Americans for a Clean Energy Grid

Transmission 101

A complex network of transmission lines powers our daily lives. Miles of high-capacity power lines transport energy from where it is produced first to the smaller distribution lines we see in our communities and then into our homes, schools, and businesses.

Much of our nation's transmission and distribution lines, however, were constructed in the 1950s and 1960s and have reached or exceeded their intended 50-year lifespan. Amid the ongoing electrification of transportation, home heating, and the industrial sector, the U.S. will require a vastly expanded and modernized grid to power our future energy needs.

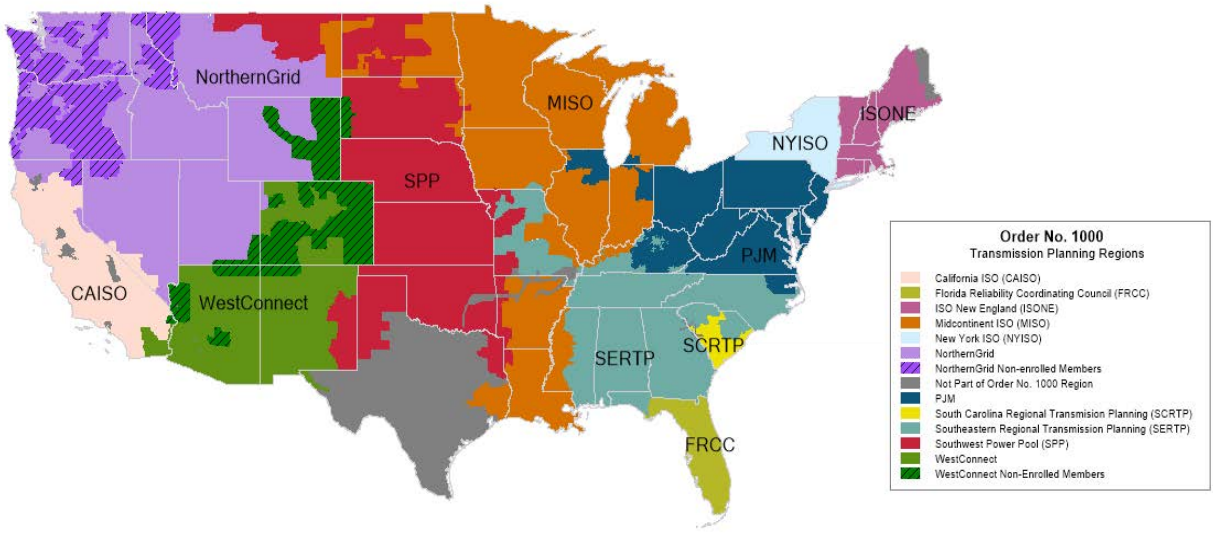
How is transmission planned?

It depends. The U.S. is divided into nearly a dozen transmission planning regions, which are responsible for planning broader transmission strategy and specific projects. Comprehensive planning is more effective in "regional transmission organizations," RTOs. In other areas, traditional utilities focus on planning for their systems, and regional planning is less effective. Private companies known as merchant transmission developers also build new lines.

How is transmission paid for?

Once again, it depends. Traditional utilities recover their costs directly from electric usage customers that will benefit from the new lines; in RTOs, transmission developers share costs throughout the region. Merchant transmission developers negotiate rates directly with generators, who then pass the costs along to those who buy their power.

Order 1000 Transmission Planning Regions



FERC divided the country into a dozen transmission planning regions under its Order 1000.

How is transmission sited and permitted?

State and local regulatory authorities must approve transmission projects that pass through their jurisdiction. This balkanized process requires many approvals for one project. The Federal Energy Regulatory Commission (FERC) has some limited authority to approve transmission projects when state/local bodies fail to act on an application in a timely manner, but FERC has never used this power.

Who regulates transmission?

Under federal law, "the transmission of electric energy in interstate commerce" is subject to federal jurisdiction, and the rest lies with the states – but it's not that easy:

- Congress can pass laws that impact transmission, including how it is planned, permitted, and paid for.
- FERC establishes policies that govern how transmission is planned and how costs are allocated.
- Where transmission crosses federal lands or federal environmental laws are triggered, other federal agencies can govern siting and permitting parts of transmission projects.
- State public service commissions regulate electric utilities, including how they can collect costs from customers.
- State agencies — and some local governments too! — site and permit these projects.

Obstacles to Transmission Expansion

- **Planning:** Most regions have been insufficiently forward-looking in their transmission planning, failing to account for anticipated future demands on the grid. The majority of recent transmission projects have been smaller-scale intra-regional lines as opposed to the long-distance, high-capacity ones needed to transport power across the U.S.
- **Permitting:** The cumbersome transmission siting process requires a project to receive approval from every state and/or locality along its path. Environmental reviews during the permitting process often take much longer than they should. As a result, some transmission lines take over a decade to build while hundreds of gigawatts of power — most of it wind and solar — is stuck waiting to connect to the grid.
- **Financing and Reducing Costs:** Building transmission is very expensive, and we need clearer policies guiding distribution of those costs, in a way commensurate with the benefits provided. Congress could also establish an investment tax credit to reduce the private share of the cost of this necessary public infrastructure.

The Benefits of Transmission

- Prevents **power outages** during increasingly frequent and severe weather threats.
- Ensures **energy security** by mitigating the impact of cyber or physical attacks on individual substations.
- Protects **national security** by allowing the U.S. to fully develop its domestic energy resources.
- Allows **clean energy** resources to connect to the grid and reach population centers across the country.
- Reduce **harmful pollution** by allowing older, dirtier generating units to be retired.
- Decrease consumer **electricity bills** by providing access to lower-cost, geographically diverse energy resources.
- Creates **good-paying jobs** in the construction and long-term operation of transmission.
- Supports local **economic development** opportunities