Alliant Energy - NewGrid Topology Optimization Pilot

November 7, 2023

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Transmission Reconfigurations - Background

- **Switching circuit breakers open or closed**
  - Analogous to temporarily diverting traffic away from congested roads to make traffic smoother
- **Currently used for reliability reasons**
  - MISO has procedures in place (e.g., operating guides) to reconfigure the grid as needed to maintain reliability

Not a new concept - Reconfigurations are happening everyday across MISO

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Alliant Energy - NewGrid Pilot

- NewGrid software and expertise utilized to find regionally beneficial reconfiguration solutions to congestion events affecting Alliant Energy generation assets
- Perform contingency and reliability analysis
  - Determine if solution can relieve congestion while respecting system security limits such as N-1 contingency criteria and voltage limits
  - Either no load radialized or limited to a minimum
- Work with transmission owners and MISO to implement
- Overall looking for low hanging fruit (avoid complex solutions)

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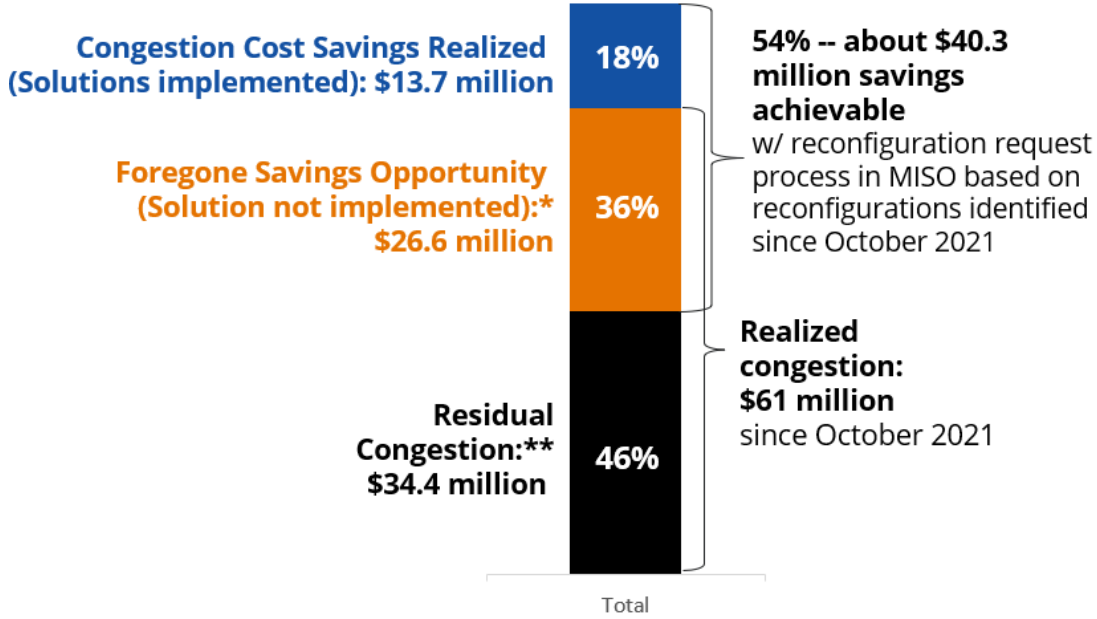
Results - Congestion Impacts

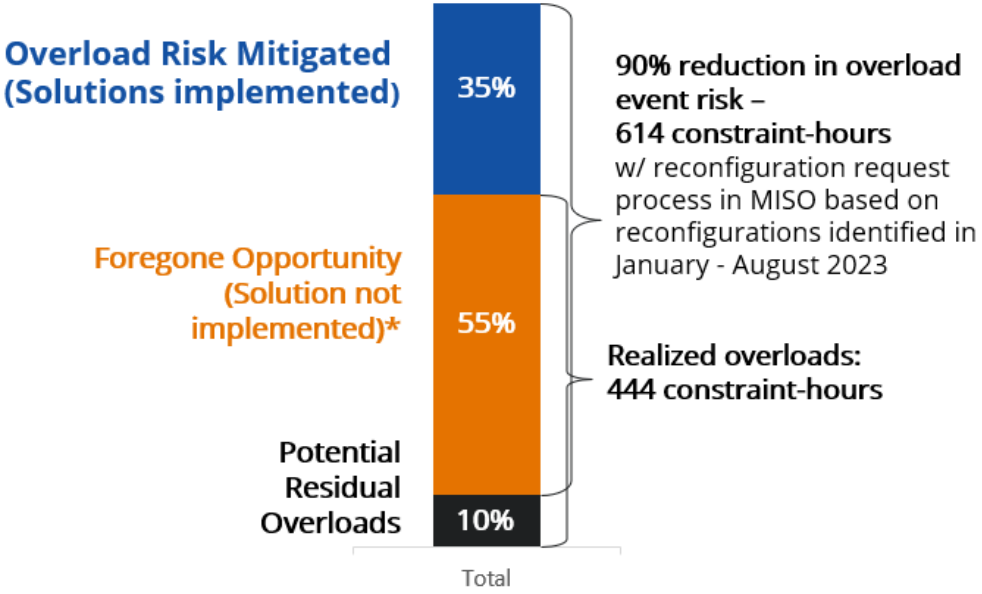


The impacts were calculated ex-post based on analyses of state estimator cases published by MISO and of historical market data. The total chart shows the cumulative costs for all months since the pilot start in October 2021.

* Solution not implemented includes the impacts of all solutions found, requested and that were not declined on a technical basis, as well as solutions not requested due to the lack of an established request process (prior to July 2023).

** Residual congestion may be reduced further, as not all significant constraints affecting Alliant were analyzed during the pilot due to scope limitations.

Results - Reliability Impacts



Reliability impacts calculated ex-post based on analyses of MISO state estimator (SE) cases. The number of constraint-hours with overloads is estimated as 6 times the number of constraints in SE cases with flow over 100% of their facility rating (without redispatch), where the number 6 is used because only 4 SE cases are made available to market participants by MISO per day (one SE case about every 6 hours). Only constraints analyzed in the pilot for Alliant Energy were included in this analysis – overloads on other constraints are not included.

* Solution not implemented includes the impacts of all solutions found and submitted to MISO that were not declined on a technical basis.

MISO Reconfiguration Request Process

STEP 1: A Market Participant identifies a congestion pattern of interest

STEP 2: The Market Participant identifies reconfiguration solutions, analyzes them and submits requests to MISO and the Transmission Owners/Operators

Step 3: MISO and the Transmission Owners/Operators assess reliability and economic impacts; Generation Operators that are directly affected evaluate their risk exposure

Step 4: MISO and TO/TOP approves or denies the solution

Step 5: MISO and the Transmission Owners/Operators implement the solution if real-time conditions allow

Exit

If an economic reconfigure is no longer effective or reliable due to changes in system conditions, or fails one of the initial screening criteria, MISO and the TO/TOP will exit the congestion cost reconfiguration.

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