



PJM Regional Transmission Expansion Planning (RTEP) Process

IPSAC

December 10, 2021

- Planning Committee (PC)
 - <http://www.pjm.com/committees-and-groups/committees/pc.aspx>
- Transmission Expansion Advisory Committee (TEAC)
 - <http://www.pjm.com/committees-and-groups/committees/teac.aspx>
- Interregional Planning
 - <http://www.pjm.com/planning/interregional-planning.aspx>
- Services and Requests
 - <http://www.pjm.com/planning/services-requests.aspx>
- RTEP Development
 - <http://www.pjm.com/planning/rtep-development.aspx>
- Manual 14B
 - <http://www.pjm.com/-/media/documents/manuals/m14b.ashx>



PJM 2021 RTEP Update

- The 2021 RTEP Assumptions were presented at the June IPSAC meeting. Refer to <https://www.pjm.com/-/media/committees-groups/stakeholder-meetings/ipsac/2021/20210604-ipsac-ny-ne/20210604-item-02-1-pjm-regional-transmission-expansion-planning-process-final.ashx>
- **Baseline Projects** – Projects that are driven by reliability criteria violations, operational performance issues, congestion constraints and public policy.
- **Supplemental Projects** – Projects that are not required to address system reliability, Operational performance or economic criteria. Supplemental projects are planned according to the Tariff Attachment M-3 process.

- Per the PJM Operating Agreement, multiple proposal windows were conducted for all reliability needs that were not Immediate Need reliability upgrades or were otherwise ineligible to go through the window process.
- 5 Order 1000 proposal windows opened during the 2021 RTEP cycle
 - Proposal Window No.1 Long-Term - 120 day window
 - Proposal Window SAA – 120 day window
 - Proposal Window No.1 - 60 day window
 - Proposal Window No.2 - 30 day window
 - Proposal Window No.3 – 30 day window

