# Predicting the Unpredictable: Forecasting Data Center Load Growth in a Reliability Region

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**ABSTRACT**

Large data centers are the fastest-growing electrical end-use in the U. S. economy. This growth has put pressure on utilities and grid operators to expand generation and transmission capacity and on regulators to manage the rate and environmental impacts of this expansion. Reliable regional forecasts are essential to guide an orderly build-out of critical assets for economic growth. This paper presents the methods and findings of a project to produce a ten-year forecast of data center electricity demand and consumption for the Electric Reliability Council of Texas (ERCOT).

Utilities and grid managers have experienced serious challenges in producing defensible data center load forecasts for their service areas. In the short term, grid managers have found that grid interconnection requests by data center developers far exceed the data center capacity ultimately built. Longer term forecasts are clouded by fundamental uncertainties over the evolution data center business models and technology.

The study team deployed an innovative sequence of approaches to address these uncertainties, including a multi-method validation process for site level records of data centers in operation and pipeline stages, interval load research on a sample of operating data centers to develop ramp rates and load factors, and a county-level regression model of data center location to estimate shares of data center growth in ERCOT and non-ERCOT regions. The analysis yielded 10-year forecasts of data center coincident and non-coincident load and energy use, using methods that are replicable in other regions.

## Introduction

This paper presents the methods and results of forecast electricity load and use[1] by large data centers in the Electric Reliability Council of Texas (ERCOT) reliability area covering the period 2025 through 2035. The project team initiated research and data development activities in August 2025 and completed analysis and refinement of the forecast in February 2026.

### Objectives

The Council's principal objectives for this project are as follows:

- Develop base, low, and high growth projections in MWs for total large data center load in total and by data center type.

[1] "Load" as used in this report refers to the amount of electricity demand from one or more customers on the grid at a single point of time, measured in kilowatts (kW) megawatts (MW) or Gigawatts (GW). "Electricity use" or "energy" refers to the amount of electricity used over a defined period such as a day, month, or year, measured in megawatt-hours (MWh), gigawatt-hours (GWh), or terawatt-hours (TWh).

- Develop forecasts of the percentage of authorized load used by different types of centers starting from their initial energization from the grid. We refer to that pattern as the load ramp.

ERCOT's Load Analysis and Forecasting Department worked closely with its consultants in reviewing proposed methods and interim results. ERCOT also provided important information to the study, including interval load data series for 54 data centers operating on the ERCOT system.

**Market and Policy Context**

The two years prior to this study witnessed enormous growth and changes in the data center industry. These changes in turn elicited urgent action by utilities, grid operators, regulators, and elected politicians to accommodate rapid data center growth while mitigating risks to the electric system and its many customers and stakeholders. The most important of these changes were as follows:

- **Surge in installed capacity of data centers**.[2] Between August 2024 and the end of July 2025, the installed capacity of data centers operating in the ERCOT region grew from 5.8 GW to 9.0 GW, an increase of 55%. Nationwide installed capacity increased by 13.1 GW or 42% over the same period.
- **Surge in capacity of data centers in the development pipeline**. Over the same period, the capacity of announced data center projects in construction or planning stages grew from 9.3 GW to 29.3 GW in the ERCOT region, an increase of 182%. Nationally, capacity in the construction and planning pipeline increased 113.1 GW or 168%
- **Impact on data center energy use**. Most industry participants and analysts identify uptake of AI-powered cloud services as the major driver of current and future growth in data center load and energy use. Among these analysts, there is a wide range of opinion regarding the pace at which end-users will adopt AI technology, the evolution of business models and technologies to serve that demand, the availability of financing and material components to build the infrastructure for the new IT capability, and the ability of the electricity system to supply the required power. Recent cancellations or indefinite postponements of several large data center projects have heightened this sense of uncertainty. (Wilkenson 2025; Data Center Dynamics 2026) The impact of these uncertainties is reflected in the dispersion of growth trajectories in national and international forecasts produced by reputable academic, government, and business research organizations. These forecasts predict annual rates of growth over the period 2025 – 2035 ranging from 5% to 15%. (International Energy Agency 2025; Shehabi et al. 2024; Electric Power Research Institute 2026; Bloomberg New Energy Finance 2025)
- **ERCOT Transmission Grid Expansion Plan**. Partly in response to observed and forecasted growth in large loads, of which data centers are the major component, ERCOT, in December 2025, approved several large transmission projects to increase

[2] In this report the term "Capacity" or "Installed Capacity" means the sum of potential demand from the following energy systems in operational data centers: IT servers, storage, and networking equipment, power management and distribution, and cooling.

capacity and reliability of service. The total cost of these projects is estimated at $9 billion. (ERCOT 2025a)

- **Texas Senate Bill 6**. In June 2025, Governor Abbot signed into law a bill that requires ERCOT, Transmission and Distribution Service Providers (TSPs), and the Public Utilities Commission of Texas (PUCT) to work together to implement a comprehensive set of policies and procedures to increase the efficiency and transparency of large load interconnection and to mitigate risks that ratepayers will bear an unfair proportion of the costs to serve those large loads.
- **ERCOT Large Load Interconnection Process**. ERCOT has been reworking its interconnection process for large loads (defined as those of at least 75 MW) since 2022. Through this process, ERCOT is putting in place a "batch" study process to expedite completion of interconnection studies, rules for dealing with colocation and net metering situations, and processes to take curtailment capabilities into account in assessing system impacts of new load.
- **Previous ERCOT Forecasts**. ERCOT has undertaken several forecasts of data center load. The most recent of these, presented in April 2025, predicted growth in maximum data center load from 8.2 GW in 2025 to 37.9 GW in 2030, 27% of the forecasted system maximum load in that year (ERCOT 2025c)

