Resilience in Planning

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Do no harm

Opportunistic

Stand-alone resilience criteria
Potential Process Overview

1. Identify Violation
2. Validate Violation
   - Develop Resilience “Baseline” Impacts to Resilience Metrics
     - Develop Load & Generation MW Loss
3. Develop Solutions
4. Test Solutions Through Do No Harm Testing (DNH)

DNH Testing Determines Solutions to be Available for Further Review

Conduct Review of Impacts To Resilience Metrics
- Develop Load & Generation MW Loss for each Solution and compare to baseline

Develop Decision Surrounding Which Solutions to Select
- Decision includes review of all factors (e.g.: Cost, Constructability, Impact to Resilience, etc.)

Legend:
- Existing Process
- New Process

Baseline resilience used in comparison for review of individual projects
Cascading Analysis

- Components
  - CIP-014 & extreme contingencies
- Assessment
  - Develop MW load and generation loss
Current RTEP

- Various criteria tested in RTEP result in violations
  - NERC, PJM, Market Efficiency, Transmission Owner FERC filed planning criteria (FERC Form No. 715) Criteria, etc.
- Potential reinforcements developed
  - Competitive development, Transmission Owner
- Final reinforcements identified and included in RTEP

Potential future

- Baseline evaluation would include determination of load and generation MW loss
Do No Harm & Opportunistic Resilience

- **Do no harm**
  - Reliability Criteria evaluation of solution(s)
  - Add review of impact to existing resilience (amount of load/generation loss)

- **Opportunistic Resilience evaluation**
  - Analysis – develop generation & load MW loss for each solution being evaluated
  - A piece of the decision making process, not a driver
Consider Weighting Factors?

- **Load Loss**
  - Increase weighting based on quantity/type of load loss
  - Critical Load/elements – black start cranking path
- **Duration of load loss**
  - Time as a factor
Next Steps

- PJM continue to refine analytical tools
- Work with Stakeholders to determine possible inputs in future PC discussions

Schedule

- **3Q2018** – PJM continue to refine tools, continue discussions with stakeholders, and develop outline of possible processes
- **4Q2018** – PJM conduct review of 2023 RTEP and review with stakeholders
- **1Q2019** – Finalize development of tools required for analysis
- **2Q2019** – Perform baseline Resilience assessment of 2019 RTEP
- **4Q2019** – Incorporate Resilience Processes in Manuals