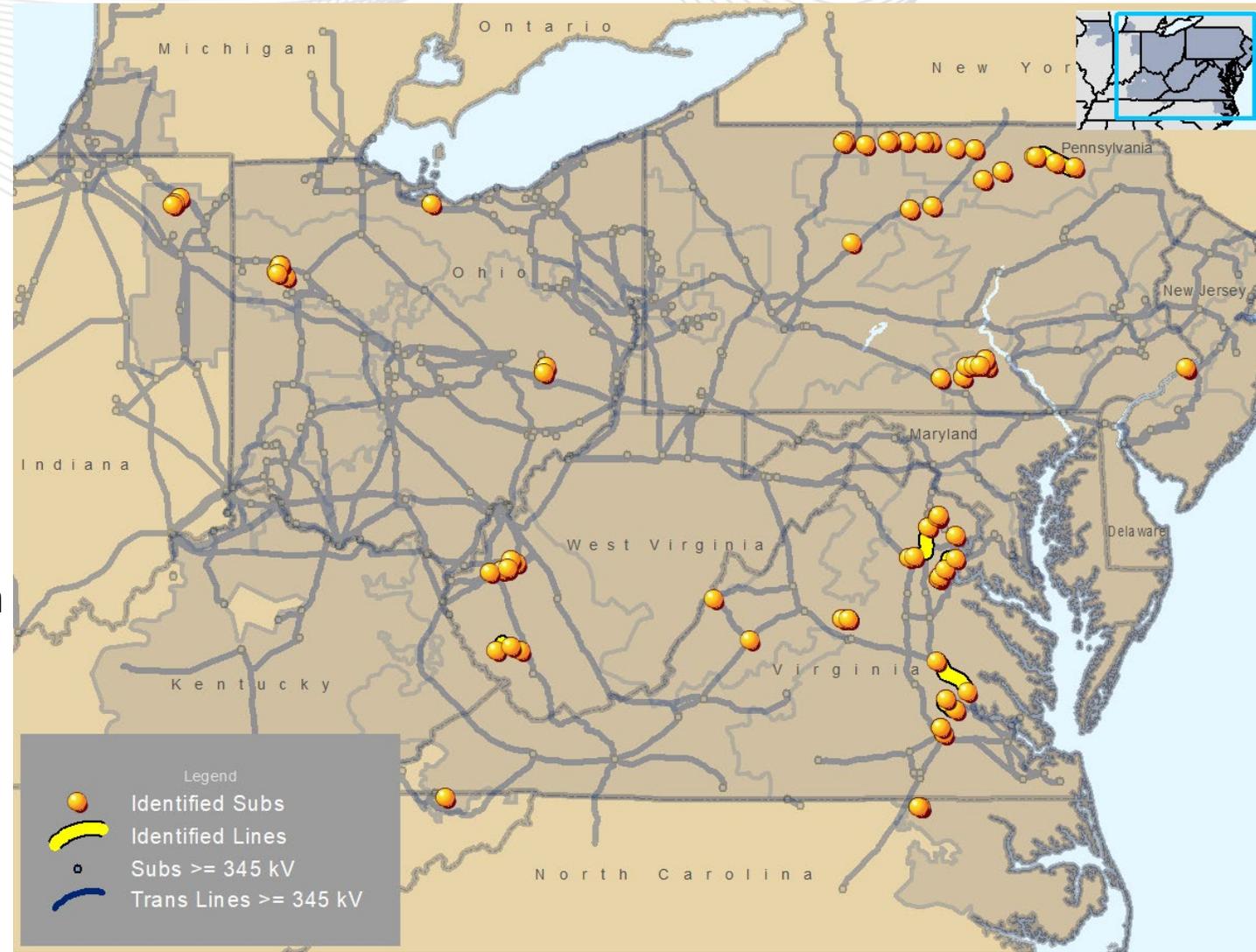
2021 RTEP Window 1 Update

- PJM as part of the annual Regional Transmission Expansion Plan conducted studies and originally identified 402 flowgates. 159 of those flowgates were eligible for competition, where 243 of the flowgates were excluded from the competition for various reasons.
 - Window opened on 7/02/2021
 - Window closed on 8/31/2021

Overview of 2026 Results

Total of 402 flowgates identified

- 159 flowgates are eligible
 - 72 in the PJM Mid-Atlantic Region
 - 33 in the PJM Southern Region
 - 54 in the PJM Western Region
- 243 flowgates excluded
 - 195 due to the below 200kv exclusion
 - 7 due to Substation Equipment Exclusion
 - 32 existing baseline fixes
 - 7 Non PJM Facility
 - 2 Invalid due to recent Deactivation



- For this Window, PJM sought technical solutions, also called proposals, to resolve potential reliability criteria violations on facilities identified in accordance with all applicable planning criteria (PJM, NERC, SERC, RFC, and Local Transmission Owner criteria).
- 57 total proposals submitted from 10 different entities (see <https://www.pjm.com/-/media/committees-groups/committees/teac/2021/20211005/20211005-item-09-reliability-analysis-update.ashx>)
 - 21 Greenfield
 - 36 Upgrades
- Cost Estimates: Approximate range from \$600k to \$136M
- 15 Proposals identified with Cost Containment

- PJM has reviewed changes which have occurred since the original 2021 RTEP violations were identified
- The significant changes include, deactivations, withdrawal of deactivations, and execution of Interconnection Service Agreements by Interconnection Customers
- The re-tool has resulted in some changes to results, reducing and eliminating the violations previously identified – all changes have been posted in an update on the Competitive Planning page
- Additional changes resulted in the need to open another Order 1000 proposal window (Window 2 – briefly discussed later in this presentation)

2021 RTEP Window 2 & 3 Update

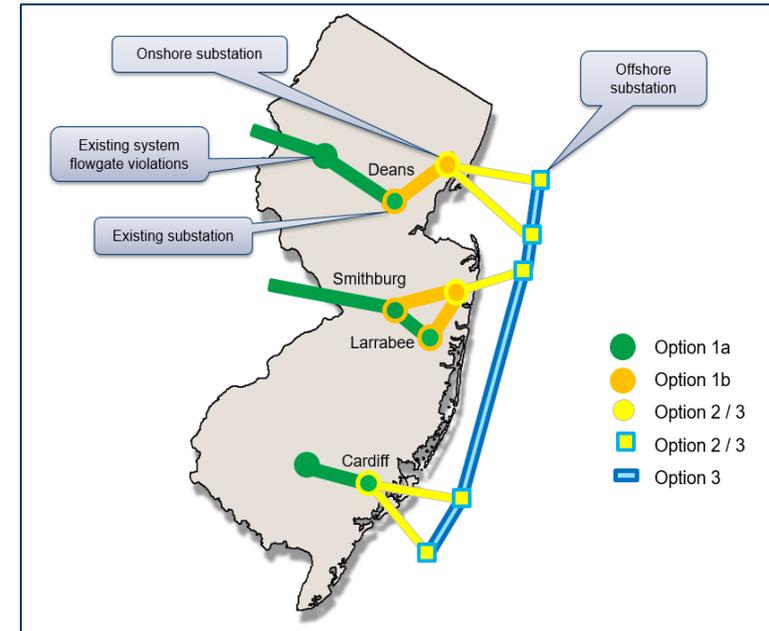
- 2021 RTEP Window 2 (60 days window) opened on November 3, 2021 and is anticipated to be closed on January 12, 2022.
 - Window 2 is an update to Window 1 due to changes associated with the re-tool
- 2021 RTEP Window 3 (30 days window) opened on November 3, 2021 and is anticipated to be closed on December 8, 2021
 - Window 3 is required for PSEG FERC Form 715 Planning Criteria (End of Life Criteria)

