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# Data Centers and Large-Scale Electric Growth: The Virginia and Texas Experiences

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# Executive Summary

## Key findings:

- **The “Who Pays?” Conflict is Escalating:** Traditional “socialized” cost-recovery models are breaking down under the scale of required grid investments. With PJM’s congestion costs rising by 64% in 2024<sup>1</sup> and Texas planning \$30B+ in transmission upgrades,<sup>2</sup> regulators face pressure to protect residential ratepayers from cross-subsidizing tech giants. Virginia’s “GS-5” tariff, which requires large loads to pay 85% of transmission capacity costs during ramp-up,<sup>3</sup> represents a shift toward strict “cost causation” frameworks. Similar mechanisms will likely spread to other electricity markets, as grids across the country face growing, clustered demand.
- **Willingness to Legislate Varies by Region:** At the time of writing, energy-oriented data center legislation occurred primarily at the state level. While Texas SB6 introduces wide-ranging reform, legislative stalemate and stakeholder debate have precluded meaningful changes in Virginia. Differences in the states’ ability to pass reforms, as well as the content of said reforms, will impact not only future data center market development but also the severity of grid- and local-level impacts—including residential energy costs.
- **Effective Governance Requires Institutional Coordination:** In the midst of digital infrastructure development, both Virginia and Texas highlight the widespread challenges of coordinating governance across planning, regulatory, and operational institutions.

## 1. Introduction

The digital economy’s electricity needs are creating new policy challenges across the United States.<sup>4</sup> Data center electricity usage grew from just under 2% of national demand in 2018 to about 4.4% in 2023, driven by advances in artificial intelligence (AI) and high-performance computing; overall, data center electricity demand may account for 6.7-12% of U.S. electricity usage by 2028.<sup>5</sup> Today, individual AI data centers can exceed a gigawatt (GW) of power demand,<sup>6,7</sup> with investments clustered in regional hubs that promise reliable electricity access, robust fiber connectivity, and low latency.<sup>8</sup>

For decades, the U.S. electricity system experienced gradual, diversified, and relatively predictable demand growth. This environment influenced how grid forecasting methods, reliability standards, and cost-allocation

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1 Monitoring Analytics, “[Congestion and Marginal Losses](#),” *State of the Market Report for PJM 2024*, 2025.

2 Public Utility Commission of Texas Filing Report, “[PUC Project No. 55718, Reliability Plan for the Permian Basin under PURA § 39.167 - ERCOT’s 2024 Regional Transmission Plan 345 - kV Plan and Texas 765-kV Strategic Transmission Expansion Plan Comparison](#).”

3 Eric Brooks and Justin Stevens, “[Adapting utility tariffs for data center driven load growth](#),” *Utility Dive*, July 14, 2025.

4 For more information about the energy policy challenges surrounding rapid data center development in the United States, see [AI, Data Centers, and the U.S. Electric Grid: A Watershed Moment](#) (2026).

5 Shehabi, A., Smith, S.J., Hubbard, A., Newkirk, A., Lei, N., Siddik, M.A.B., Holecek, B., Koomey, J., Masanet, E., Sartor, D. 2024. [2024 United States Data Center Energy Usage Report](#). Lawrence Berkeley National Laboratory, Berkeley, California. LBNL-2001637.

6 For context, 1 gigawatt (GW) or 1,000 megawatts (MW) is roughly equivalent to the consumption of 876,000 homes in one year. For more information, see: [What Is a Gigawatt \(GW\)?](#)

7 22 data centers with GW scale demand are expected to come online in the United States in 2026 and 2027. For more information see: Grid Strategies, [National Load Growth Report](#) (2025).

8 Latency refers to the time delay between a user request and the delivery of a computing response. For many AI applications, lower latency requires processing to occur close to users or other computing resources, which encourages geographic concentration.

mechanisms were designed. However, data centers are now entering the electricity system faster and at a larger scale than planning, regulatory, and market-based institutions can manage. As a result, policymakers are struggling to simultaneously guarantee low electricity costs, high reliability, and rapid interconnection for customers. The U.S. electricity system must be recalibrated to ensure greater resilience and adaptability.

Simultaneously, affordability concerns are growing. In February 2026, President Trump announced that leading technology companies (including Meta, Google, and OpenAI) had pledged to assume a larger share of data centers' energy and grid infrastructure costs.<sup>9,10</sup> Although the pledge's voluntary nature may limit compliance, the move highlights expanding awareness of data centers' impacts on grid reliability as well as the political risks of ignoring said impacts.

Conflicting interests between technology companies, regional utilities, and state regulators complicate reform. Tech companies perceive electricity as a strategic asset that facilitates rapid AI development and, thus, prioritize rapid interconnection and power deployment. Utilities and regulators, on the other hand, are risk-averse, prioritizing grid reliability and ratepayer protections. While the electricity grid can be expanded and institutions modernized to accommodate new demand, each adjustment to the status quo redistributes risks and benefits among data center developers, utilities, and public ratepayers. Policymakers must develop new ways to support the digital economy without unraveling public protections on electricity costs and environmental damages.

Despite growing federal-level interest, the majority of data center energy legislation continues to occur at the state level. This brief analyzes two of the largest data center markets in the United States (Virginia and Texas). Fundamental differences in the states' electricity market design have shaped each region's approach to data center regulation. The following sections explore shared and distinct challenges within each region. It assesses their respective policy responses and concludes by highlighting a range of policy options available to decisionmakers.

## 2. Shared Structural Challenges

Data centers pose distinct challenges for grid planners due to how they interact with the electricity planning process and market institutions as well as the physical and operational characteristics of the power system itself. These elements are briefly discussed below.<sup>11</sup>

### 2.1. Uneven Development Timelines

Commercial competition has accelerated data center timelines while increasing their power needs. While hyperscale data centers can be built within 18 to 24 months, high-voltage transmission upgrades often require 7 to 10 years to plan, approve, and construct. As such, data centers are depleting available grid capacity faster than it can be physically replaced. As new generation sources can spend 4 to 5 years in

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9 Andres Picon, "Trump to announce data center energy deals during State of the Union," Politico, February 24, 2026.

10 Jarrett Renshaw and Laila Kearney, "Tech giants sign energy pledge at White House ahead of midterms," Reuters, March 4, 2026.

11 For an in-depth discussion on the relationship between data centers and the electric grid, see *AI, Data Centers, and the U.S. Electric Grid: A Watershed Moment (2026)*.

interconnection queues before coming online,<sup>12,13</sup> shrinking reserve margins (or the quantity of power that operators use to absorb system shocks and maintain reliability) cannot be replenished fast enough to meet demand. As reserve margins shrink, the grid becomes increasingly vulnerable to shortages and instability.

