



PJM Order No. 1920 Compliance

Best Available Data, Advanced Transmission Technologies, and
Portfolio Planning

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On behalf of Americans for a Clean Energy Grid
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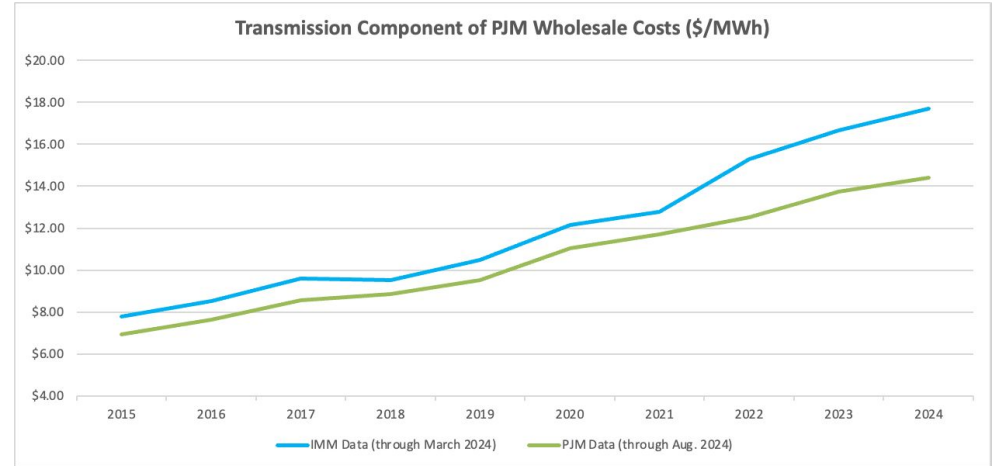
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Agenda

1. Background
2. Best Available Data and Modeling
3. Portfolio Selection
4. Advanced Transmission Technologies

Background

- Existing status quo processes are not sufficient to meet current and future needs, including generation retirements, changing resource mix, increased load
- Electric system must be designed to cost-effectively and affordably serve customers
- Transmission planning must have inclusive and meaningful participation opportunities– not measured by meeting count



Harmonizing Processes

- Need to harmonize 890, 1000, and 1920 planning, and further harmonize with interconnection process
- Existing provisions allow for some of the evolution envisioned by Order No. 1920
 - Operating Agreement (OA) § 1.4(a) The Regional Transmission Expansion Plan shall consolidate the transmission needs of the region into a single plan which is assessed on the bases of (i) maintaining the reliability of the PJM Region in an economic and environmentally acceptable manner, (ii) supporting competition in the PJM Region, (iii) striving to maintain and enhance the market efficiency and operational performance of wholesale electric service markets and (iv) considering federal and state Public Policy Requirements.
 - OA § 1.4 (b) The Regional Transmission Expansion Plan shall reflect, consistent with the requirements of this Schedule 6, transmission enhancements and expansions; load forecasts; and capacity forecasts, including expected generation additions and retirements, demand response, and reductions in demand from energy efficiency and price responsive demand . .
 - OA § 1.4 (c) The Regional Transmission Expansion Plan shall (i) avoid unnecessary duplication of facilities; (ii) avoid the imposition of unreasonable costs on any Transmission Owner or any user of Transmission Facilities; . . (iv) provide, if appropriate, alternative means for meeting transmission needs in the PJM Region;



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Existing Provisions Con.

- OA § 1.5.3 In addition to the bright line tests, the Office of the Interconnection shall employ sensitivity studies, modeling assumption variations, and scenario analyses, and shall also consider Public Policy Objectives in the studies and analyses, so as to mitigate the possibility that bright line metrics may inappropriately include or exclude transmission projects from the transmission plan. Sensitivity studies, modeling assumption variations, and scenario analyses shall take account of potential changes in expected future system conditions, including, but not limited to, load levels, transfer levels, fuel costs, the level and type of generation, generation patterns (including, but not limited to, the effects of assumptions regarding generation that is at risk for retirement and new generation to satisfy Public Policy Objectives), demand response, and uncertainties arising from estimated times to construct transmission upgrades. The Office of the Interconnection shall use the sensitivity studies, modeling assumption variations and scenario analyses in evaluating and choosing among alternative solutions to reliability, market efficiency and operational performance needs.

