2026 RTEP – Capacity Expansion Scenarios for 8-year cases (2034)

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Agenda

- Background
- Review stakeholder feedback and PJM considerations
- Revised assumptions for capacity expansion (CapEx) scenarios and sensitivities
- Siting
- Preliminary results for Scenarios A and B
- Next steps

Background

2026 RTEP's 8-year Cases (2034)

- **<u>2034 Planning Horizon</u>**: 8-year assessments currently used to inform and right-size the 5-year horizon's needs/solutions.
- **<u>Modification</u>:** PJM cannot solve the 2034 reliability cases due to insufficient generation available to meet system demand (forecast 218,339 MW summer peak / 204,549 MW winter peak).
  - Consistent with industry best practices, PJM will use Capacity Expansion Modeling (CapEx) to supplement the generation assumptions in the planning models for the 2034 planning horizon.
  - CapEx will consider Cycle 1 projects as candidate new generation, utilizing the most economic resources in alignment with public policy generation from it
  - In case states or developers observe potential for specific resources to develop within their footprint not captured by the CapEx scenarios, this indicates a higher level of confidence/certainty is required to enable those resources to be pulled through the CapEx model. This could be done through:
    - State commitments via SAA
    - Award of a capacity contract (e.g., through BRA or Reliability Backstop)
- **<u>Purpose of 2026 RTEP's 8-year case</u>:** To be used as an exercise to demonstrate to stakeholders how assumptions: (1) impact the resulting CapEx scenarios and (2) how CapEx results align with previous RTEP cycles' baseline scenarios and (3) inform stakeholders including states of what the current market, policy and economics may be bringing forward which may inform further policy, commitment actions.
  - Not envisioned to be actionable but may inform right-sizing of 5-year solutions:
    - However, PJM currently is not seeing large needs in the 5-year assessment that may require right-sizing
    - May inform some development in the Northwestern PJM (ComEd and neighboring zones).

Other Considerations

- The goal of the RTEP is to ensure that system reliability is maintained using the most credible data (available to date)
- PJM's CapEx approach is aligned with the CapEx modeling that is planned for use as part of the Long-Term Regional Transmission Planning effort to comply with FERC Order 1920; will naturally align with that process as it develops.
- PJM will account for the Reliability Backstop selections and any BRA auction results (if any and in consideration of 2026 RTEP timing) in making final selections of the 2026 RTEP W1 Solutions.
- States will be informed by the impacts of the developed scenarios and sensitivities and may elect to provide higher levels of confidence to the generation assumptions – such as through SAA commitments.

Review of Stakeholder Feedback and PJM Considerations

Entities That Provided Feedback – Thank You!

- PJM sincerely thanks all entities participating and sharing their valuable feedback which helps develop the refined planning assumptions
- This is an ongoing effort and is expected to evolve and further enhance over successive cycles and as assumptions materialize/shift with time

1. OPSI
2. PA Office of Consumer Advocate
3. NJ BPU
4. MD Energy Administration
5. MD Department of Natural Resources (DNR) Power Plant Research Program (PPRP)
6. PJM Cities and Communities Coalition
7. Public Interest Organizations: RMI, NRDC, Sierra Club, Southern Environmental Law Center
8. Corporate Energy Buyers Association
9. FirstEnergy
10. Undisclosed TO 1
11. Exelon
12. PPL

Main Feedback Themes and PJM Considerations - 1/3

Expansion candidates and siting

- *Use PJM Interconnection Queue Cycle 1 (C1) data to inform the capacity expansion*
  - Adopted, PJM will use C1 data to inform the CapEx (see revised CapEx assumption slide)
- *Do not model TC2 before other resources*
  - Adopted, the model can select from TC2 (see revised CapEx assumption slide)
- *Allow for new gas in eastern PA*
  - Adopted, allow gas also in the western PPL transmission zone in PA
- *Is Offshore Wind (OSW) in Scenario B plausible?*
  - Adopted, account for OSW under construction
- *Allow 6- and 8-hour batteries and nuclear, including small modular reactors*
  - Partially Adopted, allow 6- and 8-hour batteries and nuclear uprates
- *How will PJM site resources and load from zonal to nodal?*
  - Adopted, siting methodology provided below (note that for bulk transfer purposes, the exact siting of nodal load may not be of significant importance)

Main Feedback Themes and PJM Considerations - 2/3

Model logic

- *Develop additional sensitivities (low/high load, higher fuel costs, deactivations)*
  - Adopted, PJM to perform additional CapEx sensitivities provided below
- *Account for gas limitations (current capital costs higher than in Quad Review; gas pipeline constraints create additional costs for new gas generation expansion; account for distance from gas infrastructure in siting)*
  - Adopted, see sensitivity on gas expansion with higher costs
- *Co-optimize transmission and generation*
  - Partially Adopted, PJM will discuss the introduction of co-expansion features for generation, transmission, and gas as part of Order 1920 implementation stakeholder discussions later this year
- *Account for external generation and imports*
  - The power flow model will account for all firm transmission services
  - The capacity expansion model preliminary results show new generation heavily developing in western PJM, requiring west-to-east transfers. External generation and imports would also come from the west, reinforcing the need for west-to-east transfers
- *Short circuit analysis for siting new generation*
  - Not considered, see siting methodology below; PJM will take no actions that depend on the specific siting of generation in the 8-year cases
- *Gas pipeline contingencies*
  - May be adopted in the future through implementation of TPL008 standard and similar assessments for resiliency

Main Feedback Themes and PJM Considerations - 3/3

Interaction with other PJM reliability initiatives

- *Consider Connect and Manage*
  - Not Considered: Connect and Manage is an operational, temporary solution
- *Consider BYONG, Reliability Backstop Auction*
  - Partially Adopted: PJM will consider this additional information if/when it becomes available for the identification of needs/solutions (even if not available at time of window opening); RBP results via awarded contracts will be considered for selecting solutions

Use of 8-year cases: *How will PJM use the 8-year cases and multiple scenarios/sensitivities*

- See previous slides

Process: *Transparency (e.g., need more time for feedback, state involvement, need to vet CapEx model)*

- Adopted:
  - PJM is reopening the comment period on the assumptions for the CapEx scenarios and sensitivities and other assumptions for the 8-year cases, including siting
  - Use C1 data to inform the CapEx
  - PJM will provide stakeholders with the CapEx model – see next steps slide

Other Clarifications

- ELCC is endogenous – the ELCC of a resource adjusts with the fuel mix in the model
- Batteries contribution to capacity is based on ELCC as for other resources, including gas gen
- The reserve target in the model is set based on the current reliability standard of 1-in-10 resource adequacy (allows for a reasonable dispatch level avoiding a universal, PJM-wide too-low or too-high dispatch level in planning models)
- Model accounts for the Regional Greenhouse Gas Initiative (RGGI), including for Virginia
- Model is economic and policy based - no transmission representation
  - Transmission consideration is accounted for part of the RTEP / Open Window
- DER projections are captured through the PJM Load Forecast, including the effect of state policies
- Gas prices change by location in the model based on Henry hub + transportation costs
- The model includes technology learning curves also for batteries with longer duration than 4h

Revised Assumptions For CapEx Scenarios and Sensitivities

CapEx Assumptions for the 2026 RTEP 8-year Base Cases)

- **Scenario A.1 (Base 8-year cases – supplement current approach w/ CapEx+TC2+C1 to identify economic resource mix):**
  - 2026 PJM Load Forecast
  - Expansion candidates solar, onshore wind, offshore wind, hybrid, CC, CT, 4-6-8-10h battery, nuclear uprates
  - CAPEX, FOM, VOM, heat rate, and other financial assumptions from Quadrennial Review, NLR/NETL, EEEI (in this order)
  - Use CapEx to identify from TC2 and C1 the additional capacity needed to meet resource adequacy in 2034
  - Do not model offshore wind unless under construction or backed by SAA agreement, nor new gas in NJ, MD, DE, IL, and eastern PA* unless the project has ISA/GIA or it is backed by SAA agreement
    - Based on preliminary results, the CapEx model does not build gas in these areas even when allowed – sensitivity A.2 below
  - Do not model deactivations beyond those already announced
- The goal is to capture the impacts of scenario assumptions to inform 5-year project selection and right-sizing.
- Planning assumptions will evolve over time. PJM will adjust its plans as the assumptions materialize or change

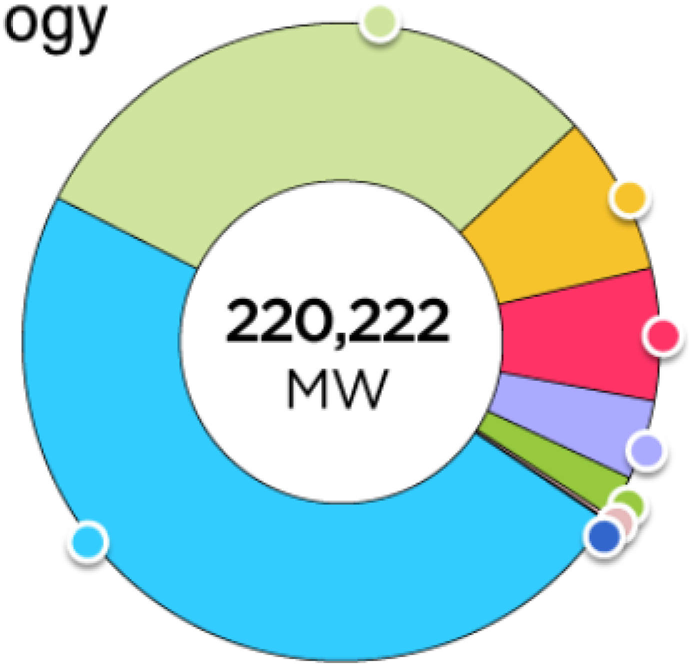
*Eastern PA refers to PECO, Eastern PPL, and METED

