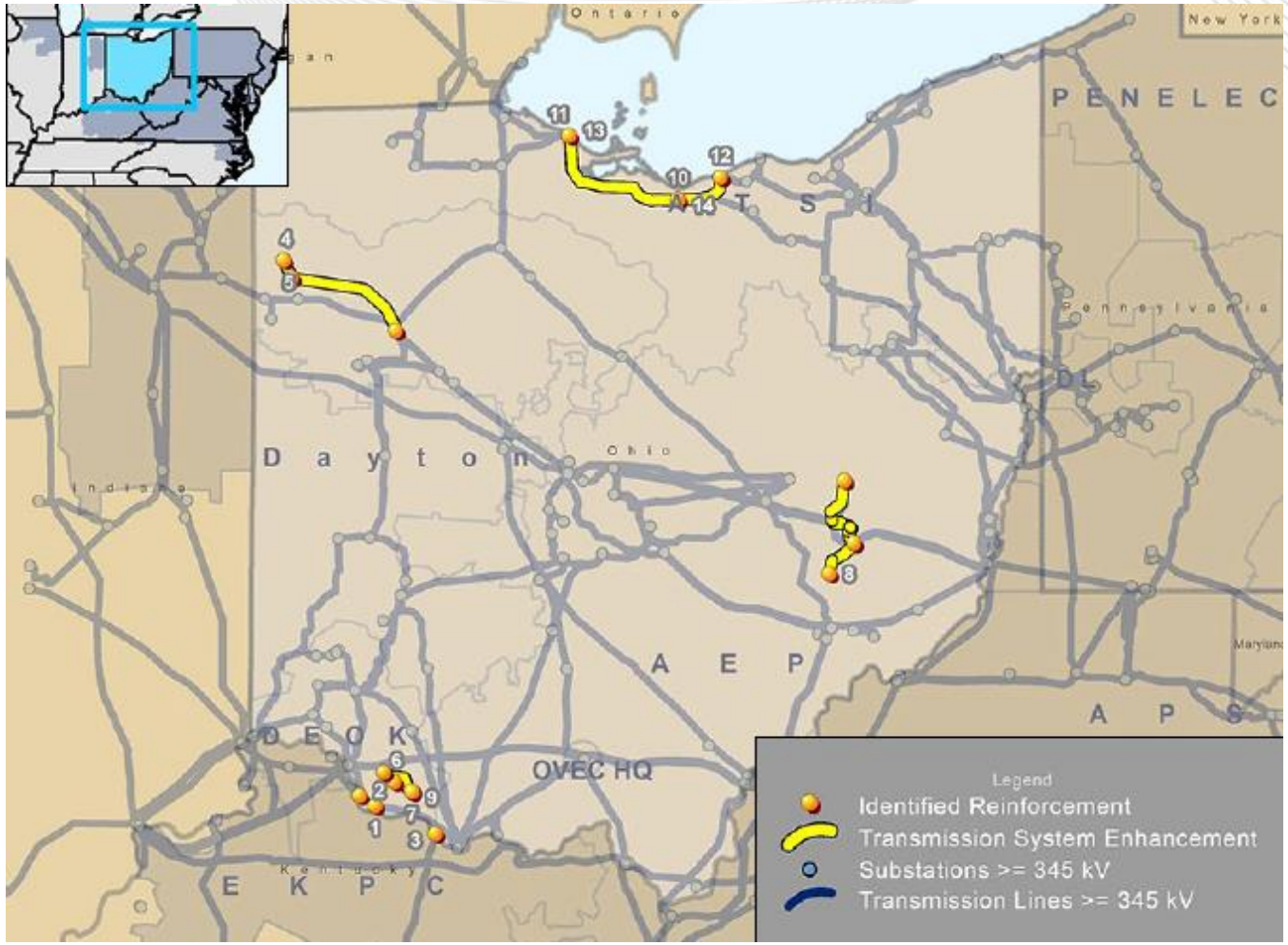
Ohio – RTEP Baseline Projects

Map ID	Project	Description	Required In-Service Date	Project Cost ($M)	TO Zone	TEAC Date
22	b3297.1	Rebuild 4.23 miles of 69 kV line between Sawmill and Lazelle station, using 795 ACSR 26/7 conductor.	6/1/2025	$19.80	AEP	1/15/2021
	b3297.2	Rebuild 1.94 miles of 69 kV line between Westerville and Genoa stations, using 795 ACSR 26/7 conductor.				
	b3297.3	Replace risers and switchers at Lazelle, Westerville and Genoa 69 kV stations. Upgrade associated relaying accordingly.				
23	b3298	Rebuild 0.8 miles of double-circuit 69 kV line between South Toronto and West Toronto. Replace 219 kcmil ACSR with 556 ACSR.		$3.53		2/17/2021
	b3298.1	Replace the 69 kV breaker D at South Toronto station with 40 kA breaker.				
24	b3299	Rebuild 0.2 miles of the West End Fostoria-Lumberjack switch 69 kV line with 556 ACSR (Dove) conductors. Replace jumpers on West End Fostoria line at Lumberjack switch.		$0.47		1/15/2021
25	b3308	Reconductor and rebuild one span of T-line on the Fort Steuben-Sunset Blvd. 69 kV branch with 556 ACSR.		$0.73		
26	b3309	Rebuild 1.75 miles of the Greenlawn-East Tiffin line section of the Carrothers-Greenlawn 69 kV circuit containing 133 ACSR conductor with 556 ACSR conductor. Upgrade relaying as required.		$3.45		
27	b3310.1	Rebuild 10.5 miles of the Howard-Willard 69 kV line utilizing 556 ACSR conductor.		$19.46		2/17/2021
	b3310.2	Upgrade relaying at Howard 69 kV station.				
	b3310.3	Upgrade relaying at Willard 69 kV station.				
28	b3312	Rebuild ~4 miles of existing 69 kV line between West Mount Vernon and Mount Vernon stations. Replace the existing 138/69 kV transformer at West Mount Vernon with a larger 90 MVA unit along with existing 69 kV breaker "C."		$12.93		1/6/2021
29	b3313	Add 40 kA circuit breakers on the low and high side of East Lima 138/69 kV transformer.		$1.20		3/19/2021

Ohio – RTEP Baseline Projects

Map ID	Project	Description	Required In-Service Date	Project Cost ($M)	TO Zone	TEAC Date
30	b3314.1	Install a new 138/69 kV, 130 MVA transformer and associated protection at Elliot station.	6/1/2025	$3.00	AEP	3/19/2021
	b3314.2	Perform work at Strouds Run station to retire 138/69/13 kV, 33.6 MVA transformer No. 1 and install a dedicated 138/13 KV distribution transformer.				
31	b3315	Upgrade relaying on Mark Center-South Hicksville 69 kV line, and replace Mark Center cap bank with a 7.7 MVAR unit.		$1.25		
32	b3316	Greene substation – Replace 138 kV, 40 kA breaker GJ-138C with a 63 kA breaker.		$0.28	Dayton	5/21/2021
33	b3320	Replace the CT at Don Marquis 345 kV.	6/1/2022	$0.08	AEP	8/10/2021
34	b3334	Rebuild the section of Miami Fort-Hebron Tab 138 kV.		$44.30	DEOK	11/2/2021
35	b3337	Replace the one Hyatt 138 kV breaker “AB1(101N)” with 3000A 63 kA interrupting breaker.	6/1/2026	$0.48	AEP	9/17/2021
36	b3338	Replace the two Kenny 138 kV breakers, “102” (SC-3) and “106” (SC-4), each with a 3000A 63 kA interrupting breaker.		$0.76		
37	b3339	Replace the one Canal 138 kV breaker “3” with 3000A 63 kA breaker.		$0.48		
38	b3341.1	Marysville substation – Install two 69 kV, 16.6 MVAR cap banks, install five 69 kV circuit breakers, upgrade station relaying, and replace 600 A wave trap on the Marysville-Kings Creek 69 kV (6660) circuit.		$2.93	Dayton	10/15/2021
	b3341.2	Darby substation – Upgrade remote end relaying at Darby 69 kV.				
	b3341.3	Kings Creek – Upgrade remote end relaying at Kings Creek 69 kV substation.				
39	b3342	Replace the 2156 ACSR and 2874 ACSR bus and risers with 2-bundled 2156 ACSR at Muskingum River 345 kV station to address loading issues on Muskingum-Waterford 345 kV line.		$0.53	AEP	11/2/2021
40	b3345.1	Rebuild ~4.2 miles of overloaded sections of the 69 kV line between Salt Fork switch and Leatherwood switch with 556 ACSR.		$9.10		
	b3345.2	Update relay settings at Broom Road station.				

Ohio – 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.

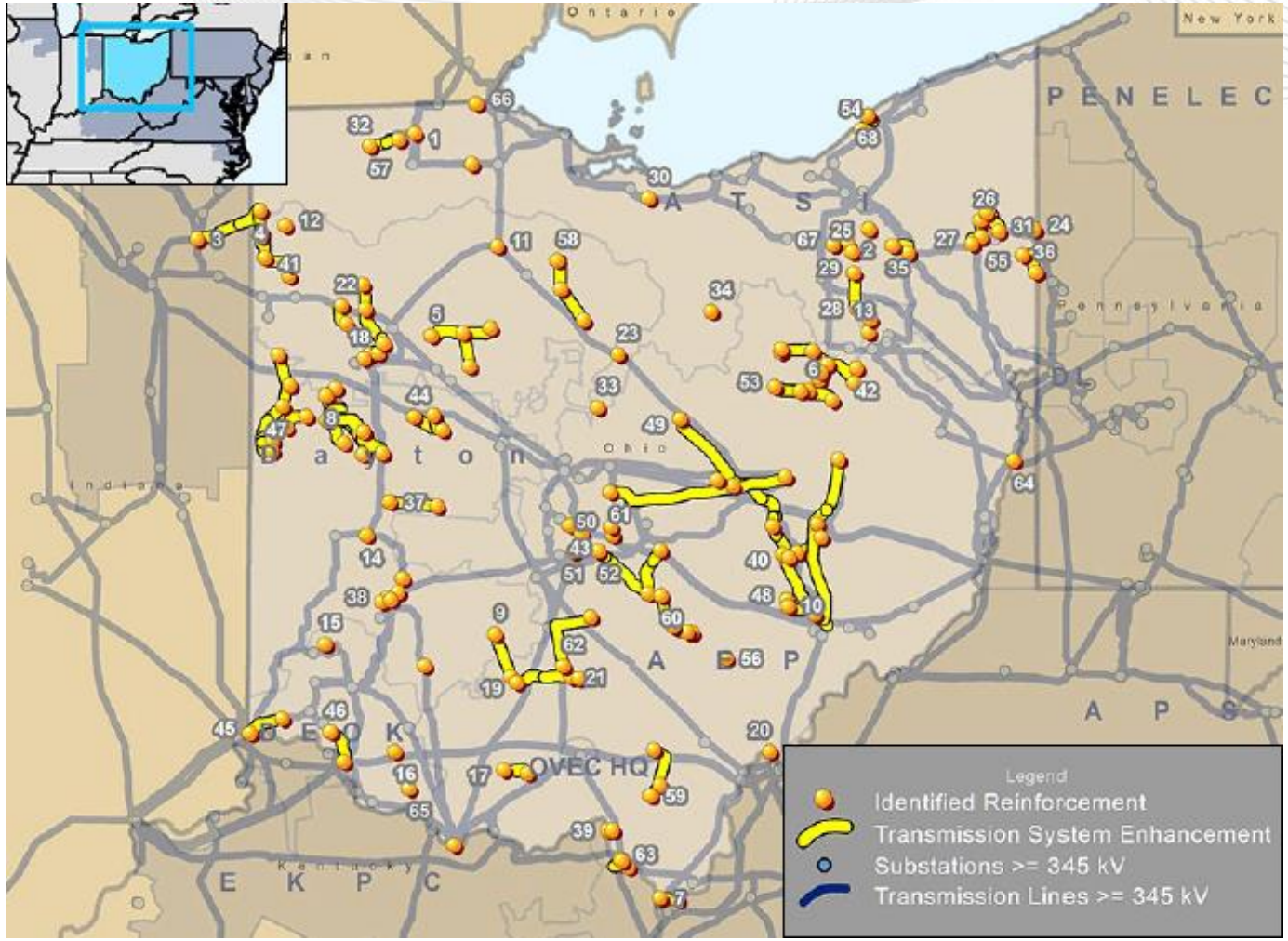
Ohio – RTEP Network Projects

Map ID	Project	Description	Generation	Required In-Service Date	Project Cost ($M)	TO Zone	TEAC Date
1	n3243	Build transmission loop through new 345 kV Meldahl interconnection substation.	V3-045	12/31/2013	$1.03	DEO&K	11/30/2021
2	n3244	Perform relay modification at Zimmer substation.			$0.02		
3	n3245	Perform relay modification at Spurlock substation.					
4	n5474	Perform AC1-173 fiber system modifications at Haviland and East Lima.	AC1-173	10/21/2020	$0.01	AEP	
5	n5648	Relay Settings – Convert two-terminal gen lead to three-terminal gen lead at AC1-173 substation.		10/31/2019	$0.06		
6	n5781	Provide engineering and construction oversight for the construction of the new AD1-136 substation.	AD1-136	6/30/2021	$5.28	DEO&K	
7	n5782	Reconfigure the South Bethel to Brown 69 kV circuit to loop through the new substation and rework the distribution under build on that circuit path to allow for the new substation.			$0.65		
8	n5793	Provide station service to Guernsey 765 kV station from Derwent-S. Cumberland 69 kV.	AB2-067	4/1/2020	$0.60	AEP	
9	n6240	Perform remote protection and communication work at South Bethel and Brown substations.	AD1-136	6/30/2021	$1.12	DEO&K	