Existing Provisions Con.

- OA § 1.5.4(a) The Transmission Owners shall provide to the Office of the Interconnection on an annual or periodic basis as specified by the Office of the Interconnection, any information and data reasonably required by the Office of the Interconnection to perform the Regional Transmission Expansion Plan . . .
- OA § 1.5.4(c) The Office of the Interconnection also shall solicit from the Members, Transmission Customers and other interested parties, including but not limited to electric utility regulatory agencies within the States in the PJM Region, Independent State Agencies Committee, and the State Consumer Advocates, information required by, or anticipated to be useful to, the Office of the Interconnection in its preparation of the enhancement and expansion study, including information regarding potential sensitivity studies, modeling assumption variations, scenario analyses, and Public Policy Objectives that may be considered.
- OA § 1.5.6(f) The Office of the Interconnection, based on identified needs and the timing of such needs, . . . shall determine, which more efficient or cost-effective enhancements and expansions shall be included in the recommended plan, ***including solutions identified as a result of the sensitivity studies, modeling assumption variations, and scenario analyses***, that may accelerate, decelerate or modify a potential reliability, market efficiency or operational performance expansion or enhancement identified as a result of the sensitivity studies, modeling assumption variations and scenario analyses, shall be included in the recommended plan.

Best Available Data

- Openness and transparency are critical and required by Order No. 1920
 - Clarity on what sources and inputs are being considered
 - Vet sources against each other can help determine “range of reasonableness”
 - i.e. PJM’s Load Forecast, NREL, Princeton REPEAT and Net-Zero America Project, Energy Policy Simulator, Evolved Energy Research, etc.
 - Similar variety of sources exist for other inputs, such as data centers and electrification
- Some inputs may include surveys/outreach to PJM members
 - Order 1000 process was intended to be an inclusive process included inputs from diverse parties
- Develop “packages” of data inputs/scenarios and allow for proposal of alternatives packages
- Order No. 1920 inputs should be reflected in Order No. 1000 processes

Need for Co-Optimized Modeling

- Best available data must be modeled well in a way that co-optimizes transmission and generation
 - Allows for iteration and examination of different scenarios
 - Identifies solutions that provide maximum benefits and lowers costs for consumers
- Generally best practices iterate between capacity expansion modeling and production cost modeling
 - Not deterministic with respect to picking preferred generation portfolio, but is needed for generation decisions beyond the queue
 - Running multiple scenarios helps determine transmission solutions to maximize customer benefits

Portfolio Planning

- Portfolio planning allowed by Order No. 1920 (¶ 889)
 - Proven successful in developing beneficial solutions in multistate RTOs
 - As the regional planner, PJM has broader insights into system needs across the region and can offer more holistic solutions for project sponsors
 - Helps to maximize broader benefits for customers and allows for streamlined benefit analyses
 - Planning is more effective: opportunity to build consensus and minimize potential conflicts over individual facilities

Advanced Transmission Technologies Integration Pathways

- At least two potential pathways
 - (1) PJM incorporates ATTs into its models and portfolio solutions
 - (2) Project sponsors must meet minimum requirements
 - Require consideration of ATTs in any solutions
 - If ATTs were not included require an explanation of why not

Advanced Transmission Technologies con.

- Best available data
 - Update/adjust line ratings in models
 - Increased information on assets and asset conditions
- Technical Application Guides
- Order No. 1920 requires ATTs to be evaluated in Order No. 1000 planning processes (P 1198)
 - Incorporating ATTs into operations and short-term planning benefits long-term planning