

ACADIA CENTER EXPLAINS

Common Sense Ways to Improve the Power Transmission System

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ADVANCED TRANSMISSION TECHNOLOGIES AND HOW THEY WORK

We're all familiar with bulk power transmission lines, the lines that are carried on those large, steel lattice towers that you see straddling the landscape. These transmission lines carry power over long distances, from where it is produced at electric generating facilities to your local utility. Transmission lines are a critically important part of delivering reliable power and meeting the growing demand for clean energy. Many projects to improve transmission lines are costly and time-consuming—taking years and millions of dollars to see through—and new lines must be sited in places that are accepted by communities. This Explainer examines one of the most effective, low cost and efficient ways to expand the capabilities of the existing system that have been have often left unused by transmission owners when planning system improvements.



WHAT ARE ADVANCED TRANSMISSION TECHNOLOGIES AND GRID ENHANCING TECHNOLOGIES?

Advanced Transmission Technologies (ATTs) are a way to bring transmission lines along on the journey to cleaner, more reliable and less costly energy. ATTs are a broad category of hardware and software solutions that include Grid Enhancing Technologies (GETs) and high-performance conductors.

ATTs increase the capacity, efficiency, reliability, and safety of existing, bulk power transmission lines. GETs do this work through remote sensors that monitor the condition of transmission lines, and software solutions that use the data gathered by the sensors to control the flow of power across the entire transmission system to optimize its efficiency. By utilizing GETs, transmission operators and transmission owners can assess the physical condition of transmission lines and accurately rate the line's capacity to carry power, ensuring available capacity is not going unused. GETs allow for quicker, more flexible deployment of power and more evenly distributed power flows across the network. This increases the transfer capacity of the grid and can substantially reduce grid congestion and assist renewable generation. High performance conductors can carry more power than the older, traditional conductors installed on most existing transmission lines and are a cost-effective means to improve the capacity, reliability, and resiliency of transmission lines in existing rights of way.



WHY ARE ADVANCED TRANSMISSION TECHNOLOGIES AND GRID ENHANCING TECHNOLOGIES VALUABLE?

Because electricity demand is projected to increase due to the electrification of homes and transportation, there is an urgent need to increase both electricity production and the capacity of the regional transmission system to deliver that additional power. ATTs are important because they can increase transmission system capacity quickly, making it possible to add needed generating resources to the grid much sooner. ATTs offer an opportunity to make early and significant gains in transmission capacity and clean energy deployments, rapidly accelerating the progress that the region needs to make to meet its aggressive climate goals.



HOW ARE THE IMPACT ATTS HAVE ON TRANSMISSION LINES QUANTIFIED?

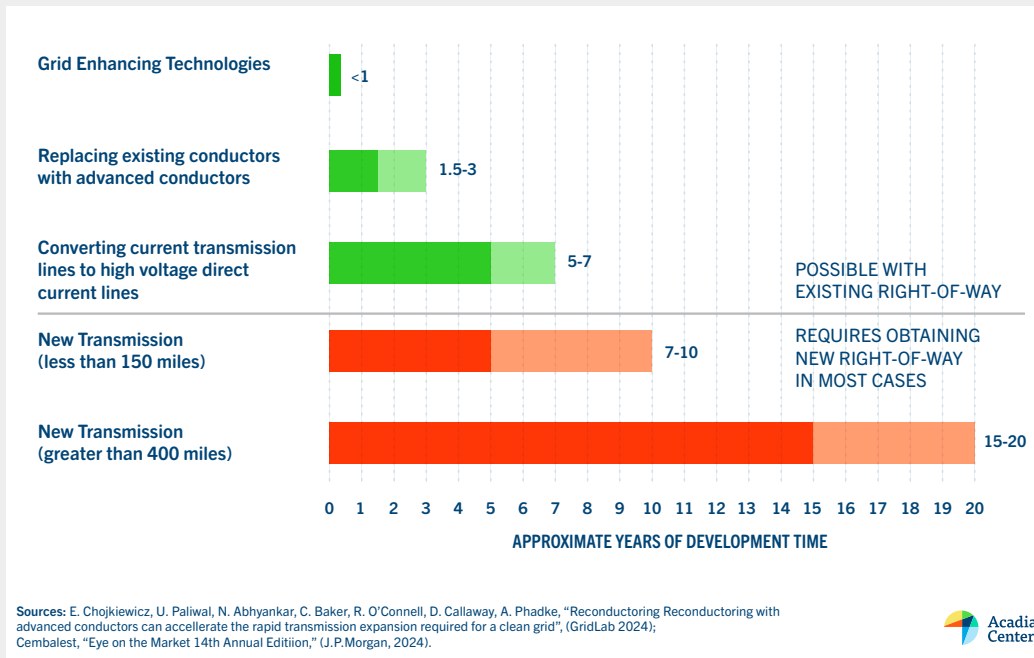
Numerous studies have confirmed the value of ATTs in increasing transmission capacity rapidly and inexpensively. One two-year pilot deployment of a GET called dynamic line ratings (DLR) increased transmission line capacity by 47% above the currently used tech.

By using another GET called Topology Optimization, Southwest Power Pool found that they could yield annual savings of \$18-\$44 million in the energy market. That's millions of dollars in avoided cost that will help to

keep the power delivered to communities more affordable. ATTs increase transmission capacity and speed deployment. The Texas utility AEP installed GETs to avoid the time and expense of building new transmission lines. The AEP project took less than three years to complete and increased the capacity of the transmission in the existing right of way by 40%.



GETs are a faster way of improving the system



WHAT IS ACADIA CENTER RECOMMENDING AROUND ATTS?

Acadia Center believes ATTs are an important part of the solution to the problems with the current energy system. They are a faster and more cost-effective way to improve existing transmission lines, which will be vital if the region hopes to meet its future demand for clean power.

It's more time-sensitive than ever that ATTs are implemented. Because grid operators like ISO New England operate but do not own transmission infrastructure, the planning of maintenance on, upgrades to, or the replacement of transmission lines is the responsibility of the individual utilities that own transmission assets. If ATTs are not incorporated these utilities' plans to upgrade or replace transmission lines today, then there will only be two alternatives to increase transmission capacity to meet future demands for power: redoing upgrades to add ATTs on the same lines later or building new transmission. Both these options are significantly more costly than implementing ATTs the first time.

The Federal Energy Regulating Commission (FERC) has recently seen the benefits of these new technologies. FERC Order 1920 requires transmission providers to develop a Long-Term Regional Transmission Plan at least every five years using at least a 20-year time horizon. These plans must consider the use of GETs in transmission projects. This requirement is the first of its kind, and Acadia Center applauds this adoption of common-sense solutions to the barriers that will prevent a cleaner, more efficient grid in the future. Acadia Center will be working to support implementation of Order 1920 in our grid reform projects.

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