Ohio – RTEP Network Projects

Map ID	Project	Description	Generation	Required In-Service Date	Project Cost ($M)	TO Zone	TEAC Date
10	**n6699**	Construct new 345 kV AC2-103 interconnection switchyard including SCADA, metering and project management.	AC1-203	10/1/2022	$9.66	ATSI	11/30/2021
11	**n6700**	Loop the Beaver-Davis Besse 345 kV circuit ~400 feet into the proposed AC2-103 three-breaker ring bus near structure numbers 41800 and 41801.			$1.52		
12	**n6701**	Beaver substation – Install standard dual SEL421 panel with UPLC for pilot scheme and DCB, DTT and anti-islanding for the AC2-103 line.			$0.29		
13	**n6702**	Davis Besse substation – Install standard dual SEL421 panel with UPLC for pilot scheme and DCB, DTT and anti-islanding for the AC2-103 line			$0.37		
14	**n6703**	To support required SCADA (Supervisory control and data acquisition) enhancements – Install ADSS (AllDielectric Self-Supporting) fiber from the AC2-103 queue position ring bus to the fiber connection point ~one mile away.			$0.19		

Ohio – 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.

Ohio – TO Supplemental Projects

Map ID	Project	Description	Projected In-Service Date	Project Cost ($M)	TO Zone	TEAC Date
1	s2237.2	S2237.2 is new additional scope to mitgate load-loss criteria violation identified during do-no-harm testing. Construct a new 345 kV four-breaker ring bus. De-energize ~1 mile of the Dowling-Fulton 345 kV line. Construct 8.7 miles of 345 kV line to connect the Dowling 345 kV line into the new 345 kV station with 954 ACSR 45/7 bundled (two conductors per phase). New 345 kV line to be built and share structures with the Delta-Wauseon 138 kV line and Delta-Fulton 138 kV line. Replace the wave trap at Dowling 345 kV line to ensure the Dowling-New 345 kV station 345 kV transmission line is the limiting element. Re-terminate the Fulton 345 kV line that serves North Star Steel Sydney into the new 345 kV station. Provide two feeds from the new 345 kV station to North Star Steel Sydney with 95.	6/1/2024	$67.00	ATSI	11/4/2020
2	s2387	New 138 kV line & Sub 5 Expansion – Build FE Sub 5 138 kV, four-breaker ring bus adjacent to the CF Sub 5 substation; Cuyahoga Falls Muni to expand CF Sub 5 substation to a 138/23 kV substation; Convert Evans 138 kV substation into five-breaker (future six) ring bus; Convert the proposed Darrow five-breaker (future six) ring bus (s1708) into six-breaker ring bus; Build a new 138 kV line from Evans to new FE Sub 5 (~4.4 miles); Build a new 138 kV line from Darrow to new FE Sub 5 (~6.6 miles); Add a 28 MVAR, 138 kV capacitor bank at Theiss substation.	6/1/2025	$44.00		1/11/2019
3	s2393.1	On the South Hicksville-Rob Park 69 kV line – Rebuild the 21.6 miles as currently constructed, including ~2.4 miles of 69 kV double circuit and ~19.2 miles of 69 kV single circuit.	6/2/2023	$54.10	AEP	9/11/2020
	s2393.2	Rebuild the through path of St. Joe 69 kV station. Install a breaker on the Harlan line exit to eliminate four MOABs in series.				
	s2393.3	At Harlan 69 kV (FERC-distribution) station – Replace a switch and line riser in order to accommodate the new line entrance.				
	s2393.4	Replace the West Hicksville 69 kV phase-over-phase switch to accommodate the new line height, route and structure/conductor type.				
	s2393.5	In order to rebuild the line, the in-line switch at Vulcraft 69 kV needs to be replaced. The switch replacement will be athree-way switch with a MOAB toward West Hicksville 69 kV.				

Ohio – TO Supplemental Projects

Map ID	Project	Description	Projected In-Service Date	Project Cost ($M)	TO Zone	TEAC Date
4	s2394.1	Rebuild ~14.3 miles of the Payne-South Hicksville 69 kV circuit.	11/15/2024	$55.60	AEP	9/11/2020
	s2394.2	Rebuild ~9.3 miles of the line between Haviland-Payne 69 kV circuit. Reconductor the remaining 2.7 mile line sections.				
	s2394.3	Install Seiberi switch as a new 69 kV, 1200A,three-way phase-over-phase switch with sectionalizing capability to eliminate the hard tap.				
	s2394.4	Replace Antwerp Sw with 69 kV, 1200A,three-way phase-over-phase switches with sectionalizing capability, including 4.3 miles of fiber buildout to allow for sectionalizing.				
	s2394.5	Replace North Antwerp Sw with 69 kV, 1200A,three-way phase-over-phase switches with sectionalizing capability.				
	s2394.6	Replace Latty switch with 69 kV, 1200A,three-way phase-over-phase switches with sectionalizing capability.				
	s2394.7	At Latty Junction switch – Install motor operators, a relay and PTs on existing phase-over-phase switches to add sectionalizing capability.				
5	s2395.1	Rebuild existing double circuit portion of the Dunkirk-Forest line asset from existing Str 194 to the greenfield Rangeline station (1.35 miles). Rebuild existing ~6.5 mile Arlington-Dunkirk 34.5 kV as Rangeline-East Arlington single 69 circuit from Str 194 to the greenfield East Arlington (formerly Arlington).	6/1/2025	$125.30		
	s2395.2	Reconfigure ~0.05 mile Dunkirk-Kenton 69 kV line to terminate into Rangeline station.				
	s2395.3	Reconfigure ~0.05 mile Dunkirk-Ada 69 kV line to terminate into Rangeline station.				
	s2395.4	Build ~10.1 mile 69 kV line section between greenfield Buckrun Sw and East Arlington as single circuit 69 kV.				
	s2395.5	Rebuild ~5.75 mile 69 kV line section between greenfield West Crawford station and Buckrun switch (outside of Blanchard station) as single circuit 69 kV.				
	s2395.6	Rebuild ~0.22 mile South Vanlue extension to tie into East Arlington-West Crawford 69 kV ckt.				

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Map ID	Project	Description	Projected In-Service Date	Project Cost ($M)	TO Zone	TEAC Date
5	s2395.7	Rebuild ~11.5 mile 69 kV line between West Crawford and South Berwick stations.	6/1/2025	(Continued)	AEP	9/11/2020
	s2395.8	Remove/retire ~10 miles of 69 kV line from Forest to North Wharton switch.				
	s2395.9	Reconfigure North Upper Sandusky-South Berwick 69 kV line to tie into Hurd switch.				
	s2395.10	Remove/Retire ~2.58 mile South Carey-Hurd switch 69 kV line.				
	s2395.11	Carey 69 kV – Install 69 kV Box Bay with 2000A 40 kA MOABs with sectionalizing capability. Remove existing Carey Sw.				
	s2395.12	West Crawford 69 kV (Rebuild) – Install a new 69 kV ring bus with three 3000A 40 kA circuit breakers to replace West Crawford Sw. Replace cap switcher "AA" and relocate cap bank from Carey Sw to West Crawford 69 kV bus.				
	s2395.13	South Carey Sw 69 kV – Remove South Carey Sw 69 kV.				
	s2395.14	North Wharton Sw 69 kV – Remove North Wharton Sw 69 kV.				
	s2395.15	South Vanlue 69 kV – Replace 69 kV bus and existing switches with 2000A 40 kA line MOABs with sectionalizing capability.				
	s2395.16	Buckrun Sw 69 kV – Install a new 69 kV, 2000A 40 kA, three-way phase-over-phase switch with sectionalizing capability.				
	s2395.17	East Arlington 69 kV – Install a new 69 kV ring bus with three 3000A 40 kA circuit breakers to replace existing Arlington station.				
	s2395.18	Flat Branch Sw 69 kV – Install 69 kV, 2000A 40 kA, three-way phase-over-phase switch with sectionalizing capability.				
	s2395.19	South Berwick 69 kV – Remote end work.				
	s2395.20	Rangeline 69 kV – Install a five-breaker (3000A 40 kA) 69 kV ring bus to replace Dunkirk station.				
	s2395.21	Forest 69 kV – Remove 69 kV circuit breaker-H toward South Berwick.				
	s2395.22	Dunkirk 69 kV – Retire Dunkirk 69 kV station.				

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Map ID	Project	Description	Projected In-Service Date	Project Cost ($M)	TO Zone	TEAC Date
6	s2396	Double the size of the existing Walnut Creek 69 kV capacitor bank, from 7.2 to 14.4 MVAR. Update relay settings and SCADA equipment accordingly.	11/1/2020	$0.10	AEP	9/11/2020
7	s2397.1	Rebuild ~1.2 miles of line on the West Huntington-South Point 34.5 kV line between Kenova station and South Point station. Cost drivers on this line section include Ohio River crossing, urban line route through Huntington, WV, and encroachments along the line.	11/1/2023	$10.70		
	s2397.2	Rebuild ~5.5 miles of line on the West Huntington-South Point 34.5 kV line between Kenova station and West Huntington station. This segment of line is classified as distribution and thus has no transmission cost.				
	s2397.3	Install three-way phase-over-phase GOAB switch at Ceredo switch station addressing hard tap.				
	s2397.4	Install three-way phase-over-phase GOAB switch at Sanitary Board station addressing hard tap.				
	s2397.5	Install three-way phase-over-phase GOAB switch at Four Pole Creek station addressing hard tap.				

