STATE of INDIANA

INDIANA UTILITY REGULATORY COMMISSION
101 WEST WASHINGTON STREET, SUITE 1500 EAST
INDIANAPOLIS, INDIANA 46204-3419

www.in.gov/iurc
Office: (317) 232-2701
Facsimile: (317) 232-6758

Request for RTO Comments for the IURC's Advanced Transmission Technologies Study

As you may be aware, Senate Enrolled Act (SEA) 422 from the 2025 legislative session requires the Indiana Utility Regulatory Commission ("Commission" or "IURC") to conduct a study on advanced transmission technologies ("ATTs"). The Commission is requesting input, comments, ideas, research, and any relevant information your organization would like to provide, including regarding the following from Indiana Code § 8-1-8.5-14. **The first round of comments is due no later than June 3, 2026.**

1) The potential use or deployment of ATTs by public utilities to enable those utilities to:
   a) safely, reliably, efficiently, and cost effectively meet electric system demand; and
   b) provide safe, reliable, and affordable electric utility service to customers?

   Under PJM's tariff, transmission owners are responsible for submitting transmission solutions for the needs PJM identifies on the system. At times, PJM has selected ATTs and GETs proposed by Transmission Developers by virtue of their superior cost and benefit efficiencies. As such, these technologies, installed (or approved) to date include Advanced Conductor applications, Dynamic Line Ratings and Advanced Transmission Technologies. PJM has posted additional information here: PJM - Grid Enhancing Technologies

Pursuant to the above process, PJM has observed use cases where Dynamic Line Ratings can increase transfer capability and congestion relief in the near-term at lower costs (please see: page 5 of https://www.pjm.com/-/media/DotCom/about-pjm/advanced-technologies/dlr.pdf and see Dynamic Line Rate Report, United States Department of Energy, June 2019 here: dynamic-line-rating-report-congress-june-2019).

PJM has found that there may be some limitations to DLR technology, including the magnitude of transfer and congestion relief it may offer and the expected value, or expected probability of performance, for reliability needs. Specifically, during peak heat demand days on the system, excess margin on the transmission wires may be scarce, and thus would not benefit from DLR.

PJM uses Topology Control Optimization to implement optimal system reconfiguration options. This has the potential to reduce transmission constraints and ultimately congestion cost. (Please find PJM's full assessment here: topology-control-and-optimization.pdf).

PJM has also found that Advanced Conductors use new materials that allow lines to potentially carry more electrical current at higher temperatures with less sag, lower losses, and often greater mechanical robustness, usually installed via reconductoring on existing rights-of-way. (Please find PJM's full assessment here: advanced-conductor.pdf)

While PJM does not have Advanced Power Flow Control devices in its footprint, PJM believes they potentially offer thermal, voltage, stability, congestion and other benefits, but at a higher cost than traditional solutions. (See page 5 of PJM's report: apfc.pdf) PJM cautions that the grid system can be exposed to increased cyber vulnerability through reliance on remote and advanced communication and control systems for the APFC devices. (See page 7 of: apfc.pdf)

2) The attributes, functions, costs, and benefits of various ATTs, including grid enhancing technologies and advanced conductors.

PJM assesses all transmission projects addressing reliability and market efficiency needs according to its FERC-approved Transmission Tariff.

According to the research listed above (PJM - Grid Enhancing Technologies), PJM has found that the mentioned technologies potentially offer the following costs and benefits:

	Financial Cost Profile	Functionality	Vulnerabilities
Dynamic Line Ratings	Low capital outlay with quick payback.	Sensors may afford some transfer and congestion benefits through optimization.	Cyber vulnerabilities, sensor errors, lower magnitude benefits compared to wires in cases.
Advanced Conductors	Higher upfront cost than traditional conductors, with potential O&M savings	Maximize existing right-of-way by affording more current at higher temperatures with less sag, lower losses.	May require tower/substation upgrades, limited long-term performance history, complexity.
Topology & Control Optimization	Relatively low up-front cost	Use real-time data to best optimize controls, but may shift congestion to other areas. Requires increased operator-owner coordination.	Higher O&M, equipment wear, requires constant coordination.
Advanced Power Flow Control	Not yet adopted by PJM; High initial cost	Not yet adopted by PJM; complexity which could result in failure.	Not yet adopted by PJM; device failure may constrain the grid.

3) Whether each particular technology does the following:
   a) Increases transmission capacity.
   b) Increases transmission efficiency.
   c) Reduces transmission congestion.
   d) Reduces the curtailment of generation resources.
   e) Increases system reliability.
   f) Increases system resiliency?
   g) Increases the capacity to connect new energy generation resources.

PJM has observed situations where the following technologies provided the benefits listed. However, we note that these technologies are assessed on a case-by-case basis under PJM's tariff. In cases, PJM also continues to adopt traditional transmission planning solutions where they have been the most viable and cost-beneficial option proposed.

	Increases Tx Capacity	Increase Tx Efficiency	Reduces Congestion	Reduces Curtailment	Increases Reliability	Resiliency	Incr. Interconnection
DLR	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Advanced Conductors	Yes	Yes	Yes	Partial	Yes	Yes	Yes
Advanced Power Flow Control	Partial	Yes	Yes	Yes	Yes	Partial	Yes
Topology Control & Optimization	Yes	Yes	Yes	Yes	Yes	Partial	Yes

4) What is the potential of each ATT to be used or be deployed by public utilities to provide safe, reliable, and affordable electric utility service to customers in Indiana, considering existing and planned transmission infrastructure and projected demand growth?
   ATTs are already being deployed in PJM throughout the interconnection, where proven more efficient or cost effective compared to other conventional alternatives.

5) What potential reductions in project costs and project completion deadlines can be furthered by ATTs compared to traditional transmission infrastructure?

   This varies depending on nature of need and whether solutions are needed to cover limited growth potential vs an ongoing, growing need that may be more efficiently and cost effectively addressed via conventional transmission upgrades. In PJM, the competitive transmission process by its nature, incents the submission and selection of efficient solutions.

6) What are potential ways to streamline the deployment of ATTs, including streamlined processes for permitting, maintenance, and upgrades?

These technologies are already being deployed in PJM using existing tariff structures and provisions. PJM and its stakeholders continue to evolve these provisions through ongoing initiatives like the Storage As a Transmission Asset Initiative. URL: 20260507-item-05a---storage-as-a-transmission-asset---sata---pjm-constellation-presentation.pdf

7) Are there any other aspects of ATTs that can assist the IURC to understand the potential role of ATTs in Indiana?

ATT consideration and deployment by Transmission Utilities is increasing as the technologies mature and become more proven. Within PJM, because PJM does not propose "specific technologies" or necessarily dictate a "specific solution" which is the responsibility of the Transmission Owners and Transmission Developers, the consideration of advanced technologies will primarily fall within the Project Proponent's domain where PJM role is to enable it's fair consideration against other solutions proposed.

Transmission owners within PJM may offer the IURC more granular performance data on the relative performance of various advanced technologies.