2021 SAA Proposal Window to Support NJ OSW

- Following a request from New Jersey BPU, PJM opened an RTEP proposal window to solicit submissions to build the necessary transmission to meet New Jersey's goal of facilitating the delivery of a total of 7,500 MW of offshore wind through 2035
 - Schedule
 - Open Window April 15
 - Close Window September 17

The proposal window received a robust response from both incumbent and non-incumbent entities

- Proposals span the breadth of the requested submissions (Option 1a, Option 1b, Option 2, & Option 3)
- Proposals for Option 1a include both upgrades to the existing system as well as greenfield upgrades



Note: Option designations refer to the four portions of the requested proposal as outlined in the *PJM RTEP – 2021 NJ OFFSHORE WIND TRANSMISSION SAA PROPOSAL WINDOW OVERVIEW* document

- Proposals received include multiple combinations of the individual proposals which expand the number of possible combinations beyond the number of proposals received
- Proposal evaluations are ongoing and additional details are expected to be available in subsequent TEAC meetings
- NJBPU has issued a guidance document indicating certain processes which will be employed going forward during evaluations – This document can be found on the NJBPU website (link below), is referenced in the notice to the TEAC on 9/24, and is also contained in the non-encrypted link for materials associated with the window on PJM’s competitive planning page

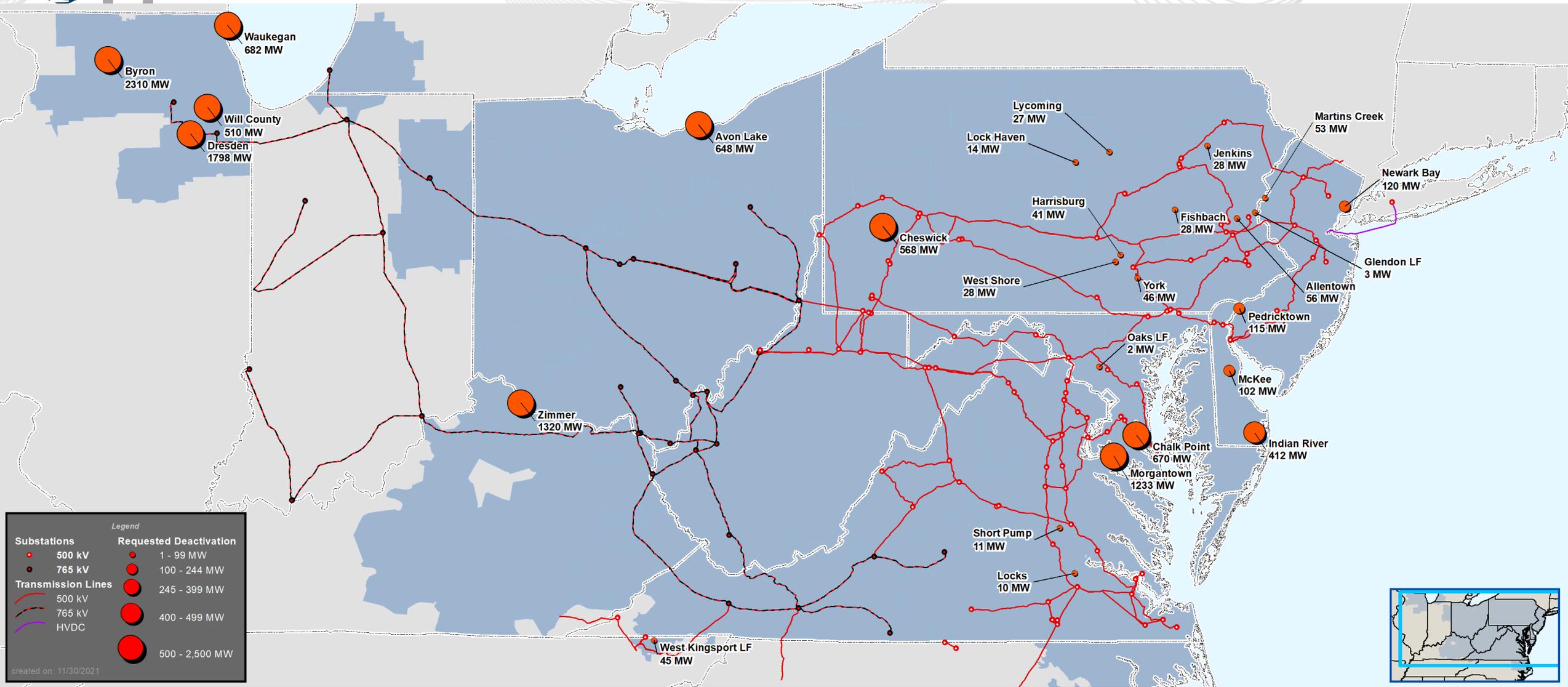
NJBPU guidance document: <https://www.nj.gov/bpu/pdf/ofrp/SAA%20Process%20Overview.pdf>