Ohio – TO Supplemental Projects

Map ID	Project	Description	Projected In-Service Date	Project Cost ($M)	TO Zone	TEAC Date
8	s2398.1	Amsterdam-West Moulton 138 kV – Rebuild the Amsterdam-St. Marys-West Moulton transmission corridor to double circuit. The project will entail rebuilding existing 69 kV transmission line facilities, replacing terminal equipment and adding new 138 kV circuits to each corridor. The rebuild of the Amsterdam-St. Marys-West Moulton corridor and replacement of in-line 69 kV switches will be 13 miles.	6/1/2024	$65.35	Dayton	10/16/2020
	s2398.2	Sidney-Honda Anna 138 kV – Rebuild the Sidney-Amsterdam transmission corridor to double circuit. The project will entail rebuilding existing 69 kV transmission line facilities, replacing terminal equipment and adding new 138 kV circuits to each corridor. The Sidney-Amsterdam corridor will be 8 miles long stopping near Honda Anna where a single circuit 138 kV will be extended to the new substation. At Sidney substation, a 138 kV ring bus will be created.	12/31/2024			
	s2398.3	Honda Anna substation – Construct a new Honda Anna 138 kV ring bus substation.	6/1/2024			
	s2398.4	Amsterdam substation – Expand the Amsterdam substation to include the new 138 kV line and 13827 line (Amsterdam-Shelby 138 kV) in a ring bus arrangement. Also, it will replace the existing Amsterdam transformer and add a second 138/69 kV transformer to the substation to ensure redundancy for the 138 kV source being added to the area. The 69 kV bus would be reconfigured to ensure adequate bus ties and to convert to a more standard design. The existing capacitor will be replaced with two smaller 16 MVAR capacitors, which will help minimize area voltage changes when the capacitors are switched online.				
	s2398.5	6672 (Amsterdam-Minster 69 kV) Rebuild – To address the condition issues on 6672, the solution is to rebuild the 69 kV line and associated terminal equipment replacements at Amsterdam and Minster substations.				
	s2398.6	West Moulton substation – AEP will install an additional 3000A 63kA circuit breaker to their ring bus being constructed as part of the City of Wapakoneta Project (s1856).			AEP	
	s2398.7	AEP will also install a pole outside of West Moulton substation and a single span of line to connect the West Moulton-Amsterdam 138 kV circuit.				
9	s2399	Tap the Greenfield-Washington Courthouse 6649 69 kV line and install three new poles with a set of one-way switches on each new structure to serve a new South Central Power Ghormley Delivery Point.	6/1/2022	$0.35	Dayton	

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Map ID	Project	Description	Projected In-Service Date	Project Cost ($M)	TO Zone	TEAC Date
10	s2401.1	Install a three 3000A breaker 69 kV ring bus called Grace station to serve the requested delivery point.	5/1/2022	$5.40	AEP	10/16/2020
	s2401.2	Install ~0.2 miles of 69 kV line to tie the greenfield Grace station in-and-out to the Muskingum River-South Rokeby 69 kV circuit.				
	s2401.3	Remove/Relocate ~0.05 miles of line on the Muskingum River – South Rokeby 69 kV line asset between structures 75 and 74A to accommodate the cut in to the new station.				
	s2401.4	Perform remote end work at South Rokeby switch.				
11	s2402.1	Re-terminate the Fostoria-Hatton line to the new Hatton switch.	11/29/2021	$1.75		
	s2402.2	Rebuild and re-terminate the Hancock Wood Co-op Extension-Hatton line into the new switch.				
	s2402.3	Install a new three-way phase-over-phase switch to serve the customer's station.	11/23/2021			
12	s2403	Add auto-sectionalizing and SCADA control to the existing North Cecil switch. This requires installing PTs, motors, a relay and communication equipment.	11/29/2021	$0.36		
13	s2404	Replace the failed 138-69 kV transformer at Reedurban with a spare 90 MVA transformer. Install a transformer oil containment system. Replace electromechanical transformer protection relays with microprocessor relays, along with 69 kV PTs.	12/10/2020	$1.20		
14	s2423	Replace terminal equipment at the substations listed to facilitate the transition to a 100/0 current split methodology – Bath 345 kV, Clinton 345 kV, Greene, Miami, Shelby 345 kV, Stuart, Sugercreek, West Manchester 69 kV, Wilmington. Once new methodology is put in place starting 1/1/2023, derate listed transmission circuits since equipment replacements will be completed – 34528, 13805, 6666, 6674, 6677, 6905, Overlook Bk-7, Amsterdam 138/69 kV, Trebein 138/69 kV, Staunton 138/69 kV, Bath 345/138 kV, Miami 345/138 kV, W. Milton 345/138 kV, Sugarcreek 345/138 kV N, Sugarcreek 345/138 kV S.	12/31/2022	$4.00	Dayton	12/18/2020
15	s2424	Reconductor the 1 mile section of feeder from Yankee to Meadow tap 69 kV. Replace 8 poles to achieve proper clearance. Capacity of the line will increase from 97 MVA to 151 MVA.	8/17/2022	$1.65	DEOK	11/20/2020
16	s2425	Install a new Half Acre substation between Batavia and Eastwood 138 kV with two 138 kV breakers, one circuit switcher, one 138/34 kV, 60 MVA transformer, a control building and two distribution feeder exits. Install a mobile 138/34 kV transformer to serve the customer until the substation is completed.	10/28/2022	$14.78		1/15/2021

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Map ID	Project	Description	Projected In-Service Date	Project Cost ($M)	TO Zone	TEAC Date
17	s2426.1	Rarden – The existing station will be rebuilt to 69 kV with a new 69 kV breaker (3000A 40 kA) facing Adams and a MOAB switch (2000A) facing Otway.	10/15/2023	$57.43	AEP	11/20/2020
	s2426.2	Adams-Rarden 69 kV – Reroute the line to the rebuilt Rarden station with 795 ACSR 26/7 (SE 179 MVA).				
	s2426.3	Rarden-Otway 69 kV – Install ~8.5 miles of greenfield 69 kV line between Rarden & Otway stations using 556.5 ACSR 26/7 conductor (SE 142 MVA).				
	s2426.4	Otway – Construct a new 69 kV station with four circuit breakers (3000A 40 kA) in a ring bus configuration.				
	s2426.5	Tick Ridge Extension – Install ~0.1 miles of greenfield line between Otway and Tick Ridge (Adams) stations using 556.5 ACSR 26/7 conductor (SE 142 MVA).				
	s2426.6	Otway-McDermott 69 kV – Install ~7.3 miles of greenfield 69 kV line between Otway & McDermott stations using 556.5 ACSR 26/7 conductor (SE 142 MVA).				
	s2426.7	McDermott – Rebuild the existing station with a 69 kV box bay and 2 MOAB switches (2000A) on the line connections.				
	s2426.8	McDermott-Rosemount 69 kV – Install ~6.3 miles of greenfield line between McDermott & Rosemount stations using 556.5 ACSR 26/7 conductor (SE 142 MVA).				
	s2426.9	Rosemount – Expand the existing station footprint. Install five circuit breakers (3000A 40kA) in a ring configuration.				
	s2426.10	Rosemount Extension – Reroute the line into the Rosemount 69 kV ring bus with 795 ACSR 26/7 (SE 179 MVA).				
18	s2427.1	Cut-in the Sterling extension (Shawnee Road-Sterling 34.5 kV) line asset at Str. 8 to install the new Lima Petrol switch.	3/25/2022	$0.90		
	s2427.2	Build 0.07 mile line extension from Lima Petrol switch to customer station.				
	s2427.3	Install a new manually operated 1200A three-way phase-over-phase switch named Lima Petrol switch.				
19	s2433.1	Install a new three-way 1200A, 69 kV switch (Towhee switch) with auto-sectionalizing, MOABs and SCADA to serve the new Paint Creek Delivery Point. Install low-side metering at Paint Creek customer station.	6/30/2022	$0.70		12/18/2020
	s2433.2	Tie Towhee switch into the Biers Run-Buckskin 69 kV circuit.				
	s2433.3	Install ~0.1 mile radial line extension connecting Towhee switch to the structure outside SCP's Paint Creek substation.				

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Map ID	Project	Description	Projected In-Service Date	Project Cost ($M)	TO Zone	TEAC Date
20	s2434.1	Install a greenfield three-way 69 kV, 1200A phase-over-phase switch (Bryson switch) with auto-sectionalizing, MOABs and SCADA to serve the new requested delivery point. Install metering at the proposed customer station.	12/15/2022	$11.20	AEP	12/18/2020
	s2434.2	Build a ~4.3 miles of greenfield single circuit 69 kV transmission line between Hemlock-Bryson switch with 556 ACSR conductor.				
	s2434.3	Hemlock station – Install a new 69 kV, 3000A 40 kA circuit breaker toward Bryson switch.				
21	s2441.1	At Slate Mills – Rebuild the existing three-way switch as an in-and-out box bay with two 2000A switches on the line exits.	4/25/2022	$2.20		
	s2441.2	Re-terminate the Ross-Highland 69 kV line into the rebuilt station.	4/5/2022			
	s2441.3	Perform remote end relay and coms work at Adena, Biers Run & Ross.	4/25/2022			
22	s2442.1	Remove and Retire the existing Lima-Kalida line asset (~17 miles). Top off poles for distribution underbuilt.	4/15/2022	$20.03		
	s2442.2	Jones City station – Remove all equipment from the existing Jones City 34.5 kV station and retire the station.				
	s2442.3	Gomer station – Cut in the North Delphos-East Side 138 kV line and install a 138 kV box bay with two 138 kV, 3000A auto-sectionalizing MOABs to provide service to AEP Ohio's new Gomer Delivery Point.				
23	s2447	Replace existing electromechanical relaying for Galion 138/69 kV TR No. 1 using SEL-351A for 51G tertiary relay. Also, replace limiting 750 CU substation conductors between TR & bus-side DS with 954 kcmil SAC.	12/1/2021	$1.20	ATSI	11/20/2020
24	s2448	Masury – Replace two 138 kV, 1200A disconnect switches (D133 & D132) with 2000A switches. Replace one 138 kV, 3000A SF6 breaker (B85). Replace one 138 kV CVT. Replace one 138 kV wave trap with a 2000A unit. Replace substation conductor. Upgrade Masury-Maysville 138 kV line relaying.	5/25/2021	$0.80		

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Map ID	Project	Description	Projected In-Service Date	Project Cost ($M)	TO Zone	TEAC Date
25	s2449	Babb – Replace two 138 kV disconnect switches (D8 & D10). Replace one 138 kV air-break switch (A11). Replace three 138 kV CVTs (CC12, CC13, & CC14). Replace line drops breaker. Replace three rod gaps with three 108 kV, 84 kV MCOV surge arresters. Valley – Replace one 138 kV circuit breaker (B1). Replace one 138 kV line-side disconnect switch (D4) with a 2000A disconnect switch. Replace three 138 kV CVTs (CC14, CC15, & CC16). Replace three rod gaps with three 108 kV, 84 kV MCOV surge arresters.	12/31/2021	$1.30	ATSI	11/20/2020
26	s2450	Highland – Replace one 138 kV breaker (B158). Replace one 138 kV disconnect switch (D159). Replace three CCVTs. Replace Highland-Mahoningside 138 kV line relaying. Mahoningside – Replace one 138 kV breaker (B67). Replace one 138 kV disconnect switch (D68). Replace three CCVTs. Replace Highland-Mahoningside 138 kV line relaying.	6/1/2022	$1.40		
27	s2451	Highland – Replace one 138 kV breaker (B2). Replace substation conductor. Replace one 138 kV disconnect switch (D3). Replace three CCVTs. Replace Highland-GM Lordstown 138 kV line relaying. Tod – Replace 1200A line switches (A7 & A9) with 2000A switches. GM Lordstown – Replace one 138 kV disconnect switch (D68). Replace one 138 kV transfer bus disconnect switch (A16) Replace three CCVTs. Replace substation conductor. Replace Highland-GM Lordstown 138 kV line relaying.		$1.20		
28	s2452	Dale – On the Dale-West Canton 138 kV line exit, install AMETEK Smartgap. Replace Dale-West Canton 138 kV line primary and backup line relays with FE standard dual SEL-421 protection schemes. Install Power Comm PCM 5350.	3/31/2022	$0.42		
29	s2453	Dale – Replace spark gap arresters with surge arresters. Replace three 138 kV CVTs. Replace line relaying and control with standard relay panel for the Dale-South Akron 138 kV line, include breaker failure relaying for breaker B29. South Akron – Replace one 138 kV line-side disconnect switch (D320). Replace limiting 750 conductor between bus and disconnect switch. Replace three 138 kV CVTs. Replace line relaying and control with standard relay panel for the Dale-South Akron 138 kV line, include breaker failure relaying for breaker B2. Replace existing spark sap arresters with surge arresters. Replace 138 kV insulators.	12/30/2021	$1.00		

