



June 3, 2026

Indiana Utility Regulatory Commission
101 W. Washington St. #1500E
Indianapolis, IN 46204
URCComments@urc.in.gov

Re: IURC Request for Stakeholder Comments on Advanced Transmission Technologies

To Whom It May Concern:

I. Introduction

The Pew Charitable Trusts' Energy Modernization Project appreciates the opportunity to provide comments on the Indiana Utility Regulatory Commission's Advanced Transmission Technologies (ATTs) Study. Since our founding, The Pew Charitable Trusts has worked at the intersection of data and policy to create common ground and address the nation's most pressing challenges. Pew's Energy Modernization Project works to advance policies that will help build a modern, reliable grid that can meet the growing need for electricity. Pew offers the following comments as the IURC studies the role that ATTs can play in Indiana.

II. The Role of ATTs on the Grid

ATTs are hardware and software solutions that can be installed quickly on new and existing transmission lines to unlock capacity on the grid, reduce costs to consumers, and maximize existing transmission infrastructure. As a result, they can enable the near-term uptake of additional energy to the grid from generation projects sitting in the interconnection queue, which includes up to 65 GW in Indiana alone.¹ ATTs can be

¹ <https://emp.lbl.gov/maps-projects-region-state-and-county>.

deployed within existing transmission rights-of-way often within three months to three years,² compared to an average of ten years to plan, permit, and pay for new transmission lines.³

ATTs can also be used to target known areas of grid congestion, resulting in significant cost-savings for consumers and large energy users. These congestion costs reached an estimated \$12 billion nationwide in 2024, including \$1.8 billion in MISO and \$1.75 billion in PJM.⁴ In addition to increasing line capacity, ATTs mitigate congestion by giving grid operators more control and visibility of the transmission system, allowing them to increase the flow of power on lines or efficiently reroute electrons away from chokepoints so that the most cost-effective resources are dispatched.

III. Overview of Specific ATTs and Benefits

ATTs include both high-performance conductors (HPCs) as well as a category of systems called grid-enhancing technologies, or GETs; these include dynamic line rating systems (DLR), topology optimization (TO), and advanced power flow controllers (APFC).

DLR systems are sensors installed on transmission lines that provide grid operators with real-time weather conditions, such as temperature and wind speed, enabling them to safely boost the flow of power on the line by 10-30% beyond the fixed rating. DLRs can be deployed quickly, in some cases being installed via drones, as Entergy did in Arkansas

² Michelle Solomon, “DOE Study Highlights America’s Transmission Needs, but How Do We Accelerate Buildout?,” Utility Dive, March 31, 2023, <https://www.utilitydive.com/news/doe-study-transmission-clean-energy/646589/>.

³ Louise White et al., “Pathways to Commercial Liftoff: Innovative Grid Deployment,” U.S. Department of Energy, 2024, https://liftoff.energy.gov/wp-content/uploads/2024/04/Liftoff_Innovative-Grid-Deployment_Final_4.15.pdf.

⁴ Grid Strategies, “Transmission Congestion for 2024,” https://gridstrategiesllc.com/wp-content/uploads/GS_Transmission-Congestion-for-2024.pdf.

earlier this year.⁵ In Pennsylvania, the utility PPL deployed DLRs on three bottlenecked lines, resulting in a 16% increase in capacity, a \$65 million reduction in congestion costs, and \$50 million in savings by deferring a transmission line rebuild.⁶ In 2021, AES deployed 42 DLRs in less than two weeks on lines in Indiana and Ohio, noting that the average installation time per sensor was approximately 30 minutes.⁷ AES found a substantial increase in available headroom across the upgraded lines, including a 61% increase over static rating on one of the lines, and noted that the situational awareness provided by DLRs provides opportunities for strategic planning and grid management.⁸

APFCs are a modular hardware solution that can be installed on existing lines to change their reactance and enable grid operators to move power more efficiently, unlocking additional capacity.⁹ These devices are located at substations and can be moved and redeployed as needed, making them a nimble tool to maximize grid infrastructure. APFCs unlock additional capacity by redirecting power flows to underutilized lines and contribute to grid stability by controlling voltage. In New York, Central Hudson, a regional utility, installed 15 APFCs to an area of known congestion which unlocked 185 MW of transfer capacity and saved \$10 million dollars compared to a

⁵ Heimdall Power, “In a remarkable five-day effort, Heimdall Power installed 31 Neurons™ by Drone in Louisiana, Texas, and Arkansas Despite Unprecedented Winter Conditions,” <https://www.heimdallpower.com/news/energy-sets-us-record-with-multi-state-dlr-deployment-by-drone>.

⁶ Factor This, “Case study: The first US electric utility to integrate dynamic line ratings into real-time and market operations,” <https://www.renewableenergyworld.com/power-grid/smart-grids/case-study-the-first-us-electric-utility-to-integrate-dynamic-line-ratings-into-real-time-and-market-operations/>.

⁷ AES, “Lessons from the First Deployment of Dynamic Line Ratings,” <https://www.aes.com/sites/vault/files/2025-07/AES-LineVision-Case-Study-2024.pdf>.