- Anbaric Development Partners, LLC
- Atlantic City Electric Company
- Atlantic Power Transmission (APT), a Blackstone Infrastructure Partners portfolio company
- Con Edison Transmission, Inc.
- Jersey Central Power & Light Company
- LS Power Grid Mid-Atlantic, LLC
- Mid-Atlantic Offshore Development, LLC, a joint venture of EDF Renewables North America (EDFR) and Shell New Energies US, LLC (Shell New Energies)
- NextEra Energy Transmission MidAtlantic Holdings, LLC
- Outerbridge New Jersey, LLC, a subsidiary of Rise Light & Power, LLC
- PPL Electric Utilities
- PSEG Renewable Transmission LLC and Orsted N.A. Transmission Holding, LLC
- Public Service Electric & Gas Company
- Transource Energy, LLC

PJM 2021 M-3 (Supplemental) Update

- Development of Supplemental Projects:
 - PJM coordinated the Supplemental projects planning as described in the Tariff, Attachment M-3.
 - PJM received/presented 250 Supplemental Needs from 1/1/2021 to 11/30/2021
 - Solutions were proposed/presented for 236 projects
 - 235 projects with cost of approximately \$4 billion completed all necessary reviews and the projects will be integrated into the 2022 Regional Transmission Expansion Plan.

Generation Deactivation Notification Update (Between 4/1/2021 and 11/1/2021)



Unit Name	Capacity (MW)	Fuel Type	Transmission Zone	Requested Deactivation Date	PJM Reliability Status
Allentown CT1, CT2, CT3 and CT4	56	Oil	PPL	6/1/2022	Reliability analysis complete; no impacts identified
Fishbach CT1 and CT2	28	Oil	PPL	6/1/2022	Reliability analysis complete; no impacts identified
Harrisburg CT1, CT2 and CT3	41.1	Oil	PPL	6/1/2022	Reliability analysis complete; no impacts identified
Jenkins CT1 and CT2	27.6	Oil	PPL	6/1/2022	Reliability analysis complete; no impacts identified
Lock Haven CT1	14	Oil	PPL	6/1/2022	Reliability analysis complete; no impacts identified
Martins Creek CT1, CT2 and CT3	53.3	Oil	PPL	6/1/2022	Reliability analysis complete; no impacts identified

Unit Name	Capacity (MW)	Fuel Type	Transmission Zone	Requested Deactivation Date	PJM Reliability Status
West Shore CT1 and CT2	28	Oil	PPL	4/1/2022	Reliability analysis complete; no impacts identified
Williamsport-Lycoming CT1 and CT2	26.6	Oil	PPL	4/1/2022	Reliability analysis complete; no impacts identified
DINWIDDIE 1CT	3	Diesel	Dominion	6/1/2023	Reliability analysis complete; no impacts identified
Lanier 1 CT	7	Diesel	Dominion	6/1/2023	Reliability analysis complete; no impacts identified
Rockville CT	4	Diesel	Dominion	6/1/2023	Reliability analysis complete; no impacts identified
Weakley CT	7	Diesel	Dominion	6/1/2023	Reliability analysis complete; no impacts identified