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Map ID	Project	Description	Projected In-Service Date	Project Cost ($M)	TO Zone	TEAC Date
30	s2454	Avery – Replace three 138 kV CVTs. Replace three spark gap arresters with new surge arresters. Install AMETEK Smartgap. Replace disconnect switches (D35 & D63). Replace line relaying with dual SEL-421 with DCB over PLC. Install new SEL-501 BFT scheme for 138 kV breaker (B36). Install PowerComm PCM5350. Shinrock – Install AMETEK Smartgap. Install PowerComm PCM5350.	3/31/2022	$0.60	ATSI	11/20/2020
31	s2455	Niles Central Muni – Replace one 138 kV line trap and tuner. Replace three CCVTs. Replace Central-Packard 138 kV line relaying. Packard – Replace one 138 kV breaker (B13) and associated disconnect switches (D12 & D14). Replace one 138 kV line trap and tuner. Replace three CCVTs. Replace Central-Packard 138 kV line relaying.		$1.40		
32	s2456	Delta – Replace one 138 kV breaker (B13430). Replace 138 kV Wauseon line CCVT. Upgrade one 138 kV wave trap and line tuner. Upgrade substation conductor. Replace Delta-Wauseon 138 kV line relaying. Wauseon – Replace one 138 kV line trap. Replace 138 kV line CCVT. Upgrade substation conductor. Replace Delta line disconnect switch. Replace Delta-Wauseon 138 kV line relaying.	6/1/2022	$1.40		
33	s2457	Cardington – Replace Cardington (Galion) 138 kV line relaying. Galion – Upgrade substation conductor.	12/1/2022	$1.10		
34	s2458	Brookside – Upgrade relay package. Upgrade the CCVTs, wave trap, tuner, co-ax cables and carrier set. Upgrade 400 CU substation conductor, disconnect switches (D76 & D77). Longview – Upgrade relay package. Upgrade the CCVTs, wave trap, tuner, co-ax cables and carrier set. Upgrade relay packages at Brookside and Longview terminals, the CCVTs, wave trap, tuner, co-ax cables and carrier set. Include Smartgap and PCM 5350.	12/20/2022	$1.50		
35	s2459	Hanna – Replace 138 kV breaker (B7) foundation and conduit. Upgrade two 138 kV disconnect switches (D84 & D85) to 138 kV, 2000A DSWs. Replace one 138 kV circuit breaker (B7). Replace line relaying and control consisting of dual SEL-421 over DCB and SEL-501 (BF/B7) for the Hanna-West Ravenna No. 1 138 kV line with a new prewired standard line relaying panel. West Ravenna – Upgrade two 138 kV disconnect switches (D60 & D59) to 138 kV, 2000A DSWs. Replace line relaying and control consisting of dual SEL-421 over DCB and SEL-501 (BF/B21) for the Hanna-West Ravenna No. 1 138 kV line, using a prewired standard line relaying panel. Upgrade one 138 kV transfer bus switch (A61) to 138 kV, 2000A DSW due to condition. Upgrade limiting conductors between the dead end and the disconnect switches.	4/6/2021	$1.50		

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Map ID	Project	Description	Projected In-Service Date	Project Cost ($M)	TO Zone	TEAC Date
36	s2460	Maysville – Replace two 138 kV, 1200A disconnect switches (A1 & D3) with 2000A switches. Replace one 138 kV wave trap with a 2000A unit. Replace one 138 kV CVT. Replace substation conductor. Upgrade Masury-Maysville 138 kV line relaying.	5/25/2021	$1.00	ATSI	11/20/2020
37	s2461.1	St. Paris-Urbana 69 kV line & KTH Alternate Delivery – Construct a new 12.6 mile single circuit 69 kV line utilizing 1351 AAC conductor (ratings – SN-151, SE-187).	12/31/2023	$21.05	Dayton	2/17/2021
	s2461.2	Second KTH Delivery – Provide a second delivery to KTH. Establish a new 69 kV three-way MOAB switch along the St. Paris-Urbana 69 kV line.				
	s2461.3	Urbana substation – Extend the 69 kV west bus and install four new 69 kV circuit breakers. The new line will terminate into a single 69 kV circuit breaker off the existing east bus and relocate the capacitor to a new 69 kV circuit breaker off the west bus. The 138/69 kV transformer will be relocated to a new double-bus, double-breaker string that will serve as a second bus tie at the substation.				
	s2461.4	Casstown switching enhancement – Replace the 65703 line disconnect switch toward St. Paris with a new three-way MOAB switch to eliminate the Casstown hard tap configuration.				
	s2461.5	St. Paris substation – Construct a new four-breaker 69 kV ring bus configuration to terminate the new 69 kV transmission line from Urbana.				
38	s2462.1	Carpenter substation – To accommodate the installation of a second 69/12 kV transformer, expand the Carpenter 69 kV bus arrangement and install three new 69 kV circuit breakers and associated disconnect switches. The proposed 69 kV ring bus arrangement will be configured in a source sink arrangement.	12/31/2021	$3.50		
	s2462.2	6622 Alpha-Hempstead 69 kV – To accommodate the new ring configuration, extend the 6622 line four spans to terminate the 6622 line into two new breaker positions.				
39	s2464	Rebuild ~2 miles of 138 kV line between East Wheelersburg and Texas Eastern using 795 ACSR 26/7 Drake (SE 359 MVA).	4/15/2025	$3.41	AEP	2/17/2021

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Map ID	Project	Description	Projected In-Service Date	Project Cost ($M)	TO Zone	TEAC Date
40	s2465.1	Retire ~3 miles of the Philo-Canton 138 kV line, between Philo and East New Concord.	12/1/2024	$117.42	AEP	2/17/2021
	s2465.2	Retire ~18 miles of the Philo-Torrey 138 kV line, north of Bethel Church/Bloomfield and stopping at Newcomerstown.				
	s2465.3	Rebuild from Philo to Str 62 a ~13.07 mile section of the Philo-Torrey 138 kV line as double circuit, using 795 KCMIL 26/7 ACSR "Drake" conductor.				
	s2465.4	Build a greenfield ~4.76 mile double circuit line between Str. 62 on the Philo-Torrey line to the greenfield East New Concord switch, using 795 KCMIL 26/7 ACSR "Drake" conductor.				
	s2465.5	Rebuild from the greenfield East New Concord switch to Newcomerstown station a ~19.72 mile section of the Philo-Canton 138 kV line as double circuit, using 795 KCMIL 26/7 ACSR "Drake" conductor.				
	s2465.6	Install a three-way phase-over-phase switch, 1200A, 138 kV full SCADA functionality (rustic switch) to replace the hard tap to Bridgeville.				
	s2465.7	Rebuild the 1.9 mile radial T-line tap to Bridgeville as a double circuit in-and-out loop up to the new three-way switch, Rustic switch. The new line will use 556.5 KCMIL ACSR 26/7 "Dove."				
	s2465.8	Install a three-way phase-over-phase switch, 1200A, 138 kV full SCADA functionality (Chandlersville switch) to replace the hard tap to Chandlersville.				
	s2465.9	A new 0.12 mile double circuit 138 kV loop line is to be constructed to replace the existing tap to GM Co-op Chandlerville station, to supply a loop line circuit to a new switch structure. The new line will use 556.5 KCMIL ACSR 26/7 "Dove."				
	s2465.10	Install a three-way phase-over-phase switch, 1200A, 138 kV full SCADA functionality (Norfield switch) to replace the hard tap to Bethel Church. Remove the existing Bloomfield one-way switch.				
	s2465.11	A new 0.5 mile double circuit 138 kV line is to be constructed to replace a portion of the Philo-Torrey 138 kV line, to supply a loop line circuit to a new two-pole dead end with one of the poles of the two-pole dead end supporting a new switch structure. From the switch structure, it will connect to an existing structure of the existing tap line to supply the Bloomfield-GM co-op tap. The new line will use 556.5 KCMIL ACSR 26/7 "Dove."				
	s2465.12	Install a three-way phase-over-phase switch, 1200A, 138 kV full SCADA functionality (East New Concord switch) to replace the hard tap to East New Concord.				
	s2465.13	Upgrade the line protection relays at Philo, replacing the electromechanical relays with modern microprocessor-based relays.				
	s2465.14	Connect OPGW fiber to stations and switches along the route for telecom network connectivity.				

Ohio – TO Supplemental Projects

Map ID	Project	Description	Projected In-Service Date	Project Cost ($M)	TO Zone	TEAC Date
41	s2467.1	Payne – Replace circuit breakers B and C with 69 kV, 3000A 40 kA breakers. Replace the EM relays with new relays and install a new control house.	7/31/2022	$1.41	AEP	2/17/2021
	s2467.2	Install a high-side switch on the 69/12 kV transformer.				
42	s2468	North Strasburg 138 kV – Replace the failed 138 kV circuit switchers with new station line switches. Replace the wood support structures with new steel structures. Add a high-side fuse on the 138/4 kV (2.5 MVA) transformer.	7/1/2021	$0.23		
43	s2472	Fifth Avenue 138 kV – Upgrade the existing 138 kV partial ring bus to a complete 138 kV ring bus and provide a high-side connection for a new distribution transformer. Complete the 138 kV ring bus by adding two 138 kV circuit breakers along with associated bus work and relaying equipment.	5/16/2022	$1.00		3/19/2021
44	s2473.1	Indian Lake-Russells Point (HTM)-Blue Jacket – Eliminate the radial configuration currently serving the Honda Russells Point facility by rebuilding and rerouting the Indian Lake 69 kV. This project will retire ~3.2 miles of the existing 6648 69 kV transmission circuit that traverses a floodplain and build a new 2.6 mile single circuit 1351 AAC 69 kV line extension from the Honda Russels Point that will loop the radial load and decrease line exposure.	12/1/2024	$17.10	Dayton	3/19/2021
	s2473.2	New Russells Point substation – Establish a new 69 kV substation configured in a four-breaker 69 kV ring bus arrangement to the loop the radial load, reduce line exposure and reconfigure the area into a more flexible transmission arrangement.				
	s2473.3	Blue Jacket Tap – Eliminate the three-terminal line arrangement by extending a new single circuit 69 kV 1351 AAC line and looping it in and out of the Blue Jacket substation.				
	s2473.4	Blue Jacket substation – The 69 kV portion of the Blue Jacket substation will be expanded with three new 69 kV breakers to accommodate the new 69 kV line termination eliminating the three terminal line configuration.				
	s2473.5	Harrison Tap – The switches outside of the Harrison REA delivery point will be replaced with a new three-way MOAB with supervisory control to maintain switching flexibility once the Blue Jacket Tap switches are removed.				
	s2473.6	Huntsville Tap – Install a new three-way MOAB switch to increase operator flexibility to restore load during contingency conditions.				

Ohio – TO Supplemental Projects

Map ID	Project	Description	Projected In-Service Date	Project Cost ($M)	TO Zone	TEAC Date
45	s2512	Install a new substation, North Bend. Loop the nearby Miami Fort-Midway 138 kV feeder through North Bend switch connecting the feeder to the bus. Install a 138 kV circuit switcher; a 138/13 kV, 22 MVA transformer; a 13 kV circuit breaker for the low side of the transformer; and 13 kV bus work with circuit breakers for two distribution line exits. Reconfigure distribution lines in the area to include the new capacity available from North Bend substation.	12/1/2023	$7.20	DEOK	4/16/2021
46	s2513	Expand Newtown substation. Move the Beckjord-Newtown 138 kV feeder by removing the existing line switch, take-off tower and foundations, and installing a new line switch and take-off tower with new foundations. Install new 138 kV bus work, two bus switches and a motor-operated air break switch to feed a new 138/13 kV, 22 MVA transformer. Install 13 kV switchgear. Reconfigure distribution lines in the area to be fed by the new transformer and switchgear.		$1.70		
47	s2521.1	Rockford substation – In coordination with AEP, DP&L will retire the Rockford 69/34.5 kV transformer and construct a new 69 kV three-breaker ring configuration to close in this normally open tie at 69 kV in the future.	12/1/2025	$31.10	Dayton	
	s2521.2	Celina-Coldwater-Rockford 69 kV – Rebuild 2.5 miles of the existing 69 kV line to double circuit and construct of 1 mile of new 69 kV line to reroute the Celina-Coldwater-Rockford 69 kV extension into the relocated Celina 69 kV substation.				
	s2521.3	Celina substation – Retire the existing Celina 69 kV substation due to condition and the limitations to expand at the current location. Establish a new 69 kV breaker and one-half configuration and two new 69 kV capacitor banks at a new substation located on the western edge of Celina. The associated breaker and one-half configuration will reduce the total line exposure, eliminate the three-terminal line arrangement, and provide localized reactive compensation to the Celina load.				
	s2521.4	Chickasaw Circuit Breaker (6629) – Circuit breakers will be installed at Chickasaw substation to decrease the exposure on the Amsterdam-Coldwater 69 kV 6629 line to improve reliability.				
	s2521.5	Ft. Recovery Sub & 6684 – 69 kV circuit breakers will be installed at Ft. Recovery substation to decrease the exposure on the line to improve reliability. The tap to Macedon will be brought into a breaker position within Ft. Recovery, which will further decrease exposure on the system. This will require rebuilding ~0.15 miles of 69 kV line as double circuit into the sub.	12/31/2025			
	s2521.6	Sharpsburg, Rosehill, Cooper & Lake Sectionalizing – New automatic 69 kV MOABs switches with supervisory control will be installed at each delivery point to reduce local area interruptions during outage conditions on their associated circuits.	12/31/2023			

