Grid Strategies

United States Trails the World in High-Capacity Transmission Construction

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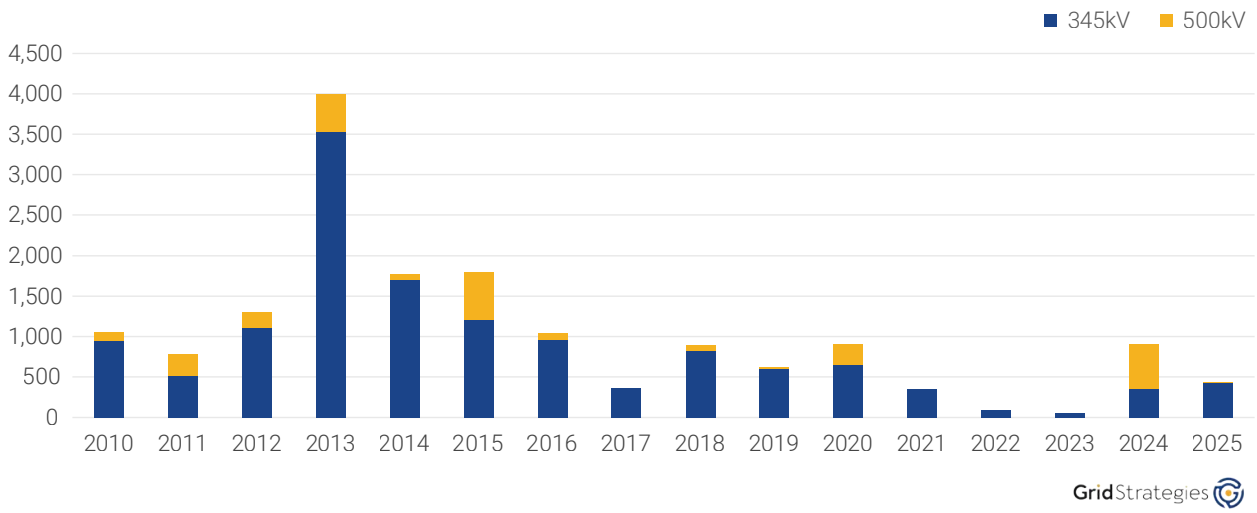
EXECUTIVE SUMMARY

The United States has entered a period of surging electrical demand driven by the expansion of data centers and artificial intelligence (AI), alongside growth in domestic manufacturing and electrification.[1] These sectors are critical to U.S. economic development and competitiveness. Yet insufficient expansion and modernization of the grid continues to prevent timely, reliable, and affordable access to electricity to enable this new growth.

In 2025, 435 miles of new high-capacity transmission lines were energized nationally.

In 2025, 435 miles of new high-capacity transmission lines were energized nationally. Transmission buildout remains lumpy. Large multi-state projects continue to take upwards of a decade or more to complete the development process. Most of the transmission built in 2025 came from just three projects in Colorado and the Southwest Power Pool (SPP). Nevertheless, while miles of construction are down slightly from last year, recently approved large-scale regional transmission plans, such as Midcontinent Independent System Operator's (MISO) Tranche 2.1 portfolio and the 765 kV backbone plans in the Electric Reliability Council of Texas (ERCOT), suggest that construction in the United States will likely soon show a more consistent year-over-year buildout, reflecting greater public attention and supportive policies such as FERC Order 1920.

Figure ES-1 | Miles of new 345 kV+ transmission constructed (2010-2025)

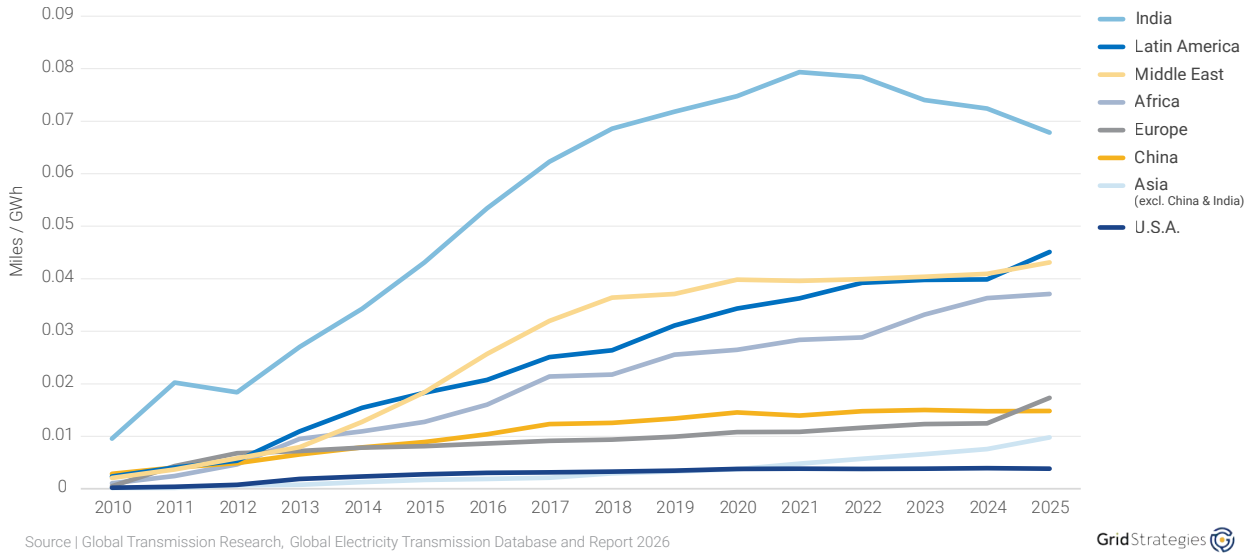


1 Grid Strategies, *Power Demand Forecasts Revised Up for Third Year Running, Led by Data Centers* (Nov. 2025), https://gridstrategiesllc.com/wp-content/uploads/Grid-Strategies-National-Load-Growth-Report-2025.pdf.

The United States is playing catch up compared to other parts of the world. The United States lags significantly behind China and the rest of the world in high-capacity transmission construction. Over the last fifteen years, the United States has built less high-capacity transmission, adjusted for load, than seven other key global comparisons, as shown in the figure below. Even in Europe, considered another advanced economy, high-capacity transmission, when adjusted for load, has expanded around seven to eight times as much as in the United States as of the end of 2025.

Over the last fifteen years, China built six to seven times more high-capacity transmission, adjusted for load, than the United States.

