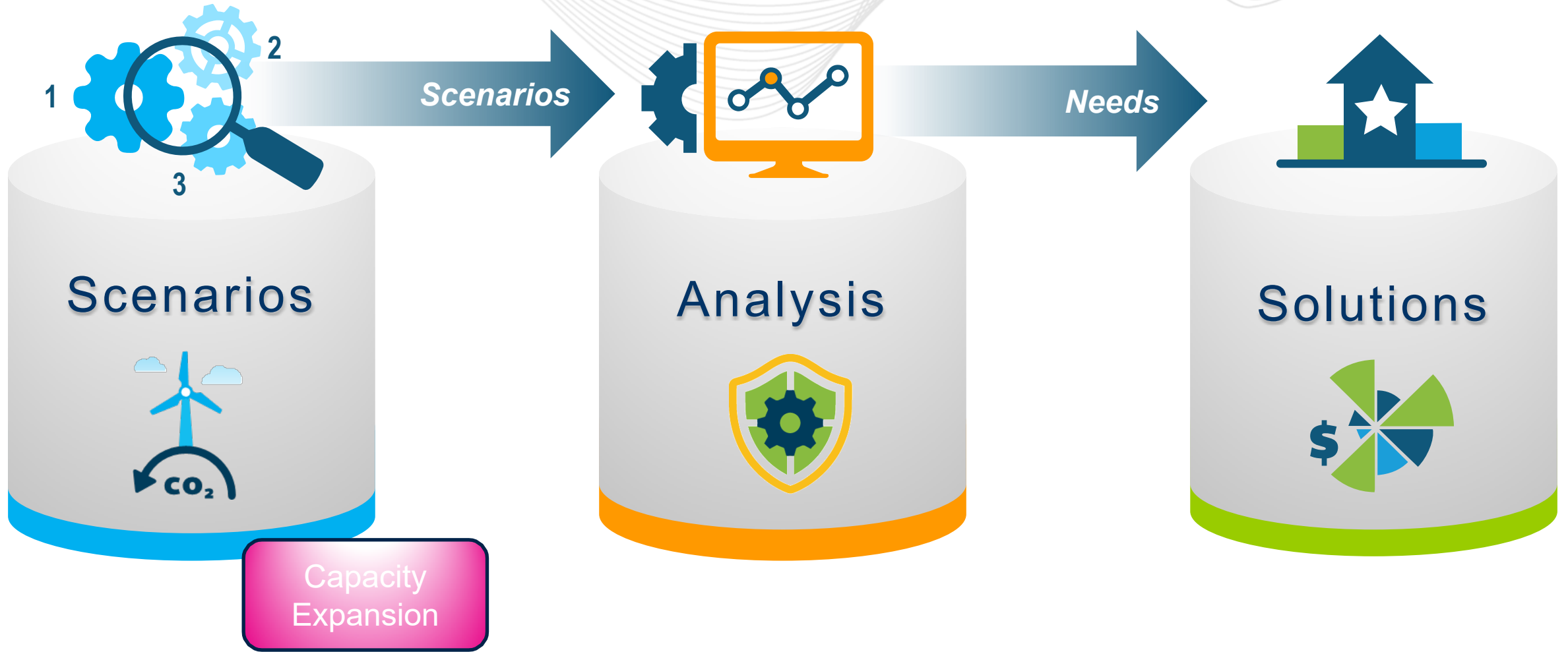


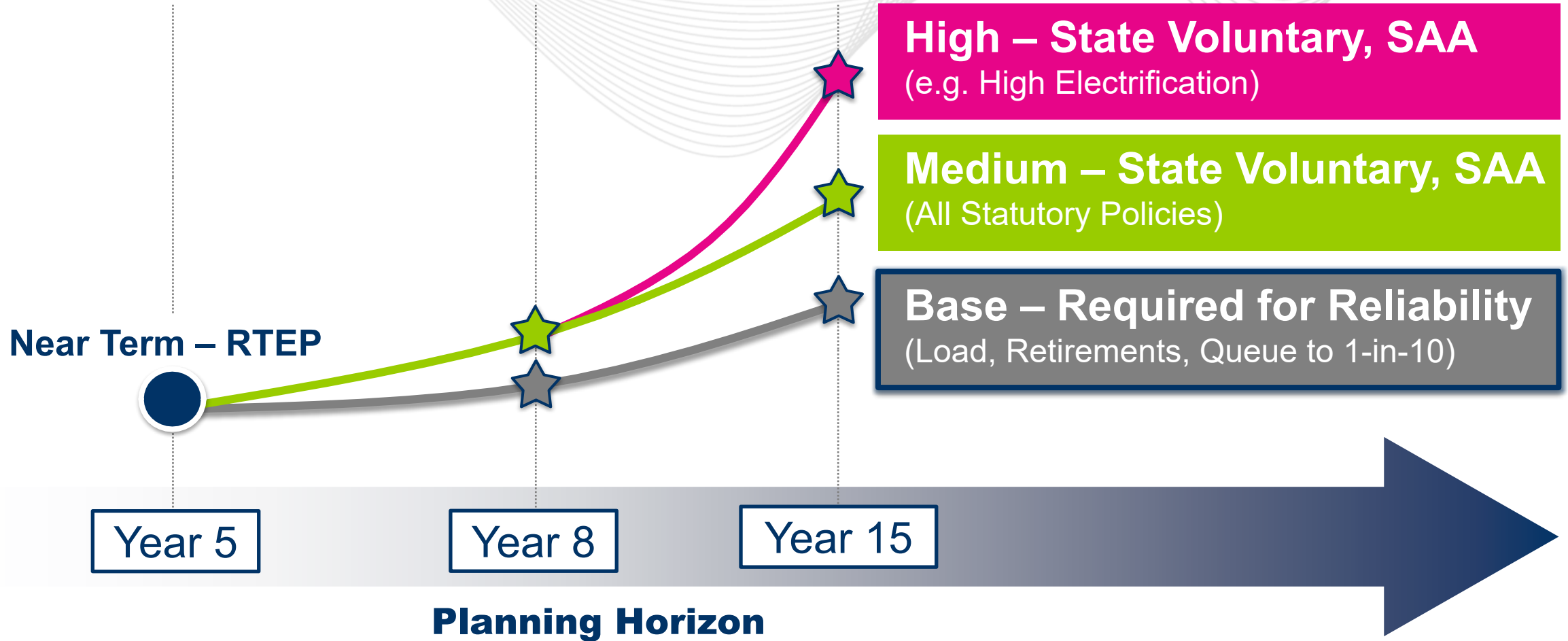


Long-Term Regional Transmission Planning (LTRTP) Manual M14B and M14F Update

Michael Herman
Scenario Analysis & Special Studies
Planning Committee
Jan 9, 2024

- LTRTP updates seek to clarify the details of long term planning analysis in order to maintain reliability through this energy transition
- PJM engaged stakeholders in 2022 to discuss LT planning via NOPR and A-NOPR responses
- PJM engaged stakeholders in 2023 to discuss a comprehensive LTRTP framework and discuss high level Manual revisions
- PJM discussed the framework in detail with OPSI, ISAC and etc.
- Detailed assumptions discussions with stakeholders to start in early 2024

