



Integrating GETs into the RTO regulatory landscape

INFORMED BY ONGOING PROJECT WORK UNDERWAY TO STUDY AND ENCOURAGE GETS DEPLOYMENT IN PJM

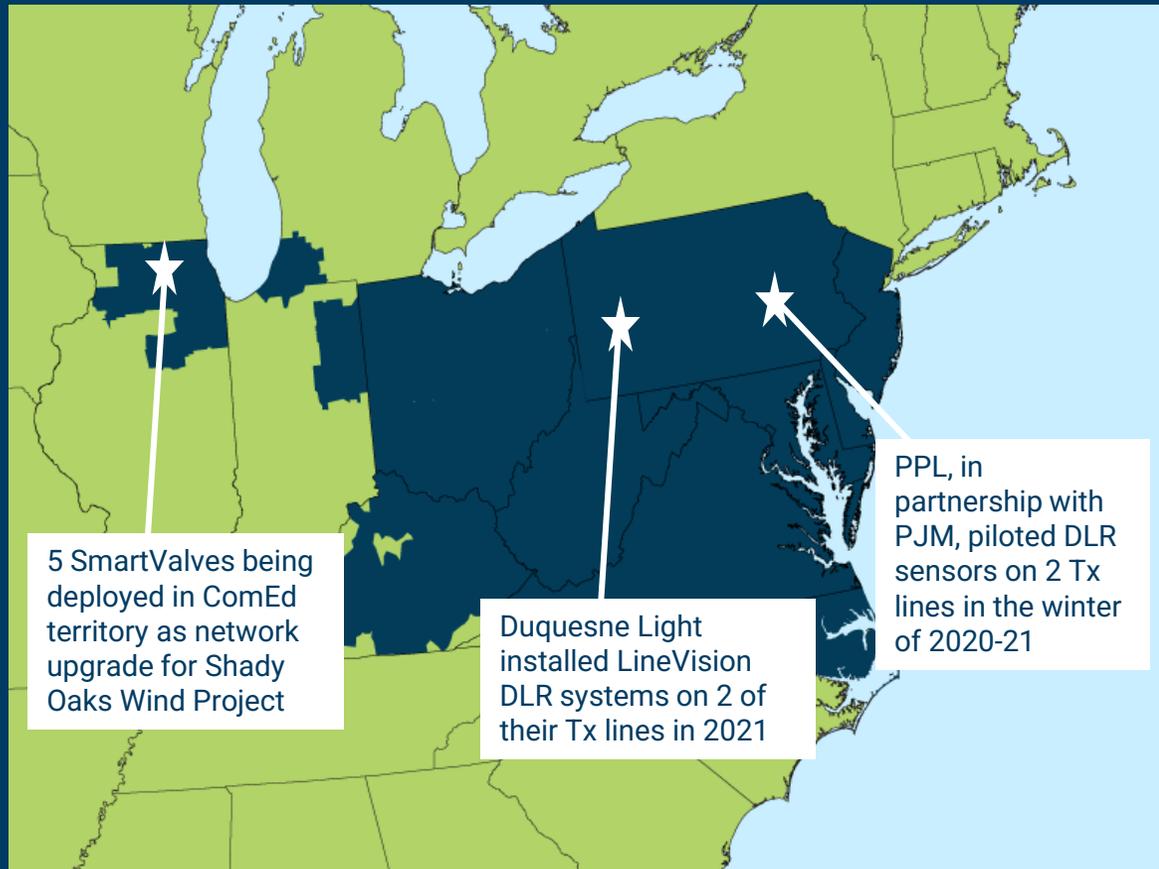
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Presentation overview

- How GETs are considered at the RTO level today
- The case for regulatory change
- Opportunities for integrating GETs into Ix and Tx study processes

In PJM today, deploying GETs is at the discretion of the transmission-owning utility