## Summary of Approach and Methods

Our approach to meeting the project objectives focused on acquiring the best data available within the scope and schedule to characterize, quantify, and, to the extent possible, reduce the major uncertainties clouding regional forecasts of data center load and energy use. Principal among these are:

- The probability and timing of completion and initiation of IT services among facilities currently in planning and construction.
- The rate at which projects will be added to the national pipeline of facilities in planning and construction phases, as well as the size and operating characteristics of those facilities. This will depend on the growth trajectory of AI-powered products and services.
- Trends in the energy efficiency (measured as energy use per unit of IT workload completed) and load flexibility of major data center energy systems.
- Current and future usage patterns of installed data center capacity.
- The course of changes in IT service business models and regulatory frameworks which affect the relative attractiveness of different regions for data center location.
- The ways in which location of new data center capacity will play out in response to those technical, business, and regulatory changes.

### Data Sources

The principal data sources supporting the forecast were as follows.

- **Baxtel Facility-Level Database of U. S. Data Center Projects.** Baxtel collects information on individual data centers projects worldwide. It compiles this information into a structured database that includes information on each identified site, including type of data center, size of the data center in square feet and MW capacity by stage of development (Operational, Construction, Planned), ownership, address and geocoordinates, and in-service date. Baxtel's U. S. database contains records on 3,700 data center sites. For this project Baxtel provided full U. S. databases from two points in time: August 2024 and July 2025.

- **ERCOT TSP Grid Connection Request Log.** ERCOT provided a log of grid interconnection requests submitted by data center developers to their local Transmission and Distribution Service providers. The database contained information on 244 interconnection requests, including facility type, milestones reached (e.g. interconnect agreement, power supply contract), expected start date, expected capacity (MW) at start date, and geographic coordinates.
- **County-level data on data center location drivers.** We used commercially-available data sets to develop nationwide county-level data series on locational characteristics that academic literature and previous identified as important factors in data center location decisions: proximity to fiber trunks, availability of tax benefits, proximity to end user markets, population density, susceptibility to environmental risks such as floods, and labor costs.
- **ERCOT interval load data.** ERCOT's load research team provided the study team with Interval load data from a sample of 54 data centers served by ERCOT substations. The interval data files contained readings from the inception of commercial service through August 31, 2025. The time period covered by the files ranged from 1 to almost 6 years. We used these files to build aggregate load characterization statistics for the different data center types.

**Recent U. S. data center load and energy use forecasts.** Several reputable research, industry, academic, and business organizations have devoted many years and extensive resources to developing, maintaining, and updating forecasts of data center energy use in the United States. In many cases, their efforts are subjected to independent expert review. (International Energy Agency 2025; Shehabi et al. 2024; Electric Power Research Institute 2026; Bloomberg New Energy Finance 2025) The study team recognized that we could not improve upon these analyses within the scope and schedule of this project. We therefore opted to use their results to establish base, high, and low annual forecasts of data center capacity additions at the national level. We then used the results of the location model to forecast the share of annual additions to U. S. installed data center capacity that would locate in the ERCOT region.

### Analytic Components of the Forecast

Figure 1 summarizes the major analytical components of the forecast, the data used in, and key findings for each component.

<table>
<tr><th>ANALYSIS OBJECTIVES/<br>Activities</th><th>SOURCES</th><th>KEY RESULTS/<br><u>Comparisons</u></th></tr>
<tr><td colspan="3">SHORT-TERM DATA CENTER CAPACITY FORECAST: Analyze current pipeline of projects in planning and construction to forecast capacity additions 2025 – 2027</td></tr>
<tr><td>• Compile info on capacity (MW) and projected start date for all projects in ERCOT in construction (N = 85) and planning (N =101) phases.<br>• Validate stage, size, likelihood & timing of completion for stratified sample accounting for 55% of population MW.<br>• Expand sample results to population.</td><td>• Baxtel database 2024, 2025<br>• Online resources including local and industry press, permitting databases, satellite imagery files, database of regulatory records<br>• Developer interviews</td><td>• 2025 Installed Capacity, including crypto: 10.2 GW<br>• 2027 Base Forecast: 35.8 GW<br>• 2027 Low Forecast: 19.4 GW<br>• 2027 High Forecast: 39.4 GW<br>• <u>ERCOT Forecast</u>: 37.9 GW</td></tr>
<tr><td colspan="3">LONG-TERM DATA CENTER CAPACITY FORECAST: Fit model of county-level share of installed capacity growth 2024 – 2025 using Baxtel database observations for 2024 and 2025. Factor using third-party long-term national data center and crypto mining energy and capacity forecasts.</td></tr>
<tr><td>• Fit regression model of county share of U. S. growth in installed capacity 2024 – 2025<br>• Compute annual increase in U. S. data center capacity 2026 – 2035 from 3rd party forecasts representing Base, High, and Low estimates.<br>• Allocate share of U. S. growth to ERCOT region per model results.</td><td>• Baxtel database 2024, 2025<br>• Public and commercial databases of locational influences: population, employment, proximity to fiber trunk lines<br>• National forecasts from LBNL, IEA, Bloomberg NEF</td><td>• Significant variables: share of pipeline capacity, share of population, proximity to fiber trunk<br>• Base Case Forecast of Installed Capacity in ERCOT<br>2030: 42.0 GW<br>2035: 48.0 GW</td></tr>
<tr><td colspan="3">LONG-TERM LOAD AND ENERGY USE FORECAST: Use interval load datal analysis of 54 data center sites to estimate aggregate ramp rate (time from service inception to start of IT operations), non-coincident peak load, coincident peak and capacity factor. Apply results to capacity forecasts to forecast load and energy use.</td></tr>
<tr><td>• Clean load data, convert to % of approved interconnect size, compile by data center type.<br>• Forecast aggregate ramp rate, non-coincident peak, coincident peak, and capacity factor for each data center type using standard forecasting methods.</td><td>• Interval load data for 54 facilities, ranging in coverage from 1 to almost 6 years.<br>• Information from ERCOT staff to characterize data center type for each site in interval load sample.</td><td>Ramp Rate in days from service start:<br>• Mean: 19 – 281, varies by DC Type<br>• Median: 0 – 88, varies by DC Type<br>Capacity Factor<br>• Mean, 20% of approved interconnect MW in first 1,000 days increasing to 30% by 2,000 days<br>Coincident Peak<br>• 3.3% of total ERCOT coincident peak in 2025 to 9.2% in 2035.</td></tr>
</table>