Cycle 1 Submissions
(Preliminary Data, Subject to Change)

Cycle 1 Submissions
by Fuel/Technology Type (MWE)

811
Generation Interconnection Submissions

As of April 28, 2026



Fuel/Technology	No. of Units:
Natural Gas, 105,797 MW *Includes single and dual fuel*	157
Storage, 67,465 MW	349
Nuclear, 17,906 MW	27
Solar, 14,781 MW	142
Solar/Storage, 8,890 MW	45
Wind, 4,726 MW	65
Hydro, 151 MW	11
Other, 506 MW *Biomass, Coal, Methane, Fusion*	15

Source: https://insidelines.pjm.com/over-800-new-generation-projects-seek-to-connect-under-pjms-reformed-process/

Other Assumptions

- PJM will be utilizing Energy Exemplar's Eastern Interconnection Dataset (EEEI) with the changes listed in this deck
- Expansion horizon: 2032-2046
  - RTEP 2031 is the start for the expansion
- Henry hub gas price from PJM Market Efficiency
- Discount rate: United States 20-year treasury rate
- Build up to TC2+C1 by 2034 and up to 3x of existing generation + queue by 2045, accounting for land availability for solar and onshore based on the NLR Limiting Access scenario
- Model ELCC and 1-in-10 resource adequacy target

Sensitivities

- PJM will perform the following capacity expansion simulations as sensitivities relative to scenario A.1:
  - A.2, Allow new gas to be built anywhere in PJM
  - A.3, Model states' storage targets
  - A.4, Model retirement of entire coal fleet (to provide indicative results on the effect of additional retirements due to aging infrastructure and economics requested by stakeholders in their feedback)
  - A.5, High gas costs – 30% higher capital cost for new CT and CC, and 25% higher natural gas price
- Scenario B.1, PJM will also run a capacity expansion for a policy scenario with the following assumptions:
  - Do not include the remaining projects in the generation interconnection queue unless economic/consistent with state and federal policies
  - Model RPS and battery storage targets
  - Do not model offshore wind unless under construction or backed by SAA and allow new gas anywhere
  - Model policy-driven deactivations
  - Build up to 2x of existing generation + queue by 2034 and 3x by 2045 (for VA solar 3x, 10x respectively) accounting for land availability for solar and onshore based on the NLR Limiting Access scenario
- PJM will not develop power flows for A.2-A.5 and B.1 (these are intended to show the impact of varying assumptions on the resulting CapEx scenario)

CapEx Generation - Siting

New Generation Siting: Principle

- In power flow cases, the generation profile in confirmation with Capacity Expansion (CapEx) will be modelled based on Existing, TC1, TC2, and C1 (Existing and Queue) generators
- Following principles will apply in developing generation profile of power flow cases:
  - If Existing and Queue generation capacity exceeds CapEx capacity, the TC2 and C1 capacities will be scaled down
  - If Existing and Queue generation capacity is less than that of CapEx capacity:
    - New generators by amount of shortfall will be modelled at EHV buses ($\text{Bus } kV \geq 345\ kV$).
    - The EHV buses to model new generation will be selected based on their location and proximity to Existing and Queue capacity, and gas infrastructure (for such assets)
    - Capacity of new generation will be based on reference MW capacity of the fuel types, MW shortfall, and capacity MW of Existing and Queue generators in the proximity of the EHV bus.
- Additionally, PJM will explore the possibility of optimizing the size and location of new generation
- PJM invites stakeholders' feedback on these siting principles and will finalize a decision at the June TEAC given that feedback

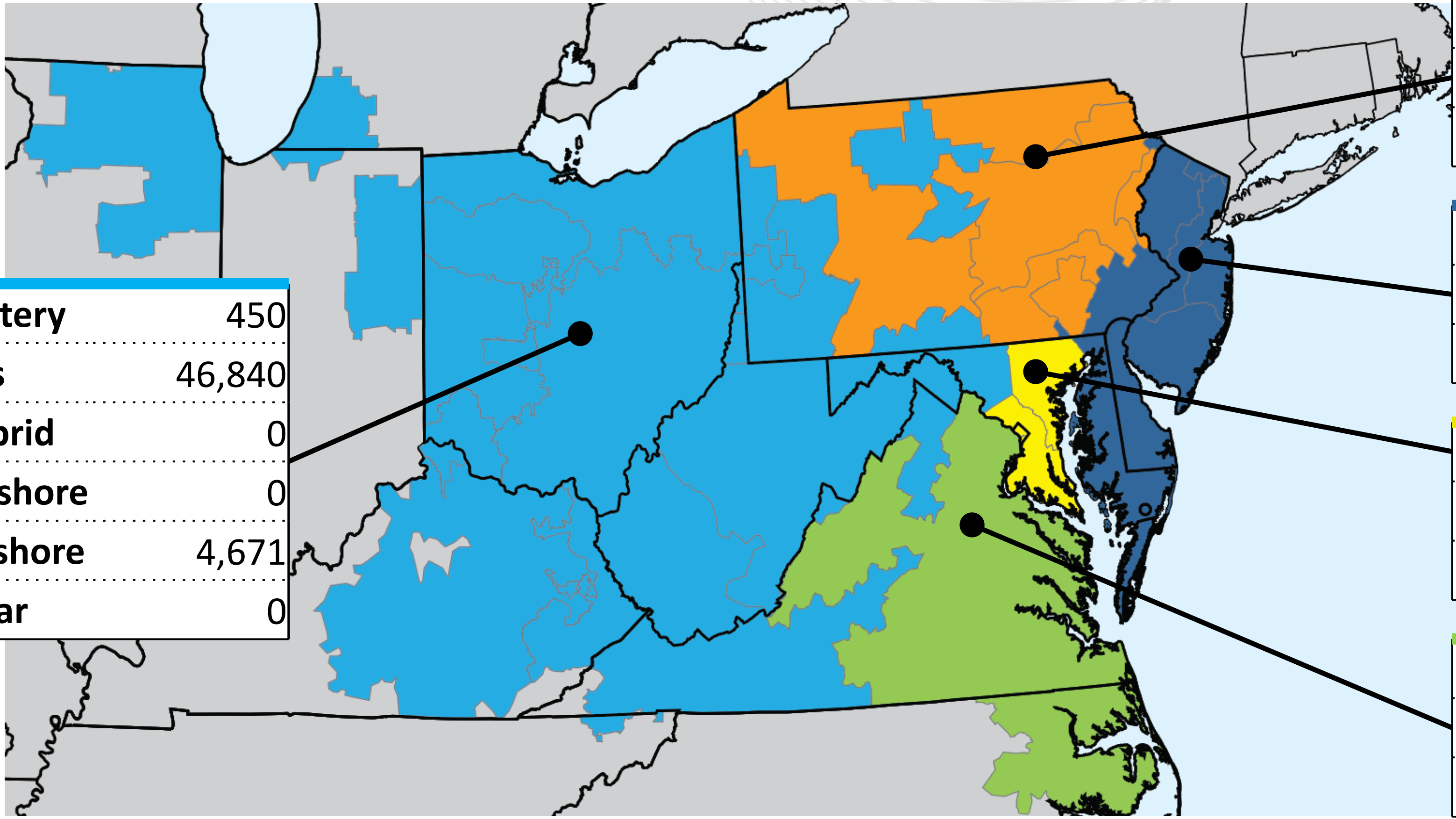
Siting Constraints

- Many regulations governing the siting of wind and solar projects are established at the county or township level. Local zoning ordinances might affect the availability of land for wind and solar development.
- The most common zoning ordinances include setbacks from structures, roads, and property lines; sound restrictions; height limitations; and an increasing number of moratoriums or bans.
- PJM will use NLR’s Limited Access siting scenario for wind and solar[1].
  - The Limited Access scenario uses environmental constraints, and national defense concerns, as well as conservative wind and solar setbacks based on local ordinances surveyed in Lopez et al.[2]

1 “Renewable Energy Technical Potential and Supply Curves for the Contiguous United States: 2024 Edition” https://docs.nlr.gov/docs/fy25osti/91900.pdf
2 “Impact of siting ordinances on land availability for wind and solar development” https://www.nature.com/articles/s41560-023-01319-3