## 2.2. Unique Load Profiles and Operational Characteristics

Data centers have unique operational characteristics that challenge traditional grid operations. For instance, they operate at exceptionally high utilization factors.<sup>14</sup> While some facilities may be able to reduce their power usage or switch to on-site power supplies, their degree of operational flexibility varies. This uncertainty complicates grid operations, as inflexible data centers leave grid operators with less maneuvering room to manage demand fluctuations, renewable intermittency, and grid emergencies.

Furthermore, data centers rely on continuous electricity, supported by uninterruptible power and on-site systems. These technologies enhance reliability for the facility itself by ensuring electricity remains constantly available, despite external disruptions; however, the aggregate behavior of these systems during grid-level disturbances can introduce harmonic distortion<sup>15</sup> and exacerbate voltage stress.<sup>16</sup> Combined, large concentrations of data centers on the grid increase grid instability, raise the risk of blackouts, and undermine its ability to ride through routine electrical faults.

## 2.3. Interconnection Queues and Phantom Projects

Historically, grid interconnection and service requests operated on a “first-come, first-served” basis with low barriers to entry. However, the scarcity of viable building sites and high interconnection demand has led developers to file “phantom” requests: multiple or duplicative project requests for a single potential facility across several utility territories that allow developers to explore multiple site options simultaneously.<sup>17,18</sup> In some regions, the volume of new load in the interconnection queue exceeds the entire demand within a utility’s jurisdiction.<sup>19</sup> These practices skew demand forecasts while complicating long-term transmission planning. In addition, the large volume of requests stretches grid planners’ administrative capabilities to evaluate and process them in a timely manner, leading to longer project delays affecting both data center operators and power generators.

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12 Lynne Kiesling, “*Booming AI Demand Collides With the Grid*,” *Dispatch Energy*, December 11, 2025.

13 While hyperscale data centers can commence operations in 18–24 months (Bain & Company, [Next phase of data center growth to be more disciplined but risks of power constraints and construction delays remain](#) [2025]), typical generation projects built in 2024 required 55 months to move from the interconnection request to commercial operations (LBNL, [Queued Up: Interconnection Queue Trends](#), [2025]). For transmission projects, the average permitting duration is 6.5 years (American Clean Power Association, [Fact Sheet](#) [2024]).

14 Utilization factors measure how much a system or asset is used relative to its maximum capacity. A utilization factor of 99% means that the data center functions at nearly full capacity.

15 Under normal circumstances, Alternating Current (AC) flows in a smooth, continuous wave. Electronic devices (like servers) chop this flow to convert it to Direct Current (DC), creating “noise” or jagged irregularities on the wave. This distortion can overheat equipment and degrade power quality for other users on the grid. In other words, these disturbances can damage physical hardware within the grid, to the detriment of all users.

16 Voltage acts like the pressure in a water pipe. To maintain that pressure, the grid needs “reactive power”—auxiliary energy that sustains the magnetic fields pushing the electricity. Data centers consume vast amounts of this reactive energy. If they drain it faster than it can be supplied locally, the “pressure” drops rapidly (collapse), potentially leading to blackouts ([Clean Energy Institute](#)).

17 Ian Goldsmith and Zach Byrum, “[Powering the US Data Center Boom: Why Forecasting Can Be So Tricky](#),” World Resources Institute, September 17, 2025.

18 Jennifer Hiller, “[Data Centers That Don’t Exist Yet Are Already Haunting the Grid](#),” *The Wall Street Journal*, September 1, 2025.

19 *Ibid.*

## 2.4. Power Co-Location and Behind-the-Meter (BTM) Generation

In response to interconnection delays, some developers are trying to reduce or eliminate grid reliance by building data centers at or near power plants (such as existing nuclear or gas facilities)<sup>20</sup> and/or constructing behind-the-meter (BTM)<sup>21</sup> generation to supply all or some of their required electricity on-site. Although these strategies could accelerate power procurement, they also create new challenges. For example, co-location can divert generation away from the wider electricity system and toward a private data center, reducing the region's overall supply cushion and worsening reliability for other customers. Many BTM arrangements rely on the grid for backup power; as a result, the utility must invest in and maintain additional standby capacity for these data centers that may not be fully or frequently utilized by the center itself. Furthermore, it is unclear as to who bears the cost of this backup capacity: data centers or all electricity customers within the system.

## 2.5. Allocative Inefficiencies

Finally, the current regulatory ecosystem complicates the allocation of grid investment costs. Because the grid is a networked system, upgrades that resolve localized problems may provide reliability benefits elsewhere. As a result, it is difficult to identify beneficiaries among whom costs should be distributed. For example, while urban data centers may necessitate the construction of a new substation, the resulting substation protects *all* consumers from blackouts, not just the data center.

As a result, transmission investments are often categorized as “network” or “reliability” assets that benefit all customers and are recovered through socialized rates.<sup>22</sup> This approach can overburden existing customers if projected load growth fails to materialize or evolves differently than expected. At the same time, strictly assigning costs to new entrants may drive developers to shift projects elsewhere. State policymakers, therefore, face a recurring tradeoff between protecting ratepayers and maintaining an environment that supports economic development.

# 3. Virginia

## 3.1. Framing Virginia's Challenges

Virginia is the epicenter of the global data center industry. With nearly 600<sup>23</sup> data centers statewide,<sup>24</sup> Northern Virginia alone hosts over 4,900 MW of operating capacity, with another 1,000 MW under development and over 5,000 MW planned.<sup>25</sup> By some estimates, 70% of global internet traffic passes through the region's data centers.<sup>26</sup>

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20 The act of building data centers near existing power generation sources is called “co-location.”

21 BTM describes the production of electricity on-site, using dedicated power sources located on the customer's side of the utility meter.

22 “Socialized rates” describe a funding model in which the cost of new transmission infrastructure is spread across all electricity customers (ratepayers) in a region. In the United States, more than 90% of transmission investment is categorized as “reliability driven” and rolled into broad regional or zonal rates rather than assigned to specific beneficiaries (The Brattle Group, *Proactive Multi-Value Transmission Planning* [April 2025]).

23 It is important to note that the total number of data centers housed in Virginia varies according to source. At the time of writing, this figure constituted a reasonable estimate.

24 Ryan Murphy and Emily Feng, “[Why more residents are saying 'No' to AI data centers in their backyard](#),” *NPR*, July 17, 2025.

25 “[JLL report reveals Northern Virginia remains the most dominant data center market](#),” *Washington Business Journal*, June 3, 2025.

26 “[The Dawn of Data: How Virginia Became the Data Center Capital of the World](#),” *Virginia Economic Development Partnership*, 2019.

Northern Virginia's market dominance reflects the region's history. As an early node in the U.S. government's ARPANET,<sup>27</sup> Virginia still hosts major internet exchange points; as a result, the region's dense fiber network and federal linkages provide attractive connectivity advantages; additionally, the state's low power costs, consistent electric reliability, and mild climate reduce data center operation costs.<sup>28</sup> Furthermore, some counties (such as Loudoun and Prince William) accelerated the permitting process for large data center campuses. State-level tax exemptions (such as the 100% sales and use tax exemption for data center campuses)<sup>29</sup> further encourage long-term investment. These factors compounded over time, as the arrival of major data centers drew new operators, creating a self-sustaining ecosystem.