- PJM is neutral/agnostic to GETs
- PJM considers GETs on a case-by-case basis as proposed by TOs, primarily in operational (rather than planning) applications
- GETs are not routinely considered as part of transmission or interconnection planning/study processes
- PJM's Applied Innovations team is conducting internal R&D on GETs
- There are a handful of GETs pilots underway in the region

There is opportunity for more widespread deployment of GETs, which could support more near-term clean generation additions

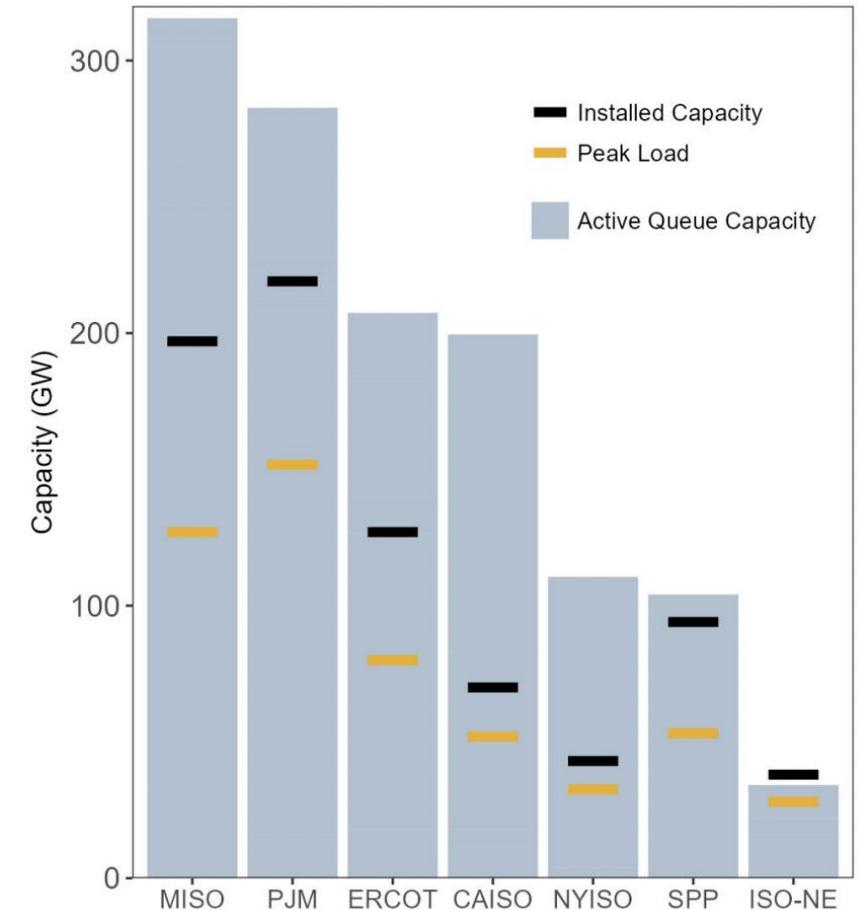
- PJM’s interconnection queue has become backlogged with thousands of projects, at the same time as its existing grid has become **more congested**, illustrating a need for more transmission capacity.
- **GETs** have the potential to help new resources connect to the grid **more quickly and cheaply** and serve as a **bridge** to the longer-term transmission build-out needed.

Annual RTO congestion costs (\$, millions), 2016-2022

RTO	2016	2017	2018	2019	2020	2021	2022
ERCOT	497	976	1,260	1,260	1,400	2,100	2,800
ISO-NE	39	41	65	33	29	50	51
MISO	1,402	1,518	1,409	934	1,181	2,849	3,700
NYISO ²	529	481	596	433	297	551	1,000
PJM	1,024	698	1,310	583	529	995	2,500
SPP	280	500	450	457	442	1,200	2,000
TOTAL	3,771	4,214	5,090	3,700	3,878	7,745	12,051

Source: Grid Strategies

RTO Installed Capacity & Peak Load vs. Active Queues



Source: LBNL

There are two primary pathways to integrate GETs in RTO planning paradigms, which could better support their uptake