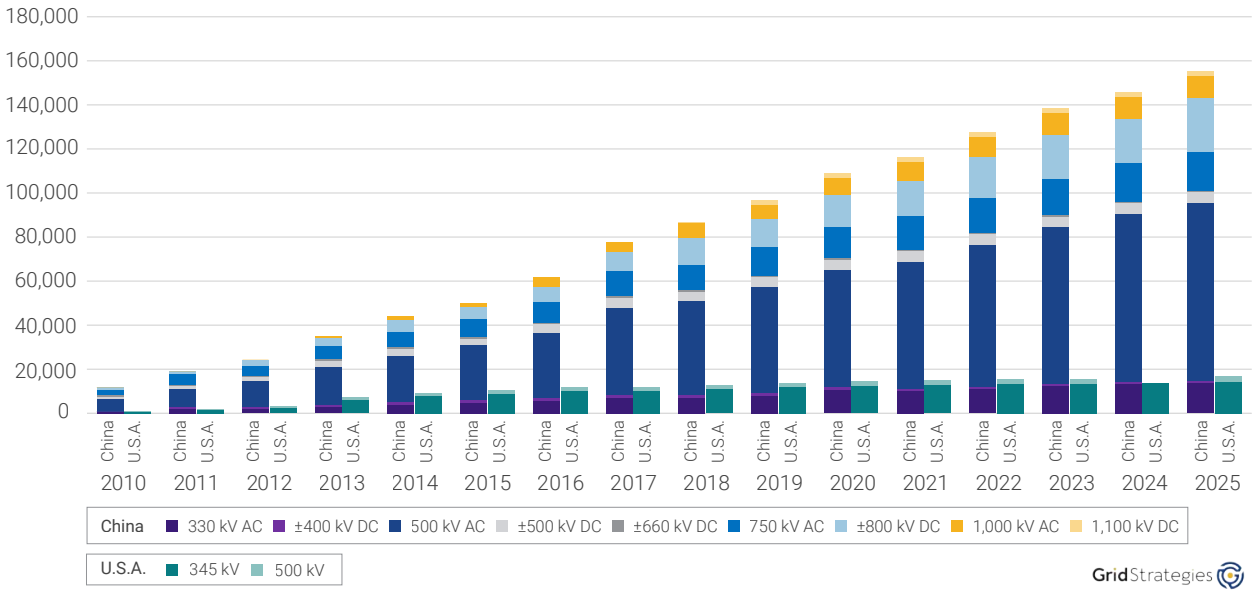
Figure ES-2 | Cumulative miles of high-capacity transmission built since 2010, normalized by load[2]



Over the last fifteen years, China built six to seven times more high-capacity transmission, adjusted for load, than the United States. Much of the transmission constructed in China is 800 kV high-voltage direct current (HVDC) or 1,000 kV high-voltage alternating current (HVAC), further exacerbating the disparity between the comparative buildouts given the significantly higher capacity of each mile of new transmission in China vis-à-vis the United States.

2 For additional information on the Global Transmission Report transmission data, see Appendix D, Global Transmission Research, *Global Electricity Transmission Database and Report 2026* (Feb. 2026), https://globaltransmission.info/global-electricity-transmission-database-and-report-2026-2/.

Figure ES-3 | Cumulative miles of high-capacity transmission constructed in China and the United States (2010-2025)[3]



This contrast raises broader questions about whether the United States is not only building enough transmission capacity to meet its immediate needs but whether it is equipped to expand capacity at the scale and pace required to maintain U.S. economic, technological, and geopolitical leadership.

A set of policy reforms could address the planning, permitting, and cost allocation challenges that would help the United States meet its needs and compete internationally.

3 *Id.*

I. INTRODUCTION

The United States has entered a new era of electricity demand growth and economic development. Load is rising across sectors, from data centers and AI to manufacturing. According to the U.S. Department of Energy (DOE) 2026 National Transmission Needs Study, total U.S. energy consumption is projected to grow 25% over the next decade,[4] while utility forecasts reported to the Federal Energy Regulatory Commission (FERC) suggest a roughly 32% cumulative growth in total electricity use by 2030.[5] Meeting this demand will require buildout of high-capacity transmission at a rate rarely sustained in the United States.

Not all transmission investments deliver benefits equally. High-capacity transmission is the backbone of the electric system and provides the highest level of benefits to consumers.

Not all transmission investments deliver benefits equally. High-capacity transmission is the backbone of the electric system and provides the highest level of benefits to consumers. One reason is economies of scale. For example, high-capacity 765 kV lines are estimated to deliver power at just $855 per MW-mile, compared to $3,430 per MW-mile for 230 kV lines, an over 75% cost advantage.[6] Texas' own experience illustrates this; ERCOT's transmission plan to meet growing demand in the Permian Basin included analysis of two scenarios—one using 345 kV lines and the other using 765 kV lines. ERCOT found that while the 345 kV option cost $2.24 billion less upfront than the alternative, the 765 kV option provided energy cost savings to Texas ratepayers and reduced the overall miles of new transmission needed to meet identified transmission needs because 765 kV lines deliver roughly four times the power at 40% the cost of 345 kV lines.[7]

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4 U.S. DOE, *National Transmission Needs Study* (July 2026), at 79, https://www.energy.gov/documents/national-transmission-needs-study-draft-july-2026.

5 Grid Strategies, "Power Demand Forecasts Revised Up," at 6.

6 Grid Strategies, *Large-Scale Transmission Deployment Saves Consumers Money* (June 2025), at 14, https://cleanenergygrid.org/wp-content/uploads/2026/03/GS_Transmission-Deployment-Saves-Consumers-Money73-1.pdf.

7 ERCOT, *2024 Regional Transmission Plan 345-kV Plan and Texas 765-kV Strategic Transmission Expansion Plan Comparison* (Jan. 2025), at 14-15, https://www.ercot.com/files/docs/2025/01/27/2024-regional-transmission-plan-rtp-345-kv-plan-and-texas-765-kv-strategic-transmission-expans.pdf.

Another key benefit of high-capacity transmission is that it enables power to flow freely across regions, matching supply to demand for electricity and unlocking access to low-cost energy resources. This strengthens reliability and reduces congestion costs. When measured, these benefits are clear. Across sixteen regional transmission plans nationwide, the regional planners estimated between $3.80 to $4.70 in average benefits for every $1 invested.[8] The benefits from a national, high-capacity transmission buildout translate to savings of up to $14.4 billion annually for residential cunsumers after accounting for cost of construction.[9]

Despite the demonstrated benefits of high-capacity transmission, construction of this category of transmission continues at a slow pace in the United States, especially compared to other countries. This report compares recent U.S. grid buildout to that of other countries and finds a significant gap, with the U.S. falling short. The report reviews new transmission projects completed in 2025 and identifies factors that allowed the projects in 2025 to move from idea to energization slightly faster than in recent years in the United States.

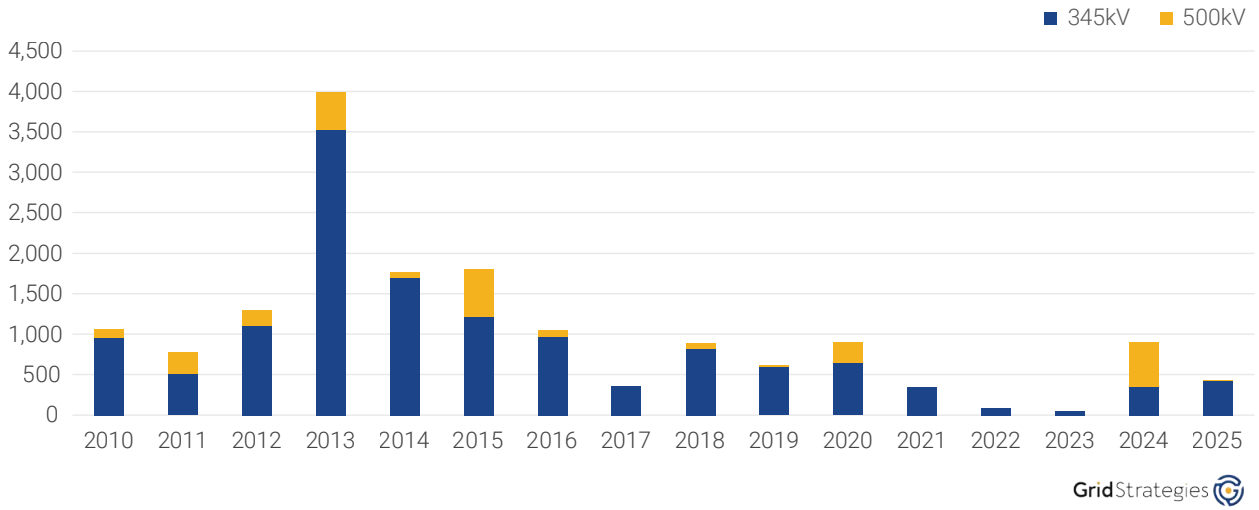
8 *Id.* at 4.