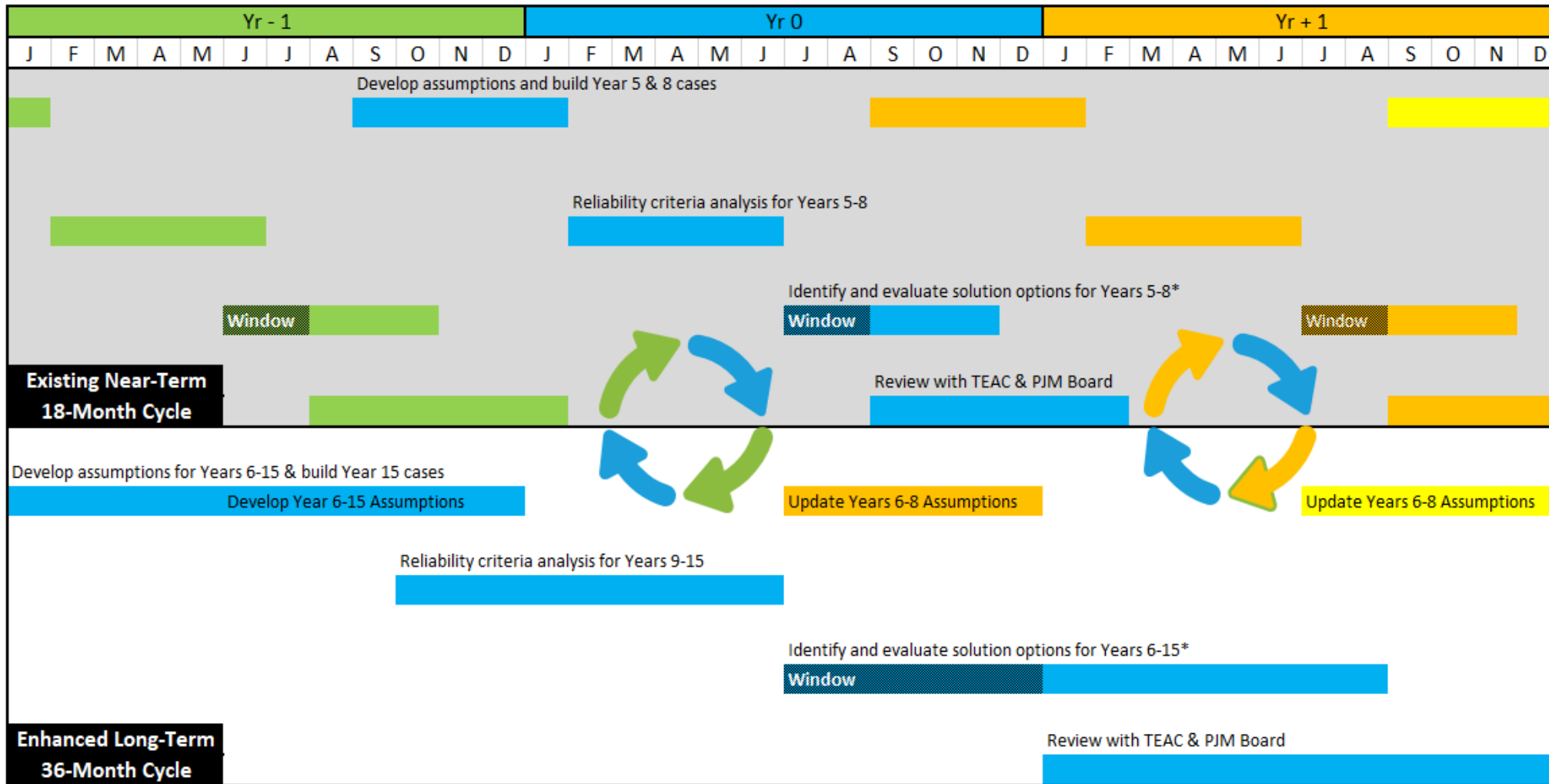




- PJM can consider performing sensitivities, e.g. for lower data center load

- Extend two year cycle to three year cycle to account for additional scenarios, sensitivities and transmission needs
- Supplement 8 year power flows with 15 year power flows
 - 8 year power flow model will be used to perform both thermal and voltage analysis and will replace the 10 year model used for voltage analysis.
These results will inform the near-term (5 year) process
 - 15 year model will be used to perform thermal analysis and limited voltage analysis
 - Medium/High/Base scenarios
 - Linear interpolation using year 5, 8 and 15 thermal analysis to determine required in-service dates

Recommended Enhancements To Long-Term Planning Process – NT RTEP vs LTRTP Cycles



* Seek transmission solutions for less complex needs in the near-term 18-month cycle window, and address remaining more complex needs in the long-term 36-month cycle window

1. Projects must address reliability or SAA needs
2. Feasibility assessment – cost and constructability analyses
3. Do-no-harm analysis
4. Secondary benefits to select among alternative projects
 - Consider robustness across scenarios/sensitivities (expandability)
5. Other M-14 F Considerations
6. Support states in the identification of solutions for SAA needs

- PJM has performed a review of existing manual language to propose revisions that are required update based on the LTRTP framework
- M14B – PJM Region Transmission Planning Process
 - Includes specifics on Assumptions, Analysis and Timelines
- M14F – Competitive Planning Process
 - Details specifics around proposal window process