Capacity Expansion Draft Results for Scenarios A and B

Scenario A: Capacity Expansion Additions by 2034



Battery	450
Gas	46,840
Hybrid	0
Offshore	0
Onshore	4,671
Solar	0

Battery	0	Offshore	0
Gas	0	Onshore	0
Hybrid	0	Solar	0

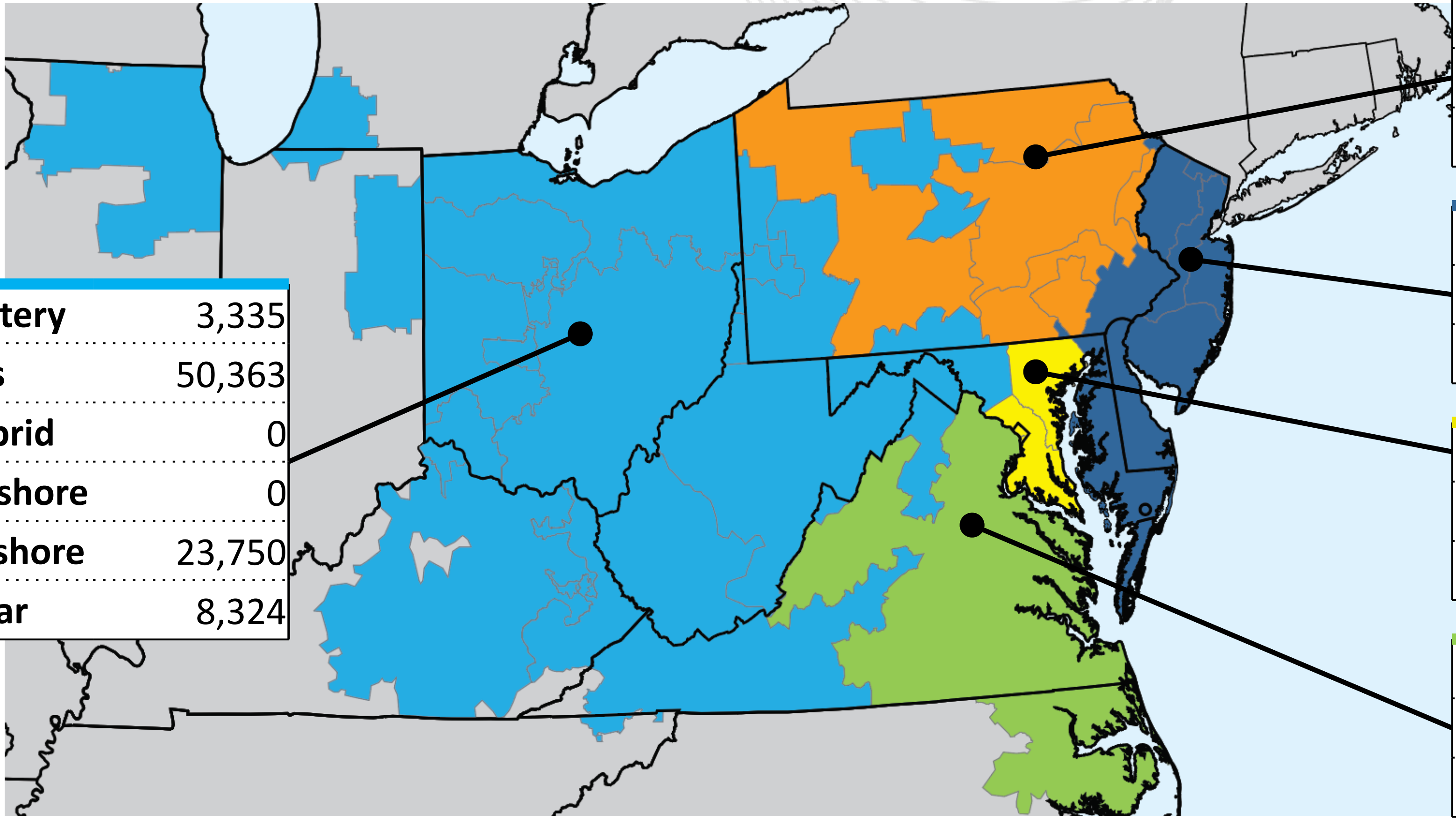
Battery	0	Offshore	0
Gas	0	Onshore	0
Hybrid	0	Solar	0

Battery	0	Offshore	0
Gas	0	Onshore	0
Hybrid	0	Solar	0

Battery	462	Offshore	0
Gas	0	Onshore	0
Hybrid	0	Solar	0

Eastern MAAC (EMAAC) Southwest MAAC (SWMAAC) Western MAAC (WMAAC) South West

Scenario B: Capacity Expansion Additions by 2034



Battery	3,335
Gas	50,363
Hybrid	0
Offshore	0
Onshore	23,750
Solar	8,324

Battery	0	**Offshore**	0
Gas	0	**Onshore**	0
Hybrid	0	**Solar**	0

Battery	1,067	**Offshore**	0
Gas	0	**Onshore**	0
Hybrid	0	**Solar**	692

Battery	0	**Offshore**	0
Gas	0	**Onshore**	0
Hybrid	0	**Solar**	841

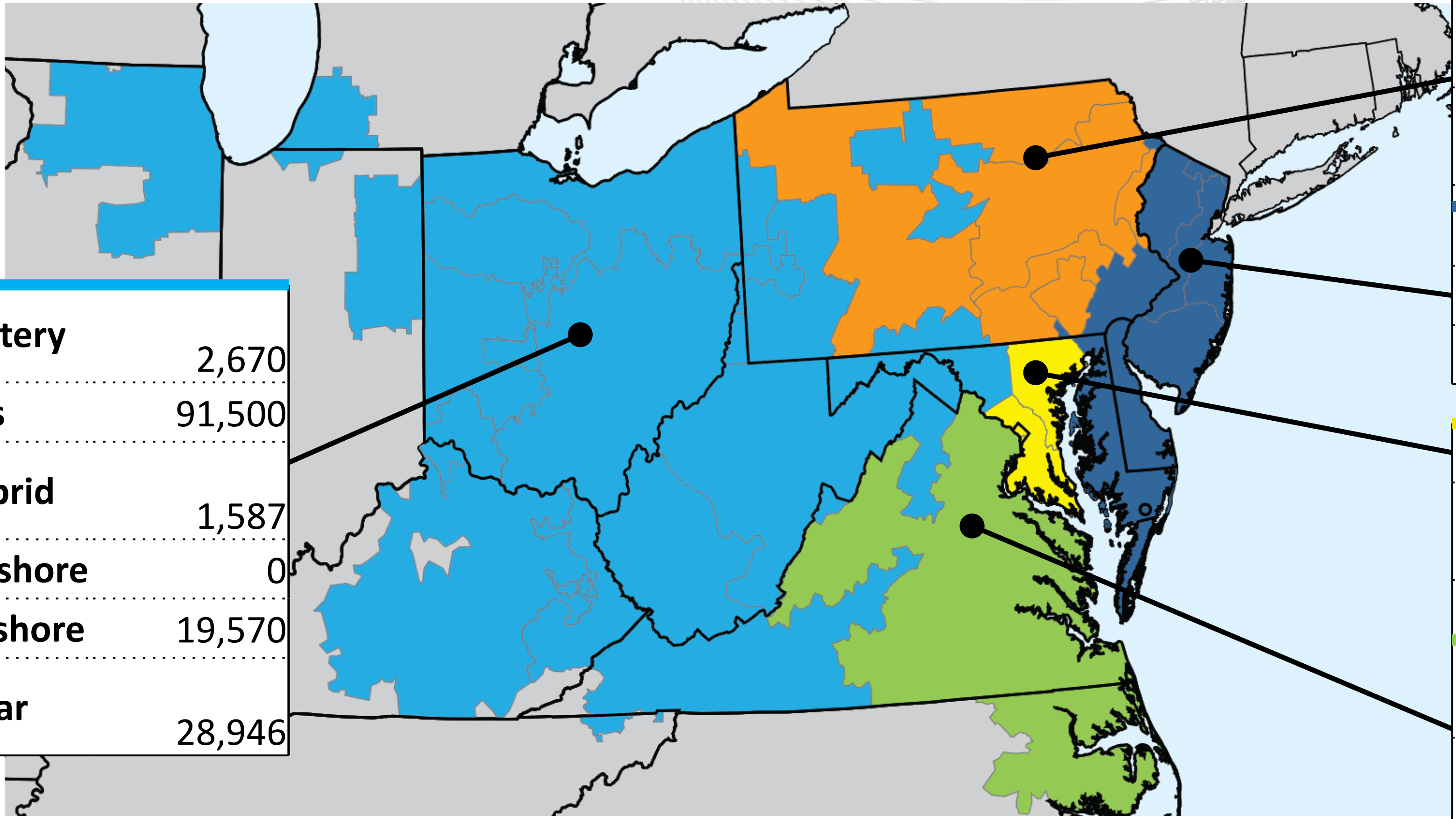
Battery	625	**Offshore**	0
Gas	0	**Onshore**	90
Hybrid	0	**Solar**	32,389

Next Steps

- Stakeholders can continue to provide feedback on the assumptions for the CapEx scenarios and sensitivities and for the other assumptions for the 8-year reliability cases, including siting and the assumptions detailed in the appendix, either during today's TEAC meeting, May 8, or in writing prior to Friday, May 22
- PJM will consider stakeholder feedback on these assumptions, finalize the assumptions, and provide CapEx results at the June 2 TEAC
- PJM will share with stakeholders the CapEx model for the competitive window
- PJM intends to further discuss PJM's capacity expansion approach for Order 1000 planning as opposed to Order 1920 planning within the stakeholder process for Order 1920 manual revisions later in 2026

Appendix

Scenario A: Resource Mix 2034



Battery	2,670		
Gas	91,500		
Hybrid	1,587		
Offshore	0		
Onshore	19,570		
Solar	28,946		