9 Grid Strategies, *Large-Scale Transmission Deployment Saves Consumers Money* (June 2025), at 2, https://cleanenergygrid.org/wp-content/uploads/2026/03/GS_Transmission-Deployment-Saves-Consumers-Money73-1.pdf.

II. 2025 CONSTRUCTION UPDATE

Following a streak between 2021 to 2023 of historically low years for transmission construction, the pace of new high-capacity transmission construction improved slightly in 2024 and 2025. With large-scale regional transmission plans recently approved (discussed further in Section 4), there is evidence that the United States can accelerate construction when planning, permitting, and paying for high-capacity transmission are addressed.

FIGURE 1 | Miles of new 345 kV+ transmission lines built over the last fifteen years[10]



According to project-level data compiled from FERC Infrastructure Reports and ERCOT Transmission Project reports, 435 miles of 345 kV+ transmission lines were completed in 2025.[11] The majority of these miles came from three projects:

1. Public Service Company of Colorado's Power Pathway Segments 2 and 3 (160 miles and 65 miles respectively)
2. NextEra Energy Transmission Southwest's (NEET Southwest) 94-mile Wolf Creek-Blackberry Interstate Transmission Project
3. NEET Southwest's 48-mile Minco-Pleasant Valley-Draper Project

10 FERC, *Energy Infrastructure Updates, January 2011 through April 2026* (accessed August 2026), https://www.ferc.gov/sta--reports-and-papers.

11 FERC, *Energy Infrastructure Updates* (accessed Oct. 2026), https://www.ferc.gov/staff-reports-and-papers; ERCOT, *Transmission Project Information and Tracking (TPIT) Report*, https://www.ercot.com/gridinfo/planning.

Achieving needed levels of transmission construction requires proactive multi-value planning of new large-scale high-capacity regional and interregional transmission lines. Progress with interregional transmission continues to be especially slow. In 2025, none of the completed high-capacity projects were interregional. According to DOE, between 2016 to 2024, an average of only 150 circuit-miles of interregional transmission were built each year.[12] FERC Commissioner David Rosner noted in an April 2026 concurring statement, "since 2011, Order No. 1000's interregional consultation requirements have resulted in exactly zero interregional transmission projects."[13]

The good news is that several major interregional transmission projects were energized in 2026 including the Champlain Hudson Power Express, the New England Clean Energy Connect, and the SunZia Transmission Line. In addition, there are numerous "shovel-ready" interregional transmission lines under development today that could move forward, especially to the extent policy changes result in more formal interregional planning and cost allocation mechanisms.[14]

12 U.S. DOE, *National Transmission Needs Study* (July 2026), at 30, https://www.energy.gov/documents/national-transmission-needs-study-draft-july-2026.

13 Southwest Power Pool, Inc., 195 FERC ¶ 61,025 (2026) (Comm'r Rosner, concurring), https://www.ferc.gov/news-events/news/commissioner-rosners-concurrence-regarding-interregional-transmission-southwest.

14 OpenMinds, *Shovel Ready Interconnects*, https://www.openminds203x.org/resources/shovel-ready-interconnects.

III. COMPARISON OF U.S. AND INTERNATIONAL TRANSMISSION CONSTRUCTION

The United States has constructed the least amount of high-capacity transmission, adjusting for load, when compared to seven key regions and countries. To compare transmission construction in the United States to the rest of the world, this section uses data from the Global Transmission Report[15] to compare total cumulative miles of high-capacity transmission constructed between 2010-2025 as well as miles of construction adjusted for load (per gigawatt-hour (GWh)) of demand.[16]

The United States ranks 83rd out of 91 countries for cumulative miles of construction of high-capacity transmission from 2010-2025, adjusted by load.

The United States ranks 83rd out of 91 countries for cumulative miles of construction of high-capacity transmission from 2010-2025, adjusted by load.[17] While some of the low transmission construction years in the United States could be explained by relatively flat electricity demand over the past two decades, excess transmission capacity has now largely been absorbed as load growth has rapidly accelerated in recent years.[18] This leaves the United States to play catch-up, whereas other parts of the world are better-positioned to meet rapidly rising demand.

The United States has also constructed less high-capacity transmission relative to seven key regions and countries over the past fifteen years. For our report, we compared the United States with five key regions, including Africa, Asia, Europe, Latin America, and the Middle East, as well as two countries, China and India. When comparing average transmission construction across three five-year periods from 2011–2025, the United States has constructed fewer miles than the seven different countries and regions tracked by the Global Transmission Report. Average transmission construction for the United States across those three periods (2011–2015, 2016–2020, 2021–2025) dropped from roughly 1,900 miles to 800 miles to 400 miles, a nearly 80% decline overall. While some countries and regions also saw a decrease in miles of transmission constructed,

15 Global Transmission Research, *supra* note 2, analysis by Grid Strategies.

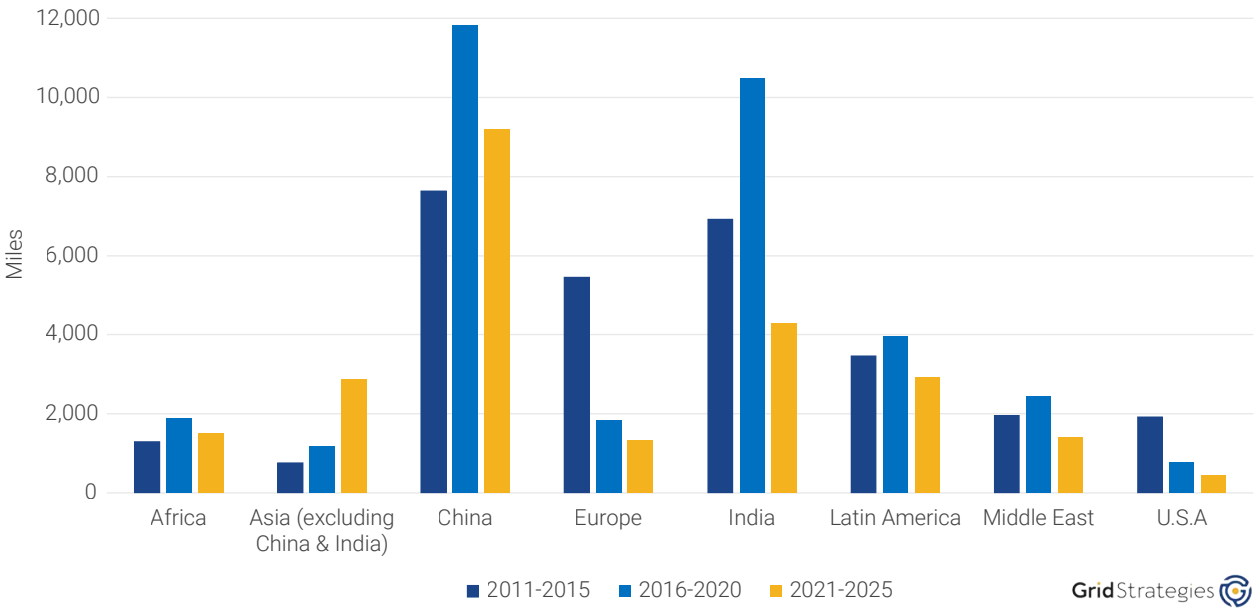
16 Miles of transmission are normalized by GWh of electrical load. Normalizing by load helps account for the fact that countries with higher load require more transmission and allows for a clearer comparison for how each region or country has built out transmission to keep pace with the demand it serves.

