



# 2026 Geomagnetic Disturbance Vulnerability Assessment (GMDVA) Update

*Jack Thornton*  
Planning Engineer III

May 11, 2026

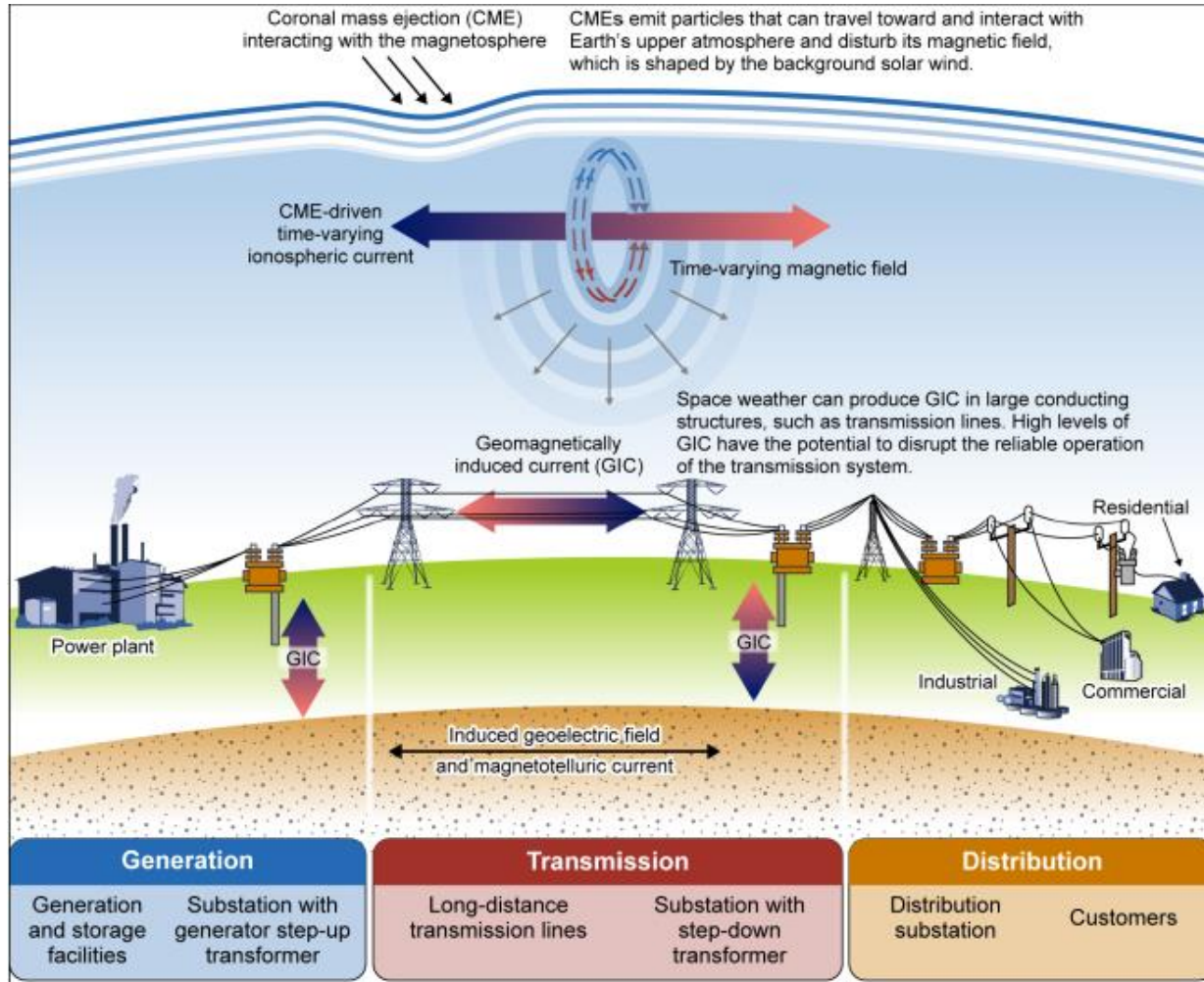
## Outline:

- GMDVA Background
- Study Overview/Timeline
- Study Assumptions
- Contact Information

## Key Takeaways

- This presentation provides an update on the 2026 Geomagnetic Disturbance Vulnerability Assessment (GMDVA)

# GMDVA Background



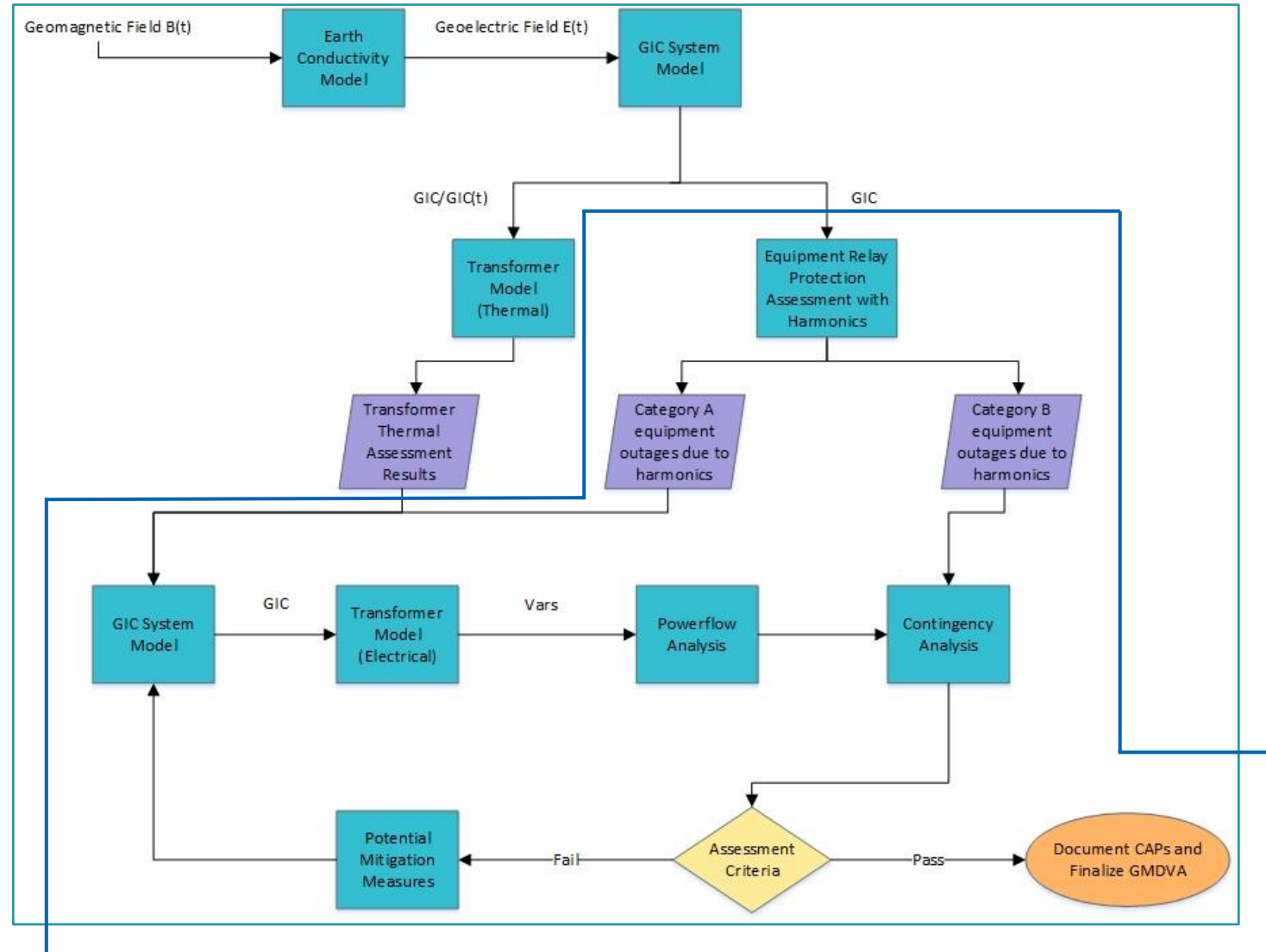
Sources: GAO (presentation); Art Explosion (images). | GAO-19-98