Battery	350	Offshore	0
Gas	11,504	Onshore	1,353

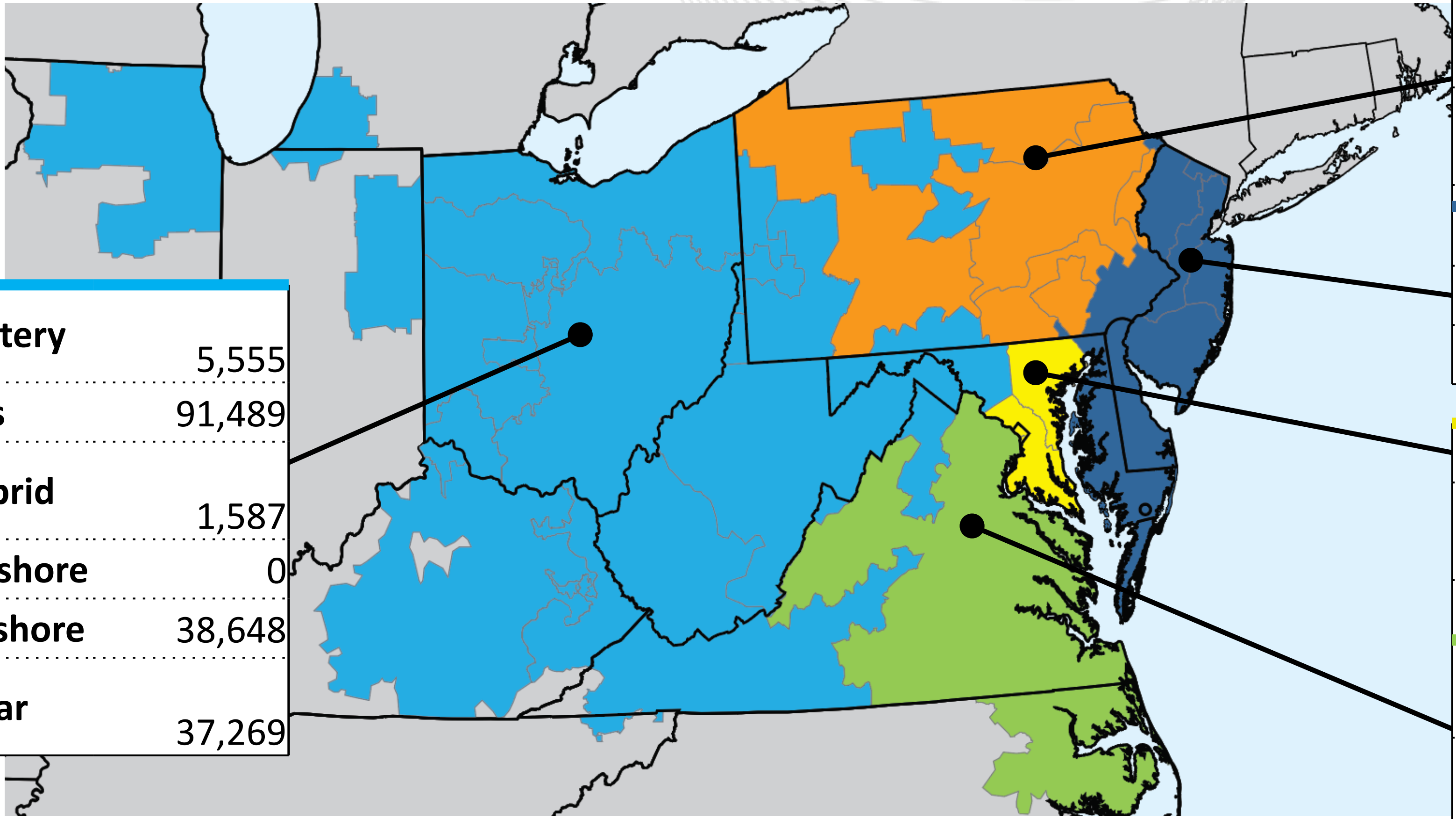
Battery	907	Offshore	0
Gas	16,356	Onshore	0
Hybrid	80	Solar	2,283

Battery	503	Offshore	0
Gas	2,739	Onshore	0
Hybrid	0	Solar	[illegible]

Battery	2,422	Offshore	2,489
Gas	16,598	Onshore	590
Hybrid	436	Solar	11,309

	Eastern MAAC (EMAAC)	Southwest MAAC (SWMAAC)	Western MAAC (		
Peak Load 2034:	**35,267 MW**	**13,525 MW**	**19,835 MW**	**39,061 MW**	**108,032 MW**

Scenario B: Resource Mix 2034



Battery	5,555		
Gas	91,489		
Hybrid	1,587		
Offshore	0		
Onshore	38,648		
Solar	37,269		

Battery	350	Offshore	0
Gas	11,504	Onshore	1,353

Battery	1974	Offshore	0
Gas	16,309	Onshore	0
Hybrid	80	Solar	2,975

Battery	503	Offshore	0
Gas	2,739	Onshore	0
Hybrid	0	Solar	

Battery	2,585	Offshore	2,489
Gas	16,598	Onshore	680
Hybrid	436	Solar	43,698

	Eastern MAAC (EMAAC)	Southwest MAAC (SWMAAC)	Western MAAC (W		
Peak Load 2034:	**35,267 MW**	**13,525 MW**	**19,835 MW**	**39,061 MW**	**108,032 MW**

Scenario A: Capacity Additions (MW) by Zone

Scenario A						
	Battery	Gas	Hybrid	Offshore	Onshore	Solar
AEP	0	26076	0	0	269	0
APS	200	7603	0	0	1572	0
AE	0	0	0	0	0	0
BGE	0	0	0	0	0	0
ComEd	0	0	0	0	2530	0
Dayton	0	3917	0	0	0	0
DPL	0	0	0	0	0	0
Dom	462	0	0	0	0	0
DEOK	0	0	0	0	0	0
DLC	0	0	0	0	0	0
EKPC	250	0	0	0	0	0
ATSI	0	9244	0	0	300	0
JCPL	0	0	0	0	0	0
Meted	0	0	0	0	0	0
Penelec	0	0	0	0	0	0
PPL	0	0	0	0	0	0
PEPCO	0	0	0	0	0	0
PECO	0	0	0	0	0	0
PSEG	0	0	0	0	0	0
RECO	0	0	0	0	0	0
Total	**912**	**46840**	**0**	**0**	**4671**	**0**

Scenario B: Capacity Additions (MW) by Zone

Scenario B						
	Battery	Gas	Hybrid	Offshore	Onshore	Solar
AEP	788	17858	0	0	5489	3731
APS	2293	10812	0	0	4275	1394
AE	387	0	0	0	0	0
BGE	0	0	0	0	0	360
ComEd	255	0	0	0	13088	0
Dayton	0	4243	0	0	0	0
DPL	0	0	0	0	0	692
Dom	625	0	0	0	90	32389
DEOK	0	2588	0	0	0	0
DLC	0	4603	0	0	0	0
EKPC	0	2037	0	0	0	3198
ATSI	0	8222	0	0	898	0
JCPL	342	0	0	0	0	0
Meted	0	0	0	0	0	0
Penelec	0	0	0	0	0	0
PPL	0	0	0	0	0	0
PEPCO	0	0	0	0	0	481
PECO	0	0	0	0	0	0
PSEG	338	0	0	0	0	0
RECO	0	0	0	0	0	0
Total	**5027**	**50363**	**0**	**0**	**23840**	**42245**

Scenario A: Resource Mix (MW) by Zone

Scenario A						
	Battery	*Gas*	*Hybrid*	*Offshore*	*Onshore*	*Solar*
AEP	1400	40860	847	0	5220	16566
APS	220	13998	400	0	3086	2053
AE	120	994	0	0	0	254
BGE	503	253	0	0	0	30
ComEd	510	10534	270	0	10558	4283
Dayton	185	4845	0	0	0	1857
DPL	9	3468	10	0	0	1240
Dom	2422	16598	436	2489	590	11309
DEOK	104	1615	0	0	0	349
DLC	0	345	0	0	0	54
EKPC	250	1519	0	0	0	1487
ATSI	0	17783	70	0	706	2297
JCPL	250	2075	70	0	0	551
Meted	20	2708	0	0	0	385
Penelec	160	2349	175	0	1131	1765
PPL	170	6446	20	0	222	798
PEPCO	0	2485	0	0	0	76
PECO	0	4212	0	0	0	3
PSEG	528	5607	0	0	0	234
RECO	0	0	0	0	0	0
Total	**6851**	**138696**	**2297**	**2489**	**21513**	**45592**