17 Global Transmission Research, *supra* note 2, analysis by Grid Strategies.

18 Grid Strategies, "Power Demand Forecasts Revised Up," at 6.

the United States saw the highest drop of any of the regions or countries analyzed, as shown in Figure 2 below.

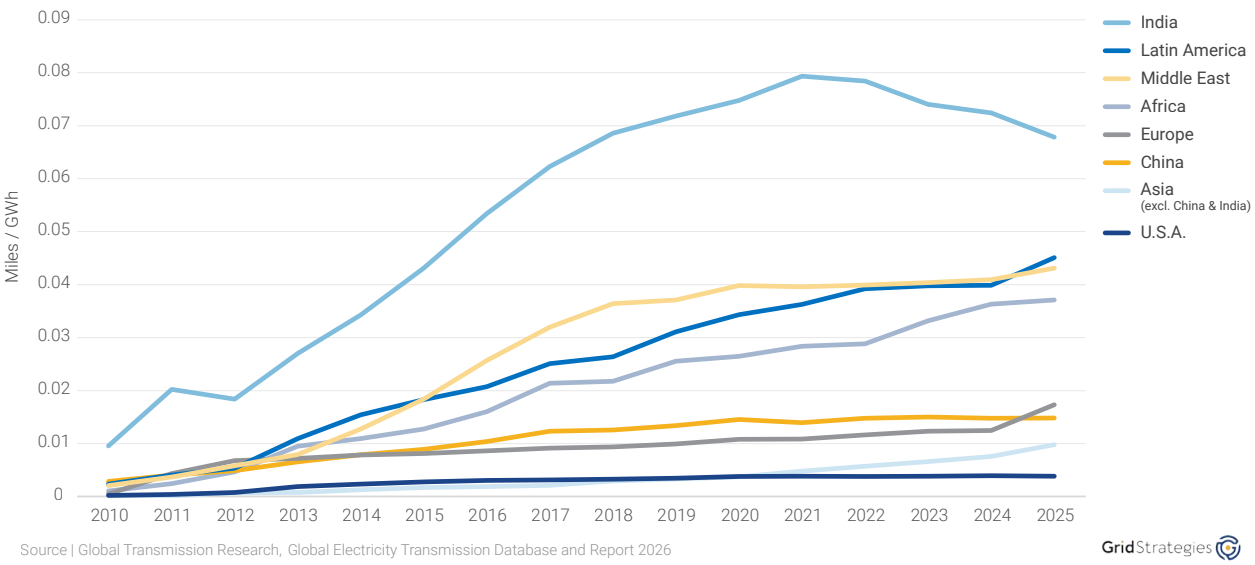
Figure 2 | Average annual miles of 300 kV+ high-capacity transmission built from 2011–2015, 2016–2020, 2021–2025[19]



Even when adjusting for load, over the past fifteen years, the United States has built the least amount of high-capacity transmission compared to the other regions and countries analyzed. As shown in Figure 3 below, the United States ended 2025 with the lowest cumulative miles of additional high-capacity transmission per GWh of load of the eight regions and countries examined. Africa, Latin America, and the Middle East have each built about ten to twelve times more high-capacity transmission per GWh than the United States. India is the clear high-achiever, building nearly thirty times more miles of transmission per GWh of load than the United States, reflecting growing electricity demand and a national priority to connect new solar and wind generation to load centers.

19 Periods begin in 2011 so that all three are five years long. 2010 is included in the cumulative totals for the rest of the figures in this report.

Figure 3 | Cumulative miles of high-capacity transmission built since 2010, normalized by load, across the world[20]



These high build rates, in some cases, might reflect developing economies building out their grid in a way that the United States did in the past, but even advanced economies like Europe have built about seven to eight times more high-capacity transmission than the United States in recent years when adjusted for load. The construction gap has resulted in the U.S. transmission system having very little available capacity to accommodate new electricity demand, threatening the ability of the United States to keep pace with economic growth and remain globally competitive.

The United States has fallen behind in high-capacity transmission construction compared to China. Future economic development will likely be highly electrified, and access to affordable power enabled by transmission capacity expansion is critical to fueling this economic growth and securing economic competitiveness. The Trump Administration has also made it a priority to be a leader in AI development.[21] However, compared to China, the United States has fallen significantly behind in high-capacity grid development, which is critical to meeting both goals.

In absolute terms, the numbers are staggering. In 2010, China and the United States had comparable annual electrical load (both around 4,000 terawatt-hours (TWh)), but China built 19,200 miles of high-capacity transmission, while the United States only built around 1,000 miles.[22] Over the subsequent years, the gap increased, with China building an

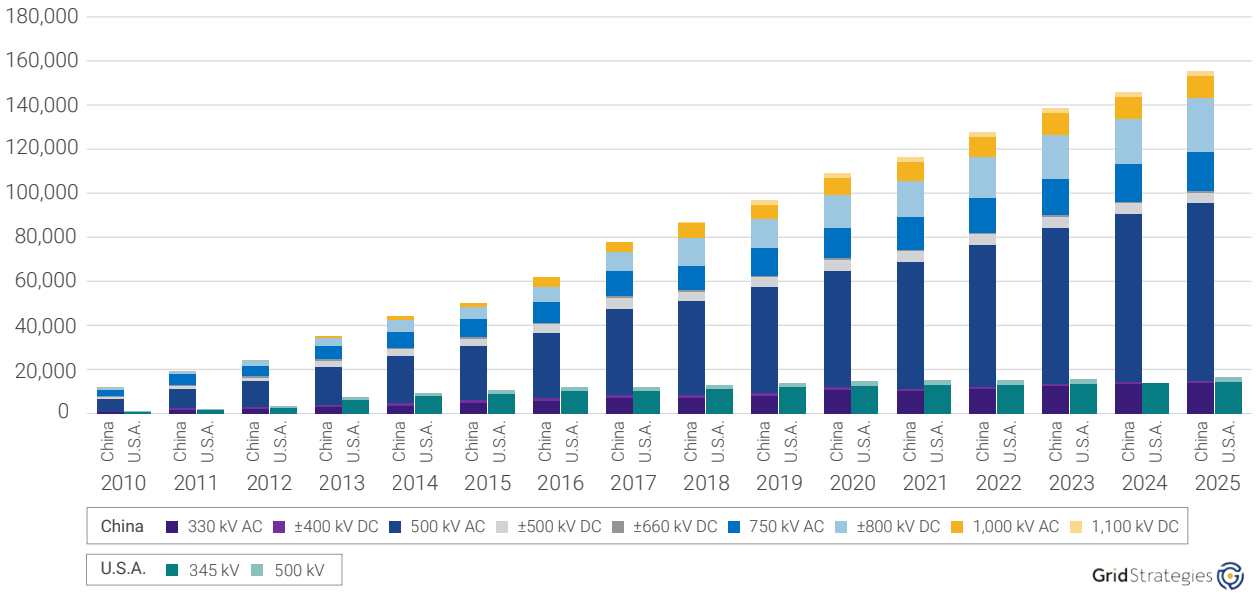
20 Global Transmission Research, *supra* note 2, analysis by Grid Strategies.

21 The White House, *Winning the AI Race: America's AI Action Plan* (July 2025), https://www.whitehouse.gov/wp-content/uploads/2025/07/Americas-AI-Action-Plan.pdf.

