



Generator Deliverability Study For New Default Deliverability Levels: Status Update

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- PJM performed an ELCC analysis to determine the minimum summer deliverability level for wind and solar resources by PJM region (MAAC, PJM West, Dominion) that would begin to produce an appreciable impact on the 2023/24 ELCC analysis if such deliverability levels were used to cap the hourly output of the wind and solar resources included in the analysis.
- Focus was on wind and solar resources because these units have deliverability requirements that are based on their average expected summer output levels, which PJM feels need to be considered in the ELCC analysis.

- PJM used historic and backcast wind and solar data for 10 years of summer hours to determine the output frequency or “P” level associated with each resource type over the period.
 - Example: The P90% for onshore wind during the summer in the MAAC region is 38%, which implies that during 10% of the peak summer hours onshore wind in wide areas across the MAAC region wind will likely be outputting more than 38% of their nameplate.
- “P” levels were developed first for each PJM area and then by PJM region (MAAC, PJM West, Dominion) by using the capacity-weighted “P” level from each area within the region

- If region X is composed of two areas X1 and X2, where

Area	% of Nameplate	Nameplate (MW)
X1	40%	900
X2	60%	100

- Then the deliverability requirement level for region X is calculated as:
$$P = (40\% \times 900 + 60\% \times 100) / (900 + 100) = 42\%$$

- After testing around a dozen combinations, PJM found that capping hourly output at the following combination of P levels began to produce an appreciable impact on the results.
 - Onshore Wind: P90%
 - Offshore Wind: P80%
 - Fixed & Tracking Solar: P70%

- PJM planning then considered whether the P levels derived through the ELCC analysis would be appropriate to be applied as new deliverability requirements in planning the transmission system.
- Significant concerns were expressed using values below P_{80%} for solar from both a planning and operating perspective.
 - P_{70%} does not consider resource outputs that are likely to occur on an area-wide basis during the summer 30% of the time.
- As a result it was determined that P_{80%} for solar would be more appropriate.



New Proposed Default Deliverability Requirements As % Nameplate

MAAC	Summer P_{80%}	Summer P_{90%}
Solar Fixed	67%	N/A
Solar Tracking	89%	N/A
Onshore Wind	N/A	38%
Offshore Wind	73%	N/A

PJM West	Summer P_{80%}	Summer P_{90%}
Solar Fixed	76%	N/A
Solar Tracking	84%	N/A
Onshore Wind	N/A	52%
Offshore Wind	N/A	N/A

DOM	Summer P_{80%}	Summer P_{90%}
Solar Fixed	77%	N/A
Solar Tracking	85%	N/A
Onshore Wind	N/A	45%
Offshore Wind	68%	N/A

- For the 10/13 special PC session, PJM hopes to complete three sets of generator deliverability runs to show the impact of the proposed new default deliverability requirements for wind and solar
 - Status quo
 - Status quo with new deliverability requirements
 - Proposed methodology change coupled with new deliverability requirements
- This analysis will be performed on two sets of power flow cases
 - 2026 RTEP Baseline Summer Peak Analysis
 - 2024 AG1 queue study considering commercial probabilities

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