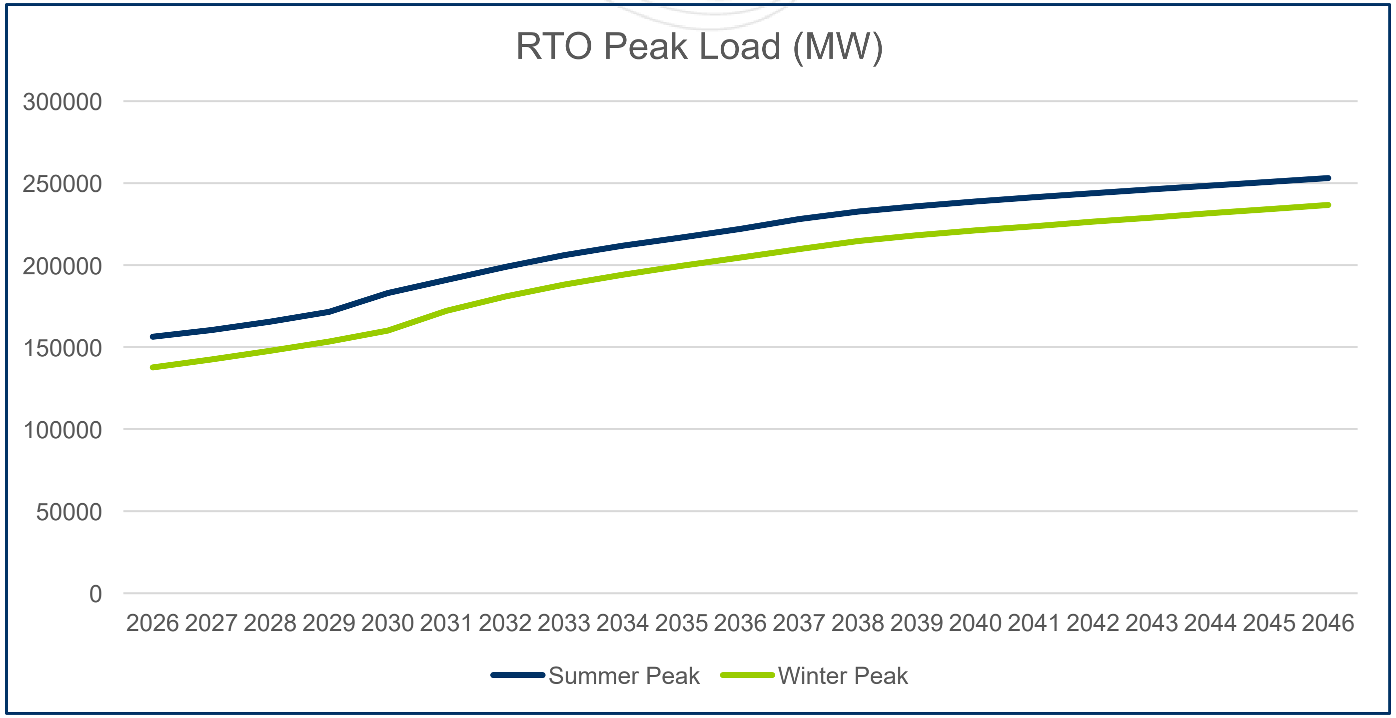
Scenario B: Resource Mix (MW) by Zone

	Scenario B					
	Battery	*Gas*	*Hybrid*	*Offshore*	*Onshore*	*Solar*
AEP	2188	32642	847	0	10441	20297
APS	2313	17207	400	0	5788	3447
AE	507	994	0	0	0	254
BGE	503	253	0	0	0	390
ComEd	765	7000	270	0	21115	4283
Dayton	185	5170	0	0	0	1857
DPL	9	3468	10	0	0	1932
Dom	2585	16598	436	2489	680	43698
DEOK	104	4204	0	0	0	349
DLC	0	4948	0	0	0	54
EKPC	0	3557	0	0	0	4685
ATSI	0	16761	70	0	1304	2297
JCPL	592	2075	70	0	0	551
Meted	20	2708	0	0	0	385
Penelec	160	2349	175	0	1131	1765
PPL	170	6446	20	0	222	798
PEPCO	0	2485	0	0	0	557
PECO	0	4212	0	0	0	3
PSEG	866	5560	0	0	0	234
RECO	0	0	0	0	0	0
Total	**10966**	**138639**	**2297**	**2489**	**40682**	**87837**

Assumptions

- Load assumptions
- Generation and storage technologies
- Fixed and Variable costs components
  - Fixed: Capital, fixed O&M, geographic adjustments coefficients
  - Variable: Heat rates, fuel costs, variable O&M
- Financial assumptions (fixed charge rate and discount rate)
- Renewable capacity factors
- Policy assumptions (new generation and deactivations)
- Resource adequacy
- Starting resource mix
- Build limits for capacity expansion (Generation Interconnection data and siting opportunities)

- PJM's 2026 Demand forecast



Generation and storage technologies

- Solar PV
- Onshore Wind
- Offshore Wind
- Battery Energy Storage (4-, 6-, 8- and 10-hour)
- Hybrid (Solar + Battery in 2:1 configuration)
- Combustion Turbine
- Combined Cycle
- Nuclear uprates

Fixed Costs, Variable Costs, and Financial Assumptions

- Fixed Costs, Variable Costs, and Financial assumptions based on available resources in the following order:
  - 2025 PJM Quadrennial Review
  - NRL (Annual Technology Baseline) and NETL (Cost and Performance Baseline studies)
  - Energy Exemplar Eastern Interconnection data

- We model other legislation and policies, including One Big Beautiful Bill Act (OBBBA) and the Regional Greenhouse Gas Initiative (RGGI), through their effect on fixed and variable costs assumptions

Fixed Costs

	Overnight Capital Cost (2028$/kW)	*FOM (2028$/kW-year)*
Combined Cycle		
EMAAC	1517	41.0
SWMAAC	1411	61.0
Rest of RTO	1419	57.0
WMAAC	1476	48.0
COMED	1649	38.0
Combustion Turbine		
EMAAC	1395	21.0
SWMAAC	1339	33.0
Rest of RTO	1361	25.0
WMAAC	1390	21.0
COMED	1495	21.0
BESS 4-hr		
EMAAC	1832	57.0
SWMAAC	1753	62.0
Rest of RTO	1750	55.0
WMAAC	1784	57.0
COMED	1980	59.0

Brattle 2025 CONE Report for PJM (Quadrennial Review)
https://www.pjm.com/-/media/DotCom/committees-groups/committees/mic/2025/20250411-special/item-01-2-cone-report-final.pdf

Fixed Costs (cont.)

	Overnight Capital Cost (2022$/kW)	FOM (2022$/kW-year)
Solar	1378.9	21.6
Onshore	1481.3	31.6
Offshore	4582.6	86.2
BESS 6-hr	2481.4	62.0
BESS 8-hr	3192.9	79.8
BESS 10-hr	3904.4	97.6
Hybrid (Solar-plus-Battery)	2252.4	61.5

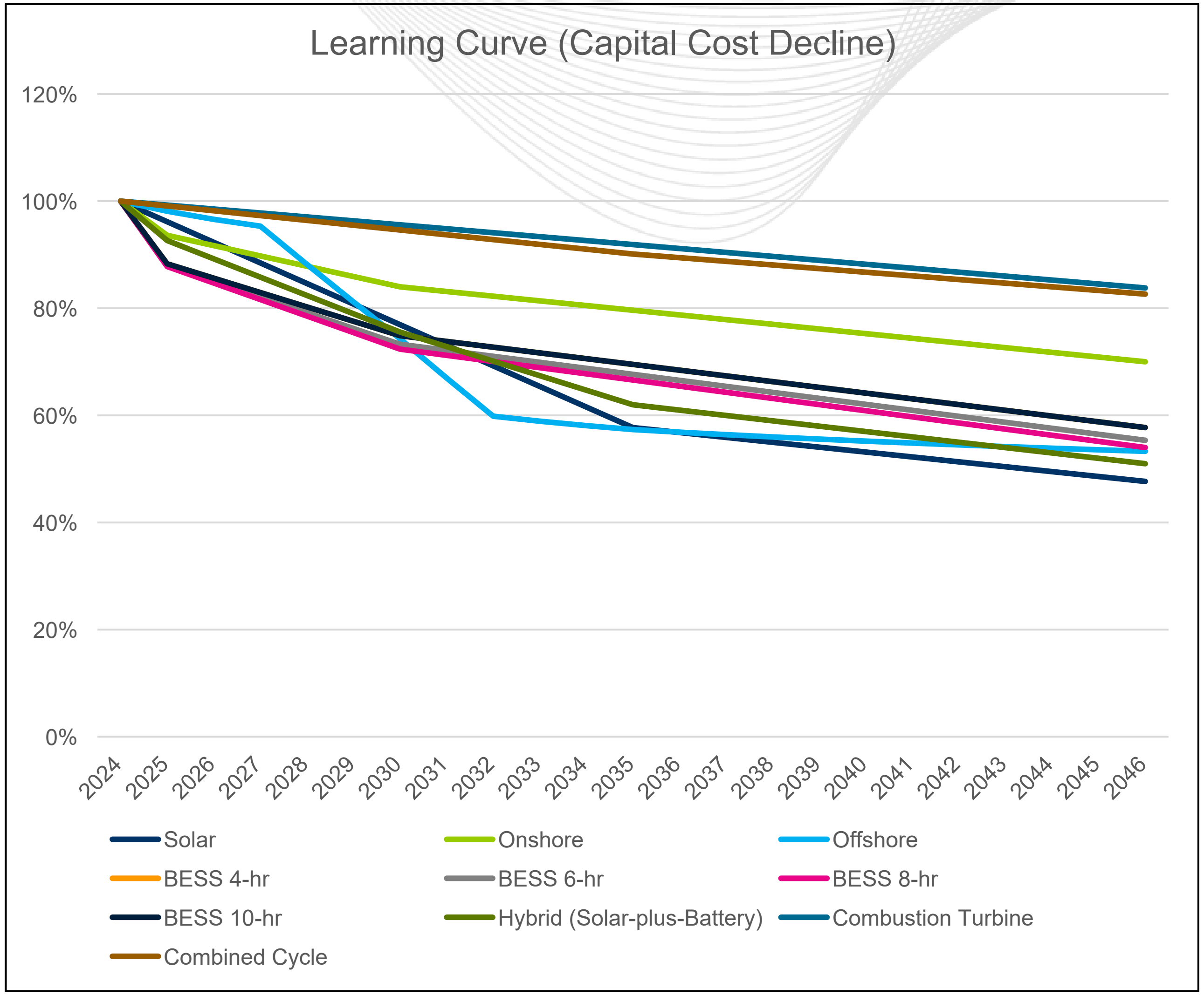
NLR (National Laboratory of the Rockies) 2024 Annual Technology Baseline

Costs will be escalated to account for inflation impact since publication in 2024

	Overnight Capital Cost (2022$/kW)	FOM (2022$/kW-year)
Nuclear	5750	175

NLR (National Laboratory of the Rockies) 2024 Annual Technology Baseline
Costs are for year 2030. Costs will be escalated to account for inflation impact since publication in 2024

Learning Curves



NLR (National Laboratory of the Rockies) 2024 Annual Technology Baseline

Variable Costs

	VOM (2028$/MWh)	Heat Rate (Btu/kWh)
Combined Cycle		
EMAAC	2.6	6318
SWMAAC	2.6	6345
Rest of RTO	2.7	6303
WMAAC	2.7	6314
COMED	2.6	6294
Combustion Turbine		
EMAAC	1.1	9166
SWMAAC	1.1	9161
Rest of RTO	1.0	9141
WMAAC	1.1	9149
COMED	1.1	9133

Heat rate for combined cycle is without duct firing

Brattle 2025 CONE Report for PJM (Quadrennial Review)
https://www.pjm.com/-/media/DotCom/committees-groups/committees/mic/2025/20250411-special/item-01-2-cone-report-final.pdf

Variable Costs (cont.)