22 *Supra* note 2 (China's 19,200 miles); FERC, Energy Infrastructure Updates (United States's 1,000 miles).

average of around 12,300 miles from 2011 to 2015; 19,000 miles from 2016 to 2020; and 14,800 miles from 2021 to 2025. During these same periods, the United States built an average of roughly 1,900 miles, 800 miles, and 400 miles, respectively.

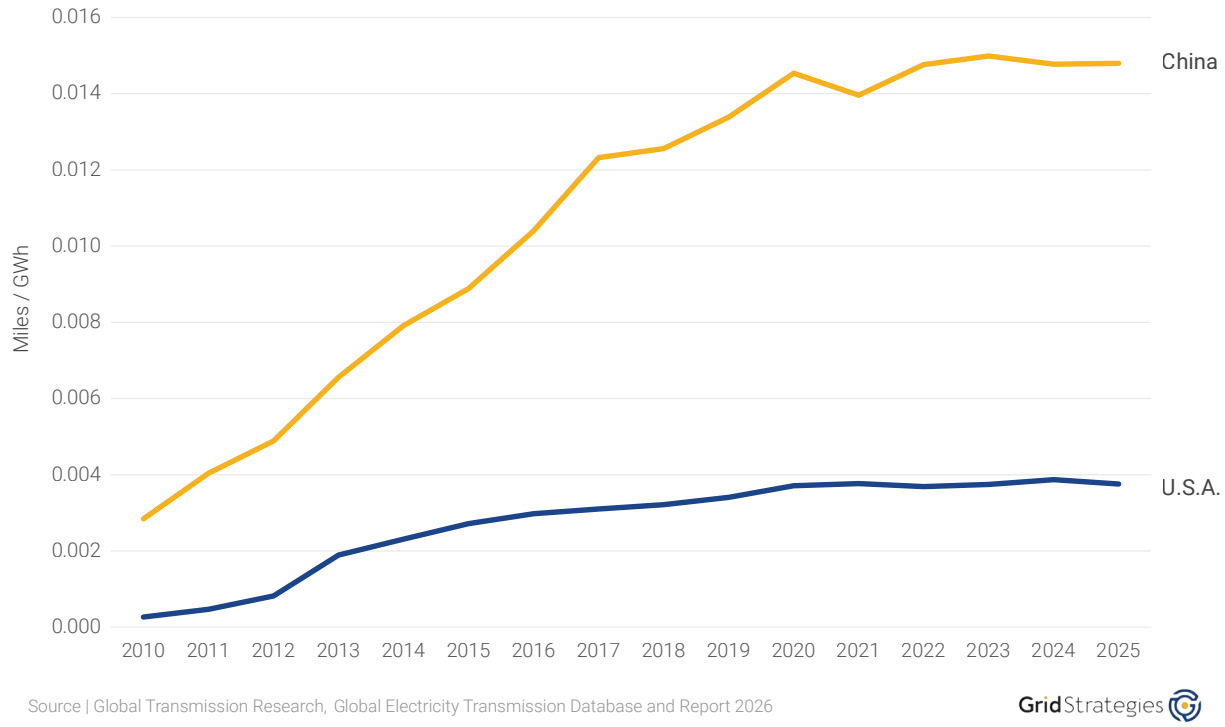
Figure 4 | Cumulative miles of high-capacity transmission constructed in China and the United States (2010-2025)[23]



As with the international regional comparisons, even when adjusting for load, China has added significantly more cumulative miles of high-capacity transmission than the United States. China built fifteen times more miles of high-capacity transmission from 2010 to 2025 and ended 2025 with six to seven times more high-capacity transmission relative to the size of its demand than the United States. Since 2020, both counties' high-capacity transmission additions have slowed relative to demand, likely reflecting the significant increases in load growth both countries are experiencing. However, over the past fifteen years China has added much more transmission capacity relative to the United States. Closing this gap will require an accelerated and sustained buildout of high-capacity transmission in the United States.

23 Global Transmission Research, *supra* note 2, analysis by Grid Strategies.

Figure 5 | Cumulative miles of high-capacity transmission built in China and the United States since 2010, normalized by load[24]



Source | Global Transmission Research, Global Electricity Transmission Database and Report 2026

GridStrategies

The limited development in the United States also has affordability consequences. When transmission capacity is not built fast enough to keep up with demand, low-cost power cannot reach areas of high demand, forcing grid operators to dispatch more expensive generation, leading to congestion costs. Nationwide, congestion costs are estimated to have reached $17 billion in 2025, up from $12 billion in 2024.[25]

Moreover, lagging high-capacity transmission investment relative to the rest of the world could undermine U.S. technological leadership and economic competitiveness. Industries driving new demand for electricity, such as data centers, AI, and domestic advanced manufacturing, depend on reliable and affordable access to electricity. China and other parts of the world have been building out a grid that can deliver power for the industries of the future, but the reality is the United States has simply not been keeping up.

24 Global Transmission Research, *supra* note 2, analysis by Grid Strategies.

25 Grid Strategies, *Transmission Congestion for 2025* (Sept. 2026), at 3, https://gridstrategiesllc.com/wp-content/uploads/Transmission-Congestion-for-2025-Final.pdf.

IV. PLANNED HIGH-CAPACITY TRANSMISSION, A POSITIVE INDICATOR

Even as construction of high-capacity transmission in the United States has been limited in recent years, a pipeline of new planned high-capacity transmission projects is on the horizon. Across the country, over 10,000 miles of 500 kV+ transmission projects have been planned and are scheduled to come online by 2034. This represents a notable increase from today in terms of miles to be constructed as well as the capacity of the projects being planned (trending toward higher voltages). Most of this planned development has resulted from regional transmission planning processes, with a few exceptions in the Southeast and West outside regional transmission organizations (RTOs). Of the roughly 10,000 miles of planned high-capacity transmission projects, about 84% are expected to come online between 2030 and 2034 according to data from utilites and RTOs. These planned investments include:

- The MISO's Long Range Transmission Plan Tranche 2.1 portfolio, approved by the MISO Board in December 2024, which is a $21.8 billion portfolio with approximately 1,900 miles of 765 kV transmission projects, among other high-capacity lines.[26]
- ERCOT's Strategic Transmission Expansion Plan (STEP), which consists of an estimated $20 billion in investments for 2,468 miles of 765 kV transmission,[27] with some of the lines already approved for construction by the Public Utilities Commission of Texas (PUCT).[28]
- Southwest Power Pool (SPP)'s $8.6 billion 2025 Integrated Transmission Plan (ITP), which includes 949 miles of 765 kV transmission projects, with more 765 kV transmission projects expected to be approved by the SPP Board in November 2026 as part of SPP's 2026 ITP.[29]

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26 MISO, *Long Range Transmission Planning (LRTP) Tranche 2.1 Fact Sheet* (Dec. 2024), https://cdn.misoenergy.org/LRTP%20Tranche%202.1666573.pdf.

27 ERCOT, *2024 Regional Transmission Plan 345-kV Plan and Texas 765-kV Strategic Transmission Expansion Plan Comparison* (Jan. 2025), https://www.ercot.com/files/docs/2025/01/27/2024-regional-transmission-plan-rtp-345-kv-plan-and-texas-765-kv-strategic-transmission-expans.pdf.

28 Public Utility Commission of Texas, *PUCT Approves Plan for the First Extra High Voltage Transmission Lines in ERCOT Region* (Apr. 2025), https://ftp.puc.texas.gov/public/puct-info/agency/resources/pubs/news/2025/PUCT_Approves_Plan_for_the_First_Extra_High_Voltage_Transmission_Lines_in_ERCOT_Region.pdf.