Ohio – TO Supplemental Projects

Map ID	Project	Description	Projected In-Service Date	Project Cost ($M)	TO Zone	TEAC Date
48	s2523.1	West Malta – Replace circuit breaker "A" with a 69 kV, 3000A 40 kA circuit breaker. Replace MOAB "X" with a 69 kV SCADA-controlled switch. Remove capacitor bank "AA" and the circuit switcher.	12/10/2022	$2.56	AEP	5/21/2021
	s2523.2	South Rokeby – Remote end upgrades to coordinate with new relaying at West Malta will require a transclosure at South Rokeby and an upgrade to the existing station service.				
49	s2524.1	Rebuild from Howard to Ohio Central as 138 kV double circuit (64 miles) using 795 ACSR conductor. Note that the ~0.5 mile 138 kV line segments outside Ohio Central station will not be rebuilt, as they are newer and in better condition; connect these existing T-line segments to the rebuilt Philo-Howard line asset.	6/1/2028	$187.84		
	s2524.2	Rebuild from Ohio Central to Philo as 138 kV single circuit (19 miles), using 795 ACSR conductor. The existing Ohio Central-Philo No. 2 138 kV circuit will be retired. Update both terminal stations to account for the retired circuit.				
	s2524.3	Millwood station – Retire the 138 kV flip-flop switching scheme, including the two 138 kV switches. Install two new 138 kV switches and replace the 138 kV through-path risers & bus. Reconfigure the 138 kV T-line entrances.				
	s2524.4	West Trinway station – Replace 138 kV through-path risers & bus.				
	s2524.5	Modify 138 kV protective relay settings at Philo, Culbertson, Ohio Central, Academia, North Bellville, North Lexington and Howard stations.				
50	s2525.1	Rebuild of the Astor-East Broad 138 kV circuit, ~2.75 miles in length, with 477KCM ACSS.	6/30/2025	$9.62		
	s2525.2	Astor 138 kV station – Remote end work including replacing the line surge arresters, relay settings and line termination.				
	s2525.3	East Broad 138 kV station – Remote end work including relay settings and line termination.				
51	s2526.1	Cyprus 138 kV station – Establish a greenfield ten-breaker 138 kV (63 kA) laid out as breaker-and-a-half station on property provided by the customer south of AEP's Parsons station. Install 138 kV retail metering toward customer station.	12/1/2022	$16.17		
	s2526.2	Cyprus-Cyprus (customer) 138 kV No. 1 – Build ~0.3 miles of double circuit 138 kV line using 795 ACSR conductor. Extend fiber cable & install redundant fiber cable for relaying and communication to the customer station. One circuit will serve customer's first building; second circuit will be partially constructed to be utilized for future second building to customer's redundancy requirements.				
	s2526.3	Cyprus-Cyprus (customer) 138 kV No. 2 – Build ~0.3 miles of double circuit 138 kV line using 795 ACSR conductor. Extend fiber cable & install redundant fiber cable for relaying and communication to customer station. One circuit will serve customer's first building; second circuit will be partially constructed to be utilized for future second building due to customer's redundancy requirements.				
	s2526.4	White Road 138 kV – Upgrade line to fiber relaying and remote end work.				
	s2526.5	Canal Street 138 kV – Upgrade line to fiber relaying and remote end work.				

Ohio – TO Supplemental Projects

Map ID	Project	Description	Projected In-Service Date	Project Cost ($M)	TO Zone	TEAC Date
52	s2527.1	Sifford station – Construct a greenfield 138 kV station served from the existing Bixby to West Lancaster 138 kV circuit to serve the customer facilities. Station includes installation of six 138 kV, 40 kA 3000A circuit breakers laid out in a breaker-and-half arrangement. Retail metering will also be needed.	5/30/2022	$9.65	AEP	5/21/2021
	s2527.2	West Lancaster-Bixby 138 kV circuit – A couple dead-end structures will be installed to bring the West Lancaster-Bixby circuit into the new Sifford station.				
	s2527.3	Sifford-Ruble No. 1 138 kV Feed A – Install 138 kV line extension from AEP's Sifford station to serve the customer's station located just south of the Sifford station.				
	s2527.4	Sifford-Ruble No. 1 138 kV Feed B – Install a second 138 kV line from AEP's Sifford station to serve the customer's station located just south of the Sifford station to meet customer's redundancy requirements at the site.				
	s2527.5	West Lancaster station – Upgrades will be needed on the existing relays at West Lancaster station toward Sifford to ensure proper coordination.				
	s2527.6	Bixby station – Upgrades will be needed to the existing relays at Bixby station toward Sifford to ensure proper coordination.				
	s2527.7	West Millersport-West Lancaster 138 kV Sag Study Mitigation – The new customer will increase loading on the existing West Millersport-West Lancaster 138 kV circuit. Multiple structure and distribution crossing issues will be mitigated on the line in order to allow the line to operate to its conductor's designed maximum operating temperature.				
53	s2534.1	Construct ~5.1 miles of new 69 kV line between the existing Trail and Alpine delivery points using 556 ACSR conductor.	2/10/2023	$40.04		11/20/2020
	s2534.2	Establish a new delivery point at Winesburg switch by installing a new 1200A, 69 kV phase-over-phase switch with MOABs and metering.				
	s2534.3	Build a new three-way phase-over-phase switch to serve the Holmes-Wayne owned Trail station.				
	s2534.4	Retire West Wilmont junction Sw.				
	s2534.5	Perform West Wilmont-Holmes Wayne co-op line work for Alpine station.				

Ohio – TO Supplemental Projects

Map ID	Project	Description	Projected In-Service Date	Project Cost ($M)	TO Zone	TEAC Date
53	s2534.6	Perform Biliar-West Wilmont 69 kV line work for Alpine station.	2/10/2023	(Continued)	AEP	11/20/2020
	s2534.7	Perform Beartown-West Wilmont 69 kV line work for Alpine station.				
	s2534.8	Build a new station (called Alpine), replacing West Wilmont junction switch. This station will be a four-breaker 69 kV ring bus utilizing 3000A 40 kA breakers.				
	s2534.9	Perform remote end relay work at Beartown station.				
	s2534.10	Perform remote end relay work at Moreland Sw.				
	s2534.11	Retire Shie Hill Sw.				
	s2534.12	Build a new station replacing Shie Hill Sw named Shie Hill. This station will be a three-breaker 69 kV ring bus utilizing 3000A 40 kA breakers.				
	s2534.13	Perform Sugar Creek-Millersburg 34.5 kV line work for Shie Hill station.				
	s2534.14	Perform Shie Hill-Holmes Wayne co-op line work for Shie Hill station.				
	s2534.15	Perform remote end relay work at Sugarcreek Terminal station.				
	s2534.16	Perform remote end relay work at Berlin station.				
	s2534.17	Install a new 138 kV, 3000A 40 kA breaker at West Millersburg station on the line toward Wooster to reduce contingency impacts and potential low-voltage concerns resulting from the new load.				
	s2534.18	Replace the two-way phase-over-phase switch at North Fredericksburg with a new 1200A, 69 kV phase-over-phase with new MOABs. The switch currently in place is not capable of supporting the necessary new equipment.				
	s2534.19	Perform Moreland Sw-Biliar line work for North Fredricksburg switch.				
54	s2545	Eastlake-Lloyd Q13 138 kV line-Eastlake-Lloyd 138 kV Q-13 – Replace the line relaying and replace terminal equipment such as breakers, associated disconnects, wave traps, CCVTs and line tuners as needed.	3/4/2022	$1.00	ATSI	4/16/2021
55	s2547	Replace two 138 kV breakers (B67 & B68) with two 138 kV, 40 kA 3000A breakers. Upgrade relays at Lincoln Park for the Lincoln Park-Lowellville line terminal. Replace four 138 kV disconnect switches (D82, D81, D99 & D100) with 2000A switches. Replace three 138 kV CVTs (CC91, CC92 & CC93). Install a 138 kV 1200A Lowellville line terminal MOABs and support structure. Replace leads and bus connection with conductor at least 278 MVA/SN, 339 MVA/SE. New transmission line ratings for Lincoln Park-Lowellville 138 kV line: Before proposed solution – 155 MVA SN/155 MVA SE & After proposed solution – 187 MVA SN/191 MVA SE.	12/31/2021	$1.40		2/17/2021

Ohio – TO Supplemental Projects

Map ID	Project	Description	Projected In-Service Date	Project Cost ($M)	TO Zone	TEAC Date
56	s2548	Victoria Road 69 kV transmission line tap – Convert and rebuild the Meander-West Austintown 23 kV line to 69 kV between Kimberly substation and West Austintown substation. Tap the Kimberly-West Austintown 23 kV line at or near Victoria Rd. Build ~0.2 miles of 336 ACSR 69 kV line from the tap location to the customer substation.	5/31/2021	$4.14	ATSI	2/17/2021
57	s2553	Construct a 138 kV tap off the Delta-Wauseon 138 kV line to the customer substation. The customer substation tap location is an ~0.8 mile extension from the existing structures to the new customer substation. Provide one 138 kV metering package and add MOAB and SCADA to two existing switches on the Delta-Wauseon 138 kV line.	2/15/2022	$3.20		7/16/2021
58	s2575.1	Install a new three-way phase-over-phase switch (Mousey Sw) and 69 kV metering to serve North Central's Sycamore station.	11/1/2024	$51.58	AEP	
	s2575.2	Construct ~13 miles of new 69 kV line between Bucyrus Center and the new Mousey switch delivery point using 556 ACSR conductor.				
	s2575.3	Install a new 69 kV, 3000A 40 kA breaker and associated terminal equipment at Bucyrus Center on the line toward Mousey switch.				
	s2575.4	Remove the existing West Rockaway 69 kV switch currently used to radially serve the Sycamore delivery point.				
	s2575.5	Construct ~0.8 miles of new 69 kV line between the existing Sycamore radial line and East Tiffin delivery points using 556 ACSR conductor.				
	s2575.6	Reconfigure East Tiffin station to add in a box bay, a breaker and terminal equipment toward Mousey switch and a new line MOAB toward South Tiffin.				
	s2575.7	Rebuild ~2.3 miles of new 69 kV line between the existing Bucyrus and East Bucyrus delivery points using 556 ACSR conductor.				
	s2575.8	Remove ~16 miles of existing 69 kV line between the existing East Bucyrus and Howard delivery points.				
	s2575.9	Retire the existing ~1.4 miles of the Howard-Bucyrus No. 2 line between Bucyrus station and structure 366.				
	s2575.10	Construct ~1.3 miles of new 69 kV line between the existing East Bucyrus delivery point and structure 336 on the Howard-East Bucyrus No. 2 line. This construction will be coordinated with rebuild project S2156.				

Ohio – TO Supplemental Projects

Map ID	Project	Description	Projected In-Service Date	Project Cost ($M)	TO Zone	TEAC Date
59	s2576.1	Lick-Jefferson 69 kV – Rebuild ~8.3 miles of the 69 kV line from Structure 29 to Jefferson switch station with 556.5 ACSR. Install shield wire from Structure 29 to Lick station, ~4 miles. This work requires tree clearing and access road construction in order to add the shield wire to existing structures. Total access road construction is 5.5 miles.	4/20/2023	$26.70	AEP	7/16/2021
	s2576.2	Echo Valley – Replace existing switch with a three-way phase-over-phase 69 kV 1200A switch with SCADA. There will be auto-sectionalizing enabled toward Firebrick.				
	s2576.3	Perform remote end work associated with the line rebuild at Lick & Firebrick.				
60	s2577.1	Rebuild the South Lancaster-East Logan 69 kV circuit, ~16.6 miles in length, with 556.5 ACSR Dove conductor.	5/2/2024	$42.31		
	s2577.2	Rebuild the Enterprise switch-Enterprise Metering structure, ~200 feet in length, with 556.5 ACSR Dove conductor.				
	s2577.3	Enterprise switch – Replace the two-way phase-over-phase switch with a new 1200A three-way phase-over-phase switch with auto sectionalizing and SCADA functionality. Replace the CTs, PTs and metering.				
	s2577.4	West Logan – Replace the three way phase-over-phase switch with a new 1200A three way phase-over-phase switch.				
	s2577.5	South Lancaster – Perform remote end work.				
61	s2578.1	Innovation 138 kV station – Construct a greenfield 138 kV breaker-and-a-half station that includes seven 138 kV, 3000A 63 kA circuit breakers and four total line exits to serve the requested load.	3/31/2023	$27.56		
	s2578.2	Innovation Extension 138 kV – Tap the existing Babbitt-Kirk 138 kV circuit creating the Babbitt-Innovation and Kirk-Innovation 138 kV circuits and construct ~2.2 miles of double circuit line to serve the new station. Extend the telecom fiber into Innovation station for relaying/communication.				
	s2578.3	Conesville-Corridor 345 kV – Relocate a portion of the existing Conesville-Corridor 345 kV single circuit line to accommodate the install of Innovation station. ~0.40 miles of line to be rerouted around station site.				
	s2578.4	Babbitt 138 kV station – Update remote end relay settings and telecom electronics.				
	s2578.5	Kirk 138 kV station – Update remote end relay settings and telecom electronics.				

