



Preliminary Voltage Performance Findings for the Benchmark GMD Event

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Preliminary Benchmark GMD Event Voltage Performance

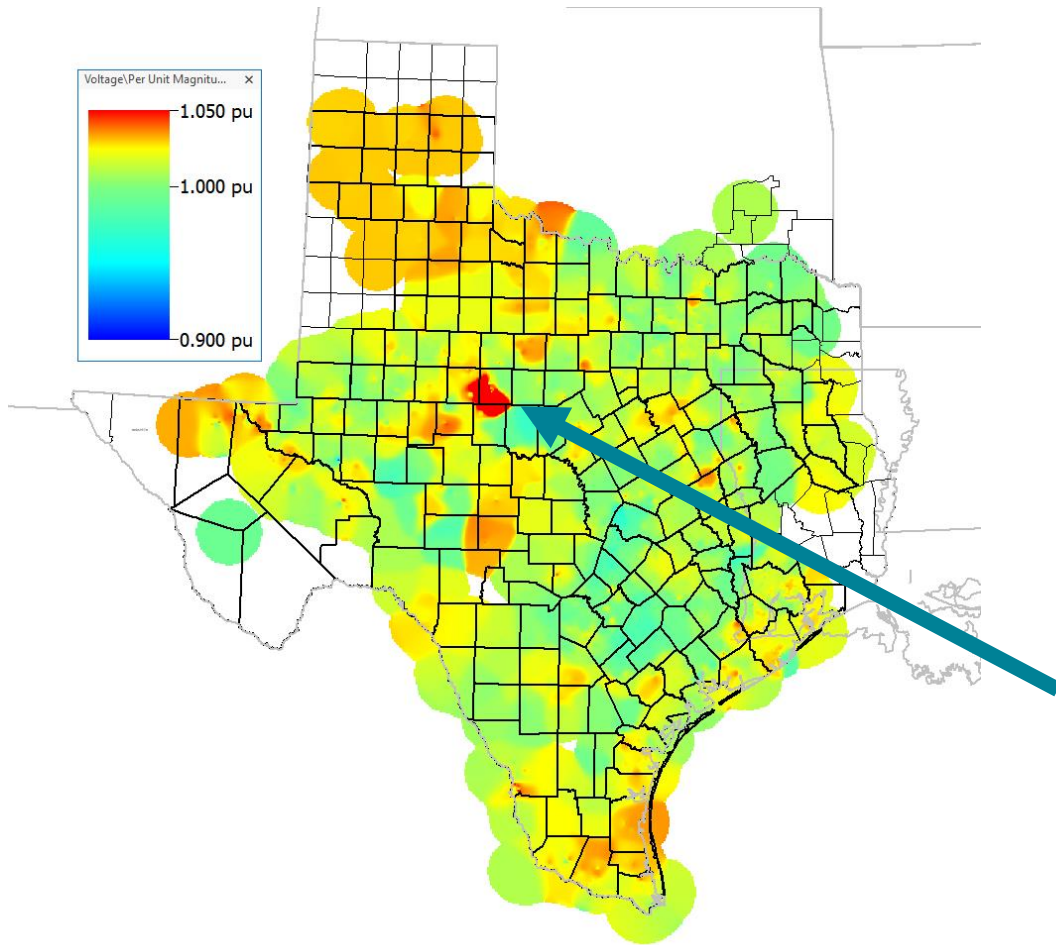
- Category A outages were simultaneously applied to the final GIC model
- Post-contingency voltage limits were used
- DC tie losses have not yet been incorporated in the analysis

