

Advanced Transmission Technologies Stakeholder Meeting

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PJM's Independent Market Monitor Q1 report

- PJM-wide **congestion costs are up 300% year over year**, increasing to over \$2 billion in the first quarter of 2026
- American Electric Power (AEP) Zone, saw **\$363.3 million of congestion charges** in the first three months of 2026.

DOE Draft 2026 National Transmission needs study

- Congestion remains a significant national problem, with estimated U.S. congestion costs of \$11 billion in 2023
- Most congestion costs are **concentrated in just 5% of hours**, especially during periods of high net load and cold weather

This presentation is focused on measuring the **direct affordability benefits of GETs** in terms of reducing congestion.

There are many other benefits of GETS that are not described here.

Backcasting or Forecasting? Both!

Backcasting:

simulating the congestion savings that would have been captured if a GET had been deployed

Advantages:

- Concrete evidence of savings opportunities
- Captures extreme weather events that are often the most valuable and yet hardest to model

Forecasting:

simulating the congestion savings that can be expected if a GET is deployed in the future

Advantages:

- Simulates changes to loads, generation, and topology that may change historical load patterns
- Can test variety of scenarios and timelines to understand the robustness of the solution

GridLab's Alternative Scenario

1. Added a 650 MWs new load and 3,400 MWs new generation in the I&M area
2. Simulated a 30% increase in line ratings to approximate a Dynamic Line Rating deployment
3. Found several million dollars in annual savings from congestion reduction* compared to the negligible savings determined in the I&M study
4. Underscores the importance of testing a **variety** of load and generation scenarios when forecasting congestion.



Figure 1: Generation Site Map



Figure 2: Load Site Map

*These findings align with real-world examples where DLR has had incredible impacts on congestion savings. In one case, PPL reported an estimated \$65 million per year reduction in congestion costs on a single line and avoided approximately \$50 million in capital expenditures by delaying new transmission construction

We can't know if rates are just and reasonable,
if we don't know **how the capabilities of the assets bought with those rates were calculated**

We can't compare the benefits and costs of solutions
If we don't know **how the benefits of each solutions are evaluated**

In particular, **transmission owners should be required to provide:**

- Facility Ratings Methodologies in accordance with NERC Reliability Standard FAC-008
- Standard Right-of-Way (ROW) Widths by structure type and voltage class
- Standard pole heights and phase spacing by voltage class
- Powerflow Models representing typically congested periods (e.g. "Peak Load," "High Generation, Low Load" etc.)
- Production Cost Models representing a variety of near-term future scenarios (rapid load growth, rapid generation growth, etc.)
- Approved equipment/conductor catalogues

What is Critical Energy Infrastructure Information (CEII)?

*CEII is specific engineering, vulnerability, or detailed design information about proposed or existing critical infrastructure (physical or virtual) that:

- Relates details about the production, generation, transmission, or distribution of energy;
- Could be useful to a person planning an attack on critical infrastructure;
- Is exempt from mandatory disclosure under the Freedom of Information Act; and
- Gives strategic information beyond the location of the critical infrastructure.

CEII is a class of information that **can be shared** if proper procedures are followed (security checks, proper transfer and storage, non-disclosure agreements etc.)

1. Weather forecasting

- a. National Lab of the Rockies (NLR) “Advanced Transmission Modeling” project
 - i. Robust weather dataset and open-source python package that can quickly allow engineers to generate a 7-year historical time series of hourly weather inputs needed to calculate the rating for any line in the contiguous U.S.

2. Modeling powerflow changes, not just line rating increases

- a. APFCs, Topology Optimization, and FACTS must be studied using powerflow models, which by design are “snapshots.” There is a growing body of techniques to study these technologies that can be used, but the **scenario definitions are key**

3. Operations

- a. To the extent possible, the implementation pathway for these technologies should be investigated (standards, operational controls, coordination with PJM/MISO)

FERC Commissioner Rosner actively calling for new modeling software capabilities*

“As a result, there may be a need for software that grid operators and public utilities can use (1) to accurately study GETs in the large load interconnection process, and (2) to rapidly, clearly, and **transparently** convey the results of those studies to customers and the public”

*July 2, 2026. Open Letter to Technical Conference Participants: GETs and Increasing Market Planning Efficiency through Improved Software.
<https://www.ferc.gov/news-events/news/open-letter-technical-conference-participants-gets-and-increasing-market-planning>

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