Figure 1: Summary of Analytical Components, Data Used, and Key Findings

**Pipeline Analysis: Short-term Data Center Capacity Forecast**

According to reports from developers, the time required for project planning and permitting in clustered in the range of 4 – 6 years in ERCOT, and construction took 1.5 – to 2.5 years. Thus, any additions to capacity in the years 2025 – 2027 would come from projects listed in the TSP interconnection log or shown as in construction or planning stages in the Baxtel database. The pipeline analysis consisted of the following steps.

- **Validation of sample project listings.** We selected a sample of forty-one sites of the 407 listed in ERCOT in 2025 and 40 of the 244 sites in the TSP interconnection request log to validate the information they contained. For each sample site: we used these sources to assess project status and likelihood of completion, timing of completion and start of IT operations, phasing, and capacity of the project.

- **Allocation of capacity in the validation to forecast years.** For each site in the validation samples, we assigned a start date for commercial operation (year), applying a set of decision rules to the information gathered through the validation process. We also assigned a capacity at that start date and increments at later dates as suggested by the validation findings.
- **Expansion of validation findings to the population of Baxtel listings.** We expanded the findings from the validation sample to the population of all Baxtel listings in the ERCOT region for each major data center type: colocation, hyperscale, and cryptocurrency mining. For TSP sites, we determined that the validation sample contained most of the viable projects in the population of interconnection requests. This process resulted in annual forecasts of total additions to capacity from the 2025 pipeline of projects in construction and planning stages through 2030.

**Long-term Data Center Capacity Forecast**

The pipeline analysis provides a strong basis for forecasts through 2027, because it takes time to plan and construct facilities. Forecasts for subsequent years need to account for new projects entering the planning stage, some of which will be built over time. The additions in ERCOT's territory will be driven by US-wide demand for data center capacity, along with factors that influence siting decisions. Hence, the long-term growth model recognizes as key drivers of ERCOT capacity growth 1) the total additions to US capacity each year and 2) the share of that growth that will fall in ERCOT's territory.

The key steps in building the long-term forecast were as follows:

1. **Fit county-level growth share models for installed (operational) capacity and for total capacity in all stages.** Using the Baxtel 2024 and 2025 data sets, We calculated the change in capacity from 2024 to 2025 at the county-level for each stage: installed (operational), in construction, and planning. We then fit two regression models of the share of total U. S. data center growth that falls to an individual county as a function of the county-level economic data: one model for installed capacity, the other for the sum of capacity in all three stages – installed, in construction, and planning.
2. **Calculate additions to installed capacity at the national level.** For each year beginning with 2025, we calculated the next year's increase in U. S. installed and all-stages capacity by applying the proportional increase in the external forecasts for that year to the current year's capacity.
3. **Allocate national growth to counties using the growth share models.** We estimated annual additions and total installed and pipeline capacity at the county level for each in the forecast period, starting with 2026. The steps in this process were as follows:
    a. Apply the fitted installed capacity growth shares model to the U. S. growth in installed capacity to determine the added installed capacity for each county.
    b. Apply the fitted all-stages growth shares model to the US growth in the pipeline (construction plus planning) plus installed capacity to determine the added all-stages capacity for each county.
    c. Using the county-level increments and prior year's installed and pipeline capacity, calculate each county's installed and pipeline capacity for the next year.
    d. Repeat for the next year with the updated county-level quantities.
4. **Aggregate county level results to ERCOT and Non-ERCOT regions.** Aggregate each year's county-level installed and pipeline capacity to ERCOT and the rest of the U.S.

5. **Adjust results to match the short-term forecast through 2027**. We used the results of short-term forecasts described above to represent installed capacity in the ERCOT region for the years 2025 – 2027. We therefore needed to make small adjustments in the calculations to match the 2027 estimates developed through the long-term forecasting process described in Steps 1 – 4 to the short-term forecast results, while maintaining consistency with the external U. S. forecasts.