	VOM (2022$/MWh)	Fuel Costs (2022$/MMBtu)	Heat Rate (Btu/kWh)
Nuclear	2.8	0.97	10.497

NLR (National Laboratory of the Rockies) 2024 Annual Technology Baseline

Costs are for year 2030. Costs will be escalated to account for inflation impact since publication in 2024

Financial Assumptions

- Fixed charge rate: Annualization coefficient for overnight capital cost (referred to as “Capital Charge Rate” in Quadrennial Review)

	Combined Cycle	*Combustion Turbine*	*Battery*
EMAAC	17.0%	16.0%	9.6%
SWMAAC	16.9%	15.9%	9.6%
Rest of RTO	16.9%	15.9%	9.6%
WMAAC	16.9%	15.9%	9.6%
COMED	18.8%	17.8%	9.6%

Capital charge rate shown for Battery incorporates the 30% ITC

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	Solar	*Onshore*	*Offshore*	*Hybrid*	*Nuclear*
Fixed charge rate	5.7%	5.8%	6.1%	7.8%	5.3%

NLR (National Laboratory of the Rockies) 2024 Annual Technology Baseline

- Discount rate: United States 20-year treasury rate 4.98% as of May 5, 2026

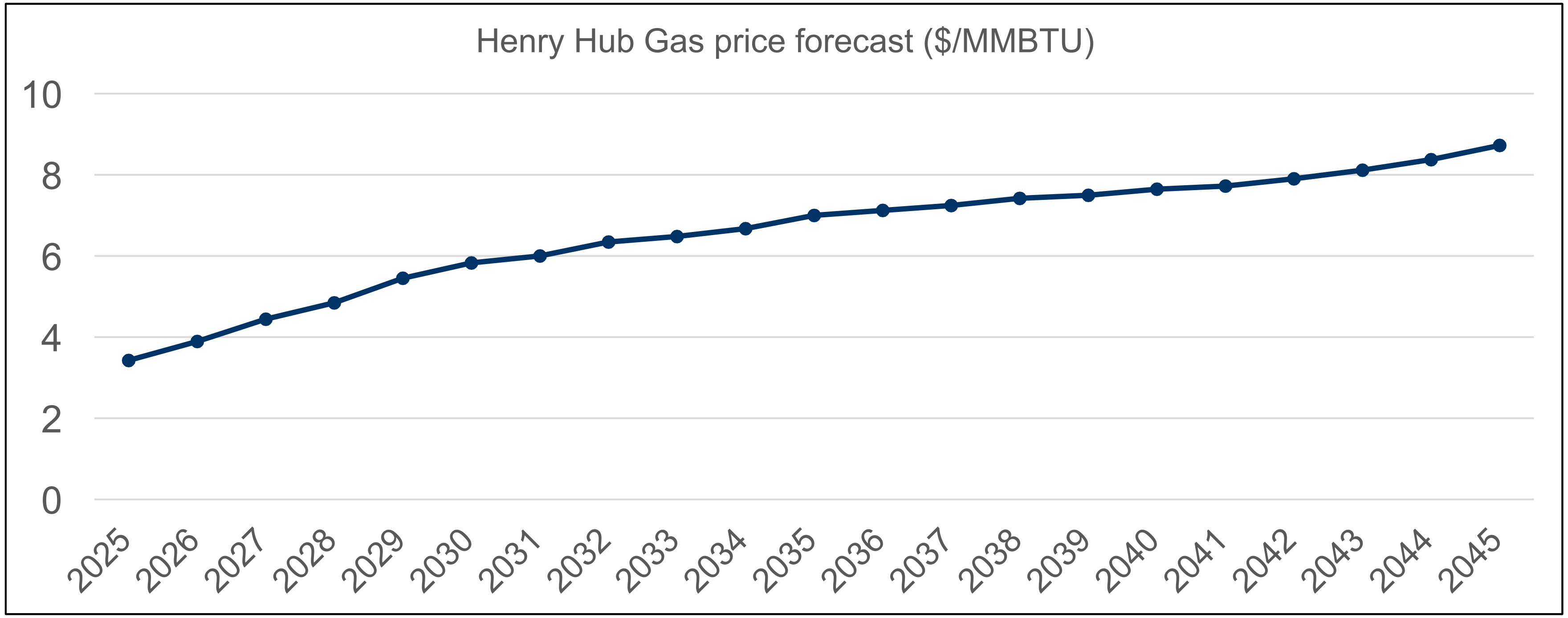
Geographic Adjustment Coefficients for Renewables

	Solar	Onshore	Offshore	Battery	Hybrid	Nuclear
Delaware	1.07	1.07	1.06	1.01	1.06	1.06
DC	1.01	1.03		1.01	1.01	1.02
Illinois	1.13	1.20	1.19	1.07	1.12	1.19
Indiana	1.00	1.02		1.02	1.00	1.03
Kentucky	1.00	1.01		1.02	1.01	1.03
Maryland	1.01	1.01	1.01	1.01	1.01	1.02
Michigan (Grand Rapids)	1.00	1.00	1.00	1.00	1.00	1.01
New Jersey	1.12	1.19	1.18	1.06	1.11	1.17
North Carolina	0.99	0.99	0.99	1.00	0.99	0.99
Ohio	0.99	0.98		0.99	0.99	0.98
Pennsylvania (Philadelphia)	1.11	1.18		1.06	1.10	1.15
Pennsylvania (Scranton)	1.02	1.03		1.01	1.02	1.04
Tennessee	1.00	1.02		1.04	1.01	1.06
Virginia (Alexandria)	1.00	1.02	1.02	1.01	1.01	1.01
Virginia (Roanoke)	0.99	0.98	0.98	1.00	0.99	0.99
West Virginia	1.01	1.00		1.00	1.01	1.01

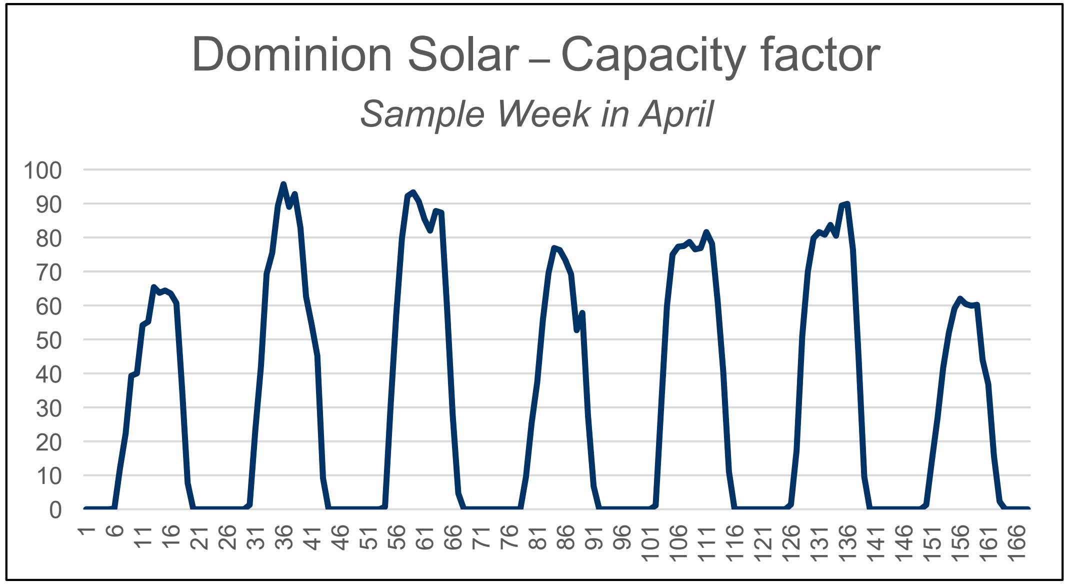
Sargent & Lundy (2024) "Capital Cost and Performance Characteristic Estimates for Utility Scale Electric Power Generating Technologies"

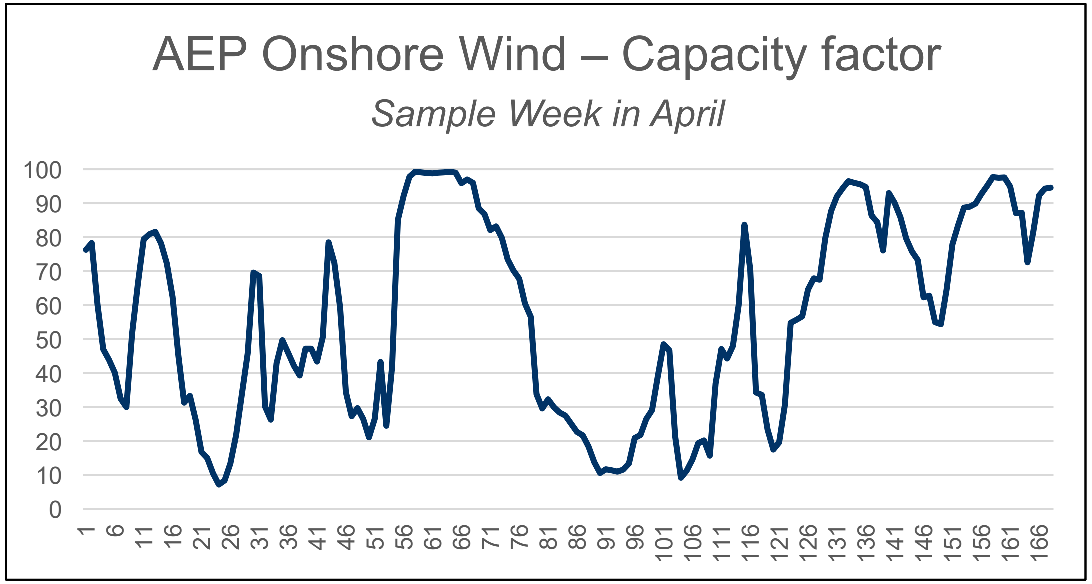
Latest forecast used by PJM's Market efficiency

(Will be updated later in May 2026 when Hitachi releases the updated forecast)



