



Transmission Solutions

Advanced Transmission Technologies

What are Advanced Transmission Technologies?

Advanced Transmission Technologies (ATTs) offer a cost-effective way to enhance the capacity, efficiency, and safety of power lines—delivering benefits to consumers much faster and at a lower cost than constructing new transmission infrastructure. Examples of ATTs include **Grid-Enhancing Technologies** (GETs), which use hardware and software to identify real-time transmission constraints and optimize power flows, and **High-Performance Conductors** (HPCs), which are modernized transmission wires that increase energy capacity while reducing fire risk.



Benefits of GETs

- **Deployed in a matter of months**, unlike new transmission lines that can take several years to route, approve, and construct
- Enhanced system resiliency and reliability through optimization of existing infrastructure, providing **real-time efficiency measures to save money**
- Increased efficiency that can **reduce systemwide congestion costs by nearly half**



Benefits of HPCs

- Use existing rights of way, avoiding costly permitting and at times controversial land acquisition, **boosting capacity by about double at half the cost**
- Made from improved materials that allow for transmitting significantly more electrons with **considerably less line sag, reducing the threat of fire**
- Capable of **adding about 2 GW of capacity and saving \$208 million per year** in energy costs for Texas ratepayers



Texas GETs Deployment

To reduce the risk of cascading outages and improve grid stability in South Texas, ERCOT collaborated with Transmission Service Providers to implement dynamic line ratings, increasing capacity on existing transmission lines and helping to maintain grid reliability while long-term transmission upgrades are in development.



Reconductoring in Texas

In 2011, American Electric Power (AEP) needed to upgrade an existing transmission line, but ERCOT determined that the line could not be taken out of service for a full rebuild. Instead, AEP reconducted approximately 240 miles of aging transmission lines with HPCs—while the line remained energized. This doubled line capacity, reduced line losses, and saved customers \$15 million annually.



Congestion costs in the ERCOT region exceeded \$7 billion from 2022 through 2024. During that time, using a conservative estimate, broad adoption of ATTs would have reduced congestion costs by about \$3 billion.



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Why Aren't ATTs More Broadly Adopted?

Despite their various benefits, cost considerations and regulatory uncertainty can make the widespread deployment of ATTs difficult for a utility. For example, electric utilities are sometimes slow to adopt new technologies due to concerns about interoperability and cost recovery. Integrating new materials and technologies into the grid introduces a worry that if operational challenges occur, replacement parts may not be as readily available as those for legacy systems. Fortunately, most of these products are designed with compatibility in mind, and delaying modernization will make upgrades more costly and complex in the future. **The time to invest is now.**

What Can Be Done?

Enhanced Cost Recovery & Savings Incentives

Utilities should be incentivized to utilize ATTs as to broaden the adoption of these technologies.



Texas Transmission Project suggests legislation that introduces enhanced cost recovery provisions and a savings incentive for utilities that choose to deploy ATTs. Importantly, this bill is not a mandate but rather an additional tool that utilities can leverage if they determine that adopting ATTs would benefit their ratepayers.

ATTs in System Planning

ATTs, which are currently deployed in some regions of Texas, should be considered by system planners for the reliability and resiliency benefits they provide when forecasting future needs.



Texas Transmission Project encourages greater consideration of ATTs in the regional planning process and to require ERCOT to evaluate and report back to the Legislature as to how these technologies could help alleviate transmission system congestion in a timely and cost-effective fashion.

To learn more about Texas Transmission Project, legislative recommendations and transmission solutions for Texas, visit www.TexasTransmissionProject.org.