⁸ *Id.*

⁹ Grid Strategies, “Unlocking Power by Redistributing Energy: Advanced Power Flow Control,” <https://watt-transmission.org/wp-content/uploads/2024/11/Unlocking-Power-by-Redistributing-Energy-Advanced-Power-Flow-Control.pdf>.

traditional solution.¹⁰

TO is a software solution that analyzes transmission lines to determine the most efficient route for power to flow to areas of high demand, reducing bottlenecks and increasing reliability. During Winter Storm Elliot in December 2022, Southwest Power Pool implemented TO solutions that released up to 845 MW from generation that was stranded due to congestion, resulting in 14 GWh of additional energy being available during the storm.¹¹ In another example, in November 2023 during planned maintenance on a major line on the Iowa/Minnesota border, a TO solution was implemented that reduced curtailment of wind power and lowered regional congestion costs by \$3.5 million.¹²

HPCs are modern, advanced wires that provide significant benefits over conventional steel-core lines. These conductors are made with carbon fiber or composite core materials encapsulated by aluminum and can carry 50% to 110% more power than their conventional steel-core counterparts.¹³ HPCs have significantly less sag during periods of high temperatures, which means that they can be installed on existing towers to increase capacity instead of requiring the construction of taller towers. For example, Montana-Dakota Utilities restructured an 11-mile segment using high-performance conductors, and as a direct result increased line capacity by 78%, while reducing construction costs by 40% through avoidance of structure modifications that would have been needed to

¹⁰ SmartWires, “Central Hudson: Leeds-Hurly Avenue project,” <https://www.smartwires.com/2023/05/31/central-hudson-leeds-hurley-avenue-project/>.

¹¹ Brattle Group, “Topology Optimization Case Studies” <https://www.brattle.com/wpcontent/uploads/2024/06/Topology-Optimization-Case-Studies.pdf>.

¹² *Id.*

¹³ Emilia Chojkiewicz et al., “2035 and Beyond: Reconductoring With Advanced Conductors,” <https://www.2035report.com/reconductoring/>.

maintain adequate clearance and support traditional, heavier conductors.¹⁴

IV. IURC Study

The IURC could strengthen the value of the study by determining what information utilities should provide to enable effective evaluation of ATTs. States across the country have passed legislation requiring utilities to submit reports on potential ATT development¹⁵ and FERC Order 1920 separately requires utilities to evaluate ATTs and explain how they will consider using these technologies in the long-term to create transparency for stakeholders.¹⁶ However, there is no standardized reporting methodology or format for utilities to rely on in preparing these reports. Through this study, the IURC could determine what metrics should be provided by utilities to assist with the IRP review required by SEA 240.

There are also two clear frameworks that the IURC can rely upon in determining the benefits of ATTs. Firstly, Indiana’s Office of Energy Development has established five pillars for state energy policy: reliability, resilience, stability, affordability, and environmental sustainability.¹⁷ The study could evaluate the ability of ATTs to help achieve these important state goals. Separately, FERC Order 1920 also outlines “Seven Benefits”

¹⁴ TS Conductor, “Montana-Dakota Utilities (MDU),” <https://tsconductor.com/projects/montana-dakota-utilities-mdu-napoleon-heskett/>; Montana-Dakota Utilities, “Montana-Dakota Utilities believes it is the first in North America to deploy aluminum-encapsulated carbon fiber conductor,” <https://www.montana-dakota.com/montana-dakota-utilities-first-in-north-america-to-deploy-carbon-fiber-conductor/>.

¹⁵ Yaron Miller, “To Boost The Electric Grid, States Look to Advanced Transmission Technologies,” <https://www.pew.org/en/research-and-analysis/articles/2025/12/15/to-boost-electric-grid-states-look-to-advanced-transmission-technologies>.

¹⁶ Federal Energy Regulatory Commission, “Explainer on the Transmission Planning and Cost Allocation Final Rule,” <https://www.ferc.gov/explainer-transmission-planning-and-cost-allocation-final-rule>.

¹⁷ Indiana Office of Energy Development, “Electricity,” <https://www.in.gov/oed/indianas-energy-policy/electricity/>.

that transmission providers must consider in long-term transmission planning.¹⁸ Because ATTs can have outsized benefits to the grid that extend far beyond their installation location, the IURC should consider how ATTs contribute to each of the benefits:

- 1) Avoided or deferred reliability transmission facilities and aging infrastructure replacement.
- 2) Reduced loss of load probability or reduced capital costs to meet planning reserve margin.
- 3) Production cost savings.
- 4) Reduced transmission energy losses.
- 5) Reduced congestion due to transmission outages.
- 6) Mitigation of extreme weather events and unexpected system conditions.
- 7) Capacity cost benefits from reduced peak energy losses.¹⁹

V. Conclusion

The Pew Charitable Trusts' Energy Modernization Project appreciates the opportunity to provide these comments and is happy to provide additional information and serve as a resource to the IURC.

Sincerely,

Jenny Netherton

Officer, Energy Modernization Program

¹⁸ *Id.*

¹⁹ *Id.*