Ohio – TO Supplemental Projects

Map ID	Project	Description	Projected In-Service Date	Project Cost ($M)	TO Zone	TEAC Date
62	s2579.1	Westfall 138 kV station – Build a new greenfield 138 kV three-breaker ring configured station. The three breakers installed will be 138 kV, 40 kA 3000A. 138 kV revenue metering equipment will be installed.	3/1/2023	$6.52	AEP	7/16/2021
	s2579.2	Westfall-Westfall (SCP) customer 138 kV – Install a 0.02 mile 138 kV single circuit line between Westfall and Westfall (SCP) customer station.				
	s2579.3	Biers Run-Circleville 138 kV – Tap the existing Biers Run-Circleville 138 kV line, removing 0.1 miles and adding two dead-end structures in order to cut the line into the new AEP Westfall station. Extend the telecom fiber into Westfall station for relaying/communication.				
	s2579.4	Circleville 138 kV station – Update remote end relay settings and telecom electronics.				
	s2579.5	Lutz 138 kV station – Update remote end relay settings and telecom electronics.				
63	s2580.1	Dow Chemical Extension – Rebuild Str. 1, 2 & 3 as double circuit to include the Dow Chemical-Highland 69 kV & Dow Chemical-Hanging Rock circuits. ACSR Osprey 556.5 (18/1) conductor (SE 126 MVA) will be used.		$2.84		
	s2580.2	Raceland-Dow Chemical 69 kV – Replace Str. 16 for new alignment. Remove Str. 17, 18, & replace Str. 19 to facilitate new tie-in arrangement. Reconfigure line from new Str. 16 to Gervais switch. ACSR Osprey 556.5 (18/1) conductor (SE 126 MVA) will be used.				
	s2580.3	Gervais switch – Install a new three-way 69 kV, 1200A 61 kA phase-over-phase switch with one SCADA-controlled MOAB (toward Dow Chemical) and one auto-controlled MOAB (toward Wurtland switch) to serve new PureCycle delivery point. Install a 69 kV revenue meter outside of customer station on monopole steel structure.				
	s2580.4	Purecycle Extension – Install ~0.1 miles of single circuit line to connect the customer to Gervais switch; ACSR Hawk 477 (26/7) conductor (SE 128 MVA).				
	s2580.5	Hanging Rock – Install the remote end SFP in the CES at Hanging Rock station to provide the connection for the CGR router at Gervais switch.				
64	s2581	Replace failed 69 kV circuit breaker ‘AN’ at Tidd with a spare 69 kV SF6 gas breaker (3000A/40 kA nameplate).	6/24/2021	$0.10		

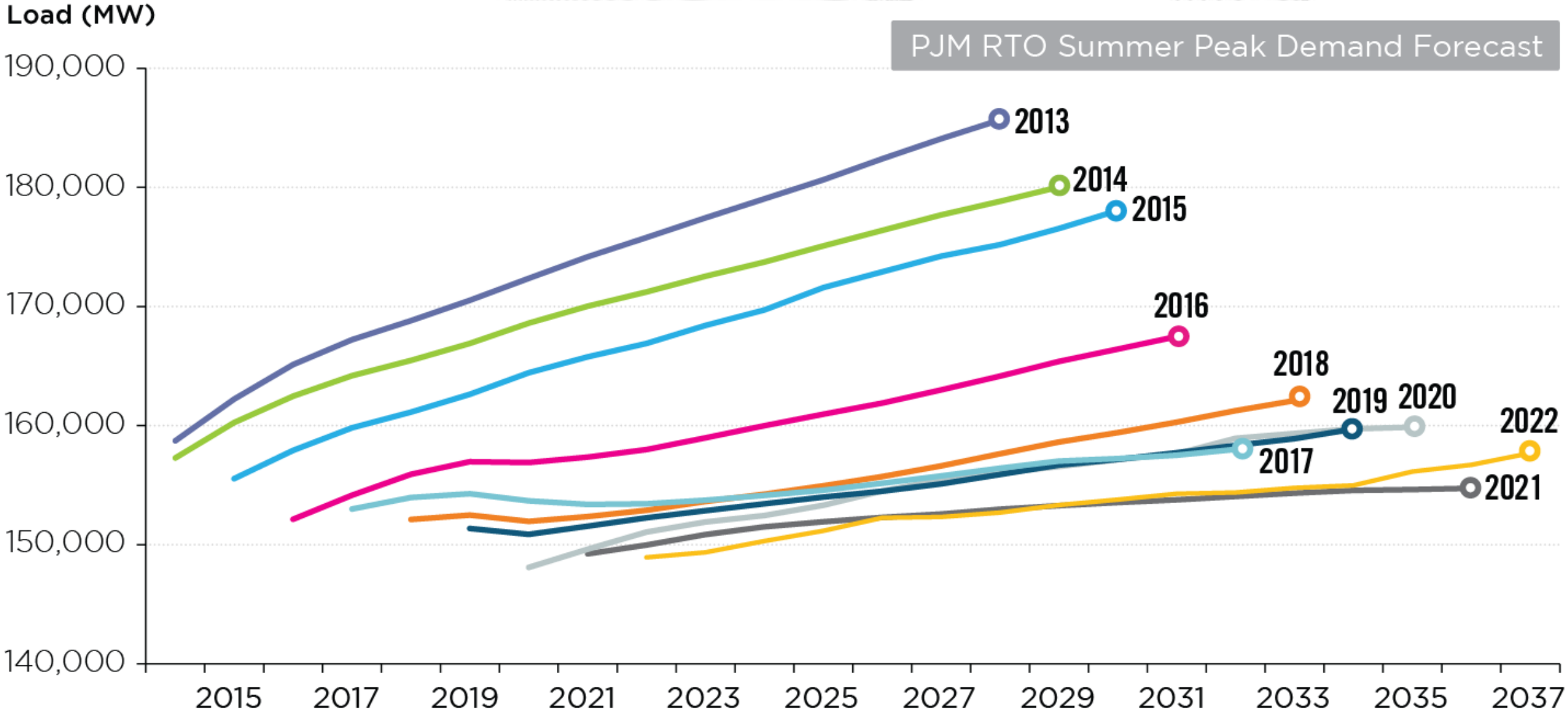
Ohio – TO Supplemental Projects

Map ID	Project	Description	Projected In-Service Date	Project Cost ($M)	TO Zone	TEAC Date
65	**s2586**	Install a 345 kV breaker between the AES bus and the 345/138 kV transformer. Replace the three oil-filled 138 kV breakers. Reconfigure the 138 kV bus into a three-position ring. Terminate in the three positions the 345/138 kV transformer, the 138 kV feeder from Brown substation, and the 138/69 kV transformer. Install a 69 kV breaker connecting the 138/69 kV transformer to the AEP feeder. Build a new control building to house protection, controls and communications equipment. Install fencing to separate Duke Energy facilities from AES facilities.	6/1/2023	$9.40	DEOK	8/10/2021
66	**s2595**	Replace breakers B-13295, B-13296, B-13297 and associated disconnects at GM Powertrain substation. Replace breaker B-13329 and associated disconnects at Jackman substation. Replace limiting substation conductors to exceed associated line ratings.	5/2/2022	$1.50	ATSI	8/16/2021
67	**s2596**	Replace 138 kV bus tie circuit breaker B-22 and breaker leads. Replace disconnect switch D-108 and D-109. Install new SEL-501 breaker failure relying for 138 kV breaker B-22. Replace transfer breaker line relaying for 138 kV breaker B-22.	2/25/2022	$0.70		
68	**s2597**	Replace B-25, B-28, B-19, B-35, B-22, B-24 and B-27 with associated disconnect switches. Replace and install associated FE standard bus relaying panels, transmission line relying panels, capacitor bank panels and BF relay panels. Replace limiting substation conductors to exceed associated line ratings.	3/2/2023	$7.90		

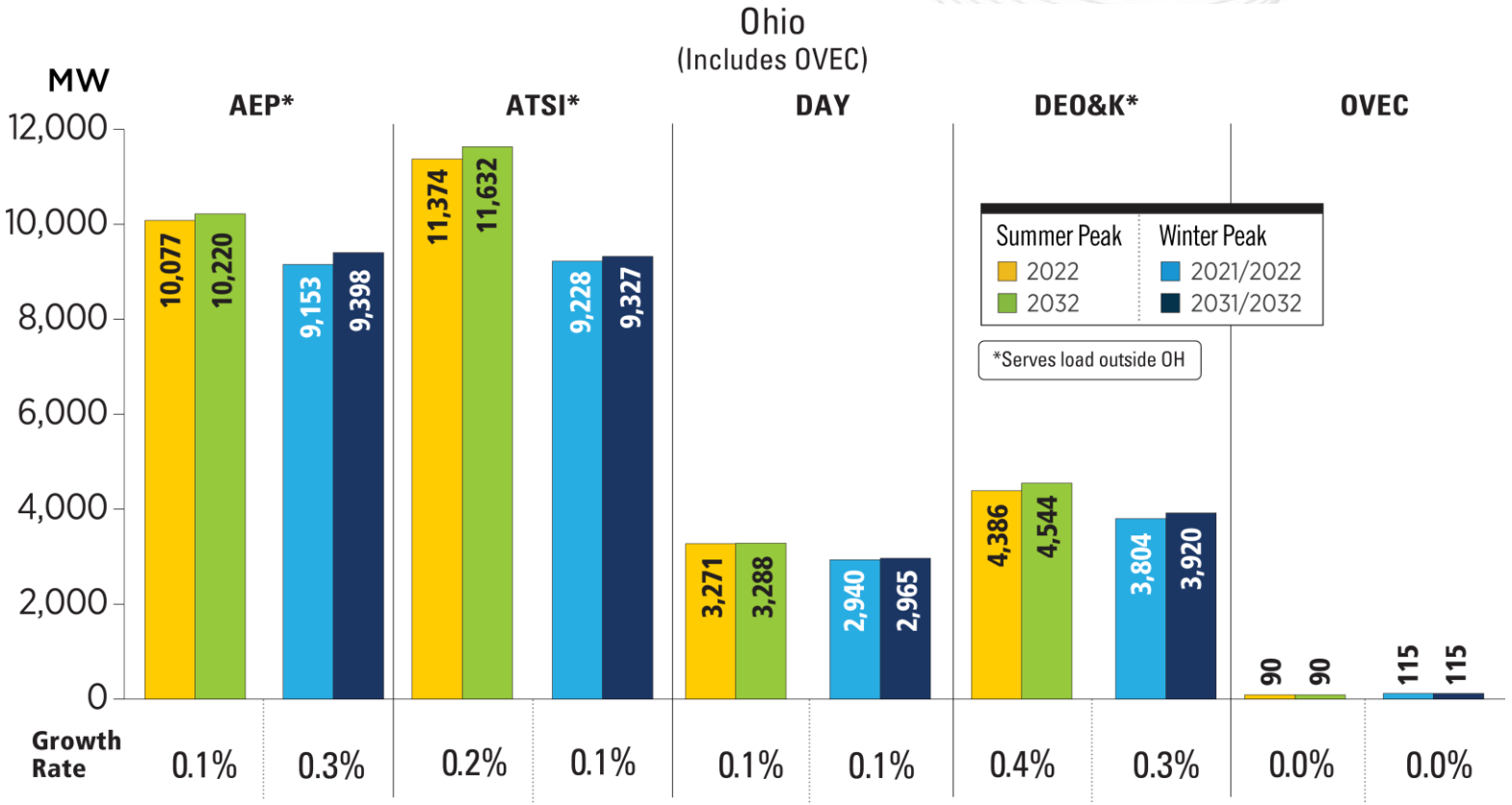
Planning
Load Forecast

PJM Annual Load Forecasts

(Jan. 2022)



