



Long-Term Regional Transmission Planning (LTRTP) Manual Review Overview

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Scenario Analysis & Special Studies

Markets and Reliability Committee
April 25, 2024

- LTRTP discussions with stakeholders throughout 2022 and 2023
 - Workshops held in 2022 and 2023
- LTRTP M14B and M14F first read at January Planning Committee
- Additional page turn meetings held on 1/23, 1/26 and 2/12 in response to feedback from stakeholders
- Received M14B and M14F endorsement at March PC

- PJM is anticipating rapid load growth and changes in the resource mix. PJM must ensure reliability through long term transmission planning.



44 GW



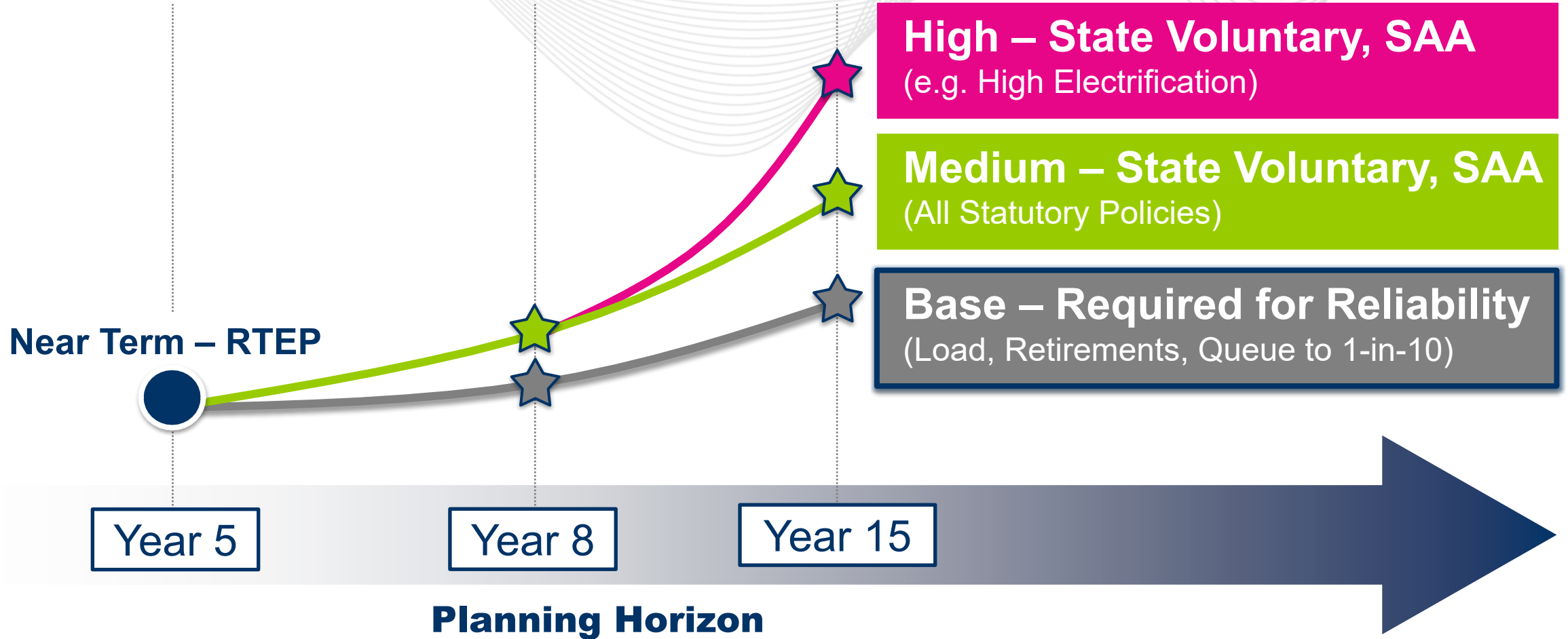
30 GW



31%

Next 15 years:

- Recent experience indicated the need for long lead transmission solutions (2022 RTEP Proposal Window No. 3)
- Enhance existing long-term planning framework to account for scenario-based, proactive planning and using benefits to select projects creating greatest value



- PJM received over 30 individual comments
- Base Reliability Scenario description added in M14B Attachment C.4.1 and inputs table
- Additional clarification to M14B Section 2.1.4 about use of policy scenario to inform the reliability scenario

Base Reliability Scenario Primary Inputs	
Load	PJM Load Forecast Report
Retirements	Announced retirements and anticipated retirements based on Public Policy Requirements and company commitments*
Resource Adequacy	Target 1-in-10 LOLE
Generation	In-service generation and generation not in service but with an executed service agreement or a State Agreement Approach reservation
Replacement Generation (to meet 1-in-10)	Generation Interconnection Requests**

* Company ESG (Environmental, Social, Governance) commitments to retire resources that are brought to the attention of PJM are included as retirements when there is a commitment to retire resources per legal consent decree or other public statement.
** Additional replacement generation beyond Generation Interconnection Requests may be necessary to achieve resource adequacy

Exhibit 4. Illustration of Base Reliability Scenario Development Considerations & Assumptions

- Based on stakeholder discussion, clarified language

2.1.4 Public Policy Planning

In parallel with the near-term and long-term reliability planning process described in section 2.1.2 above, upon request, PJM will perform scenario and sensitivity studies to identify transmission needs that may be needed to support a state's selected public policies consistent with the Operating Agreement, Schedule 6, section 1.5.9 that are have not already been identified included in the reliability planning models, as well as inform actions to be taken to enhance and expand the transmission system, through either modifications of the in-service date of required transmission projects or identification of e.g. through a Multi-Driver Projects, as part of the base reliability planning scenario.