The model was fit across all counties in the US, using a single year of change data, from Baxtel's 2024 and 2025 facility-level data, aggregated to the county level. Separate models were estimated for the three main data center types: colocation, hyperscale, and crypto and for counties with and without installed capacity prior to 2025. These models identified the following variables with significant explanatory power in the allocation of growth shares to counties:

- Fraction of the U. S. population in the county
- Industrial electricity price for customers in the county
- Installed data center capacity in the previous year
- Pipeline capacity in the previous year
- Presence of long-haul fiber optic trunks in the county

We tested the explanatory value of many other location driver variables suggested by the literature and industry experts: availability of tax credits, labor costs for construction and professional workers, weather conditions (as an influence on cooling costs), and measures of information service user market size. (Pan Fang 2020; Bloomberg New Energy Finance 2025) None of these variables yielded significant regression coefficients, most likely because the measures of prior data center location effectively reflected their influence.

### Peak Load and Energy Forecasts

The study team used interval load data described above to estimate the following load descriptors for each of the major types of data center: colocation, hyperscale, and cryptocurrency mining.

- Time interval from initiation of electric service to commercial operation
- Maximum load (non-coincident peak) as a fraction of the grid connection (in MW) authorized by ERCOT or the local TSP, by year of operation
- Coincident peak load as a fraction of the authorized grid connection
- Load factor (ratio of average load to peak load)

We combined these results with forecasts of installed data center capacity to arrive at forecasts of load quantities typically used in utility and grid planning analysis: non-coincident peak load, coincident peak load, and energy consumption for each data center type. We also needed to calculate these quantities to match external forecasts, which were rendered either in TWh/year of data center energy use or in GW of non-coincident (maximum) data center load on the electric system.

## Data Center Load Forecast

### Short-term Data Center Capacity Forecast

Table 1 displays the results of the short-term forecast of operational data base capacity by type (data center v. crypto) for the years 2025 – 2030, based on analysis of the pipeline of projects in construction and planning phases. The Base, High, and Low cases differ primarily in the assumptions used to assign the year for the start of IT operations. The Base case represents the results of applying decision rules based on industry experience to the validation evidence as consistently as possible. The High case reflects acceleration of the Base case by one year for sites where that is possible. The Low case reflects a delay of one to two years from the Base case, as well as application of completion risk factors.

Note that the analysis only shows the timing of capacity moving into the operating stage for projects that had been identified by Baxtel or the TSPs through 2025. It does not account for the addition of new projects into the planning stage. This accounts for the convergence of the Base, High, and Low cases by 2030. At that point, much of the capacity in planning stages during 2025 will have either reached operating status or been abandoned.

Keep in mind that installed operational capacity does not equal the data center load on the ERCOT system. As discussed in the section on ramp rates and load factors, maximum demand from individual facilities seldom attains authorized interconnection levels or the capacity reported in the press and company websites. Moreover, due to differences in workloads and IT functions, the aggregate load of data centers at a given time falls well below the sum of their maximum demand.

**Table 1. Pipeline Forecast of ERCOT Data Center Installed Capacity: MW**

| | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
|---|---|---|---|---|---|---|
| **Base Case** | 10,219 | 14,650 | 35,769 | 43,881 | 44,821 | 44,846 |
| **High Case** | 10,219 | 30,735 | 39,894 | 44,161 | 44,846 | 45,846 |
| **Low Case** | 10,219 | 13,717 | 19,404 | 39,756 | 44,541 | 44,821 |

### Long-term Data Center Capacity Forecast

Figure 2 displays the long-term forecast of data center installed capacity in the ERCOT region, annually from 2025 to 2035. The figure shows a rapid increase in installed capacity from 2025 to 2027, followed by a relatively flat trajectory through 2035. While this pattern may seem surprising at first, it is consistent with the validation of detailed site level data described above, broader trends in data center location, and results of the growth share model. As mentioned, both ERCOT and other regions around the country experienced an enormous influx of data center projects into the construction and planning pipeline in 2024 and early 2025. Our validation activities found that a large portion of the pipeline projects in the Baxtel data for ERCOT had a high probability of completion with the majority coming online in 2027 and 2028. Nationally, analysis of the Baxtel data sets shows that ERCOT's share of data center growth increased in the early 2020's but levelled off in 2024 as the national pipeline ballooned. Other analysts have noted similar trends. (Arnold 2026) Between 2024 and 2025, the share of data center capacity growth grew for other regions, including the Southwest Power Pool (SPP), Midcontinent Independent System Operator (MISO), and the Southeast (Non-RTO). This trend was reflected and amplified in the growth shares model, which identified the amount and share of installed and pipeline capacity in previous periods as a key predictor of growth. The general shape of the growth curves is also consistent other published long-term forecasts.

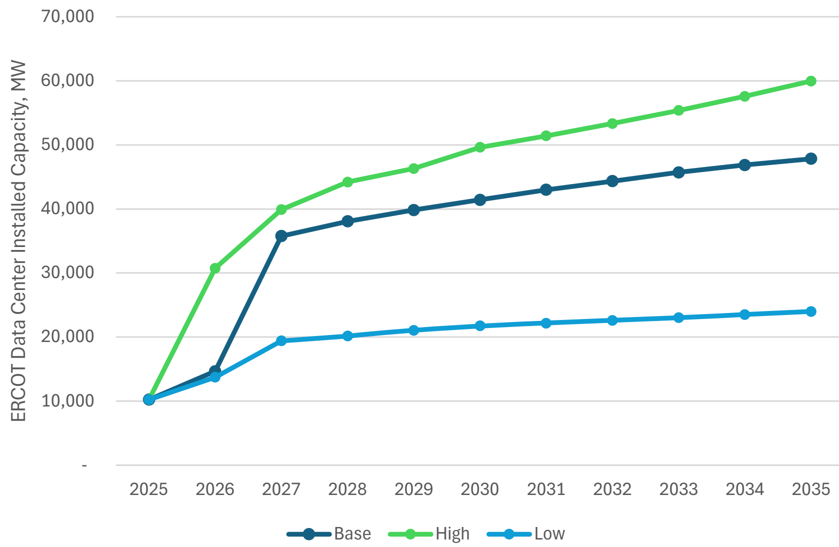


Figure 2. Long-term Forecasts of ERCOT Region Data Center Installed Capacity

### Ramp Rate, Capacity Factor, and Load Factor Analysis

To translate installed capacity into load on the grid, the study analyzed interval load data from existing ERCOT data centers and crypto facilities. The analysis addressed:

- Ramp rates: How long does it take for a facility to begin IT operations once construction is complete?
- Capacity factor: What is the observed peak load as a fraction of approved connection capacity? How does this fraction change over time?
- Coincidence factor: What is the ratio of the system coincident peak load to the noncoincident peak?
- Load factor: What is the ratio of annual energy use to the annual energy use if operating at the noncoincident peak for all hours of the year?

We conducted this analysis separately for each data center type. Multiplying the projected installed capacity by these factors provided estimates of coincident and noncoincident peak load, and of annual energy use.

### Ramp Rates

For each facility, the ramp rate analysis counted the number of days from the first non-zero load data point (interpreted as initiation of activity at the site) to a non-trivial load level (interpreted as initiation of data center/crypto operations). We determined this point in time through visual inspection of the data. Table 2 shows that some facilities become operational almost immediately, while others take multiple years. The median time to from service initiation to start of IT operations is under 3 months.

**Table 2. Days to initiation of IT operation by facility type**

| Data Center Type | Number of Facilities | Mean | 10th Percentile | 25th Percentile | Median | 75th Percentile | 90th Percentile |
|---|---|---|---|---|---|---|---|
| **Crypto** | 13 | 141 | 0 | 3 | 42 | 132 | 305 |
| **Hyperscale--AI** | 6 | 248 | 0 | 0 | 0 | 686 | 800 |
| **Hyperscale--Cloud** | 28 | 289 | 0 | 0.5 | 88 | 446 | 1,042 |
| **Colocation** | 7 | 19 | 0 | 0 | 0 | 38 | 92 |

**Capacity Factors**

Figure 3 summarizes our findings on the capacity factors of data centers in the interval load data sample with at least 4.5 years of IT operating experience. We define capacity factor as the ratio of daily peak demand to authorized grid interconnection (both in MW) for the individual facilities in the sample. The horizontal axis of the chart shows the number of days from initiation of IT operations. The dotted line indicates the number of facilities included in the calculation, referencing the vertical axis on the right. The number of facilities included in the calculations declines over the days-in-operation scale, as fewer facilities have been in operation for longer periods of time.

The solid olive-green line shows maximum capacity factor up to the number of days shown on the horizontal access. This number is important for assessing the system requirements needed to support data centers with a given level of installed capacity. The figure shows loads increasing over the first one to two years of operation, with the average maximum capacity factor levelling off between 40% and 50% after 2 years.

The jagged red line shows the average daily capacity factor for the sample facilities. This number is an indicator of the level of ongoing infrastructure utilization and is important for computing energy consumption (GWh) from forecasted loads in MW. The average daily capacity factor starts out around 20% and continues at that level through the first 1,000 days (2.7 years) of IT operations. It increases gradually to 30% through the end of the 5.5-year period for which we have data.

**Non-coincident Peak Load Forecast**

Figure 4 displays the long-term forecast of non-coincident peak load for all types of data centers in the ERCOT region, annually from 2025 to 2035. Non-coincident peak load is the sum of the peak loads for data centers during the current year in the forecast. We estimated non-coincident peak by applying a non-coincident peak factor to the forecasted installed capacity by data center type. The non-coincident peak factor is the maximum load for a data center as a percentage of its approved grid interconnection size (in MW) averaged over each year after initiation of IT operations. We show the ERCOT most recent adjusted forecast of data center load, issued in April 2025 (ERCOT 2025c) for comparison. Conceptually and computationally, it is similar the non-coincident peak load as developed by for this study.