However, data centers have spurred rapid load growth as well as new operational and reliability challenges across the grid. As the market continues to expand, these challenges threaten grid stability across the PJM region, as discussed below.

### 3.1.1. Load Growth and Transmission Dependence

Virginia's rapid data center expansion has altered power flows within PJM, the regional transmission organization (RTO) responsible for managing the region's electricity.<sup>30</sup> Local demand growth has outpaced in-state generation capacity, increasing reliance on power imports from neighboring states. In 2023, the state imported roughly 50 million MWh of electricity, or about one-third of its total supply, from coal, gas, and renewable plants in western parts of the PJM region.<sup>31,32</sup> To support these flows, PJM and transmission owners have advanced several high-voltage transmission projects, including new 500-kilovolt (kV) and 765-kV transmission lines such as the Mid Atlantic Reliability Link (MARL) and the Valley Link. However, these corridors are exhibiting increased stress, as congestion costs<sup>33</sup> rose 64% in 2024 to \$1.7 billion.<sup>34</sup>

### 3.1.2. Operational Risk from Concentration

In July 2024, a cluster of large data centers in Fairfax County went offline almost simultaneously, removing about 1.5 GW of demand from the system within minutes; to maintain stability and prevent blackouts, grid operators had to rapidly reduce the amount of electricity entering the grid.<sup>35</sup> Although the system remained stable, the event demonstrated how concentrated and synchronized data center operations can impact grid operations. These operational risks increase the chance of grid emergencies at any given time.

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27 ARPANET (the Advanced Research Projects Agency Network) was the first operational packet-switching network, developed by the U.S. Department of Defense in the late 1960s. It formed the technical foundation of today's internet.

28 Ginger Woolridge, "How Ashburn, VA became the Colocation Mecca known as Data Center Alley," *Lightyear*, November 13, 2021.

29 *Data Centers in Virginia*, Virginia Joint Legislative Audit & Review Commission, 2024.

30 For more information, see: <https://www.pjm.com/about-pjm>.

31 Refer to Appendix I for details about Virginia's power system.

32 U.S. Energy Information Administration, "Virginia was the top net electricity recipient of any state in 2023," April 2025.

33 Congestion costs describe the higher energy costs when major transmission lines are overburdened and cheaper power cannot reach high-demand areas.

34 Monitoring Analytics, *2024 State of the Market Report for PJM Interconnection*, 2025.

35 Matthew Gooding, "Virginia narrowly avoided power cuts when 60 data centers dropped off the grid at once," *Data Center Dynamics*, March 20, 2025.

### 3.1.3. Uneven Cost Allocation

The costs of transmission upgrades, and the fair distribution of said costs, are under review. Under FERC Order 1000 and PJM's current rules, the costs of regionally planned transmission projects must be "roughly commensurate" with measured benefits and cannot be assigned to entities receiving only minimal value from such investments.<sup>36</sup> PJM applies this rule through Tariff Schedule 12, which sets out a two-part formula for large transmission facilities. For 500-kV projects classified as Regional Facilities, half of the cost is allocated to all PJM transmission zones based on their load ratio share, while the other half is assigned to specific zones expected to benefit from the new line.<sup>37</sup>

However, new transmission upgrades planned to accommodate large data centers are increasing costs for residential customers. According to the Institute for Energy Economics and Financial Analysis (IEEFA), West Virginia ratepayers may bear more than \$440 million of the MARL and Valley Link costs over the projects' lifetimes, even though the additional transmission capacity primarily supports Virginia-based data centers.<sup>38</sup> IEEFA and other observers argue that PJM's regional cost-sharing model distributes costs too broadly for highly localized loads, raising questions about whether future high-voltage lines should consider directly measured benefits over system-wide allocation.

### 3.1.4. Future Resource Adequacy Concerns

The scale and load profile of data center demand are also affecting PJM's reserve adequacy outlooks. Dominion's 2024 resource plan highlights a need for 27 GW of new generation by 2039, including 21 GW of clean energy (solar, wind, and nuclear small modular reactors) and 5.9 GW of gas.<sup>39</sup> These dynamics were reflected in PJM's capacity auction for 2025/2026 that saw costs surge from \$2.2 billion to \$14.7 billion.<sup>40</sup>

Additionally, reserve margins are shrinking as power demand grows. PJM's 2026/2027 Base Residual Auction revealed a reserve margin of 18.9%.<sup>41</sup> Looking ahead, PJM predicts the reserve margin will drop. In the "low new entry" scenario, where only a small share of planned projects is built, the margin could drop from 23% in 2023 to 8% in 2028 and 5% in 2030; in the "high new entry" scenario, margins would still shrink to 15% by 2030.<sup>42</sup> Without adequate generation capacity and sufficient reserve margins, Virginia cannot guarantee future grid stability for all consumers, industrial and residential alike.

## 3.2. Institutional Responses

In response to the above challenges, Virginia is working to reform regulatory practices across the data center ecosystem. However, industry backlash has hindered many policy proposals. Virginia's institutional responses across regional, state, and local-levels highlight not only the mounting problems surrounding data center development but also the inherent challenges of multi-level institutional coordination when solving them.

36 FERC, "Order No. 1000: Transmission Planning and Cost Allocation (Docket RM10-23-000)," 2011.

37 Cathy Kunkel, "West Virginia Ratepayers Footing the Bill for Infrastructure," Institute for Energy Economics & Financial Analysis (IEEFA), 2025.

38 *Ibid.*

39 Diana DiGangi, "Dominion unveils plans to add 21 GW of clean energy, 5.9 GW of gas generation by 2039," *Utility Dive*, October 16, 2024.

40 PJM Interconnection, "2026/2027 Base Residual Auction Report," 2025.

41 *Ibid.*

42 Ethan Howland, "PJM launches fast-track capacity market reform process in face of shrinking reserve margins," *Utility Dive*, February 27, 2023.

### 3.2.1. PJM: Market Design and Planning Adjustments

Recognizing the imbalance between grid capacity and load growth, PJM undertook a series of actions. On the planning side, PJM’s Board approved multiple Immediate-Need 230-kV reliability projects under its Regional Transmission Expansion Plan (RTEP),<sup>43,44</sup> as well as roughly \$6 billion in high-voltage transmission upgrades for Virginia, including expansion of the 765-kV line to serve Data Center Alley.<sup>45</sup> Similarly, Dominion also plans to construct a 500-kV circuit that would strengthen reliability near data-center loads.