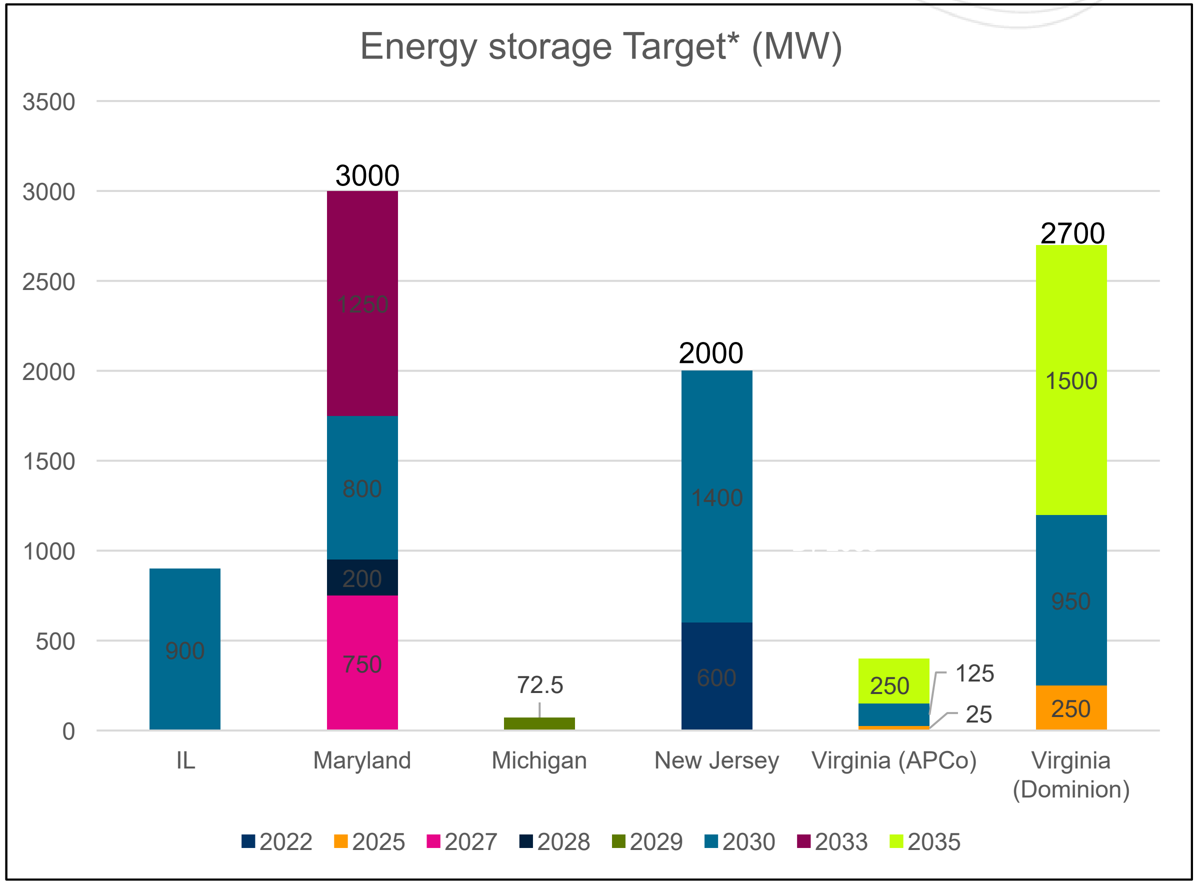
- Use Energy Exemplar's Eastern Interconnection hourly profiles for renewable capacity factors which are defined at the zonal level





Offshore Wind and Energy Storage Targets

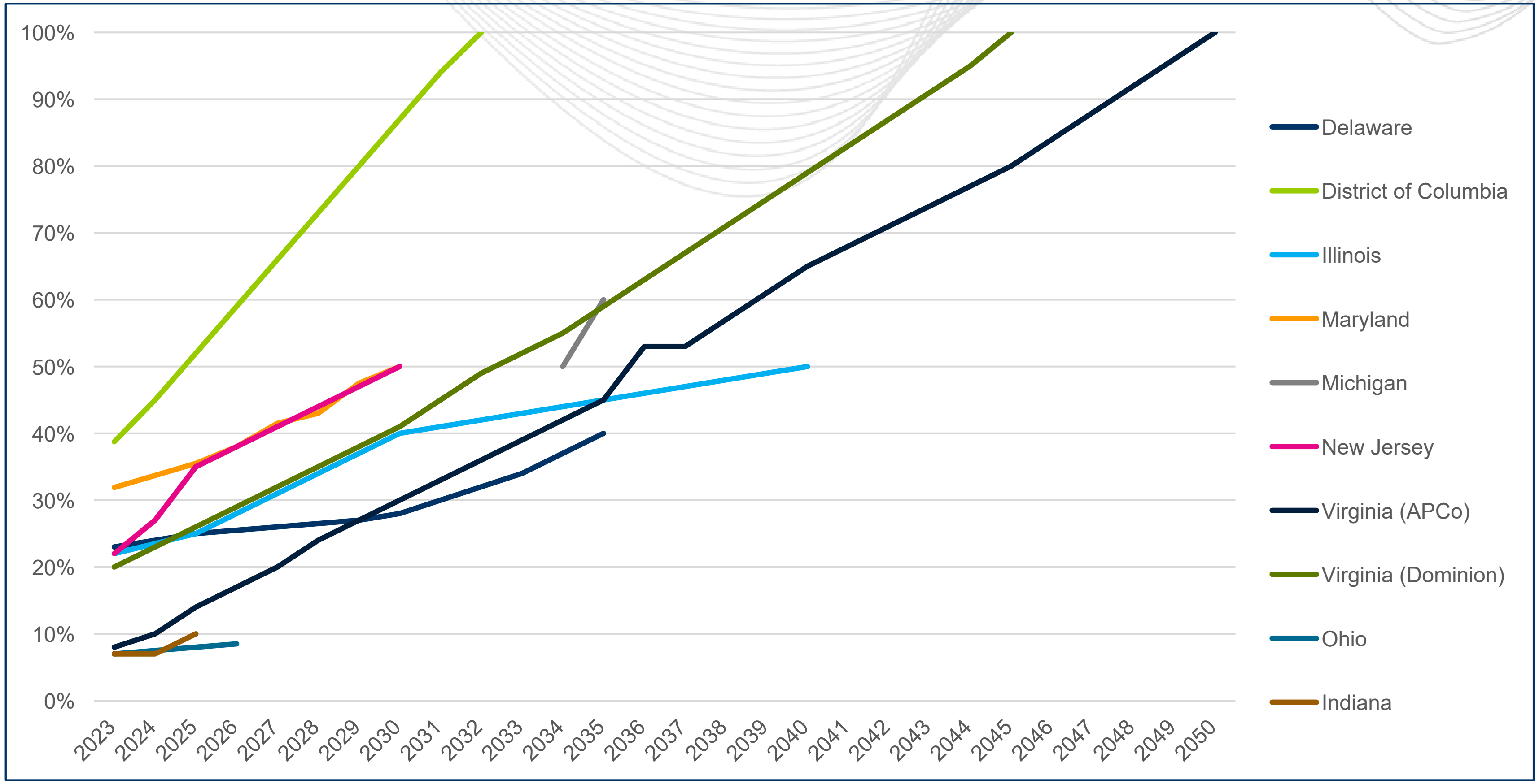
- Offshore Wind currently under construction is Coastal Virginia Offshore Wind (CVOW) with 2,489 MW MFO in VA



*IL has a target of 3000MW Energy Storage by 2030. 900MW of that target is assumed to be in PJM

*Michigan has a target of 2500WM Energy Storage by 2029. Target for PJM is assumed to be 72.5 MW. PJM may plan for more energy storage as informed by the queue and the capacity expansion modeling