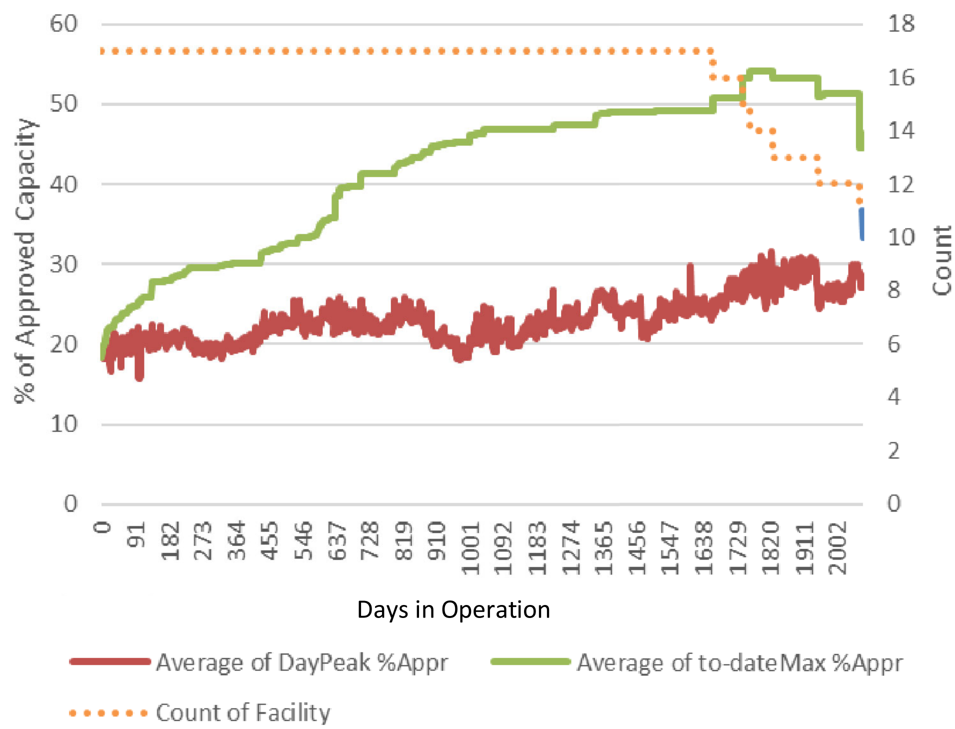


Figure 3. Capacity Factor of Data Centers with at least 4.5 Years of Load History

Our Base and High Case forecasts track closely with ERCOT's Adjusted Forecast through 2027. In subsequent years, the ERCOT forecast continues increasing at a very rapid pace while our forecasts increase more slowly. We believe these results are due to differences in the population data used to forecast data center installed capacity and the method in which load adjustments were calculated and applied to the installed capacity forecasts. Briefly, ERCOT used the TSP interconnection request log as the starting point for its estimates. This list included many large projects with reported start dates in the range of 2027 to 2032, most of which had no identifying information to support validation efforts. ERCOT applied load research findings for projects with start dates in the 2022 to 2024 range to estimate the fraction of requested load that would eventually come on to the system from all projects listed. Projects with later start dates are subject to more contingencies that can lead to delays or cancellations. The short-term forecast relied primarily on Baxtel listings of projects that had been announced in the press or other commercial setting and were therefore more likely to be realized. In subsequent years, our forecasts increased much less rapidly than ERCOT April 2025 forecast. These results reflect the results of the growth share model, which predicts that ERCOT will secure a decreasing share of U. S. data center capacity growth over the latter part of the forecast period.

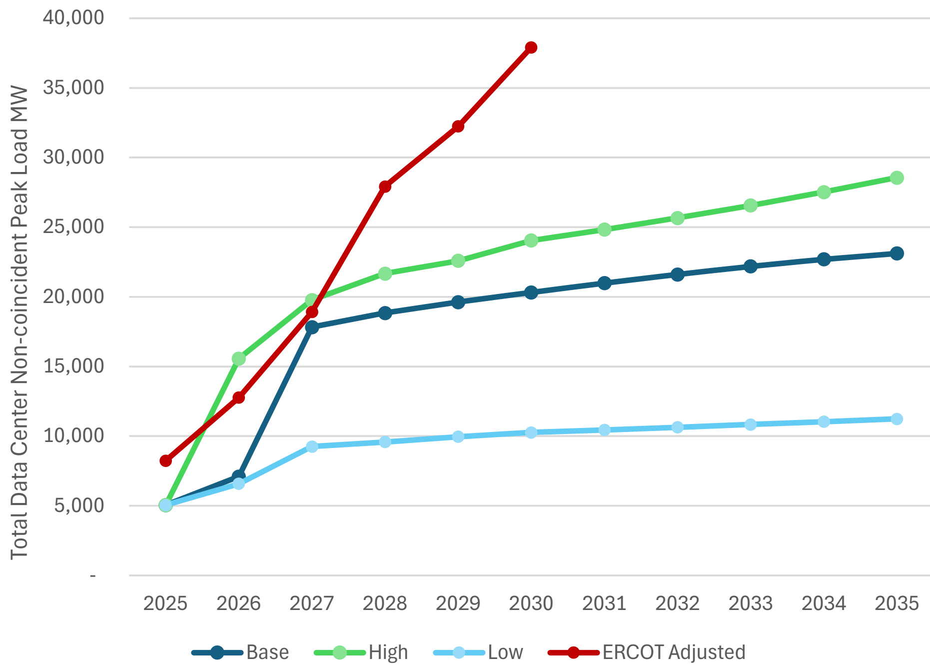


Figure 4. ERCOT Data Center Non-coincident Peak Forecast

Figure 5 shows the non-coincident peak forecast *by data center type* for colocation, hyperscale, and cryptocurrency mining facilities. Over the forecast period, the share of total non-coincident load in crypto facilities is forecast to decrease from 51% in 2025 to 23% in 2035. This trend is already apparent in ERCOT, as several crypto facility developers and operators have begun to convert their facilities to cloud computing data centers. Industry observers have also identified the long-term trend away from energy intensive "proof of work" currencies such as Bitcoin to "proof of stake currencies" such as Ethereum which require much less energy to mine. The share of total non-coincident peak for colocation facilities remains stable in the range of 40% to 45% over the forecast period, while the share in hyperscale facilities increases from 10% in 2025 to 37% in 2035.