However, even these projects may be insufficient to meet growing power demand.<sup>46</sup> According to the Maryland Public Service Commission, Dominion’s load forecast stems from geographically concentrated data centers; under the most aggressive forecasts, PJM would need far greater capacity than currently planned. Without adequate generation and transmission, both residential and industrial ratepayers across PJM may be left with higher electricity costs and a less reliable system.

On the market side, PJM introduced the Non-Capacity-Backed Load (NCBL), which would create a separate load category for very large consumers (such as new data center requests  $\geq$  50 MW).<sup>47</sup> Under the proposed category, the capacity charges for these customers would be lowered in exchange for mandatory curtailment during supply shortages and pre-emergency conditions. The move triggered broad opposition,<sup>48</sup> as data center operators argued that the measure would undermine the integrity of PJM’s capacity market and blur the line between state and federal jurisdictions.<sup>49</sup>

PJM revised the proposal in October 2025, dropping the mandatory NCBL while promoting existing voluntary programs, such as price-responsive demand (PRD) and demand response (DR).<sup>50</sup> These systems encourage large users to voluntarily reduce load or utilize on-site generation during periods of system stress in exchange for lower capacity payments. However, the voluntary nature of these programs prevents grid planners from mandating flexibility, thereby undermining reliability during grid emergencies. Consequently, Virginia regulators are under pressure to develop new incentives for enhanced flexibility for data center operations to safeguard grid stability.

### 3.2.2. State-Level Actions

At the state level, lawmakers are considering a variety of actions affecting data center development. For example, officials have considered scaling back Virginia’s data center tax exemptions. These exemptions permit operators to purchase physical hardware and equipment without paying sales tax. In FY23, the policy provided \$928 million in tax savings,<sup>51</sup> with projected annual forgone tax revenue upwards of \$1.6 billion.<sup>52</sup> A 2025<sup>53</sup> proposal to repeal the incentive stalled in the Virginia legislature. While additional bills sought to link

43 These are short-timeline upgrades ordered when engineers determine that existing equipment will exceed safe limits within the next few years.

44 PJM, *Reliability Analysis Update (TEAC Item 11, Dec 3, 2024)*, PJM Committees & Groups, 2024.

45 Advanced Energy United, *RTO Insider: PJM Board Approves \$6B in Grid Upgrades*, February 27, 2025.

46 Maryland Public Service Commission Office of People’s Counsel, *COMMENTS OF THE MARYLAND OFFICE OF PEOPLE’S COUNSEL*, 2024.

47 PJM, *Large Load Additions – Conceptual Proposal and Request for Member Feedback*, August 18, 2025.

48 PJM, *Stakeholder Comments: CIFP-LLA (August 28, 2025)*, September 2025.

49 Ethan Howland, “PJM stakeholders overwhelmingly pan proposal for data center interconnection,” *Utility Dive*, September 3, 2025.

50 PJM, *CIFP-LLA Updates: Large Load Additions (October 1, 2025 Presentation)*.

51 Joint Legislative Audit and Review Commission (JLARC), *Data Centers in Virginia*, 2024.

52 Markus Schmidt, “Clock ticking on Virginia budget as Democrats clash over data center tax break,” *Virginia Mercury*, March 11, 2026.

53 Virginia SB800 (2025) – amended version “MR 3-5.25 / 2s” — Virginia State Budget (Introduced).

eligibility to energy-efficiency or clean-energy performance, pause new projects in Northern Virginia, and/or set uniform development standards, none advanced.<sup>54</sup> A separate bill establishing statewide standards, including land use reviews, reached the governor's desk and was vetoed.<sup>55</sup> As of the time of writing, the sales tax exemption remains in place through 2035. On one hand, the failure to reduce the incentives for new data centers signals Virginia's commitment to continuing investment competitiveness. On the other hand, it also illustrates growing public concern about the spillover impacts of ever larger data centers. These concerns are likely to strengthen in the years ahead.

As Virginia's household electricity prices rise, state regulators are reconsidering cost and risk allocation methods. Virginia's State Corporation Commission (SCC) regulates electricity tariffs; for more than three decades, base rates were effectively frozen under SB 1349. To fund grid and generation investments during that time, Dominion relied on rate adjustment clauses which, by 2020, comprised about 24% of typical residential bills.<sup>56</sup> In November 2025, the SCC allowed Dominion to increase base rates, adding about \$11.24 per month in 2026 and \$2.36 per month in 2027 for a typical household electricity bill.<sup>57,58</sup> These rate increases highlight not only the capital-intensive nature of grid maintenance and development, but also the challenge of fairly distributing infrastructure costs across the region's end users.

To manage price increases and allocative risk, Dominion proposed the GS-5 "High Load" tariff, which would apply to customers with at least 25 MW of demand. Under the tariff, large customers would pay a greater share of the generation, transmission, and distribution investments needed to serve large loads (such as data centers).<sup>59</sup> Although large customers already pay for some on-site connection facilities, the proposed GS-5 tariff would go a step further. For example, if Dominion must build a dedicated substation or high-voltage line to serve a GS-5 campus, the infrastructure would be treated as customer-specific, and their costs recovered from the high-load customer instead of through general rates.

Under the proposed framework, service would be provided over a 14-year contract, with an optional four-year ramp-up period for phased development. During the ramp-up, or the period in which electric load comes online, customers over 25 MW would pay at least 60% of total cost of generation and 85% of total transmission and distribution (T&D) capacity costs, even if their actual power usage is lower than predicted. For example, a 100-MW customer using 30 MW in year one would still be charged as if it were using 60 MW (60% of 100MW) for generation and 85 MW (85%) for T&D.<sup>60</sup> Large customers would also fund site-specific substations, interconnection lines, and other connectivity equipment, rather than paying those improvements through general rates.

Data center operators objected, arguing that the tariff over-allocates risk to new entrants and could deter future investment. A coalition of data center operators filed a counterproposal lowering the minimum charges to 50% of generation and 75% of new T&D costs.<sup>61</sup> Despite these efforts, the GS-5 tariff was approved by the

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54 Rip Sullivan, *2025 Post-General Assembly Session Recap*, June 3, 2025.

55 McGuireWoods, *Virginia Governor Vetoes Data Center Bill*, May 8, 2025.

56 Virginia Poverty Law Center, *Thumb on the Scale: An Examination of Utility Rate Adjustments and the Role of the Virginia Legislature*, September 2021.

57 Shuting Pomerleau and Irene Ko, "Virginia's New Data Center Electricity Rate Class," *American Action Forum*, January 8, 2026.

58 The approved rates are higher than Dominion's initial proposal, which would have increased monthly rates by \$8.51 in 2026 and \$2.00 in 2027. (Dominion Energy, "Dominion Energy Virginia Proposes New Rates to Continue Delivering Reliable Service and Increasingly Clean Energy," Press Release, February 3, 2025.)

59 Eric Brooks and Justin Stevens, "Adapting utility tariffs for data center driven load growth," *Utility Dive*, July 14, 2025.