Interconnection

- GETs could be required to be evaluated as a **network upgrade option** during the facilities study phase of the interconnection process
 - SmartValve installation in ComEd territory is a promising example of this application
- Language in the FERC Interconnection NOPR suggested GETs' consideration at interconnection customer request

Transmission planning

- GETs could be integrated into **long-term transmission planning** (e.g., RTEP, other processes) to ensure smarter as well as larger transmission system build-out
- GETs can be **complementary** to traditional transmission solutions
- FERC Transmission Planning NOPR calls for RTOs to “consider” DLR and PFCs in all regional transmission planning

Tariff changes at the RTO level can be initiated by FERC orders or issue charges that spur a new stakeholder dialogue on proposed reforms (e.g., PJM's previous interconnection reform task force, the ongoing capacity market reform work, etc.)



Reference slides

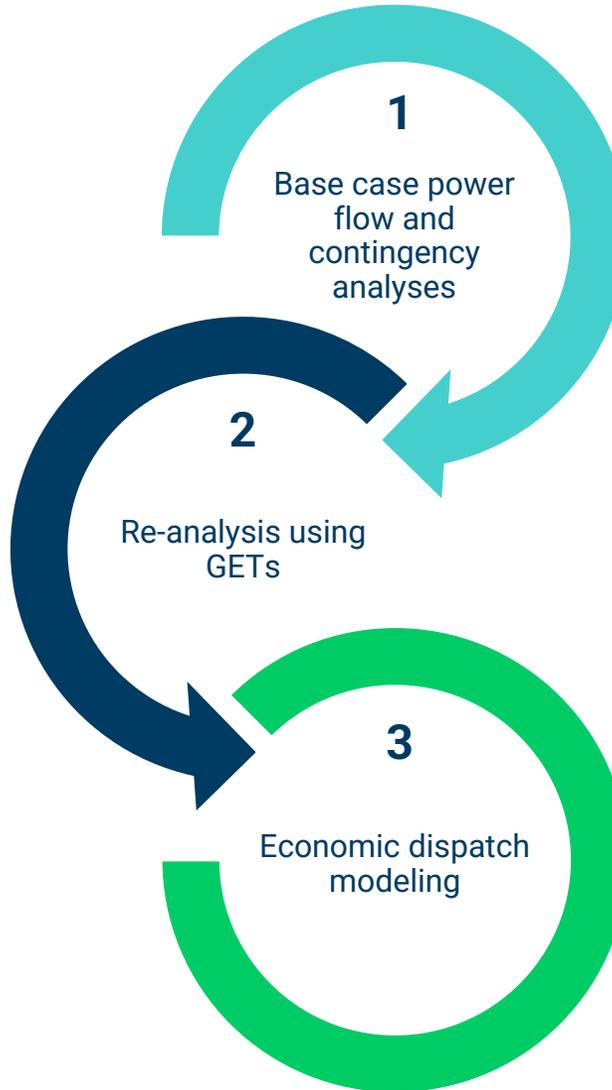
RMI GETs project: analytical approach

1. Power flow analysis:

5 states, 3 future years, and 3 seasonal planning conditions

2. GETs technologies will be applied individually and/or jointly to fix issues

3. Production cost modeling, taking GETs into account



This will quantify the number and magnitude of overloads caused by resources in the queue, as well as how much curtailment would be necessary

GETs (deployed where practical) will reduce the magnitude and number of overloads on the system

Economic dispatch modeling will quantify the impact of utilizing GETs (additional MW that can interconnect, \$ saved from reduced curtailment, etc.)

Policy options for GETs at the state level

Recent RMI blog highlights 4 strategies state PUCs can use to support more widespread GETs deployments:

Strategy 1:
Build Knowledge
and Experience
with GETs

Strategy 2:
Require that GETs
Be Considered in
Planning
Processes

Strategy 3:
Incentivize GETs
Adoption

Strategy 4:
Shape FERC
Policies