29 SPP, *Powering the Future*, https://www.spp.org/documents/75194/2025%20itp%20fact%20sheet%20final.pdf.

- PJM Interconnection (PJM)'s Regional Transmission Expansion Plan investments, which, since 2023, include over 1,100 miles of 500 kV, 765 kV, and 525 kV HVDC transmission projects, totaling just over $10 billion.[30]
- Georgia Power's 2025 Integrated Resource Plan, approved by the Georgia Public Service Commission in July 2025, which includes a 10-year transmission plan with roughly 360 miles of new 500 kV transmission projects totaling an estimated $2 billion.[31]
- California Independent System Operator (CAISO)'s $4.8 billion 2024–2025 annual transmission plan, which includes approximately 100 miles of new 500 kV transmission, expected to be in-service in 2034.[32]

With MISO, ERCOT, PJM, and SPP all planning for 765 kV backbone transmission projects, these plans represent one of the largest commitments to high-capacity transmission buildout ever made in the United States.

30 PJM, *TEAC Recommendations to the PJM Board* (Feb. 2026), https://www.pjm.com/-/media/DotCom/committees-groups/committees/teac/2026/20260203/20260203-pjm-board-whitepaper-february-2026.pdf.

31 Georgia Power, *Integrated Resource Plan* (July 2025), https://www.georgiapower.com/about/company/filings/irp.html.

32 CAISO, *Appendix I, Board-Approved 2024-2025 Transmission Plan* (May 2025), https://www.caiso.com/documents/appendix-i-board-approved-2024-2025-transmission-plan.pdf.

V. POLICY REFORMS NEEDED TO BUILD MORE TRANSMISSION

Americans are paying more for electricity, in part, because demand has outpaced the transmission buildout necessary to enable more supply. Electrification trends, industrial growth, and data centers are adding to grid capacity needs, while years of delays in developing planned transmission are driving up costs. Previous analysis from Grid Strategies estimated that transmission delays cost consumers $150 million to $370 million in lost net benefits each year for every $1 billion investment that is delayed.[33]

The pace of transmission buildout in other parts of the world underscores how much ground the United States still has to make up. Over the past fifteen years, China built roughly six to seven times more miles of high-capacity transmission than the United States, adjusted for load. In the 2020s alone, China completed more than 10,000 miles of new 800 kV HVDC lines compared with 3,045 miles of 345 kV and above transmission lines built in the United States over the same period.[34] This gap highlights the urgency of transmission infrastructure buildout in the United States to ensuring continued U.S. economic competitiveness globally.

Narrowing the shortfall in U.S. transmission development compared to China and other parts of the world will require changes to U.S. policies that better support transmission development. Because transmission is linear infrastructure, a single line can cross multiple counties, states, and federal lands, with federal crossings potentially triggering numerous permitting reviews under federal environmental laws such as the National Environmental Policy Act. The process can take years to navigate and has numerous sources of delay. For example, the Boardman-to-Hemingway transmission line, a 300-mile, 500 kV transmission line in the Pacific Northwest that is expected to come online in 2027, has been under development for some 20 years.[35] Over half of that time has been in federal permitting. With major interregional transmission under development and thousands of miles of high-capacity transmission projects planned across the country,

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33 Grid Strategies, *Delaying Transmission Increases Costs and Reduces Benefits for Consumers* (Nov. 2025), https://gridstrategiesllc.com/wp-content/uploads/GS_WIRES-Cost-of-Delayed-Transmission.pdf.

34 Global Transmission Research, *supra* note 2, analysis by Grid Strategies.

35 Herman Trabish, "Idaho Power's Vital Boardman-to-Hemingway Transmission Line Wrestles with Permitting," Utility Dive (Oct. 2014), https://www.utilitydive.com/news/idaho-powers-vital-boardman-to-hemingway-transmission-line-wrestles-with-p/316552/; *See also* Idaho Power, *B2H History* (Accessed Oct. 27, 2026), https://www.idahopower.com/about-us/energy/planning-and-electrical-projects/current-projects/boardman-to-hemingway/b2h-history/; *See also* Nat'l Petroleum Council, *Bottleneck to Breakthrough: A Permitting Blueprint to Build* (2025), U.S. Department of Energy, at 3-38, https://permitting.npc.org/files/2025_Bottleneck_To_Breakthrough.pdf.

avoiding similar delays will be critical to meeting rising power demand and keeping pace with other major global economies.

A comprehensive and coordinated federal transmission strategy would address each of the "3 Ps" that are central to transmission development: planning, paying, and permitting. Planning reforms can improve regional and interregional transmission planning requirements and help ensure transmission needs are identified earlier. Paying, or cost allocation, reforms can resolve disputes over the benefits of transmission, better align who pays with the benefits that projects provide, and allow bottom-up, developer-driven cost allocation proposals. Permitting reforms can strengthen FERC's federal transmission siting authority, reduce unnecessary delays and duplicative reviews, improve coordination among federal and state agencies, and provide greater certainty that approved projects will move forward and in a timely manner.

Recent federal efforts have addressed pieces of the "3 Ps," but generally not all three together. FERC has taken steps to improve planning and cost allocation through Order No. 1920, which established long-term regional transmission planning requirements. The Infrastructure Investment and Jobs Act of 2021 and Inflation Reduction Act of 2022 created key funding programs for transmission, such as the Transmission Facilitation Program, and made targeted changes to federal backstop siting authority. The Fiscal Responsibility Act of 2023 also enacted modest permitting reforms and required a limited study of interregional transfer capability.

Taken together, these efforts represent progress in the right direction, but significant gaps remain. A more coordinated federal approach that addresses transmission planning, cost allocation, and permitting together, such as the recently introduced Bipartisan American Affordability and Jobs Act,[36] will be necessary to accelerate transmission development at the scale and pace required to meet rising demand, improve affordability, and maintain U.S. economic competitiveness.

36 Sen. Martin Heinrich, *Remarks: Heinrich Introduces the Bipartisan American Affordability and Jobs Act with Capito, Lee, and Whitehouse* (Oct. 2026), https://www.heinrich.senate.gov/newsroom/press-releases/remarks-heinrich-introduces-the-bipartisan-american-affordability-and-jobs-act-with-capito-lee-and-whitehouse.

VI. CONCLUSION

The United States built 435 miles of new 345 kV and above transmission in 2025 and has more than 10,000 miles of 500 kV and above transmission planned to come online by 2034, with about 84% of those 10,000 miles being built between 2030 and 2034. Transmission deployment is starting to move in a positive direction compared to the past two decades of high-capacity transmission buildout in the United States. Nevertheless, compared to the rest of the world, and China in particular, the United States has built significantly less high-capacity transmission since 2010, even after adjusting for demand. In order to accelerate development and expand transmission capacity, grid reforms are needed, such as the Bipartisan American Affordability and Jobs Act, to ensure the U.S. can build the transmission and related energy infrastructure needed. In addition to the domestic affordability and reliability costs of underinvestment in the grid, the slow pace of the United States' grid development relative to the rest of the world poses a broader challenge to its economic, technological, and geopolitical leadership.

APPENDIX A: 2025 ENERGIZED PROJECT CASE STUDIES

A majority of the miles of 2025 high-capacity transmission construction came from just three projects. First, Public Service Company of Colorado (PSCo) (Xcel Energy's Colorado subsidiary) energized Segments 2 and 3 of the Colorado's Power Pathway project (Canal Crossing–Goose Creek and Goose Creek–May Valley), spanning 160 miles and 65 miles, respectively, in 2025. Second, NEET Southwest energized the 94-mile Wolf Creek-Blackberry Interstate Transmission Project in 2025. And third, NEET South energized the 48.4-mile Minco-Pleasant Valley-Draper project in 2025. Together, these projects illustrate two different paths to getting large-scale high-capacity transmission lines built today: (1) through proactive state-level planning, and (2) via competitive procurement through an established RTO-run regional transmission planning process.