Unit Name	Capacity (MW)	Fuel Type	Transmission Zone	Requested Deactivation Date	PJM Reliability Status
Glendon LF	2.9	Methane	ME	6/1/2022	Reliability analysis complete; no impacts identified
Zimmer 1	1320	Coal	DEOK	5/31/2022	Reliability analysis complete and upgrades expected to be completed in time for unit to deactivate as scheduled.
New Bay Cogen CC	120.2	Natural Gas	PSEG	5/31/2022	Reliability analysis complete; no impacts identified
Pedricktown Cogen CC	115.3	Natural Gas	AEC	5/31/2022	Reliability analysis complete; upgrades expected to be completed in future, but interim operating measures identified and unit can deactivate as scheduled
Avon Lake 10	21	Oil	FirstEnergy	4/1/2022	Reliability analysis complete and upgrades expected to be completed in time for unit to deactivate as scheduled.
Avon Lake 9	627	Coal	FirstEnergy	4/1/2022	Reliability analysis complete and upgrades expected to be completed in time for unit to deactivate as scheduled.

Unit Name	Capacity (MW)	Fuel Type	Transmission Zone	Requested Deactivation Date	PJM Reliability Status
Cheswick 1	567.5	Coal	DL	4/1/2022	Reliability analysis complete and upgrades expected to be completed in time for unit to deactivate as scheduled.
Indian River 4	411.9	Coal	DPL	5/31/2022	Reliability issue identified
Waukegan 7 & 8	682.4	Coal	ComEd	5/31/2022	Reliability analysis complete; no impacts identified
Will County 4	510	Coal	ComEd	5/31/2022	Reliability analysis complete; no impacts identified
Morgantown Unit 1 & 2	1232.7	Coal	PEPCO	5/31/2022	Reliability analysis complete and upgrades expected to be completed in time for unit to deactivate as scheduled.

Unit Name	Capacity (MW)	Fuel Type	Transmission Zone	Actual Deactivation Date	PJM Reliability Status
York Generation Facility	46.2	Natural Gas	ME	9/20/2021	Reliability analysis complete; no impacts identified
Oaks Landfill	2.2	Methane	PEPCO	7/1/2021	Reliability analysis complete; no impacts identified
Chalk Point Unit 1 & 2	670.3	Coal	PEPCO	6/1/2021	Reliability analysis complete; no impacts identified
McKee 3	102	Natural Gas	DPL	6/1/2021	Reliability analysis complete; no impacts identified
West Kingsport LF	45	Biomass	AEP	5/31/2021	Reliability analysis complete; no impacts identified

Unit Name	Capacity (MW)	Fuel Type	Transmission Zone	Withdrawn Deactivation Date	PJM Reliability Status
Byron 1 & 2	2310	Nuclear	ComEd	9/15/2021	N/A
Dresden 2 & 3	1798	Nuclear	ComEd	9/15/2021	N/A