60 ScottMadden, *Adapting Utility Tariffs for Data Center-Driven Load Growth*, July 2025.

61 Charles Paullin, "Dominion Energy and Big Tech Maneuver Over Pivotal Rate Decision in Virginia," *Inside Climate News*, September 4, 2025.

SCC in November 2025 and is scheduled to come into force in early 2027.<sup>62</sup>

### 3.2.3. Local-Level Reforms

Local governments played an important role in facilitating early data center development by streamlining zoning, permitting, and infrastructure coordination for large campuses. Many of these same communities are now reversing course by strengthening regulations on data center land use and environmental impacts. Since September 2024, Fairfax County has required greater setbacks from homes, larger buffers for on-site diesel generators, mandatory design reviews, and increased noise and visual impact mitigations.<sup>63</sup> Similarly, Loudoun County is overhauling its data center zoning, moving most projects from automatic approval to a review process that requires county sign-off as well as new rules on siting, building design, screening, noise, and other operational impacts.<sup>64</sup>

Overall, opposition towards data centers continues to grow throughout Virginia.<sup>65,66</sup> These measures illustrate how local governance shapes the geography of data-center market growth. While state-level tax policy still favors expansion, local land-use restrictions and grid constraints are forcing developers to slow down and consider local impacts throughout the development process.

## 3.3. Virginia Takeaways

So far, Virginia has been able to maintain grid stability amidst rapid data center market expansion. Yet our analysis reveals mounting tensions beneath the surface. Institutions are adapting incrementally to accommodate unprecedented load growth while trying to balance competing objectives of maintaining investment competitiveness, fair cost allocation, system reliability, and public protection. Virginia highlights not only the mounting problems surrounding data center development but also the inherent challenges of multi-level institutional coordination when solving them. Data center siting continues to be shaped by county-level decisions, while the SCC is addressing cost and risk allocation through retail tariffs and PJM grapples with regional planning, market design, and cost-allocation questions. Without adequate coordination between these stakeholders, Virginia risks ineffective regulations and continued stalemate, while grid and local-level impacts intensify.

# 4. Texas

## 4.1. Background

Texas is one of the fastest-growing data center markets in the United States. Like Virginia, the state offers

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62 Shuting Pomerleau and Irene Ko, “[Virginia’s New Data Center Electricity Rate Class](#),” *American Action Forum*, January 8, 2026.

63 Fairfax County, [Board of Supervisors Approves New Data Center Zoning Ordinance Amendment](#), September 2024.

64 Loudoun County, [Data Center Standards & Locations](#), Loudoun County Official Website.

65 Shannon Heckt, “[Virginia doesn’t have statewide data center regulations. Localities are making their own rules](#),” *Virginia Mercury*, June 20, 2025.

66 Shannon Heckt, “[Amazon pulls Louisa County data center proposal after strong resistance](#),” *Virginia Mercury*, July 28, 2025.

abundant land, generous tax incentives,<sup>67,68</sup> and, unlike Virginia, ample access to renewable resources. Additionally, Texas enjoys a relatively fast interconnection process, as the grid’s “connect-and-manage” system allows new projects to interconnect faster than in most other U.S. regions; developers often cite this accelerated timeline as a decisive factor in site selection.<sup>69</sup> These factors have attracted significant investments from AI campuses, crypto mines, and cloud facilities, with growth clustered around the Dallas-Fort Worth metro area and several communities in West Texas.<sup>70</sup> At the current pace of development, Texas may surpass Virginia as the largest data center market worldwide by 2030.<sup>71</sup>

Texas data center expansion is occurring within the Electric Reliability Council of Texas (ERCOT) ISO region, a grid largely isolated from the rest of the country. ERCOT operates a wholesale electricity market<sup>72</sup>; in this energy-only market, generators are compensated through energy and ancillary service<sup>73</sup> revenues rather than through a centralized capacity market (as exists in PJM). Under this design, investments in new generation are driven by scarcity pricing during periods of tight supply, rather than by forward capacity procurement.

## 4.2. Framing Texas’ Challenges

As in Virginia, data center market development has challenged Texas’ long-standing electricity market design and regulatory systems.

### 4.2.1. Load Growth and Capacity Challenges

Like Virginia, Texas is facing inadequate generation capacity in the wake of data center electricity demand. Recent load forecasts show a sharp departure from historical trends. Between 2000 and 2024, ERCOT’s peak demand grew from 58 GW to 84 GW (or, by about 1-2% on average each year).<sup>74</sup> As of 2025, Texas data centers demanded just under 8 GW of power at their peak.<sup>75</sup> Current projections anticipate nearly 51 GW of new, grid-wide demand by 2030, effectively compressing half a century of historical growth into a single planning cycle. New data centers (including crypto miners) account for over half of this increase.<sup>76,77</sup>

Over the same period, planned generation projects will provide only 386 GW of new power generation capacity, almost entirely comprised of intermittent solar and wind projects, with only about 3 GW of new dispatchable gas and diesel capacity and an additional 23 GW of battery storage capacity under development.<sup>78</sup> However,

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67 Texas Comptroller, *State Sales Tax Exemption for Qualified Data Centers*, accessed on January 1, 2026.

68 Cornell Law School, *34 Tex. Admin. Code § 3.335*, accessed on January 1, 2026.

69 Kaitlin Fung, “5 key questions about US grid interconnection answered,” *Wood Mackenzie*, August 13, 2025.

70 ERCOT, *Regional Transmission Plan*, 2025.

71 Barney Dixon, “JLL: Texas to become world’s largest data center market by 2030,” *Data Center Dynamics*, February 18, 2026.

72 For more information on the difference between wholesale and retail electricity markets, see: <https://www.nrg.com/insights/energy-education/who-s-selling-you-energy.html>.

73 For more information on ancillary services and their role in ERCOT, see: <https://www.ercot.com/files/docs/2024/10/07/ERCOT-Ancillary-Services-Trending-Topic.pdf>.

74 ERCOT, *Yearly Peak Demand*

75 Paul Cobler, “Texas forecast to be top market for data centers in two years, increasing grid demand,” *The Texas Tribune*, January 20, 2026.

76 ERCOT, *Long Term Load Forecast*, 2025.

77 This 145 GW figure is an adjusted demand estimate. The raw interconnection requests submitted by Transmission Service Providers (TSPs) totaled 218 GW including about 86 GW for data centers. According to the “ERCOT Long Term Load Forecast”: “ERCOT studied requested MWs versus the peak consumption by Data Center site for Data Centers with in-service dates in 2022 through 2024. The average peak consumption per site was 49.8% of the requested MW. This factor was applied to all non-crypto Data Center Load additions.”

78 ERCOT, *Capacity, Demand, Reserves Report, December 2025*.

current battery technologies provide limited duration storage and remain inadequate during extended weather or other grid-stressing events.<sup>79</sup> Furthermore, due to the phaseout of renewable energy incentives under the Inflation Reduction Act (IRA), some projects will not be built, further reducing projected generation capacity.