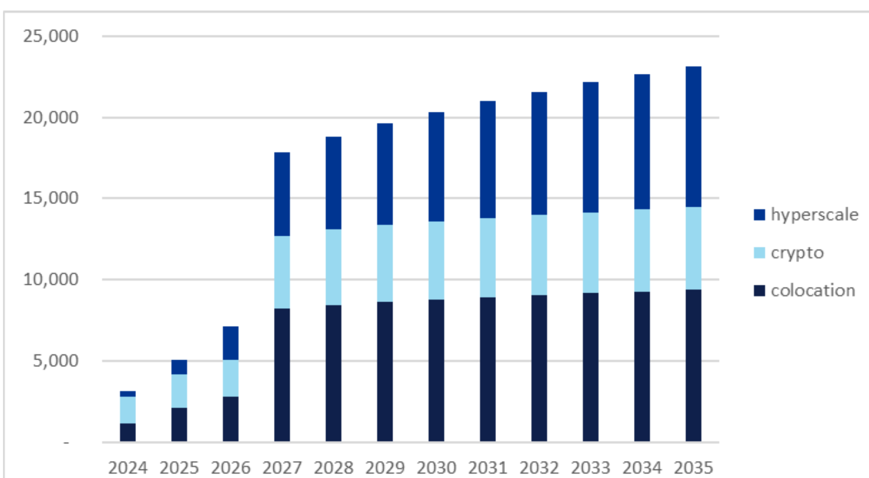


Figure 5. ERCOT Data Center Non-coincident Peak Forecast by Data Center Type

**Coincident Peak Load.** Coincident peak load is the electricity demand of a group or class of customers during the period when utility grid reaches its maximum usage. It is a measure of a customer's or group of customers' contribution to the total system capacity requirements. The coincident peak for each facility was calculated as the average of loads for hours 17 and 18 (4 to 6 pm) on weekdays, June through September. We calculated the coincident peak capacity factor as the ratio of this average load during the peak period to the approved capacity. The coincident peak load for each facility type and year was calculated by multiplying the forecasted installed capacity by these factors. Figure 6 shows Base, High, and Low growth trajectories for coincident peak load attributable to data centers in ERCOT.

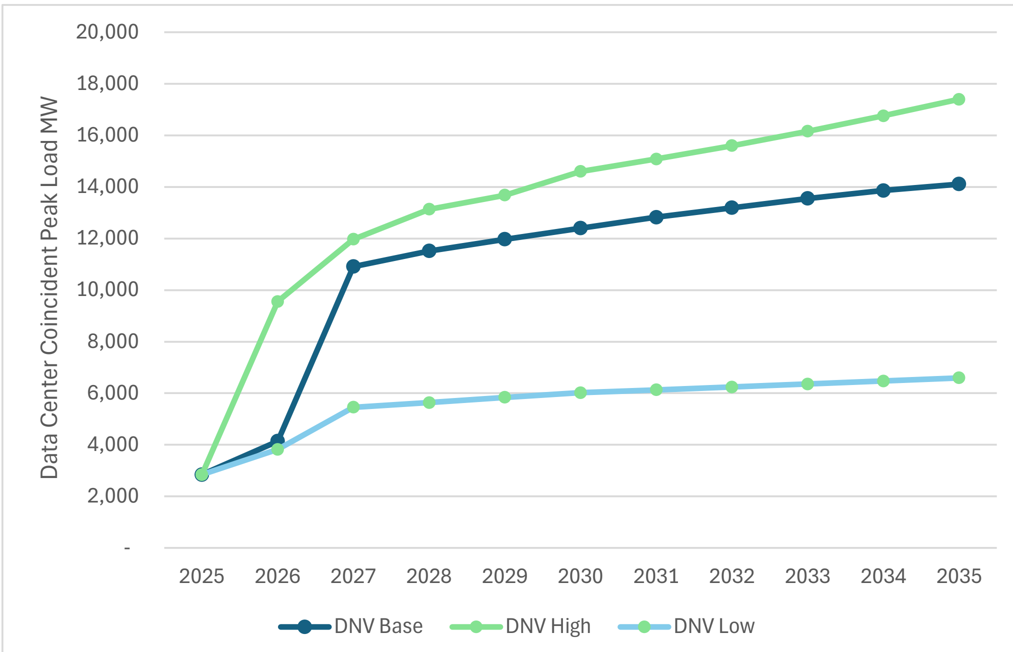


Figure 6. ERCOT Data Center Coincident Peak Forecast

Under the Base Case, coincident load for data centers increases from 2.8 GW in 2025 to 14.1 GW in 2035. This is 3.3% of the average monthly ERCOT system peak demand in 2025, growing to 9.2% of average monthly system peak in 2035.[3] Under the High growth scenario, coincident load for data centers is forecasted to reach 17.4 GW by 2035, or 11.3% of average monthly system peak.

**Energy Forecast**

For each facility in the interval load data sample, we calculated annual energy use in kWh for each full year of operation as the sum of the hourly loads in kW. We then calculated the ratio of annual energy use to the coincident peak load multiplied by 8760, the number of hours in a year. The result is a coincident load factor. For each forecast year, we estimated annual energy by multiplying the forecast coincident load by 8760. Figure 7 displays the Base, High, and Low

[3] Percentages based on ERCOT (2025b)

forecasts of annual data center energy use in the ERCOT region through 2035.