Ohio – 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

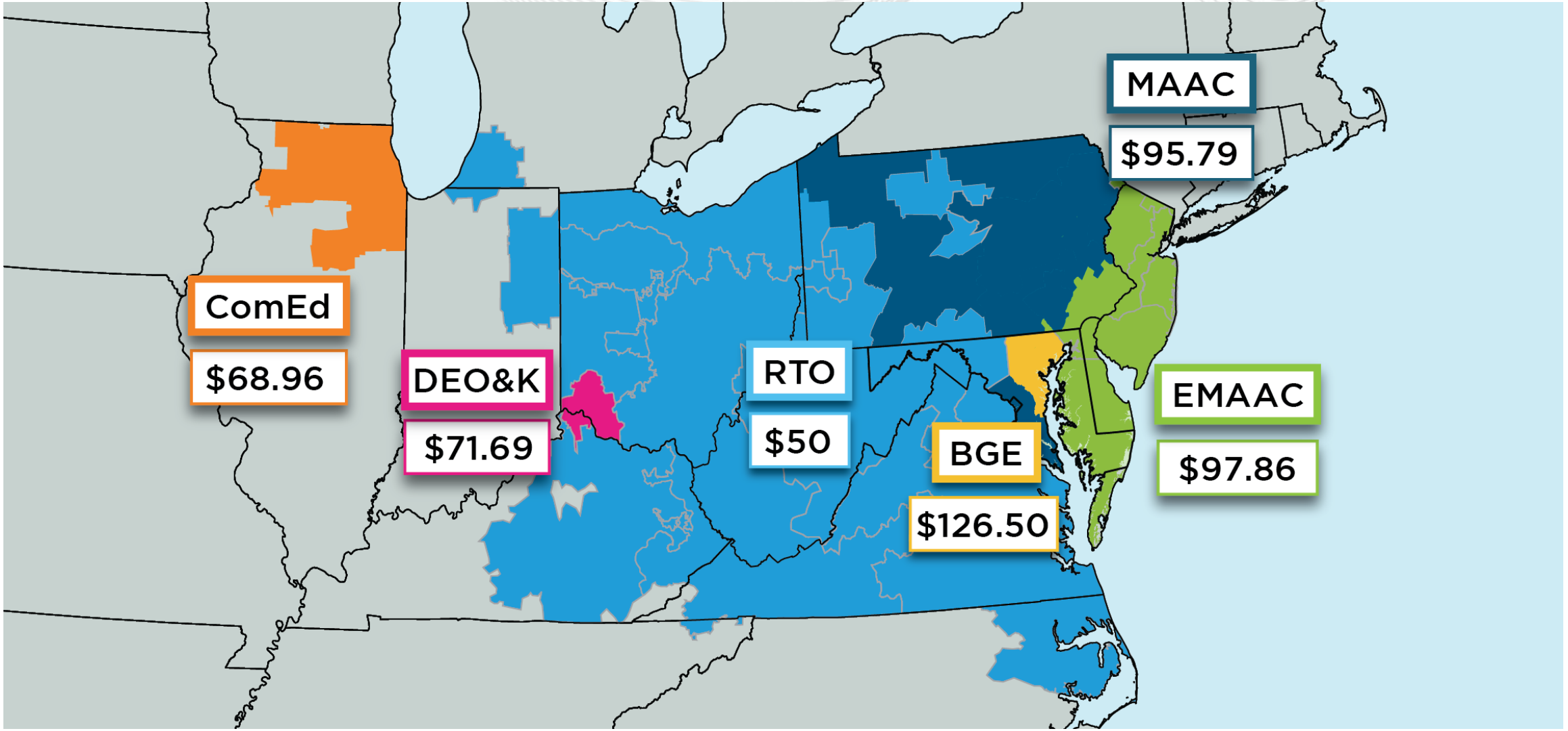
Growth Rate 0.7%

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	

Ohio – Cleared Resources in 2022/23 Auction

(June 2, 2021)

	Cleared MW (Unforced Capacity)	Change from 2021/22 Auction
Generation	22,194	+3,893
Demand Response	1,819	-365
Energy Efficiency	834	+486
Total	24,847	+4,014

RTO Locational Clearing Price	DEO&K Locational Clearing Price
$50	$71.69

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.

Ohio – Offered and Cleared Resources in 2022/23 Auction

(June 2, 2021)

		Unforced Capacity
Generation	Offered MW	25,346
	Cleared MW	22,194
Demand Response	Offered MW	2,247
	Cleared MW	1,819
Energy Efficiency	Offered MW	854
	Cleared MW	834
Total Offered MW		28,447
Total Cleared MW		24,847

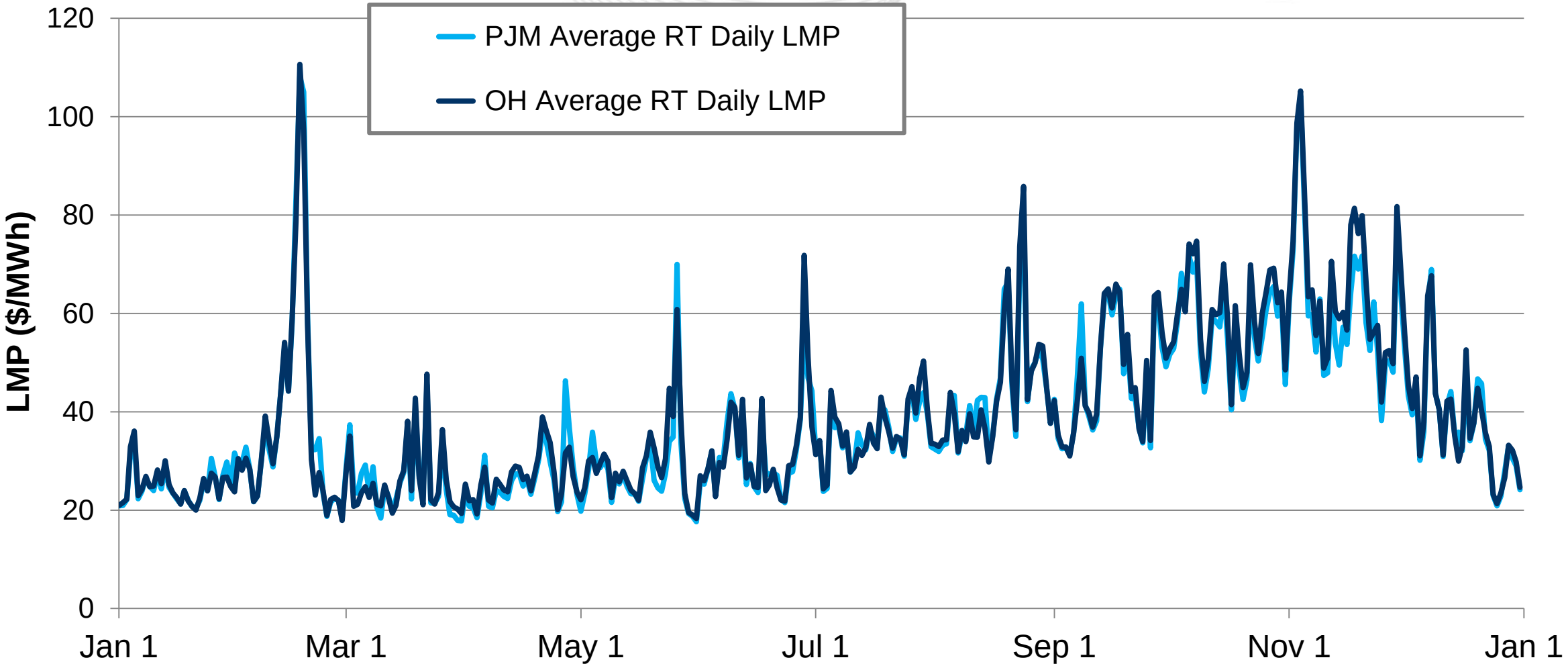
NOTE: Demand Response and Energy Efficiency are reported to PJM by Transmission Zone. The numbers above reflect the state's pro-rata share of cross-state zones for illustrative purposes.

Markets

Market Analysis

Ohio – Average Daily LMP

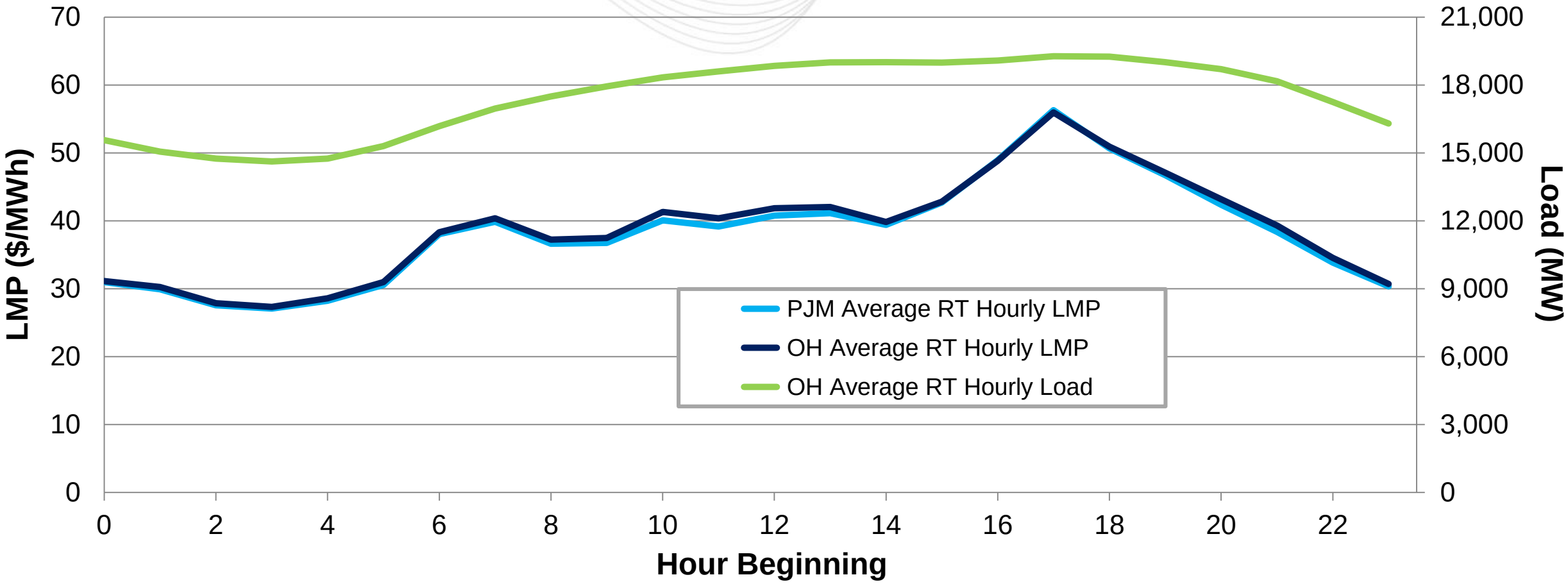
(Jan. 1, 2021 – Dec. 31, 2021)



Ohio – Average Hourly LMP and Load

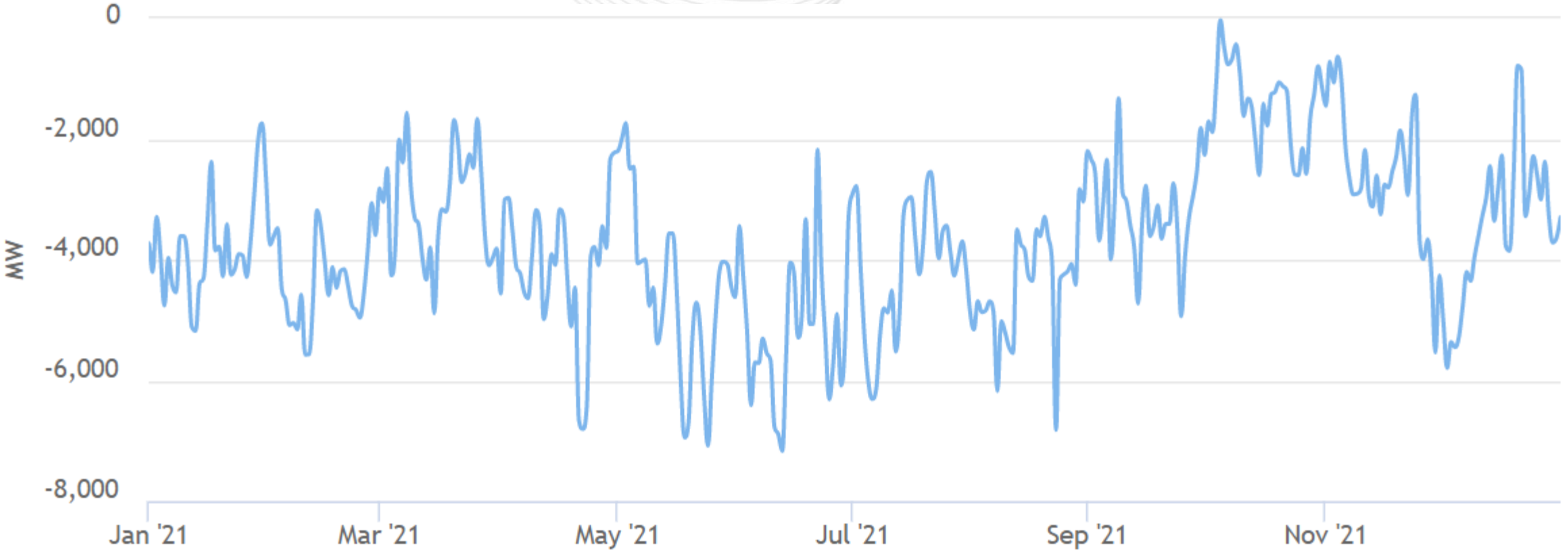
(Jan. 1, 2021 – Dec. 31, 2021)

Ohio's average hourly LMPs generally aligned with the PJM average hourly LMP.