FIGURE A1 | New 345 kV+ transmission lines completed in 2025

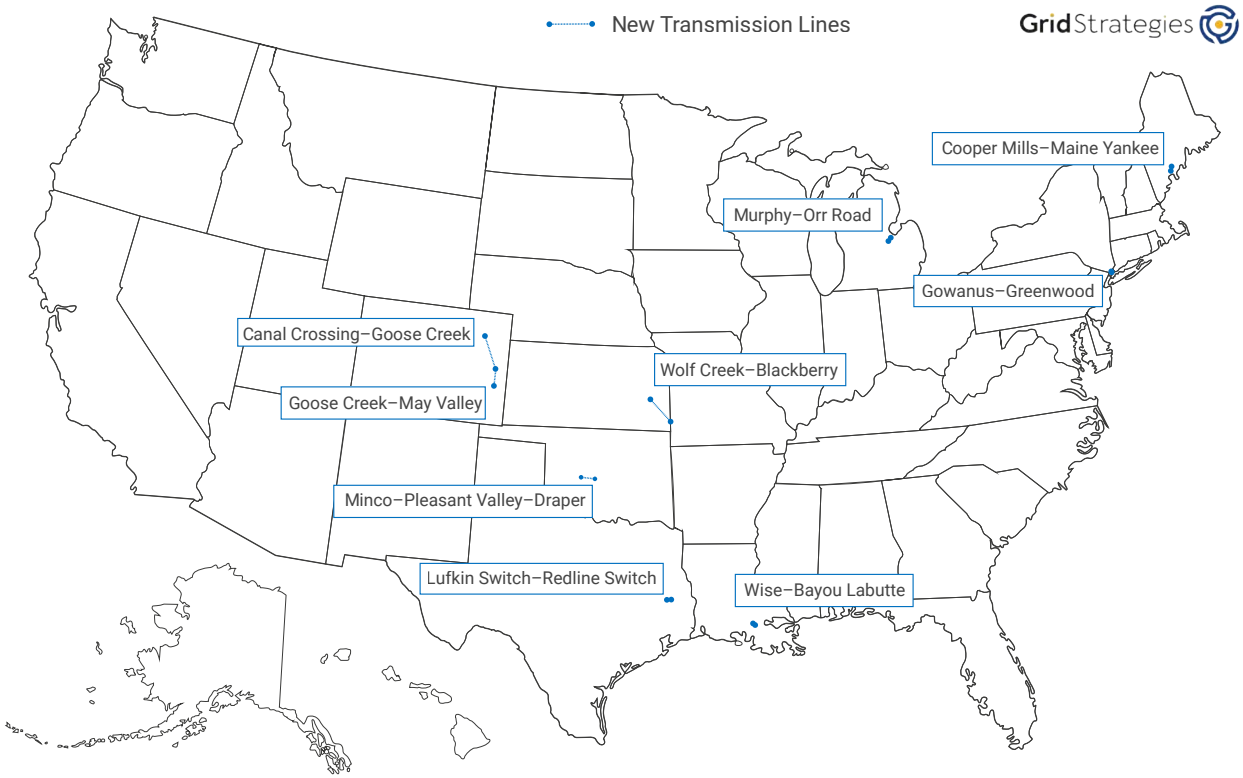


TABLE A1 | Details on new 345 kV+ transmission lines completed in 2025

Line completed in 2025	Line Length (mi)	Line Voltage (kV)	State
Lufkin Switch - Redland Switch 345 kV Line	8.1	345	TX
Murphy - Orr Road Transmission Project	4	345	MI
Coopers Mills - Maine Yankee Transmission Project	26	345	ME
Wolf Creek - Blackberry Interstate Transmission Project	94	345	KS, MO
Gowanus - Greenwood	1	345	NY
Goose Creek - May Valley (Segment 3)	65	345	CO
Canal Crossing - Pawnee Substations - Goose Creek (Segment 2)	160	345	CO
Wise - Bayou Labutte	1.8	500	LA
Minco – Pleasant Valley – Draper	48.4	345	OK

Colorado's Power Pathway – Segment 2 (Canal Crossing–Goose Creek) and Segment 3 (Goose Creek–May Valley)

These two segments are a part of Colorado's Power Pathway project, a five-segment $1.7 billion project developed PSCo. This project consists of roughly 550 miles of new 345 kV double-circuit transmission lines across 12 counties, four new substations, and upgrades to four existing substations. This project supports PSCo's resource plans, which anticipate 2.3 gigawatts (GW) of wind, 1.6 GW of solar, and 0.4 GW of storage. The project itself can accommodate up to 3–3.5 GW of new generation.[37] PSCo completed Segments 2 and 3 in Spring 2025, with Segment 1 following in 2026, and Segments 4 and 5 projected to be in-service in 2027. PSCo filed its application for a Certificate of Public Convenience and Necessity (CPCN) with the Colorado Public Utilities Commission (Colorado PUC) in March 2021, which the Colorado PUC approved for all five segments

37 Colorado Public Utilities Commission, *Decision No. C22-0270, Proceeding No. 21A-0096E* (June 2022), at 8, https://www.xcelenergy.com/staticfiles/xe-responsive/Company/Rates%20&%20Regulations/CPUC%20Pathway%20Written%20Decision_%20C22-0270_21A-0096E.pdf.

in June 2022, finding the project necessary and in the public interest.[38] In the same order, the Colorado PUC approved PSCo's $1.7 billion cost estimate for recovery through a transmission cost rider in PSCo's rates and added performance incentives specifically to encourage timely construction of the remaining Colorado's Power Pathway segments.[39] Although the roughly fifteen months from filing an application to state regulatory approval represents an efficient state approval process, Colorado's transmission siting process happens at the county level and local approvals have delayed the rest of the project. For example, Elbert and El Paso counties denied land-use permits for Segment 5 in 2025, but the Colorado PUC used its state backstop siting authority to override both denials in spring 2026.[40]

Wolf Creek–Blackberry Interstate Transmission Project

In its 2019 ITP, SPP identified the need for the 94-mile 345 kV Wolf Creek–Blackberry Interstate Transmission Project, connecting the Wolf Creek substation in Coffey County, Kansas, to the Blackberry substation in Jasper County, Missouri. The project will relieve congestion on power flowing from generation rich areas in the western part of the RTO's footprint to large demand centers in the eastern part.[41] Because the project addresses congestion, SPP opened a competitive solicitation in 2021 and selected NEET Southwest to design, permit, construct, and operate the line. At an original cost of $162.7 million out of $336.7 million for the entire 2019 ITP portfolio,[42] Wolf Creek–Blackberry represented roughly half of the 2019 ITP's projected investments and around 23% of all miles of high-capacity transmission built in 2025. The project was energized ahead of schedule and under budget, six years after planning and SPP Board approval.

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38 Colorado Public Utilities Commission, *Decision No. C22-0270, Proceeding No. 21A-0096E* (June 2022), at 35, https://www.xcelenergy.com/staticfiles/xe-responsive/Company/Rates%20&%20Regulations/CPUC%20Pathway%20Written%20Decision_%20C22-0270_21A-0096E.pdf.

39 Colorado's Power Pathway (accessed Aug. 2026), https://www.coloradospowerpathway.com/project-description/.

40 Colorado PUC, *Proceeding Nos. 25A-0354E and 25A-0355E, Decision Nos. C26-0228* (Apr. 2026), https://www.dora.state.co.us/pls/efi/EFI_Search_UI.Show_Decision?p_dec=32778&p_session_id=, and *C26-0299* (May 2026), https://www.dora.state.co.us/pls/efi/EFI_Search_UI.Show_Decision?p_dec=32850&p_session_id=.