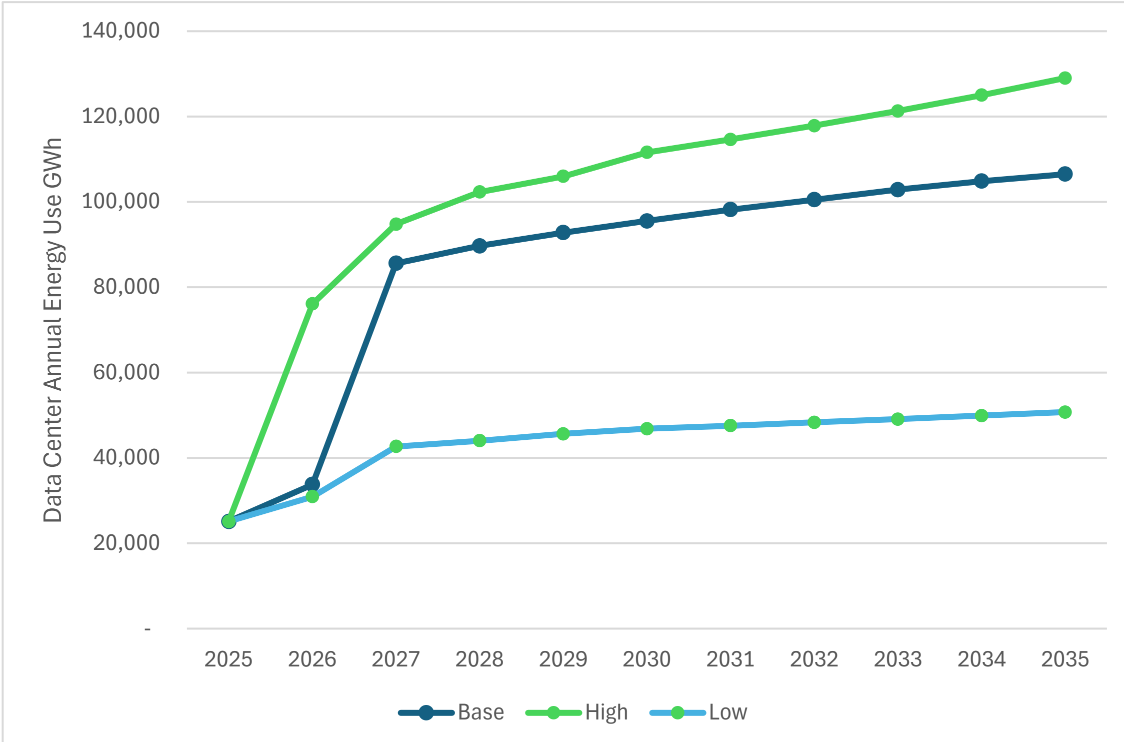


Figure 7. ERCOT Data Center Energy Use Forecast

Under the Base Case, data center energy use increases from 25,177 GWh in 2025 to 106,517 GWh in 2035. This is 5.2% of ERCOT system energy use in 2025, growing to 9.4% of forecasted energy use in 2035. Under the High growth scenario, data center energy use is forecasted to reach 129,010 GWh by 2035, or 11.3% of forecasted system energy use. These results are consistent with national forecasts of the data center share of total electricity consumption.

## Assessment of Forecast Method

Based on our experience in preparing this forecast we identified the following strengths and limitations of the methods deployed.

### Strengths

- **Transparency.** The logic of the forecast moving from short-term installed capacity forecasts based on region-specific site-level inventory, to long-term forecasts based on modeling of the same data is easy to explain stakeholders. Moreover, with one exception, the key data needed to execute the analysis are well-documented and widely available. The exception is the interval load data for operating data centers. This information may or may not be available to utilities, grid operators, and other potential study sponsors, depending on market structure and rules. In such cases, sponsors may need to rely on studies from other regions and time periods, such as this one, to develop the parameters needed to translate installed capacity projections into load and energy forecasts.

- **Replicability.** With the exception of data center interval load series, the data series required for this approach are available publicly or from commercial providers at reasonable cost. The methods used to collect, compile, and process these data sets are generally well-documented. This means that the sponsors can replicate the analysis at modest cost in later periods to refine the forecast and integrate data on more recent developments. It also facilitates replication in other regions using uniform methods.
- **Flexibility in presentation of results.** Our methods enabled us to produce forecasts in terms of installed capacity, non-coincident peak, coincident peak, and energy consumption, each of which is applicable to different aspects of system planning and operations.

**Limitations**

- **Effect of duplicative grid connection applications.** We believe that the use of a commercial database of announced projects as the starting point for the short-term installed capacity forecast, combined with verification of a large portion of the MW-weighted pipeline helped to mitigate some of the overestimation of capacity growth in earlier forecasts by ERCOT and AEP. (Howland 2026) However, we could not extend that level of data quality control effort to all regions. It is possible that leaving duplicative projects in the database for non-ERCOT areas distorted the outcomes of the growth share model.
- **Availability of capacity change data for only one year.** Comparably structured extracts from the Baxtel database were only available for 2024 and 2025. As discussed above, those extracts encompassed an extraordinary year in terms of growth in installed and pipeline capacity. It is possible that the results of the pipeline analysis and growth share model would be very different if they had included data from the previous and/or subsequent years. The modeling system is in place to assess the effect of the influx of projects into the pipeline on longer-term data center location patterns.
- **Use of external long-term forecasts to set national growth rates.** Some of the forecasts we used to develop the Base, High, and Low forecasts provided only high-level descriptions of their methods and the data used. We relied on the reputation of the study sponsors and analysts, our own experience conducting similar work, and the expert review processes described in the forecast report in deciding whether to use the results of their work in our model.

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**Disclosure:** No AI tools were used in the preparation of this report.