PJM’s Do No Harm Analysis Process: PJM Planning Committee Discussion

American Municipal Power     March 8, 2018
PJMs Changing RTEP Costs Structure

Project drivers have changed. Is our process adequately dealing with this change?
Why Are We Interested in PJM’s DNH Process & Analysis?

• Concerned that the increase in Supplemental projects is impacting PJM’s RTEP process and scope
• Generally, consumers are able to rely on the PJM transmission planning process as set forth in the Operating Agreement and Manuals, to ensure a cost effective build out
• Not so with Supplemental Projects
• Absent additional analysis, PJM and its members are not able to ensure we are achieving efficient and economic transmission solutions
• There is concern that Supplemental Projects may preclude competitive transmission projects and/or generate baseline criteria violations in the near term planning horizon
• Appropriate to evaluate additional DNH analysis to ensure PJM continues to meet its transmission planning process and scope.
Mission

• As the primary task, to ensure the **safety**, **reliability** and **security** of the bulk electric power system.

• Create and operate robust, competitive and **non-discriminatory** electric power markets.

• **Understand customer needs** and **deliver valued service** to meet those needs in a **cost-efficient manner**.

• Achieve **productivity** through the efficient union of **superior knowledge** workers and **technology advances**.
Manual 14B Highlights: (Page 58)

- The RTEP will: (Note: Not shown completely)

  - Avoid any unnecessary duplication of facilities.
  - Avoid the imposition of unreasonable costs on any Interconnected Transmission Owner (ITO) or any user of transmission facilities.
  - Provide, if appropriate, alternative means for meeting transmission needs in the PJM Region.
  - Identify local system limitations discovered in analyzing the Transmission System.
  - Include Scenario Planning evaluations beginning in mid-2006. Scenario Planning examines the long-term impacts on the reliability of the PJM system from uncertainty with respect to certain assumptions implicit in the development of the RTEP. PJM will examine the effects of uncertainty with respect to selected variables such as economic growth effect on the Load Forecast, Circulating transmission flow effects on system deliverability and generation scaling sensitivities.
  - Include Probabilistic Risk Assessment (PRA) of Aging Transmission System Infrastructure beginning in 4Q, 2006. PRA is employed to mitigate transformer risk on the bulk power system. The consequences of a failure, both reliability and economic impacts, are then considered to implement, when appropriate, a proactive, PJM-wide approach to mitigate operational and market impacts to such failures.
The RTEP will not:

- Include an evaluation of Transmission Owner transmission expansion or enhancement plans for local area load supply, which are not needed for reliability, market efficiency or operational effectiveness of the Transmission System and do not otherwise negatively impact the Transmission System. These Transmission Owner projects (Supplemental Projects) will be identified in the RTEP for information purposes and tracked for possible future impact implications.

- Include any upgrades based solely on scaling up of generation to solve load flow studies for years 6 through 15.
Supplemental & Baseline proposals are assessed to ensure the proposal does not result in new criteria violations on the system.

- What happens if it does create an overload that PJM identifies?

- Assessment ensures adherence to PJM & TO’s FERC 715 planning criteria.
  - Applies bright line thresholds. Thermal Loading, Voltage Magnitude & Voltage Deviations, etc
  - Only tests on PJM developed cases

- Powerflow analysis accounts for the following:
  - Summer peak conditions, Light Load conditions, Winter peak conditions
  - Established Firm Point – Point Transmission Service
  - Established Firm TWR’s & TIR’s
  - Established CBMs

- ASPEN analysis is conducted on 2 & 5 year out cases
  - Includes FSA units?
Concerns With Current Process

• When there were fewer Supplemental Projects, the current “Do No Harm” was sufficient
• With the proliferation of Supplemental Projects not planned by PJM, we are not getting a comprehensive understanding of Supplemental Project impacts
  – Applies to TO “Local” Baseline & Supplemental projects
  – Analysis is only applied on PJM developed models
• Lack of Transparency
  – Models not assembled by PJM
  – TO developed models with no review process
  – Generation dispatches differing from RTEP models
  – Load profiles differing from RTEP models
• Projects only reviewed for “Do No Harm” can impact the RTEP’s ability to meet its scope.
  – Avoiding unnecessary duplication of facilities?
  – Avoiding unreasonable costs?
  – Providing alternative means for meeting region needs?
Concerns With Current Process

