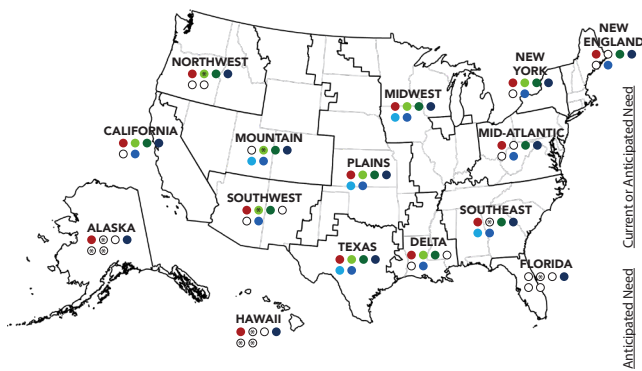




FACT SHEET

2023 NATIONAL TRANSMISSION NEEDS STUDY UNITED STATES

The U.S. Department of Energy’s Grid Deployment Office (GDO) released the National Transmission Needs Study (“Needs Study”) in October 2023. The Needs Study is the Department’s **triennial state of the grid** report. It identifies transmission needs and provides information about current and anticipated future capacity constraints and congestion on the Nation’s electric transmission grid. In this fact sheet, we highlight the transmission needs across the United States. The Needs Study provides further detail on the benefits of transmission that could be realized throughout the country.



	Region														
	California	Northwest	Mountain	Southwest	Texas	Plains	Midwest	Delta	Southeast	Florida	Mid-Atlantic	New York	New England	Alaska	Hawaii
Current or Anticipated Need	Improve reliability & resilience	●	●		●	●	●	●	●		●	●	●	●	●
	Alleviate congestion & unscheduled flows	●	✱	✱	●	●	●	●	✱	✱		●		✱	✱
	Alleviate transfer capacity limits between neighbors	●	●	●	●	●	●	●	●		●	●	●		
	Deliver cost-effective generation to meet demand	●	●	●		●	●			●	●	●	●	●	●
Anticipated Need	Meet future generation & demand with within-region transmission			●		●	●		●					✱	✱
	Meet future generation & demand with interregional transfer capacity	●		●	●	●	●	●	●		●	●	●	✱	✱

**Wholesale market price data is limited for non-Regional Transmission Organization (RTO)/Independent System Operator (ISO) regions and capacity expansion modeling data is limited for Alaska and Hawaii. Absence of data does not necessarily indicate that there is no need for new transmission.*

FINDINGS OF TRANSMISSION NEED ACROSS THE UNITED STATES

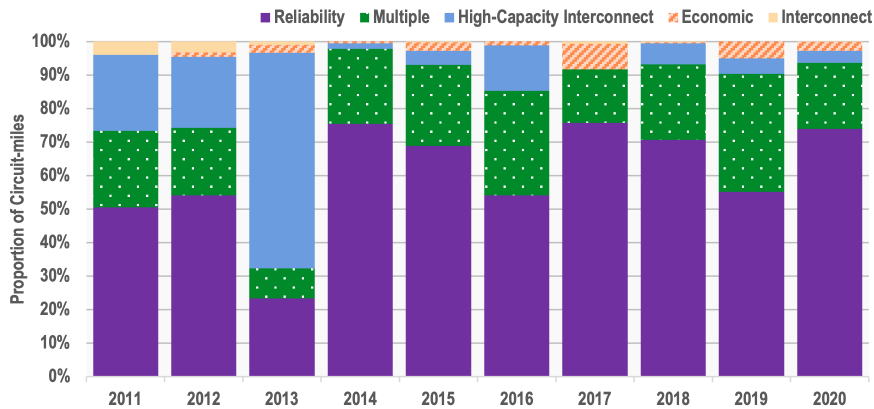
- › **Improve reliability and resilience.** Nearly all regions in the United States would gain improved reliability and resilience from additional transmission investments. Some regions have acute reliability and resilience needs that additional transmission deployment can address.
- › **Alleviate congestion and unscheduled flows.** Regions with historically high levels of within-region congestion—the **Northwest, Mountain, Texas, and New York** regions in particular—as well as regions with unscheduled flows that pose reliability risks—**California, Northwest, Mountain, and Southwest** regions—need additional, strategically placed transmission deployment to reduce this congestion.
- › **Alleviate transfer capacity limits between regions.** Historically, the data assessed show a need for transmission to alleviate transmission constraints that prevent moving electricity across the interconnection seams—**between the Mountain and Plains** regions and **between Texas and all its neighbors** (Southwest, Plains, and Delta regions). Similar needs are also found **between the Plains and the Midwest and Delta** regions, the Plains region’s two eastern neighbors.
- › **Deliver cost-effective generation to meet demand.** Areas of several regions endure consistently high prices, most notably in **New York, California, and the Plains, Midwest, and Mid-Atlantic regions**. Additional transmission to bring cost-effective generation to demand in these high-priced locations would help lower prices.
- › **Meet future generation and demand with additional within-region transmission.** The clean energy transformation, evolving regional demand, and increasingly extreme events must all be accommodated by the future power grid. Significant transmission deployment is needed as soon as 2030 in the **Plains, Midwest, and Texas** regions. By 2040, large deployments will also be needed in the **Mountain, Mid-Atlantic, and Southeast** regions.
- › **Meet future generation and demand with additional interregional transmission transfer capacity.** The same power sector characteristics are also driving increased need in interregional transmission deployment. By 2040, there will be a significant need for new interregional transmission between **nearly all regions**.

