



Overview of PJM DRAFT Discussion Paper

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Long-Term Transmission Planning
Reform Workshop
March 8, 2022

- Provide overview of the need for and how long-term planning can be structured
- Discuss scenarios that need to be targeted
 - Outline variables for scenarios
- Recognition that clear decision-making criteria is needed to ‘sort’ from multiple scenarios to determine those that are potentially actionable in future RTEPs
- Discuss move from probabilistic to more deterministic assumptions in transition from further out years to the 5 year studies

Relationship to the FERC ANOPR

- *The How*: Multiple parties call for long-range scenario planning but few specific recommendations to FERC on how to determine which are potentially actionable
- *The Who*: Who determines whether a given set of scenarios are ones which should form the basis for ordering new projects---The RTO? States? FERC? DOE thru its new corridor authority?
- *The What*: Who bears the risk of scenarios that do not come to fruition (e.g. Project Mountaineer)?
- *The Process*: How to avoid endless re-litigation of the choice of actionable scenarios?

- Develop process able to be flexible when needed, but structured to ensure reliability and resilience of the grid is maintained
- Allowing for needed updates for changed circumstances while avoiding endless re-litigation of scenarios or prudence challenges

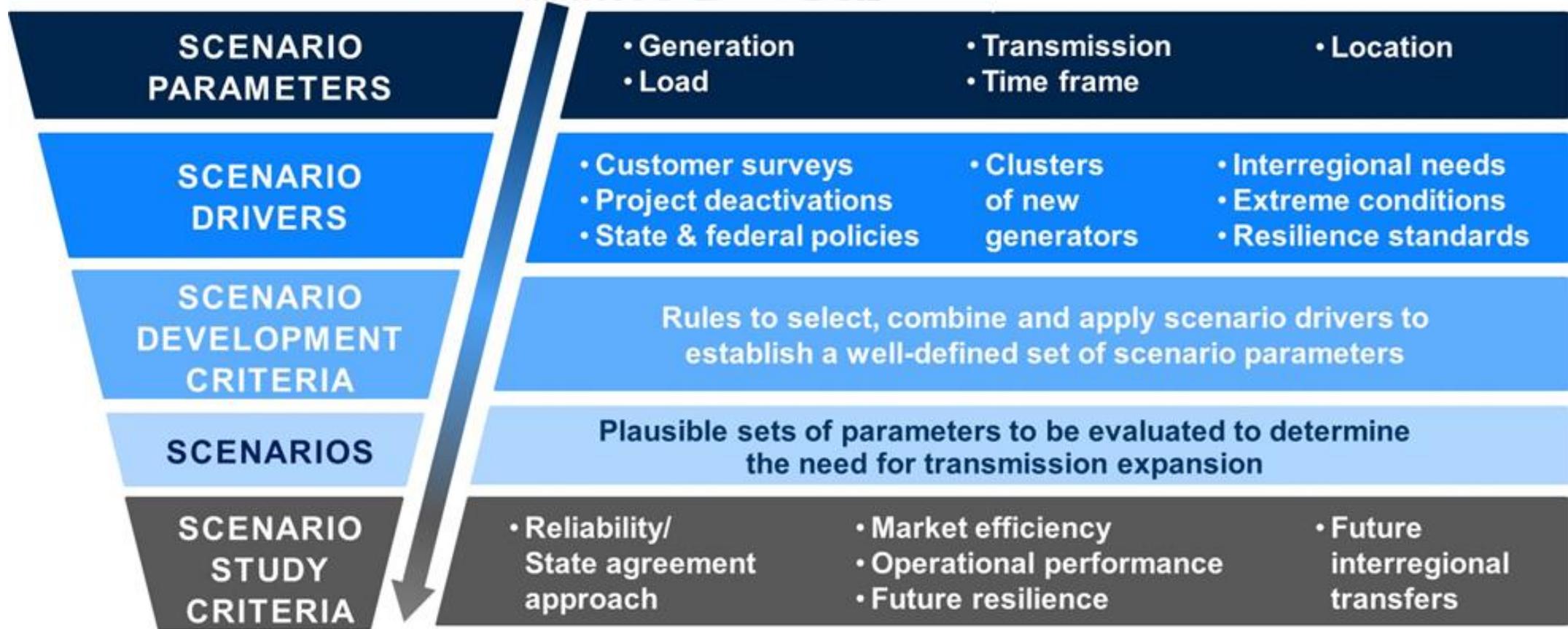
- Considerations to be incorporated into Scenarios – what is the right view?
 - New generation scaling / siting
 - New, unannounced, generation retirement
 - State / Federal policy requirements (required by statute or regulation) [Public Policy Requirements – OA]
 - State / Federal policy objectives [Public Policy Objectives – OA]
 - Scaling / introduction of load

