



2026 Geomagnetic Disturbance Vulnerability Assessment (GMDVA) Final Results

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Outline:

- Study Overview/Timeline
- Study Assumptions
- GMDVA Study Criteria
- Results and Next Steps
- Contact Information

Key Takeaways

- This presentation provides the final results for the 2026 Geomagnetic Disturbance Vulnerability Assessment (GMDVA)

2026 GMDVA Status

- **May 28th, 2024:** GIC System Models were published to MIS TSP Certified site
- **October 3rd, 2024:** Preliminary GIC flows were published for Market Participants to provide comments
- **November 6th, 2024:** Final GIC flows were posted after addressing Market Participants comments and no transformers exceeded the NERC defined threshold for thermal impact assessment
- **February 21st, 2025:** Market Notice (M-A022125-01) was sent out to TSPs and Resource Entities to collect a list of equipment that may be removed due to operation/misoperation of protection system caused by harmonics during the benchmark and supplemental GMD events (*responses were due May 31st, 2025*)
- **May 11th, 2026:** A study update was provided during the [May 11th, 2026 RPG Meeting](#) to update stakeholders on study process and assumptions.

Study Inputs and Assumptions

- The final GIC system models (DC and AC) posted in November 2024 were used as the GMDVA start cases
 - The models represented 2027 Summer Peak Load and Minimum Load conditions
- The benchmark GMD event used a geoelectric field amplitude of 8 V/km while the supplemental GMD event used an amplitude of 12 V/km
- Both the benchmark and the supplemental GMD events were applied to the entire ERCOT footprint

Category A and B Outages

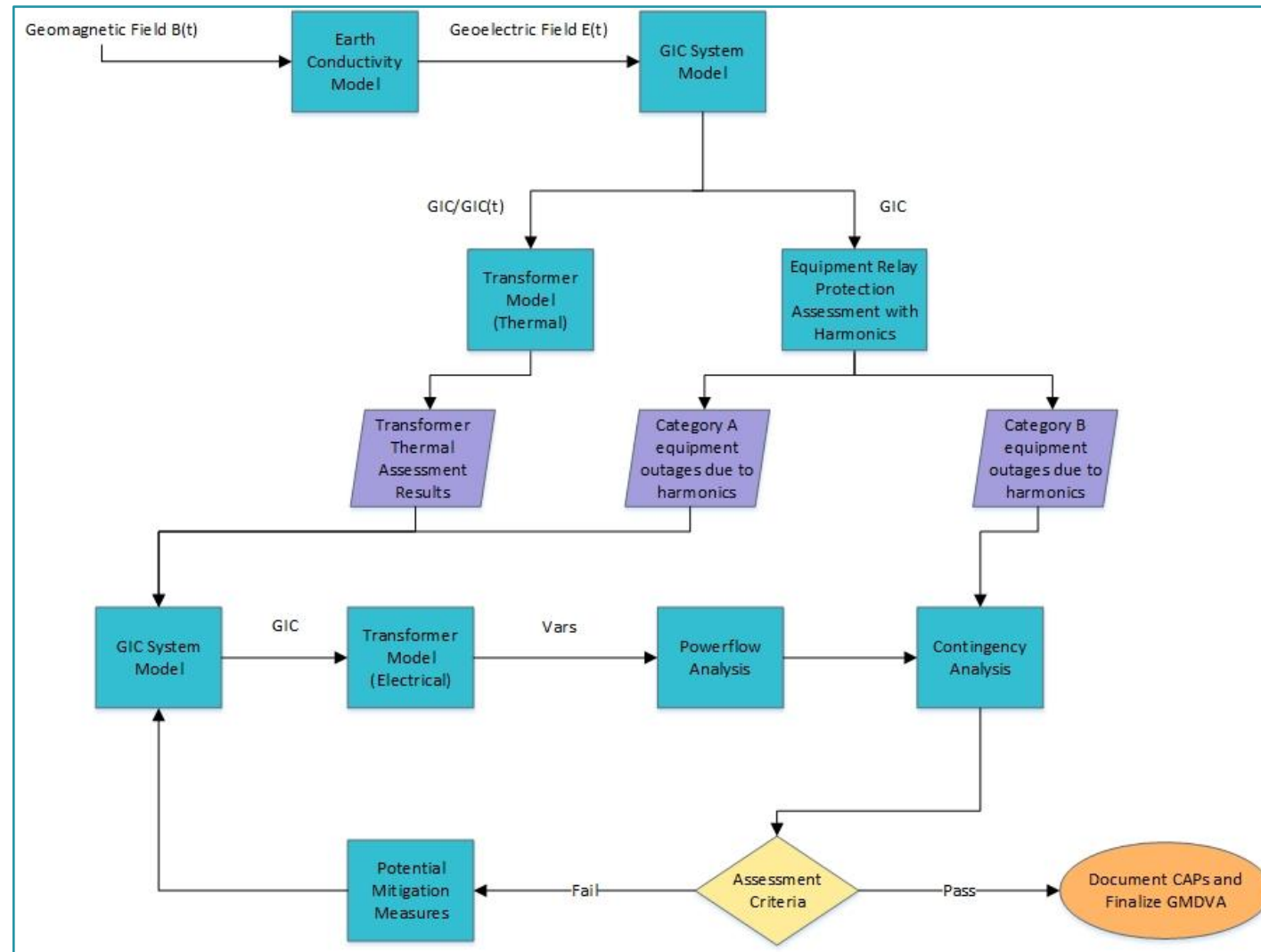
TSPs and Resource Entities (REs) were requested to review their facilities to develop a list of potential equipment that may be removed from service as a result of generated harmonics due to either normal operation or mis-operation which would then be categorized based on likelihood of tripping:

- Category A Outage: Equipment anticipated to have a high probability of tripping offline due to harmonics during the GMD events and may be studied simultaneously in the GMDVAs. The category A outage submissions for the Benchmark and Supplemental GMD events were identical.
- Category B Outage: Equipment anticipated to have a lower probability of tripping offline due to harmonics during the GMD event and may be studied one at a time in the GMDVAs.

Category A Summary		
Equipment Type	Reactive Capability (MVar)	Installed Capacity (MW)
Thermal Unit	1,250	1,946
Solar Unit	1,691	4,452
Wind Unit	800	1,901
Switch Shunt	628	-
Total	4,369	8,299

Category B Summary	
Scenario	Count
Benchmark (8 V/km)	302
Supplemental (12 V/km)	306

Study Process



GMDVA Study Criteria

Steady-State Voltage Performance Analysis Criteria:

- The steady-state voltage criteria outlined in Planning Guide Section 4.1.1.4, specifically the post contingency voltage performance criteria, was used following the occurrence of the benchmark and supplemental GMD events
- The voltage deviation criteria outlined in Planning Guide Section 4.1.1.4 was used following the occurrence of the benchmark and supplemental GMD events

Cascading Analysis Criteria:

- Transmission Facilities (100 kV and above) that exceeded the lower of their relay loadability limit or 125% of their emergency rating were assumed to trip automatically and removed from service
- Load at buses with known UVLS protection schemes where the voltage fell below their under-voltage set point were assumed to trip automatically
- Generators with buses on the low side of a Generator Step Up (GSU) transformer that experienced voltages lower than their under-voltage trip limits or higher than their over-voltage trip limits were assumed to trip automatically

Final Results and Next Steps

Benchmark and supplemental GMDVA Results:

- No steady state voltage criteria violations were identified
- No cascading events were identified

No CAPs were required for either the benchmark or supplemental GMD events.

Next Steps:

- ERCOT will draft and post the GMDVA report along with the study cases by December 31, 2026

Questions/Comments?

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