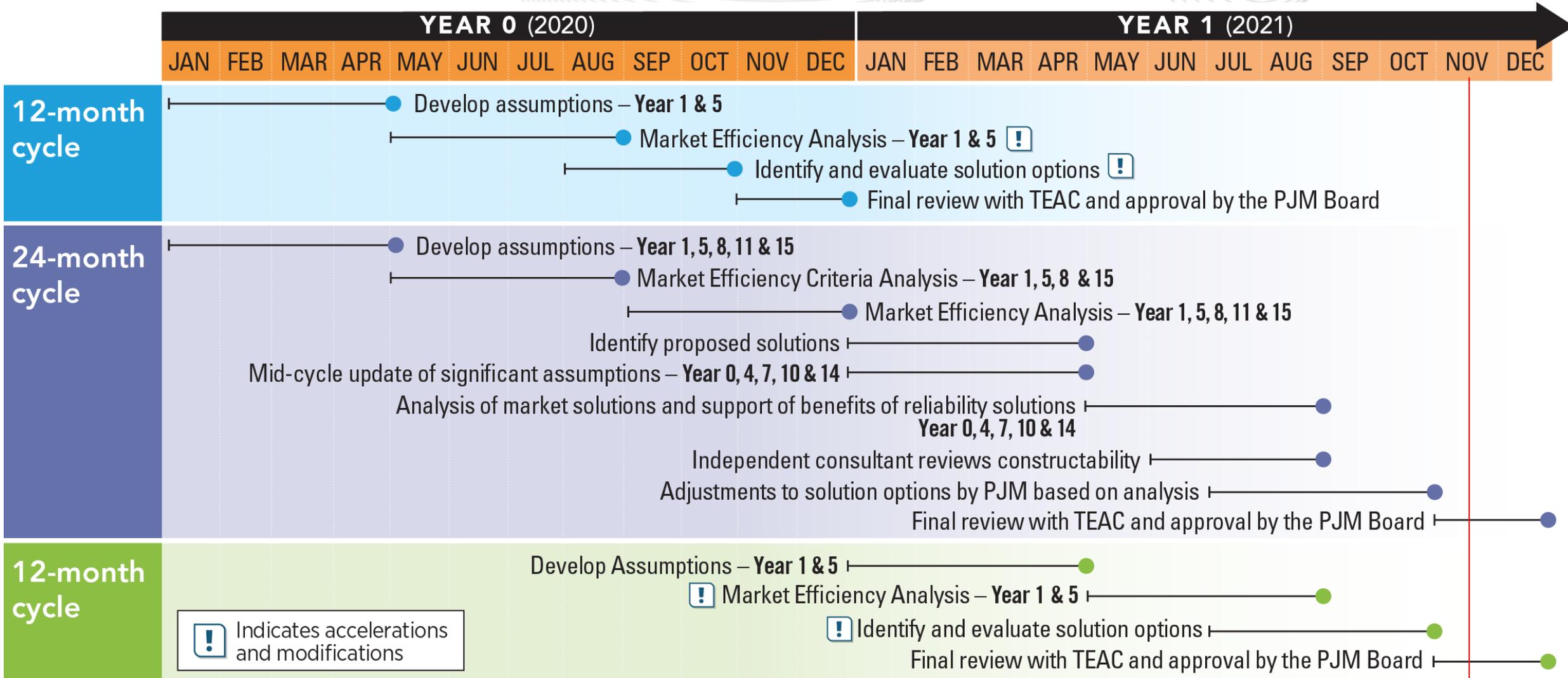
Generation Deactivation link:

<https://www.pjm.com/planning/services-requests/gen-deactivations>

PJM Market Efficiency Update

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2020/2021 Long-Term Window



- 2020/21 Long-Term Window 1 (Market Efficiency)
 - Opened on January 11, 2021 and closed on May 11, 2021.
 - 4 congestion drivers posted
 - Cluster No. 1 (APS) - French's Mill to Junction 138 kV
 - Cluster No. 2 (PECO) - Plymouth Meeting to Whitpain 230 kV
 - Cluster No. 3 (PPL) - Juniata to Cumberland 230 kV
 - Cluster No. 4 (DOM) - Charlottesville to Proffit 230 kV (also posted as a reliability violation)
 - 24 proposals received from 7 submitting entities (10 greenfield proposals, 14 upgrades).
 - [Redacted Public Proposals for 2020/2021 Long-Term Window](#)
- Results of the final review to be shared with stakeholders at the December TEAC after which a final recommendation will be made to the PJM Board for review and approval.

- Hitachi Energy PROMOD Database – Spring 2022.
- Powerflow consistent with the 2027 RTEP powerflow.
- Load Forecast and Demand Response based on PJM 2022 Load Forecast Report.
- Generation Expansion consistent with the machine list included in the Planning RTEP Powerflow.
- Fuel and Emissions Price forecasts provided by Hitachi Energy.
- Financial parameters Discount Rate and Carrying Charge, based on the Transmission Cost Information Center spreadsheet.

Step	Target Date
Post Preliminary Base Case	July 2022
Stakeholders Feedback	September 2022
Identify Congestion Drivers	September – November 2022
2022 Reevaluation Analysis	September – November 2022
2022 Acceleration Analysis	September – November 2022
Post Final Base Case and Target Congestion Drivers	January 2023
Long Term Proposal Window	January - May 2023
Analysis of Proposed Solutions	May – September 2023
TEAC Reviews and Board Approval	October - December 2023

Questions?