Composition of Category A Outages

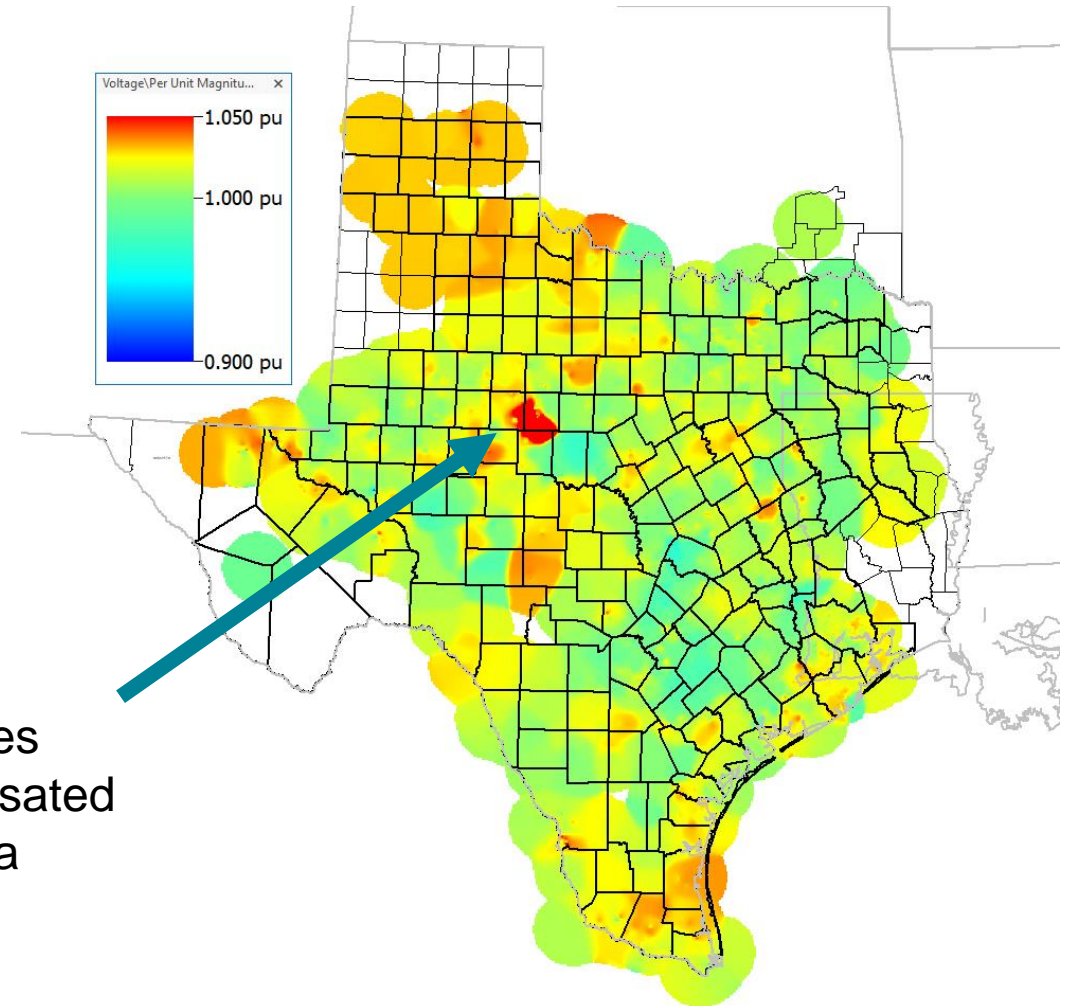
	Generator	Transformer	GSU	Reactive Device	Line
69 kV	0	0	1	3	23
138 kV	3	5	5	2	30
345 kV	6	0	8	1	0