• Bright line analysis does not assess a project’s total impact to the system
• PJM DNH process cannot enable consumers to see that TO’s assessments of stakeholders alternatives are accurate or unbiased.
• Analysis provides no insights to the appropriate sizing of a facility.
  – This could potentially impact PJM’s Resilience efforts.
• Analysis cannot enable consumers to see consistent application of individual TO criteria or need identification
• Analysis does not always align with PJM RTEP windows
  – No deadline or cutoff dates
  – RTEP window length is predetermined
  – TO Issues not always disclosed prior to PJM windows
• Does not account for economic impacts
Process Improvement Considerations

- **Standardize timelines for TO “Local” area project needs and proposal submissions:**
  - Clearly establish start and stop dates for TO needs & proposal submissions.
  - Align start and stop dates to ensure coordination with competitive windows.
  - Will aid in preventing supplemental projects from preventing competition in the PJM open window process.

- **Standardize the data reporting requirements for all project submissions**
  - Require reporting of all scenarios and models used to justify and size project facilities. Including considerations not covered by TO FERC 715 documentation.
  - Include reporting of applicable TO & PJM standards & documentation used in project justifications.

- **PJM process that allows for formal submission & PJM review of alternative proposals**
  - Ensure a non-biased third party reviews the proposed alternative solutions.
  - Process for stakeholders to report criteria violations & solutions for PJM to analyze.
  - None competitive windows (Stakeholders not interested in owning the alternative project).
Process Improvement Considerations

• Process to verify the project is addressing the criteria/needs outline in its justification
  – Not verifying need, verify the solution to the need

• PJM verification that projects are assigned based on FERC accounting rules
  – Slide 31 & 32 (Distribution transformer being booked as transmission)
  – [Link](http://www.pjm.com/~/media/committees-groups/committees/srrtep-w/20180309/20180309-reliability-analysis-update.ashx)

• Initiate a way for Stakeholders to obtain a list of limiting elements associated with a facility
  – Lists will increase transparency about what is overloading and what needs to be done to address that overload.
  – Stakeholders can clearly understand what might limit their proposal and the cost associate with addressing the limit.
Considerations for Analysis Improvements

• Cross vet baseline and supplemental drivers/needs for interdependence
  – Example: Line A is overloading for contingency X. An adjacent Line B needs rebuilt due to condition. Rebuilding Line B to double circuit could eliminate overload on Line A.

• Reporting facilities loading below 100% of thermal or interrupting capability:
  – Identify & report highest loading FERC 715 scenario
  – Identify & report the load of facilities being directly impacted by a proposal
    • Example: Transmission line being replaced due to performance, condition, and/or risk
  – Identify & report the loading of “area” facilities that could be indirectly impacted by a proposal
    • Example: Transmission line loading changing by a defined % and/or increasing to a % of its maximum capability

• Extend analysis to economic studies & modeling
  – Quantify & report impacts of proposals on previously approved economic projects
  – Assess proposals for impacts to the cost allocation of previously approved projects
  – Analyze impacts to production cost, load energy payments, capacity cost, load capacity payments
Considerations for Analysis Improvements

• Conduct a “Look Back” Analysis to determine if reliability driver is not longer a issue.
  – Determine if a proposal would eliminate previously approved Reliability violation driven projects.
  – Assess proposals for impacts to the cost allocation of previously approved projects
• Identify and report any FSA resources (generation, storage) that addresses the need for a proposal
  – Similar to generation sensitivities (page 64) process outlined in Manual 14B
  – Consider in FSA generation in alternative analysis
• Identify storage resources that could be applied as transmission to resolve a need