While some facilities are deploying small reciprocating engines and gas turbines for on-site backup, the delivery of large-scale combustion turbines required for grid-level reliability is facing significant supply chain delays,<sup>80</sup> further limiting the market's ability to add firm capacity. Additionally, Texas' "scarcity price" framework, under which electricity prices spike during periods of high demand resulting from weather-related events and/or grid emergencies,<sup>81</sup> struggles to incentivize generation fast enough to match demand growth. While intense, scarcity events are too infrequent and unpredictable to underwrite the long-term financing required for such projects.<sup>82,83</sup>

Administrative and operational challenges further exacerbate this supply-demand mismatch. In December 2025, ERCOT reported that it was monitoring roughly 226 GW of large load<sup>84</sup> interconnection requests, up from about 63 GW at the end of 2024, with roughly three-quarters of these requests from data centers.<sup>85</sup> In response to this meteoric increase, Texas stakeholders have raised concerns about "phantom" or duplicative interconnection requests: projects submitted speculatively or in parallel at multiple locations to allow developers to explore multiple site options and potentially expedite the siting process.<sup>86,87</sup> Uncertainty surrounding the legitimacy of existing requests further complicates long-term grid planning.

#### 4.2.2. Clustering, Congestion, and Reliability

As in Virginia, data center clusters are exacerbating grid stress. Dallas County alone is projected to have about 10 GW of large loads (defined as customers requiring 75 MW or more of power<sup>88</sup>) by 2030.<sup>89</sup> ERCOT's 2024 constraints report identifies roughly \$14.9 billion in planned transmission projects through 2030 (including major upgrades in Dallas County, San Antonio, Temple, and West Texas) to relieve existing constraints.<sup>90</sup> BTM arrangements are also raising reliability concerns. In its *Characterization and Risks of Emerging Large Loads* white paper, the North American Electric Reliability Corporation (NERC) describes events in which extended low-voltage conditions prompt large loads within ERCOT to drop offline or transfer to back up generation over a short period.<sup>91</sup> While data centers can rely on backup generation to continue operations, the abrupt loss of these loads introduces instability that affects power availability and quality for other customers. Conversely, the experience of Winter Storm Uri (2021) heightened political sensitivity to inequities in load-shed decisions,

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79 "Average duration of batteries operating is ERCOT to 1.65 hours", Modo Energy, [ERCOT Annual Buildout Report: Battery capacity reaches 14 GW entering 2026](#).

80 Tsvetana Paraskova, "U.S. Power Boom Triggers Global Gas Turbine Shortage," *Oil Price*, February 4, 2026.

81 For more information, see: <https://www.nrg.com/insights/energy-education/what-texas-businesses-need-to-know-about-scarcity-pricing-this-s.html>.

82 Raúl Bajo Buenestado, *Operating Reserve Demand Curve, Scarcity Pricing and Intermittent Generation: Lessons From the Texas ERCOT Experience*, Baker Institute of Public Policy, 2020.

83 ERCOT, *State of the Grid*, 2024.

84 Loads greater than 75 MW.

85 ERCOT, *System Planning and Weatherization Update*, December 2025.

86 Ian Goldsmith and Zach Byrum, "Powering the US Data Center Boom: Why Forecasting Can Be So Tricky," World Resources Institute 2025.

87 Baker Botts, *Texas Senate Bill 6: Understanding the Impacts to Large Loads and Co-located Generation*, 2025.

88 ERCOT, *Questions and Answers About the Large Load Interconnection Process*, 2025.

89 ERCOT, *Regional Transmission Plan*, 2024.

90 ERCOT, *Report on Existing and Potential Electric System Constraints and Needs*, 2024.

91 National Electricity Reliability Council, *Long-term Reliability Assessment*, 2024; North American Electric Reliability Corporation, *Characteristics and Risks of Emerging Large Loads*, 2025.

especially cases in which residential customers lost power while certain large industrial facilities remain online.

### 4.2.3. Cost Allocation

ERCOT recovers investments by socializing costs to all ratepayers. Under the Four Coincident Peak (4CP)<sup>92</sup> methodology, transmission costs are allocated to customers based on their contribution to system peak demand during four designated intervals in the summer months.<sup>93</sup> While this approach reflects the shared nature of the grid, it has come under increased scrutiny as large, localized loads drive the need for substantial network upgrades.

In addition, ERCOT is planning large long-distance lines to connect new load concentrations in DFW with renewable generation projects in West Texas. Furthermore, ERCOT's Independent Market Monitor report highlights that Large Flexible Loads (primarily crypto miners), in West Texas are effectively "gaming" the 4CP methodology by strategically predicting peak windows and curtailing usage during these periods. While this strategy reduces their operating costs, the operators are shifting a disproportionate share of transmission costs onto other ratepayers. Due to these combined dynamics, there are growing calls to revise the existing cost allocation formula to reflect the sources of demand driving additional transmission investment.<sup>94</sup>

## 4.3. Institutional Response

Texas has passed legislation to address several of these challenges. In June 2025, the Texas State Senate passed Senate Bill 6 (SB6), a package of planning, interconnection, cost-sharing, transparency, and operational reforms aimed at strengthening and protecting the state's energy grid. The law formalizes ERCOT's Large Load Interconnection Study (LLIS) process<sup>95</sup>; directs the Public Utility Commission of Texas (PUCT) to determine new cost allocation mechanisms for incremental grid loads; and requires improved disclosure to reduce speculative filings – among other measures.<sup>96</sup> These changes are discussed below.

### 4.3.1. Screening and Staging Large-Loads

Texas has responded to the surge in large-load interconnection activity by strengthening front-end screening and creating clearer conditions for energization. Texas Senate Bill 6 (SB6<sup>97</sup>) requires greater discipline at the front end of the interconnection process. The legislation authorizes the PUCT to establish standardized interconnection rules for large-load customers and requires applicants to provide more complete and credible information, including disclosure of duplicate or parallel interconnection requests. It also enables the Commission to require investors to pay upfront study fees, thereby reducing incentives for speculative filings and helping ensure that only serious projects enter the queue.

In parallel, ERCOT has moved towards a conditional and staged interconnection approach. Large loads

92 For more information on the Four Coincident Peak methodology and usage, please see: <https://blog.gridstatus.io/predicting-ercot-4cp/>.

93 ERCOT, *ERCOT Four Coincident Peak Calculations*.

94 Independent Market Monitor, *2024 State of the Market Report for the ERCOT Electricity Markets*, Potomac Economics, May 2025.

95 ERCOT, *Market Notice M-A052125-02*, "Partial Implementation Details of NPRR1234/PGRR115," ERCOT, November 25, 2025.

96 Cameron Sabin, Gabriel Salinas, and Kseniia Kolontai, "Important Texas Regulatory Updates for Data Centers," Mayer Brown, July 3, 2025.

