



Overview

Grid-enhancing technologies (GETs) and [advanced reconductoring](#), the energy efficiency tools of the power grid, can help increase the capacity of the grid faster and without building new lines. By increasing the capacity of existing lines, the grid can transmit more electricity without the lengthy permitting process.

A [regional study](#) on the impact of GETs showed nationwide benefits such as doubling the amount of renewables that can be integrated into the grid prior to building new large-scale transmission lines. Also, GET integration creates jobs – 330,000 local construction jobs, and 20,000 high-paying operations jobs. A [recent study](#) showed that reconductoring transmission lines could add about 64 Terrawatt (TW) miles of new interzonal transmission capacity by 2035 compared to about 16 TW miles from only building new transmission lines and would allow the United States to get 90% of its electricity from emissions-free power sources by 2035.



Example: PPL Electric Utilities

In 2022, PPL Electric Utilities, a utility in Pennsylvania, was the [first U.S. utility](#) to integrate dynamic line rating technologies into real-time and market operations. PPL spent less than \$300,000 installing dynamic line rating sensors on two 230-kV lines instead of rebuilding or reconductoring. This decision saved the utility about [\\$50 million in costs](#) and immediately provided about \$20 million savings in annual congestion costs. Average “normal” capacity ratings on one line increased about 18% and on the other line increased about 19%.

Types of Technologies

- **Dynamic Line Ratings** - Measure the true conditions and temperature of a line to determine its capacity. The capacity of lines can increase by 50% in cold temperatures.
- **Advanced Power Flow Control** - Hardware and software balance overloaded or underutilized corridors of transmission, avoiding overflows of electricity in some areas and underutilization in others.
- **Topology Optimization** - Software is used to track the best route and combination of lines for transferring power. The software can then turn off/change power lines that are in use to optimize the existing grid network.
- **Advanced Reconductoring** - Replacing old conductors on existing transmission lines with new ones that have higher capacity for electrical current.





Legislation *(bills following two asterisks [**] indicates bipartisan support)*

- **[Colorado S.B.16 \(Enacted 2023\)](#)**: Requires the Colorado Electric Transmission Authority to study the need for expanded transmission in the state including by co-locating multiple transmission lines, reconductoring transmission lines; and strategically siting new transmission corridors.
- **[Minnesota S.F.4942 \(Enacted 2024\)](#)**: Requires transmission owners to identify areas of congestion over the past 3 years and the next 5 years, the increased cost to ratepayers as a result of that congestion, the technical feasibility and cost of installing GETs to address congestion, and propose an implementation plan to install GETs at such points. Allows the Commission to approve cost recovery mechanisms for GET investments.
- **[Montana H.B.729 \(Enacted 2023\)](#)**: Enables the State's Public Utility Commission to approve cost-effectiveness criteria for Advanced Conductor projects that may be placed into a utility's ROI (Return on Investment) Rate Base.
- **[**Utah S.B.191 \(Passed Senate 2024\)](#)**: Requires that during transmission expansion or improvement, distribution companies must conduct cost-effectiveness and timetable analyses of GETs integration, and report to the Public Service Commission.
- **[Virginia H.B.862 \(Enacted 2024\)](#)**: Requires an electric utility to include in electric distribution grid planning (i) a comprehensive assessment of the potential application of grid-enhancing technologies and advanced conductors and (ii) if applicable, a detailed explanation of why such technologies or conductors are not included in such plan.

Additional Resources

- [Increasing Transmission and Grid-Enhancing Technologies \(GETs\)](#) | NCEL
- [GET a GRIP: A Path to More Renewable Energy on the Grid](#) | RMI
- [Grid Resilience and Innovation Partnership \(GRIP\) program](#) | GRIP
- [What are GETs? & Federal Funding for GETs](#) | WATT Coalition
- [Grid-Enhancing Technologies: A Case Study on Ratepayer Impact](#) | U.S. DOE
- [The 2035 Report: Reconductoring With Advanced Conductors Can Accelerate The Rapid Transmission Expansion Required For A Clean Grid](#) | Energy Innovation & GridLab