- Timeline 2 Year process → 3 year process
- 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
- Acceleration of LT projects/Informing NT Projects
- LT vs NT framework

- 1.1 Planning Process Workflow
- 1.3 Planning Assumptions and Model Development
 - Seeking input and establishing assumptions
- 2.1 Transmission Planning
 - LT Scenario Analysis
 - Reliability Planning (2.1.2) – 3 Year process
- 2.2 RTEP Process Drivers
 - Addition of LTRTP
- 2.3.14 Long Term Reliability Review
- 2.3.15 Stakeholder Review of and input to Reliability Planning
- Attachment B – Scope of 15 year plan, Scenario Planning Procedure
- Attachment C – Long Term Deliverability Analysis and Upgrades

- 1.1 Proposal Window Type and Duration
 - Timing of LT proposal window
 - 3 year process
 - Update Exhibit 1
 - 36-Month Reliability Planning Cycle
- 4.2 Secure Information
 - Add requirements specific to LT projects
- 8.1.2 Detailed Proposal Review
 - Clarifies separation between LT and economic
- Attachment C: Decisional Diagram

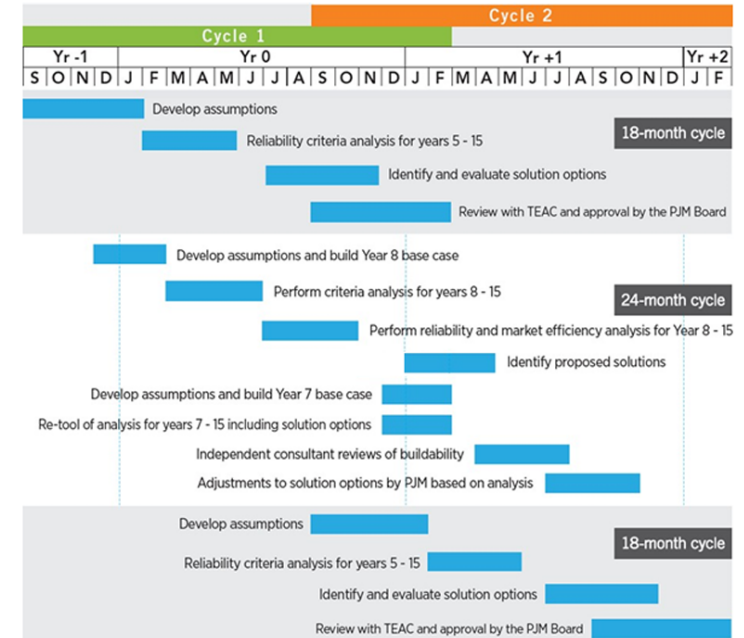


Exhibit 1: 24-Month Reliability Planning Cycle

- Planning Committee First Read – 1/9/2024
- Planning Committee Endorsement – 2/6/2024
- Markets & Reliability Committee First Read – 2/22/2024
- Markets & Reliability Committee Endorsement – 3/20/2024

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Appendix

Policies	Legend		
	Base	Medium	High
Load Policies*(e.g. Electrification, BTM)			High
Federal Policy Retirements (e.g. EPA)			
State Policy Retirements (e.g. CO ₂ , CEJA)			
Inflation Reduction Act			
Replacements/Generation Policies (e.g. RPS, Offshore wind)	Use queue to meet 1-in-10	Statutory	Statutory/ Objectives

Notes: Initial position on assumptions to be included in each scenario that will be further discussed in the assumption meetings, Sensitivities for econ. at-risk units and state policy retirements; * Includes Data Centers;

Latest Approved Near-Term RTEP
Latest Approved Long-Term RTEP



Capacity Expansion, Reliability,
Production Cost Models

System Cost + Enhanced Reliability

Latest Approved Near-Term RTEP
Latest Approved Long-Term RTEP
Current Cycle Long-Term RTEP



Capacity Expansion, Reliability,
Production Cost Models

System Cost + Enhanced Reliability



Benefits are calculated
for Reliability and SAA Solutions

PJM will consider calculating zonal benefits
(But may be easier with load payments)