HELPFUL LINKS

- › Read the full study at: www.energy.gov/gdo/national-transmission-needs-study
- › Contact GDO with additional questions: transmission@hq.doe.gov

FINDINGS AT A GLANCE

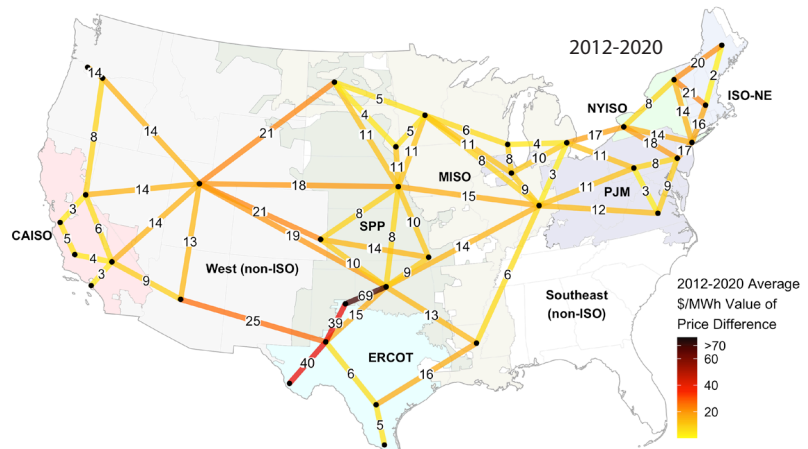
Proportion of national circuit-miles of new or rebuilt transmission lines (≥ 100 kV) energized between 2011 and 2020 by project driver.



The proportion of overall transmission circuit-miles installed to address specific **system reliability needs** has grown with time, from 44% in 2011 to 74% in 2020.

Congestion value of hypothetical transmission links between select zonal nodes within and across regions.

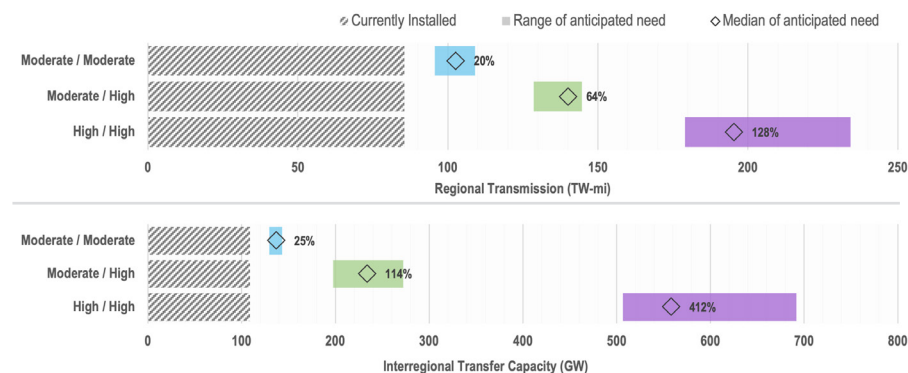
Wholesale market price differentials demonstrate that are the **highest value of new interregional transmission** exists **across the three electrical interconnections.**



Note: Wholesale market price data is limited for non-RTO/ISO regions. Absence of data does not necessarily indicate that there is no need for transmission to alleviate congestion and/or unscheduled flows in non-RTO/ISO regions. Findings organized using geographic region nomenclature as described in the Needs Study. Source: D. Millstein, et al. (2022)

Within-region transmission and interregional transfer capacity need across the United States in 2035

Anticipated need for three future scenario groups labeled as ___ load / ___ clean energy growth. Median % growth compared to 2020 system shown.



There is an **increasing need for both within-region and interregional transfer capacity by 2035** as consumer load and clean energy generation grows nationwide. These needs also grow with time.

Median 2035 capacity expansion modeling results for each scenario group from the Needs Study highlighted.