97 Texas Legislature Online, *Senate Bill 6 text*, 2025.

seeking rapid interconnection are now subject to enhanced reliability studies, with ERCOT determining how much load can be served safely on existing infrastructure. Where necessary, service to new data centers or other large loads may be initially limited, with additional loads permitted only after transmission upgrades or other mitigation measures are completed. This approach seeks to preserve reliability while allowing development to proceed in a phased manner.

SB6 also addresses concerns about large loads attempting to bypass reliability and planning review through co-location or BTM arrangements. The law establishes a new mandatory pre-approval process for certain BTM operations, requiring ERCOT studies and PUCT approval before such facilities may deploy on-site generation. Applicants must demonstrate that their backup generation, transfer equipment, and operating protocols will not destabilize the grid during outages or transitions.

### **4.3.2. Reliability and Operational Controls**

Beyond the volume of new demand, ERCOT now reviews whether the loss of one or more facilities during a disturbance could trigger cascading load reductions at a scale that threatens frequency or voltage stability. Where such risks are identified, ERCOT may require mitigation measures, impose operating limits, or delay full energization until system conditions improve. As ERCOT's reserve margins tighten due to the deployment of large discrete loads, legislators seek to ensure that households and essential services are prioritized during future emergencies. To address this goal, SB6 complements the technical measures by directing PUCT and ERCOT to ensure that large-load customers, such as data centers, are capable of curtailment during grid emergencies.

### **4.3.3. Cost Responsibility**

In addition, SB6 directs the Commission to ensure that large-load customers pay a reasonable share of the interconnection and transmission-related costs incurred on their behalf. This reflects growing concern that highly concentrated, fast-moving demand could impose costs on the broader system if not aligned with appropriate cost responsibility. While the statute does not prescribe a specific formula, it initiates a regulatory process to clarify how cost causation should be calculated. This process has sparked debate. Utilities argue that “reasonable” means “but-for” causation (i.e. if you caused the upgrade, you pay 100% of the costs). Data centers counter that since the grid is a shared network, there should be a broader sharing of costs.<sup>98</sup> While the issue remained unresolved as of the time of writing, the cost-allocation choices made in Texas will likely influence policies enacted elsewhere across the country.

### **4.3.4. Addressing Insufficient Transmission and Generation**

Recognizing the lack of market incentives for new transmission and generation infrastructure, the state created the Texas Energy Fund (TEF), which provides up to \$10 billion in low-interest loans and grants for new dispatchable generation, gas storage, microgrids, and transmission modernization.<sup>99</sup> The program signals a willingness to use public subsidies to backstop reliability. Furthermore, TEF complements scarcity pricing by providing a capital-cost bridge for developers who might not otherwise invest based on volatile market revenues alone.<sup>100</sup>

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98 Public Utility Commission of Texas, *Filings for Docket 58484*, December 2025.

99 Texas Legislature Online, *SB 2627*, 2023.

100 Includes up to \$7.2 billion for low-interest loans to construct or modernize dispatchable generation; \$1.8 billion for transmission and critical-facility modernization; and \$1.0 billion reserve for non-ERCOT areas and grid resilience grants.

Since 2022, investments in strengthening infrastructure and better congestion management have led to a gradual decline in congestion costs.<sup>101</sup> However, ERCOT recognized the need for new large-scale transmission infrastructure to connect generation in West Texas to load clusters in the East. Accordingly, in 2024–25, ERCOT and the PUCT approved roughly 2,500-mile, 765-kV backbone transmission plan<sup>102</sup>; while this line was intended initially to support electrification in the Permian Basin, it will ultimately link major load pockets across the state.

#### 4.4. Texas Takeaways

Like Virginia, the Texas experience underscores the emerging challenges of coordinating governance across planning, regulatory, and operational institutions. SB6 represents a positive step to address some of these challenges. To contain near-term reliability risks, Texas has strengthened front-end screening, clarified emergency curtailment expectations, and begun to revisit how infrastructure costs should be assigned. These measures represent a shift away from passive reliance on market signals toward more explicit governance of large-load integration. At the same time, our analysis highlights several unresolved structural challenges that will shape Texas’s ability to accommodate continued growth.

First, the sequencing problem persists: demand is arriving faster than generation and major transmission upgrades can accommodate. While the TEF and high-voltage transmission corridors are steps in the right direction, they address only a fraction of the projected demand. Additional interventions will be required to support supply adequacy and transmission expansion. That said, some constraints (most notably supply chain limitations for large equipment) remain beyond the state’s control and will affect timelines going forward.

Second, cost allocation is in transition. While SB6 explicitly directs official review of cost responsibility and cost causation calculations, the regulatory process will take time. As a result, substantial capacity investments may still be committed under the existing rules, governing the allocation of costs; this dynamic will catalyze continued concerns among residential and commercial ratepayers, who face higher costs without concrete benefits.

Lastly, administrative capacity remains a point of concern. Developers and utilities alike have questioned whether transmission service providers and ERCOT possess sufficient resources to process and study the growing volume of large-load requests, particularly given the additional screening and reliability requirements in place. In response, ERCOT has begun exploring alternative study approaches, including the potential use of batch processing, to improve efficiency and consistency in evaluating requests.

Planning under these conditions remains challenging. Stop-gap measures like the interim load adjustments used for forecasting purposes may help manage near-term uncertainty but are not a durable basis for committing investments in long-lived infrastructure. More broadly, institutional coordination has become more complex. Load approval processes must be better synchronized with transmission development and generation investment decisions. Absent such coordination, tighter screening alone may delay projects without meaningfully reducing system risk.

## 5. Texas and Virginia: Two Sides of the Same Coin

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<sup>101</sup> ERCOT Independent Market Monitor, *State of the Market Report 2024*.

<sup>102</sup> ERCOT, 2024 *Regional Transmission Plan*, 2025.

The experiences of Virginia and Texas show how AI-driven data center growth is posing fundamental challenges to the institutional frameworks that underlie the planning, regulation, and operation of the electricity grid. The case studies underscore the sweeping challenges of coordinating governance across planning, regulatory, and operational institutions. In both states, rapid and concentrated digital load growth is colliding with infrastructure timelines, interconnection procedures, and planning tools designed for a different era.

Furthermore, fundamental differences in market design impact the pace and ability of each state to legislate. As an RTO, PJM must consider the needs of all states within its jurisdiction; accordingly, it faces significant multi-stakeholder coordination challenges that hinder timely reform. ERCOT, by contrast, needs only consider dynamics within the Texas region, thus lowering policy barriers. Despite these differences, both jurisdictions now face the same core challenges: securing credible demand forecasts, allocating the costs of new transmission fairly, and updating reliability mechanisms to manage large loads that behave very differently during grid disturbances.