PJM will work with stakeholders to determine whether additional scenarios and/or sensitivities, for example regarding load, retirements and additions to the base reliability scenario may be useful to help inform the posting of the reliability needs and the selection of transmission solutions that result from the base reliability scenario. In parallel, PJM will also work with stakeholders to develop a public policy scenario to support states in identifying and selecting public policy projects as defined in the Operating Agreement, Schedule 6, section 1. additions that are forecast to occur between years 5.9, which may be also be used to inform decisions regarding enhancements or expansions to the system made in regards to the base reliability scenario, through either modification of the in-service date of required transmission projects or identification of Multi-Driver Projects, and in accordance with the Operating Agreement, Schedule 6, section 1.5.1(a). As a result, the first phase of the long-term planning cycle is devoted to working closely with the ISAC and TEAC to define the parameters that will be used in the development of these long-term planning assumptions to be used in the base reliability scenario and in any scenario and sensitivity models. PJM shall make the final determination as to which scenarios and sensitivities are considered as well as the assumptions that are included in each scenario or study to be completed. through 8.

- First Read at March 20th Markets and Reliability Committee
- Seeking endorsement at the April 25 Markets and Reliability Committee meeting

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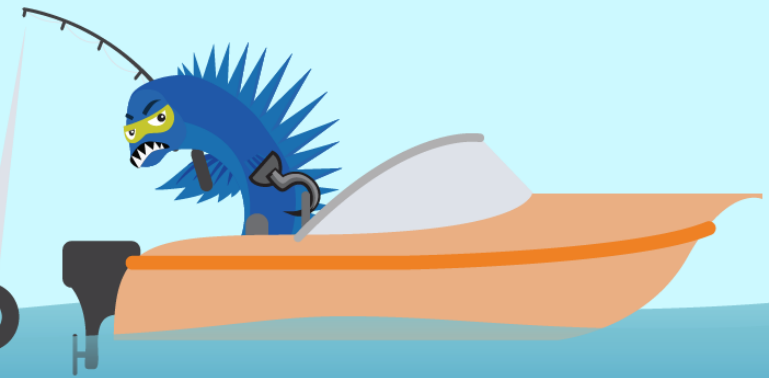
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**THINK BEFORE
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MALICIOUS PHISHING
EMAILS**



**Report suspicious email activity to PJM.
Call (610) 666-2244 or email it_ops_ctr_shift@pjm.com**

Appendix

Feedback	Consideration
Request to post legal position paper and OA references	1/9 PC postings
Request PJM conduct a page turn of LTRTP Manual revisions	1/23 and 1/26 meetings
Request to enhance the issue charge with scope	1/23 Posting
Discuss replacement generation and capacity expansion	M14b: 1.3.1
Consider modeling economic retirements in scenarios	M14b: 1.3.1
Discuss LTRTP scenario and assumption considerations	M14b: C.4.1 (w/ 2.1.2, 2.1.4), Exhibit 4
Consider TEAC/ISAC participation in scenarios' definitions	M14b: 1.3.1
Consider public policy assumptions in NT RTEP	M14b: 1.3.1, 2.1.4, B.4
Incorporate how economic factors considered in evaluation	M14f: 8.1.2, 8.1.3
Consideration for states to request additional benefits	M14f: 8.3
Questions about base line upgrades and public policy projects	Useful Terminology Slide

- Check grammar/typos/language consistency
- Add details, particularly on:
 - Definition of the Base Reliability scenario
 - Capacity expansion
 - Benefits
 - Development of multiple scenarios and their use
- Keep manual language at a high level and work through the details in the assumption discussion phase

- PJM proposed specific language for the Base Reliability scenario
 - Stakeholders expressed strong appreciation for PJM response to this most important feedback and support for the proposed language
- Other feedback:
 - Check language consistency, especially on public policies, and align it with OA
 - Use more specific language on retirements modeled in Base Reliability scenario
 - Consideration of stakeholder feedback on the Base Reliability and other scenarios/sensitivities' assumptions
 - Review reliability analysis language: voltage thresholds, studied contingencies, 8 vs 15-year cases

Feedback	Consideration
Regarding Public Policy considerations section, where do PPO make it into the LTRTP process	Summary of PPR and PPO Modeling in LTRTP Scenarios clarifies (next slide)
Clarifications on capitalization of PPR/PPO	PJM Manual 14B Updates
Manual language on p. 27 seems to restrict policy scenarios to only one scenario – Suggest using use “at-least”.	PJM believes “one or more” is appropriate
Suggest characterizing Base Reliability as business as usual instead of “minimum set of inputs...”	PJM updated language to remove “minimum set of inputs”
Specify that sensitivity studies could consider additional load	PJM added “sensitivities will consider different levels of load”
Does Order 1000 require PJM to consider all PPR when planning for reliability? How do the Reliability and Policy scenarios differ in their modeling of PPRs?	Summary of PPR and PPO Modeling in LTRTP Scenarios clarifies (next slide)
Will PJM show what portion of policy targets is achieved with the queue in the Base Reliability scenario?	Summary of PPR and PPO Modeling in LTRTP Scenarios clarifies (next slide)

- Timeline 2 Year process → 3 year process
- Long-Term (LT) vs Near-Term (NT) framework
- Development of additional LT powerflow cases for years 8 and 15
- Update LT analysis procedures
 - DFAX extrapolation to linear interpolation
 - Expansion of analysis to include limited N-1-1 and voltage studies
- Update language that defines qualifications for LT needs
- Additional content in establishing assumptions (e.g. capacity expansion, public policy, etc.)
- Outline process for collecting state policy data