Ohio – Net Energy Import/Export Trend

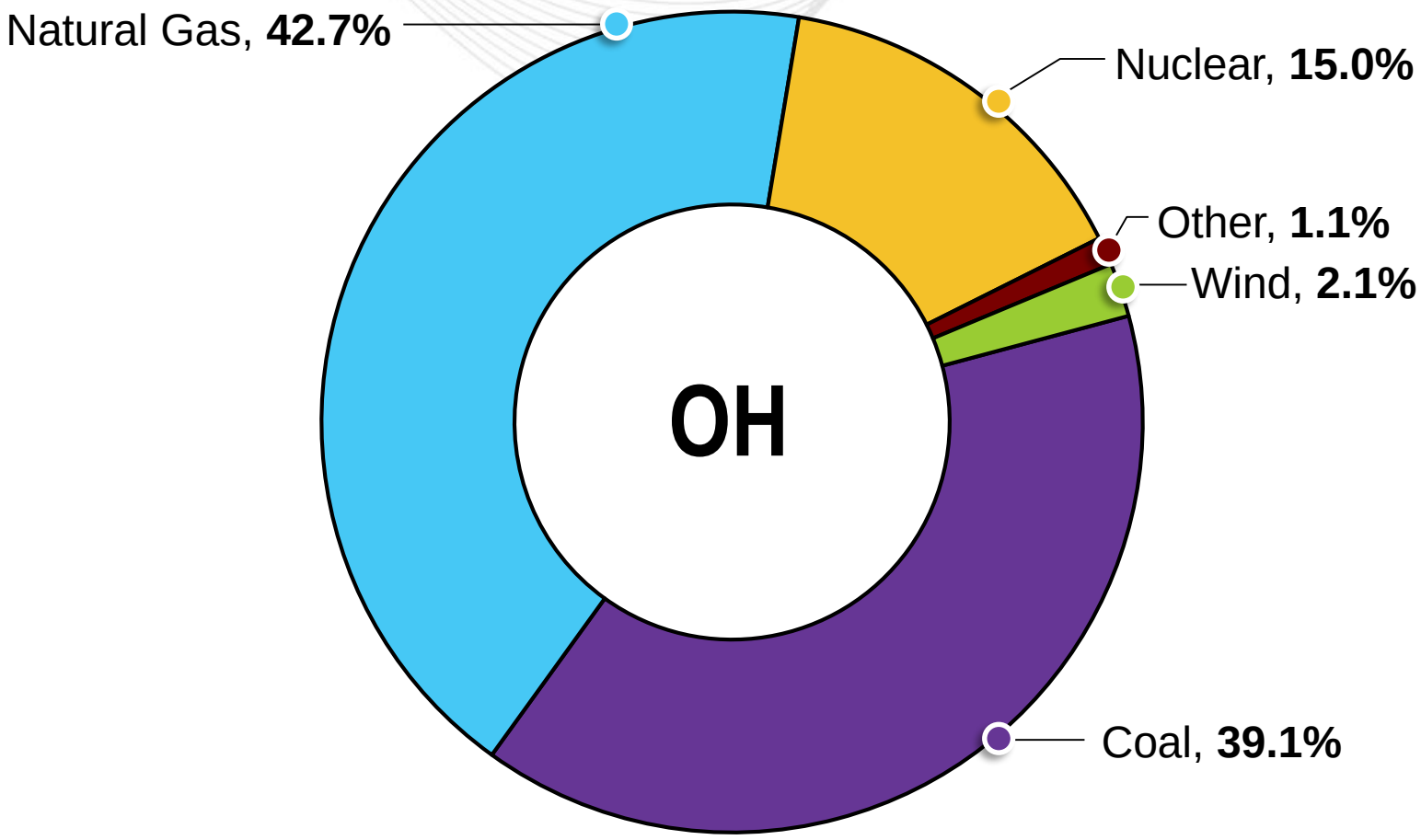
(Jan. 2021 – Dec. 2021)



Positive values represent exports and negative values represent imports.

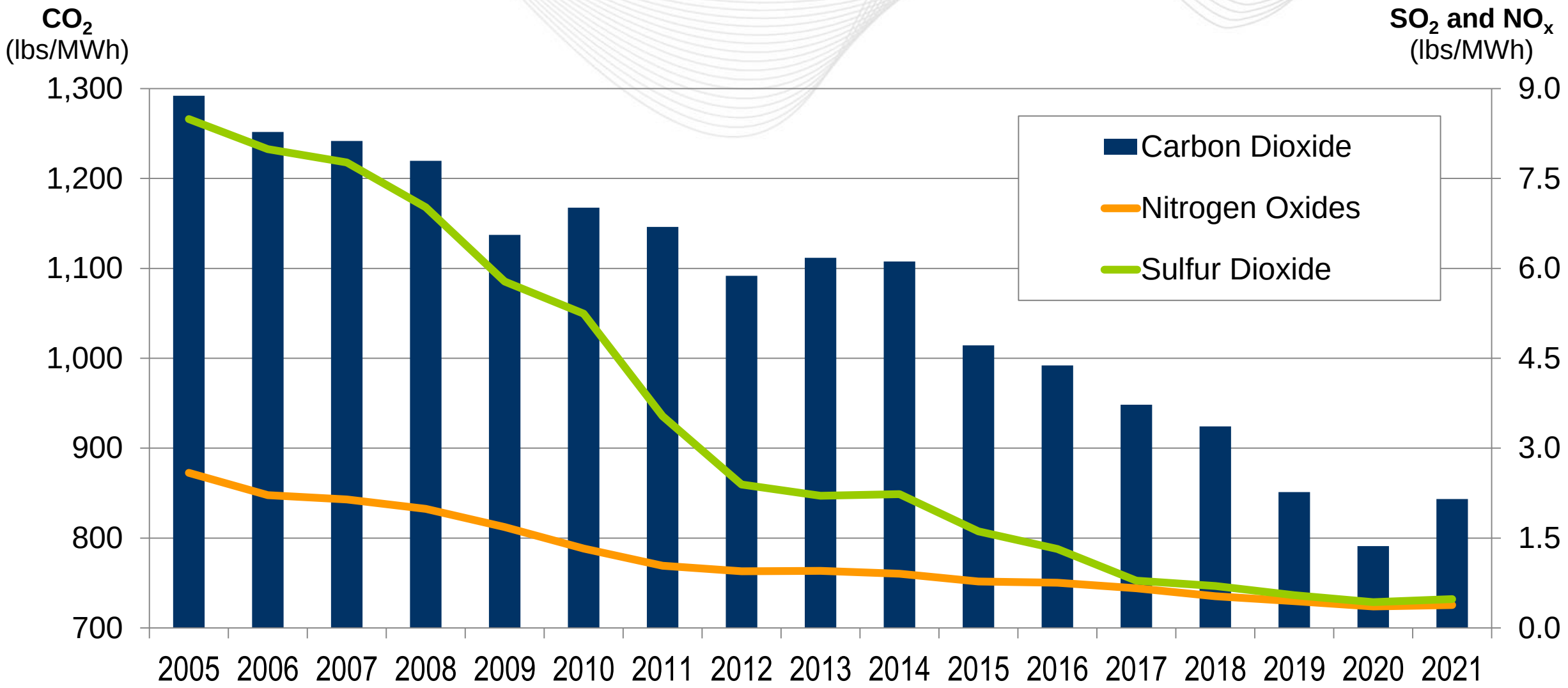
Operations

Ohio – 2021 Generator Production



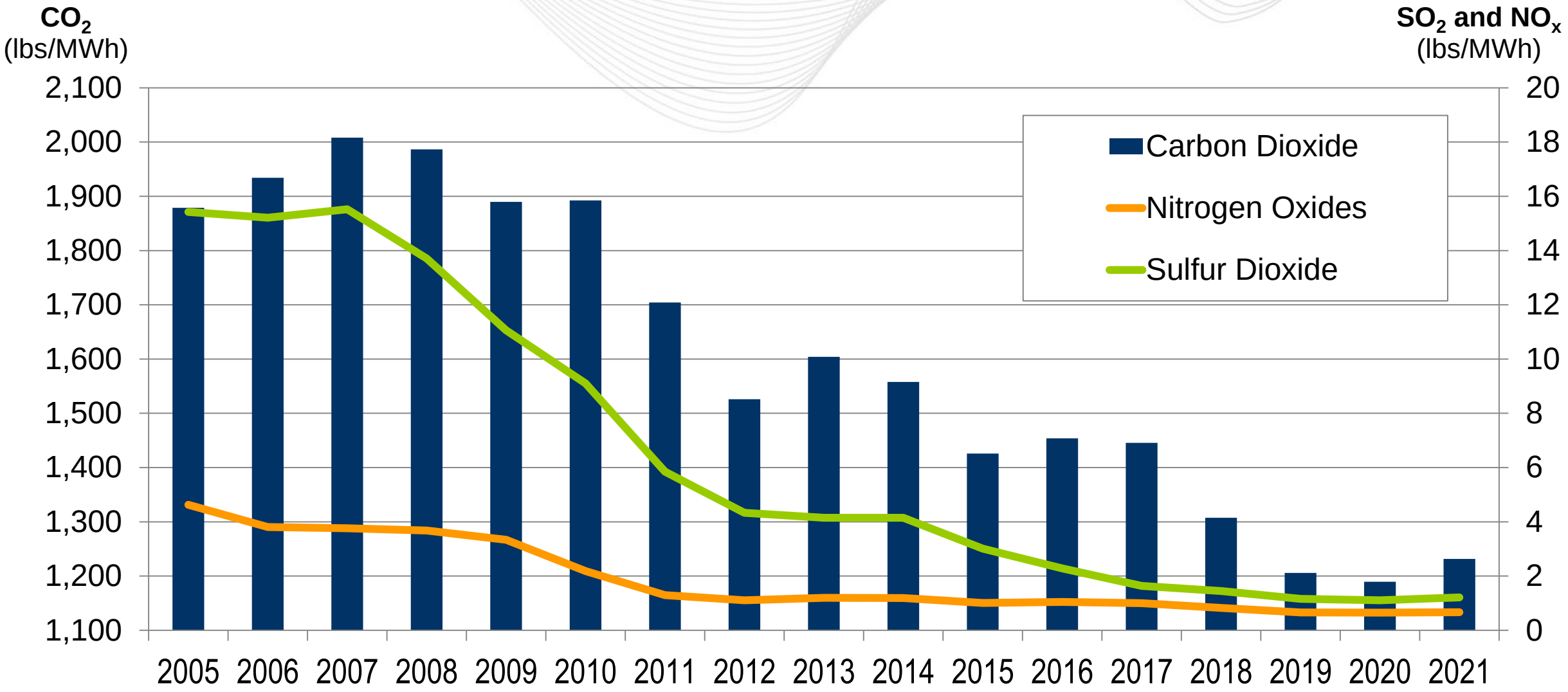
The data in this chart comes from EIA Form 923 (2021).

2005 – 2021 PJM Average Emissions



Ohio – Average Emissions (lbs/MWh)

(Feb. 2022)



Version History

- Version 1 – posted May 9, 2022 (original report)
- Version 2 – posted July 6, 2022 (updated deactivation totals)