2022 Summer Peak Case

With Category A outages applied



With Category A outages and reactive losses applied



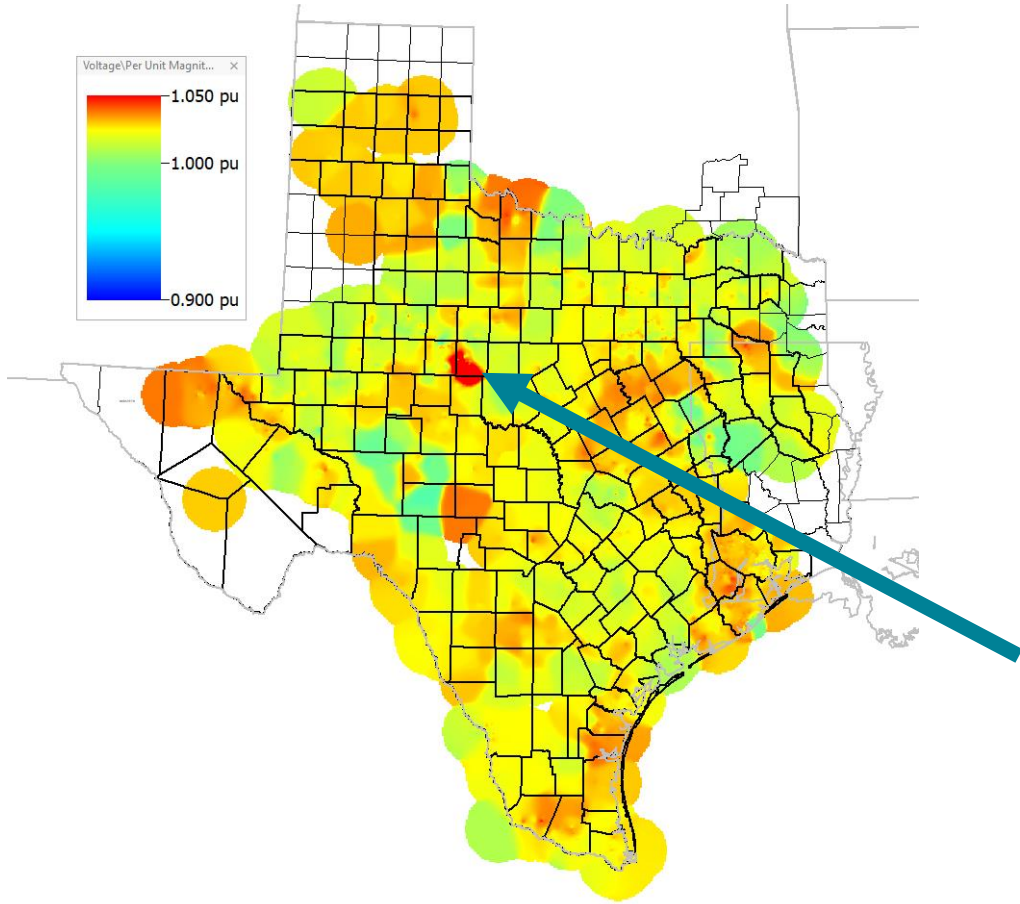
Series compensated area

Contoured maps display voltages at buses >100 kV

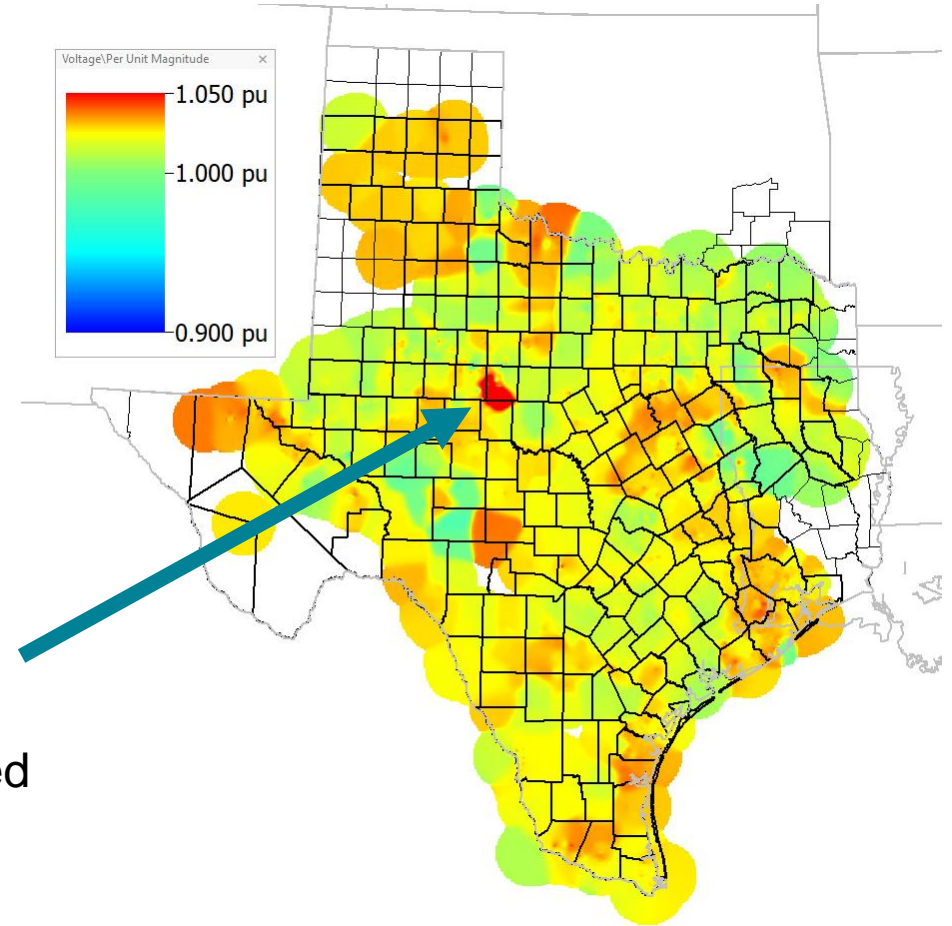


2022 Minimum Load Case

With Category A outages applied



With Category A outages and reactive losses applied



Series
compensated
area

Contoured maps display voltages at buses >100 kV



Preliminary Recommendation and Next Step

- No proposed changes to the steady state voltage performance criteria for the benchmark GMD Vulnerability Assessment
 - Recommendation may change based on future findings
 - E.g. Preliminary voltage performance for the supplemental GMD event or results based on Category B outages
- Next step is to include the individual application of Category B outages

Please send any questions or comments to
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