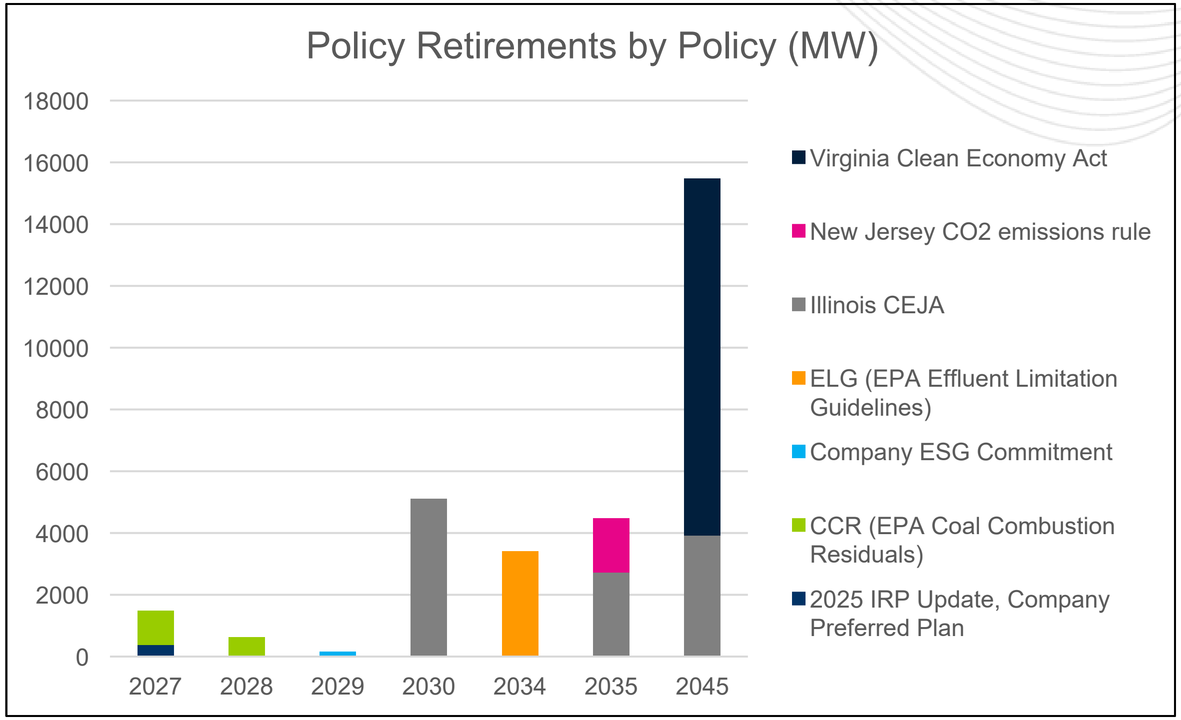
State RPS Policy

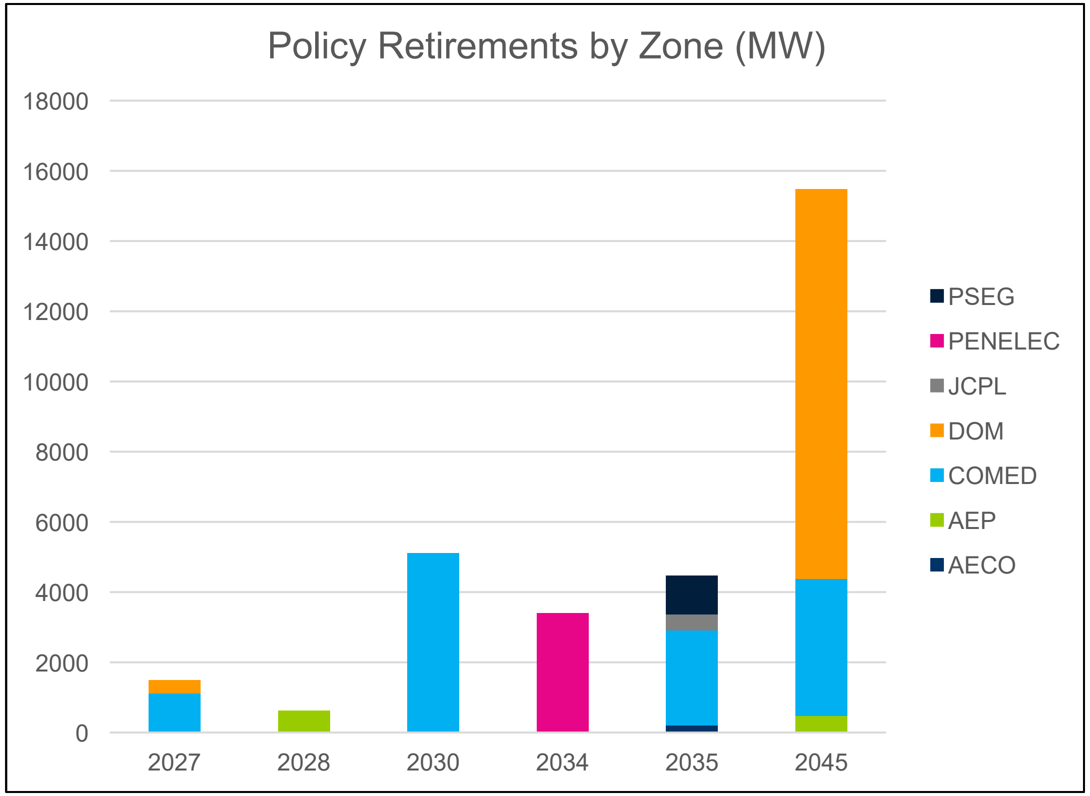


*PJM will model the geographic and technology eligibility rules for RPS Policies

**The complete policy assumptions are in the ISAC policy workbook: https://www.pjm.com/-/media/DotCom/committees-groups/state-commissions/isac/postings/2026-rtep-isac-assumptions-submission.xlsx

Unannounced Policy Retirements



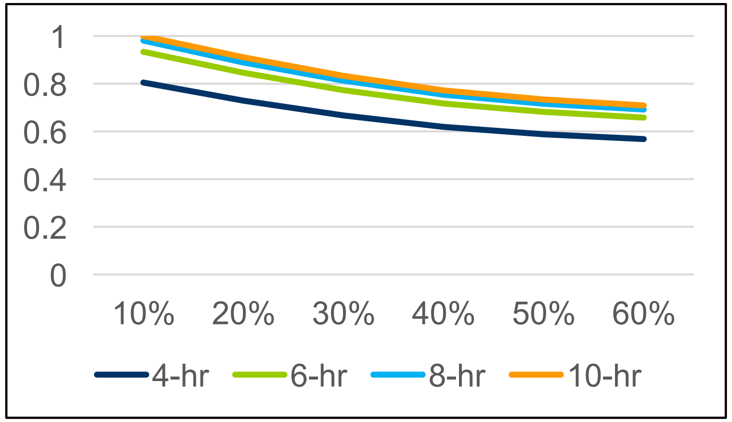


- Enforce the 1-in-10 resource adequacy constraint in the model
- Set ELCC-based capacity constraints to obtain resource adequate expansion (see next slide for ELCC curves)

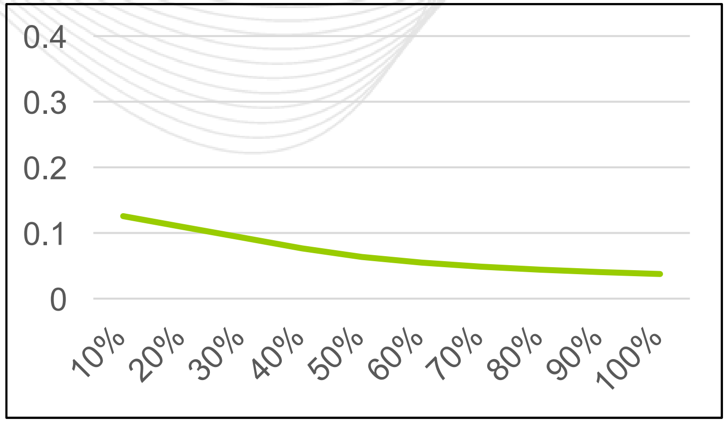
ELCC Assumptions

Summer

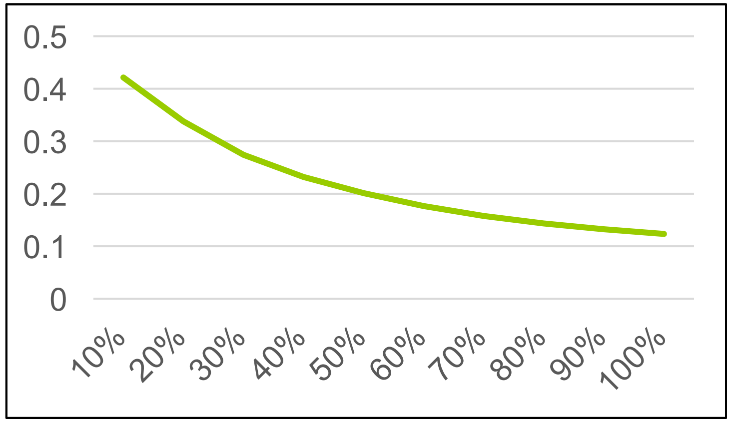
Battery



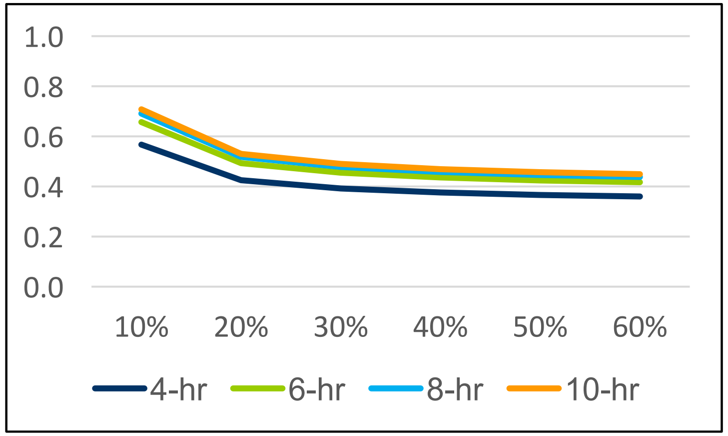
Onshore



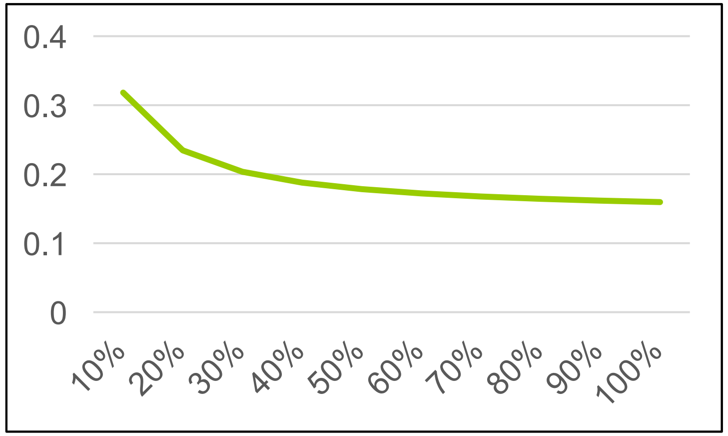
Solar



Winter



percent of nameplate to annual peak load



percent of nameplate to annual peak load

- Solar winter ELCC set to 0
- Hybrid: solar ELCC + 0.5 battery ELCC
- Offshore: 1.7 × onshore ELCC
- CC and CT: 0.95 summer, 0.85 winter
- Coal: 0.87
- Nuclear: 0.99

Starting Resource Mix and Build Limits

- Starting resource mix: Consistent with 2026 RTEP model-year 2031
- Build up to TC2+C1 for Scenario A and related sensitivities and 2x of existing generation + queue in Scenario B by 2034, 3x by 2045 (for VA solar 3x,10x respectively in Scenario B) and based on land availability for solar and onshore using the NLR Limiting Access scenario

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Revision History

- May 12, 2026
  - Slide 4, formatted text size (last bullet was not easily visible)
  - Slide 7, changed First Energy to FirstEnergy
  - Slide 40, added the second table for fixed charge rate
  - Slide 41, added geographic adjustment coefficients for Nuclear