Across both states, policymakers are balancing the goal of attracting investment with growing concerns about fairness and risk allocation. Regulators are under pressure to sift speculative filings from genuine investments, avoid risks of stranded assets, and ensure that additional infrastructure investments do not disproportionately burden ratepayers. At the same time, both states are considering how traditional definitions of reliability may need to be reconsidered to account for data center loads. Effectively, the responses are shifting the approach from open access principles towards regulatory gatekeeping and risk segmentation. While Texas SB6 introduced wide-ranging reform, legislative stalemate and stakeholder debate have precluded meaningful changes within Virginia. Differences in the states' ability to pass reforms, as well as the content of said reforms, will impact not only future data center market development but also the severity of grid- and local-level impacts.

Historically, increasing government intervention in a high-growth sector has seldom led to the most economically efficient outcomes. By adding barriers like segregated tariffs and additional technical assessments, these states may be slowing down deployment and raising costs. However, these steps hedge against the "worst-case" risks, including total grid collapse, widespread community-level damages, and/or billions of dollars in stranded assets. There is an inevitable trade-off between efficiency and social priorities. Where to draw the line between these two sets of goals will challenge regulators for the remainder of this decade.

Virginia and Texas are early movers into a future that many other states could soon face. Their experience points to a common set of policy questions that jurisdictions preparing for AI infrastructure growth must address. The answers will look different across markets, but the underlying challenge remains: how to redefine the rules of grid governance to match the scale, speed, and system impacts of 21<sup>st</sup> century digital infrastructure.

# Appendix I:

## Virginia Electricity Market and Utility Structure

Virginia's electricity system sits within PJM Interconnection, the regional transmission organization that coordinates the flow of power across 13 states and the District of Columbia.<sup>103</sup> PJM balances electricity supply and demand every five minutes, operates competitive wholesale markets, and plans regional transmission to maintain grid reliability.<sup>104</sup>

PJM operates two core markets: the energy market and the capacity market.<sup>105</sup> The energy market determines electricity prices using day-ahead and real-time auctions in which generators submit price offers. PJM selects the lowest-priced offers needed to meet demand at each location, and the highest offer used sets the locational marginal price. Prices rise when demand increases or transmission is congested. The capacity market, on the other hand, ensures sufficient generation to meet the system's future peak.<sup>106</sup>

To secure this future capacity, PJM conducts an annual auction three years in advance of energy delivery. Generators that clear the auction commit their availability for that future delivery date and receive fixed payments for providing reliability, even if their electricity is not always dispatched in the energy market. This system provides power plant owners with a predictable revenue stream to cover fixed costs such as maintenance and financing, while ensuring sufficient supply will be available to handle extreme weather or unexpected outages. Together, the energy and capacity markets form the backbone of how PJM maintains grid reliability.

Dominion Energy is Virginia's primary utility. It owns most of the generation, transmission, and distribution infrastructure in its service territory and must provide power to all connected customers. Dominion participates in PJM's markets but remains regulated by the Virginia State Corporation Commission (SCC), which approves its rates, investments, and resource plans. Other market participants include:<sup>107</sup>

- Generators that produce electricity from sources such as gas, nuclear, solar, or wind and sell it into PJM's wholesale market.
- Load-serving entities (LSEs), such as Dominion or competitive retail suppliers, that sell electricity to customers within PJM's domain.<sup>108</sup>
- Transmission owners that build and maintain the high-voltage lines that move power between regions.
- End users (including data centers and residential consumers) that consume electricity either through standard tariffs or special large-load contracts.

For additional information on PJM's structure and operations, please see the *PJM Knowledge Community* website: [https://pjm.my.site.com/publicknowledge/s/topic/OTOTS0000002rh14AA/general?language=en\\_US](https://pjm.my.site.com/publicknowledge/s/topic/OTOTS0000002rh14AA/general?language=en_US).

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103 PJM Interconnection, "Territory Served," accessed October 22, 2025.

104 Federal Energy Regulatory Commission, *An Introductory Guide for Participation in PJM Interconnection, L.L.C. Processes*, April 11, 2025.

105 PJM Interconnection, *Understanding the Differences Among PJM's Markets*, March 10, 2025.

106 PJM Interconnection, *PJM Capacity Market: Promoting Future Reliability — Fact Sheet*.

107 PJM Interconnection, *PJM Manual 12: Balancing Operations*.

108 "How to become a Load Serving Entity (LSE), *PJM Knowledge Community*, 2024.

## Appendix II: Texas Electricity Market and Utility Structure

The Electric Reliability Council of Texas (ERCOT) is an independent system operator (ISO) that manages the flow of electricity to more than 26 million Texas customers, covering about 90% of the state's electricity consumption. Unlike PJM, the ERCOT grid is largely isolated from the rest of the United States. It relies almost entirely on internal generation resources to meet demand.<sup>109</sup> ERCOT operates a wholesale “energy-only” electricity market.<sup>110</sup> Generators are compensated for the actual electricity delivered and for ancillary services rather than receiving fixed payments for being available.

Texas does not have a centralized capacity market. Rather, the market relies on “scarcity pricing” to drive investment.<sup>111</sup> During periods of high demand and tight supply, wholesale prices can spike significantly to a cap of \$5,000 per MWh (the High System-Wide Offer Cap) to signal the need for more generation.<sup>112</sup> In this design, investment in new power plants is driven by these price signals rather than forward procurement of capacity.

While ERCOT manages the grid and the wholesale market, the retail and utility structure is fully unbundled in most of the region. The Public Utility Commission of Texas (PUCT) oversees the market and regulates rates for transmission but does not set generation prices.<sup>113</sup> Market participants include:

- Generators that operate in a competitive market and produce electricity from sources such as gas, wind, solar, and nuclear. They are paid only for the energy they generate or the ancillary services they provide.
- Transmission Service Providers (TSPs) that own and maintain the high-voltage lines that move power across the state. They are regulated entities that recover costs through rates approved by the PUCT.
- Retail Electric Providers (REPs) that purchase power from the wholesale market and sell it to end-use customers. In the deregulated parts of ERCOT, customers choose their REP to compete on price and service plans.
- Qualified Scheduling Entities (QSEs) that act as the financial interface between market participants and ERCOT. QSEs submit energy schedules and bids on behalf of generators and load-serving entities as well as settle financial payments with ERCOT.<sup>114</sup>

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109 ERCOT, “[Fact Sheet](#),” November 2021.

110 Public Utility Commission of Texas, “[Substantive Rules Chapter 25: Electric](#),” accessed January 2026.

111 ERCOT, “[High System-Wide Offer Cap \(HCAP\) Parameter Change](#),” February 28, 2022.

112 Public Utility Commission of Texas, “[Emergency Pricing Program Proposal](#),” September 14, 2023.

113 Texas Legislature, “[Utilities Code Chapter 39: Restructuring of Electric Utility Industry](#),” accessed January 2026.

114 ERCOT, “[Qualified Scheduling Entities](#).”