- FERC issued Order 779 in May 2013 directing NERC to develop reliability standards to address the potential impact of GMDs on the reliability operation of the Bulk-Power System.
  - NERC TPL-007-4
  - ERCOT Planning Guide Sections: 3.1.1.5; 3.1.8; and 6.11
- Studies include assessment of the NERC defined benchmark and supplemental GMD events under the following conditions once every 60 calendar months:
  - System On-Peak load condition in the Near-Term Transmission Planning Horizon
  - System Off-Peak load condition in the Near-Term Transmission Planning Horizon
  - Under 8 V/km (Benchmark) and 12 V/km (Supplemental) Electric Field Strengths

## 2026 GMDVA Status

- **May 28<sup>th</sup>, 2024:** GIC System Models were published to MIS TSP Certified site
- **October 3<sup>rd</sup>, 2024:** Preliminary GIC flows were published for Market Participants to provide comments
- **November 6<sup>th</sup>, 2024:** Final GIC flows were posted after addressing Market Participants comments and no transformers exceeded the NERC defined threshold for thermal impact assessment
- **February 21<sup>st</sup>, 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 31<sup>st</sup>, 2025*)

# Study Process



# Start Cases

- The GIC system models used to finalize the GIC flow posted on November 6, 2024 will be used as start cases for the benchmark and supplemental GMDVAs
- The GIC system models represent the 2027 summer peak load condition and the 2027 minimum load condition

# 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	-
<b>Total</b>	<b>,369</b>	<b>8,299</b>

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

# 2027 MIN Model Assumptions

## Load Values (MW) by Weather Zone

COAST	EAST	NORTH	NORTH CENTRAL	WEST	FAR WEST	SOUTH	SOUTH CENTRAL	TOTAL
15,565	1,233	3,501	11,979	2,550	12,365	5,753	8,768	61,714

## Renewables and Battery Assumptions

Region/Type	Capacity Factors
Coastal Wind	32.5%
Other Wind	45.5%
Panhandle Wind	54.3%
Solar	OFF
Battery	OFF

- Weighted average capacity factor for each wind region (Coastal, Panhandle, Other)
- Based on bottom 20 load hours of each year (past 3 years)

# 2027 SUM Model Assumptions

## Load Values (MW) by Weather Zone Post Load Adjustment

COAST	EAST	NORTH	NORTH CENTRAL	WEST	FAR WEST	SOUTH	SOUTH CENTRAL	TOTAL
30,888	3,668	3,921	34,093	3,390	13,248	9,522	18,635	117,365

## Capacity Factors for Renewables

Region/Type	Weight
Coastal Wind	52.9%
Other Wind	54.0%
Panhandle Wind	38.2%
Solar	84.6%
Battery	OFF

- Application of category A outages resulted in a generation deficit of 3,600 MW
- Capacity factors are the average of the top 10 load hours from the last 5 years
- 4,500 MW of crypto load adjustment (1,200 MW remaining) was applied to allow 900 MW of reserve

# Questions/Comments?

[GMDVA@ercot.com](mailto:GMDVA@ercot.com)

## Learn More

[www.ercot.com](http://www.ercot.com)

## Download ERCOT Mobile App



## Connect With Us



[facebook.com/ERCOTISO](https://facebook.com/ERCOTISO)



[x.com/ercot\\_iso](https://x.com/ercot_iso)



[linkedin.com/company/ercot](https://linkedin.com/company/ercot)



[instagram.com/ercot\\_iso](https://instagram.com/ercot_iso)