- Any indicators of the need for changes to scenarios?
 - E.g.: Put in place reviews of original estimate for siting of certain resource types is exceeded by a certain percentage / does not meet the target within a certain percentage, should this be a trigger to alter future scenario studies?
- With changes in future scenarios, previously identified plans may need to be altered
 - Maintain current process to look at the status of any upgrades and determine reliability impact for removal of a planned upgrade?
 - How to avoid endless re-litigation of scenarios in each RTEP cycle

- Process should be able to transition from the long-term to the intermediate to the short-term
- How to move from probabilistic (potential change) to deterministic (known change) inputs given long-term assumptions that differ when transitioning to the intermediate and short-term studies in the RTEP?
- What are the decision-making criteria and role of FERC and the states?
- Changes may be needed to the current short-term RTEP analysis (5 year) given the development timeframe for certain generation resource types

- Long-term generation siting
 - How to determine where generation is to be sited in studies beyond queue indications?
- Short-term generation siting
 - Maintain current practice of looking at executed ISAs and FSAs?
- Long-term generation retirement
 - Look at policy objectives in addition to policy requirements?

- The following scenario terminology definitions help provide context for the following slides
 - **Scenario parameters** are building blocks that are defined in order to construct a scenario.
 - **Scenario drivers** are those factors that impact scenario parameters.
 - **Scenario development criteria** are the rules by which the scenario drivers are selected.
 - **Scenario** is a plausible set of parameters to be evaluated as part of power flow base case.
 - **Scenario study criteria** are the methodologies by which the scenario is analyzed including the decision-making process that determines whether potential reliability violations warrant transmission expansion.



- Major elements of scenarios (assumptions in the case(s))
 - Load Forecast
 - Generation type and location
 - Retirement assumptions
 - Underlying case assumption for interregional transfer capability
- The current process out to 15 years uses generation loaded in the 5-year case to meet the load and then scales the load and generation as needed to meet the load forecast at 15 years
 - How can we change the longer term assumption inputs if trends are changing?

- Maintain current load forecast methodology
 - Currently incorporates process to review end use trends – Do we need to look at more?
 - Other sources of data to indicate trends?
 - Will this affect not only the forecasted load, but also the profile?

- Current 5-year case uses generation which has an executed interconnection agreement
 - May incorporate generation which has reached the facilities study phase of the interconnections process
- Should we incorporate the introduction of types of generation based on the policy objectives (not law) in the 5, 10 (or other interim point), and / or 15 year point?
- Should we look at prospective new generation based on the policy requirements, at what level and at what point in time (5, 10, 15 year as above)?
- How does PJM make these determinations? How do we avoid driving market outcomes (e.g. 'self-fulfilling prophecy'---building around possible but not yet announced retirements)

- Current 5-year case built with known deactivations (notices supplied to PJM)
- Other possible assumptions could include
 - Public announcements by generation owners
 - Laws requiring changes to the operation of certain types of resources
 - Economic Analysis
- How and when do we incorporate these inputs as a new assumption to build a scenario (or scenarios)?

- The number of scenarios that are appropriate, and can be completed, will be driven partially by the number of different conditions we might examine and the amount of time between the scenario studies
- Do we run:
 - A low-mid-high set of scenarios?
 - A low-high set of scenarios?
 - Something else?
- Should we conduct the analysis every year? Every two years? Every 5 years?

- Final selection of a scenario to proceed with must be completed in a manner that is unambiguous
- PJM cannot proceed with multiple potential “futures” to the Board for approval
- What is the criteria we use to make a decision as to which scenario we might proceed with? Are they different for 15-year vs. 8-year timeframe?
- Do we look at trends on certain inputs to select the scenario of choice?
- Should there be a process to obtain a review/approval from the FERC and/or the states to avoid later hindsight reviews?

- PJM looking to engage with stakeholders to have interested stakeholders provide their positions on the questions posed here
- Possibility of looking to provide 15-20 minutes per entity to allow presentation of thoughts – timing may change based on interest
- PJM requests that presentation focus not just on the mechanics of developing scenarios but addressing the challenging questions of:
 - Who decides which scenarios are actionable?
 - If the RTO is the decision-maker, what criteria should we use to make this determination?
 - What processes can be established to avoid endless re-litigation of scenario selection?

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Long-Term Transmission Planning Reform Workshop



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