41 SPP, *2019 Integrated Transmission Planning Assessment Report* (Nov. 2019), at 100, https://spp.org/documents/60937/2019%20itp%20report_v1.0.pdf.

42 *Id.* at 4.

Minco–Pleasant Valley–Draper Transmission Project

SPP identified a need for a new 345 kV transmission line between the Minco and Draper substations in Oklahoma through its 2020 ITP. It required an in-service date of January 1, 2025, and cited a need to address forecasted economic congestion.[43] As with Wolf Creek–Blackberry, SPP opened the project to competitive bidding and selected NEET Southwest's proposal in April 2022 at an estimated cost of $55 million.[44] This made Minco–Pleasant Valley–Draper NEET Southwest's second awarded project in SPP. The completed line relieves congestion and enables more low-cost generation, mostly wind, to flow from the resource rich western Oklahoma to demand centers in eastern Oklahoma.[45] The project was energized in January 2025, six years after SPP's planning and three years after its selection of NEET Southwest.

43 NextEra Energy Transmission Southwest, *Minco-Pleasant Valley-Draper 345-kV Transmission Line* (accessed Sept. 2026), https://www.nexteraenergytransmission.com/subsidiaries/neetsw/projects/mpvd.html.

44 Southwest Power Pool, *Notification to Construct Approved Reliability Network Upgrades, SPP-NTC-210670* (May 2022), at 8, https://www.spp.org/documents/67115/ntc%20210670%20neets.pdf.

45 NextEra Energy Transmission Southwest, *Minco-Pleasant Valley-Draper 345-kV Transmission Line* (accessed Sept. 2026), https://www.nexteraenergytransmission.com/subsidiaries/neetsw/projects/mpvd.html.

APPENDIX B: FERC INFRASTRUCTURE REPORTS AND ERCOT TRANSMISSION PROJECT AND INFORMATION TRACKING PROJECT DATA

TABLE B1 | FERC 2025 Infrastructure Report data on new transmission lines[46]

Line	Developer	Line Length (mi)	Line Voltage (kV)	State	Month Reported by FERC
Murphy - Orr Road Transmission Project	ITC Michigan	4	345	MI	December
Coopers Mills - Maine Yankee Transmission Project	Central Maine Power	26	345	ME	December
Wolf Creek - Blackberry Interstate Transmission Project	NextEra Energy	94	345	KS, MO	July
Gowanus - Greenwood	Consolidated Edison Company of New York	1	345	NY	May
Goose Creek - May Valley (Segment 3)	Public Service Company of Colorado	65	345	CO	May
Canal Crossing - Pawnee Substations - Goose Creek (Segment 2)	Public Service Company of Colorado	160	345	CO	May
Wise - Bayou Labutte	Entergy Louisiana (ELL)	1.8	500	LA	April

46 This analysis relies primarily on project-level data from FERC's monthly Infrastructure Reports. However, these reports are subject to revisions and reporting lags, which may result in data gaps or missing projects. We supplemented FERC's data with ERCOT's Transmission Project and Information Tracking (TPIT) reports, which include additional projects.

TABLE B2 | ERCOT July 2026 Transmission Project and Information Tracker (TPIT) completed transmission project data

Line	Developer	Line Length (mi)	Line Voltage (kV)	State	Month Reported in TPIT
Lufkin Switch - Redland Switch 345 kV Line	Oncor	8.1	345	TX	December

APPENDIX C: NEED FOR MORE CLARITY ON TRANSMISSION DATA

FERC tracks and reports on miles of new transmission constructed in its monthly Energy Infrastructure reports. These reports often contain modest updates and adjustments to the miles of newly constructed transmission as more complete data become available. For example, the 2023 data only increased by four miles across an entire year of updates, and it does not appear that the 2022 data have changed significantly either.[47]

FERC's data are based on information and reporting from the North American Electric Reliability Corporation Electricity Supply & Demand (ES&D) and U.S. Electric Transmission Projects© of Yes Energy and The C Three Group, LLC. The data reported are often incomplete, as delays in reporting or identification of newly energized lines can lead to undercounts. As more accurate data become available, FERC revises its data and figures accordingly.

Unfortunately, FERC does not disclose which specific lines are added when it revises historical build numbers, making it difficult to identify which lines are included in the change. While FERC requires each transmission provider to report new transmission mileage by voltage class in Form 1 filings, there is limited oversight or standardization of this data. FERC does require each transmission provider to report miles of new transmission added across voltages in its Form 1 report and could rely on that data to easily track this information. However, a limited focus on the quality or standardization of the information submitted in the report makes it difficult to obtain useful data, leading to continued reliance on outside sources.

47 FERC, *Energy Infrastructure Update for December 2024* (Apr. 2025), https://cms.ferc.gov/media/energy-infrastructure-update-december-2024-revised-dataapril-22-2025; FERC, *Energy Infrastructure Update for December 2023* (May 2024), https://cms.ferc.gov/media/energy-infrastructure-update-december-2023-0; FERC, *Energy Infrastructure Update for December 2022* (Feb. 2023), https://cms.ferc.gov/media/energy-infrastructure-update-december-2022.

APPENDIX D: INTERNATIONAL TRANSMISSION DATA

The international comparisons in Section III use data from the Global Electricity Transmission Database and Report 2026 (GETR), published by Global Transmission Research.[48] This database and report cover 91 countries and tracks, by country, historical miles of transmission built, along with installed generation capacity, electricity production, and consumption from 2006 to 2025. The GETR tracks annual kilometers of new transmission from 110 kV and above. For our analysis, we converted kilometers to miles for 300 kV and above transmission lines from 2010 to 2025.

Regional aggregation

We summed miles constructed into six regions and two countries: Africa, Asia (excluding China and India), China, Europe, India, Latin America, and the Middle East. Since GETR groups countries into six regions, we utilized the existing regional groupings and separated China and India from the rest of Asia to draw more specific country comparisons. For the United States, we used FERC Energy Infrastructure reports.[49]

Cumulative miles and normalization

GETR reports total kilometers of new transmission for each country by voltage class and year constructed. Year-to-year differences reflect net additions. For each country, we calculated miles constructed each year and then added year-over-year additions to get cumulative miles built from 2010 to 2025. We divided each country's annual cumulative miles of transmission by its total electrical consumption in GWh and summed them by the regions defined above. Normalizing by load accounts for the fact that larger grids require more transmission and shows how much each region is building relative to the amount of demand they serve.

Limitations

There are several limitations to note. First, the voltage threshold for the international data differs from the 345 kV and above threshold used in the U.S. data from FERC. This is because each country has its own unique voltage classes, so creating broader buckets was necessary. Second, GETR relies on data reported by countries, which varies in completeness. Third, GETR is a paid product, so the underlying country-level data cannot be reproduced here.

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48 Global Transmission Research, *Global Electricity Transmission Database and Report 2026* (Feb. 2026), https://globaltransmission.info/global-electricity-transmission-database-and-report-2026-2/.

49 FERC, *Energy Infrastructure Staff Reports and Papers* (accessed Oct. 2026), https://www.ferc.gov/staff-reports-and-papers.



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Grid Strategies LLC is a power sector consulting firm helping clients understand the electric power industry, energy markets, and policy. Drawing on extensive experience in state regulation, transmission planning, and wholesale markets, Grid Strategies analyzes and helps advance grid integration solutions.

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