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## Introduction

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NOVEC requested an adjustment to the 2026 PJM Load Forecast to reflect continued expansion of the data center industry within NOVEC service territory (see Table 1 below for a yearly summary). The growth drivers and load profile of data centers are fundamentally different from those of other types of commercial load. As a result, modelling data center loads independently, as opposed to part of the broader commercial and industrial sectors, is essential to produce a sound and defensible load forecast.

This document is prepared and submitted following NOVEC’s 2025 large load adjustment request and its preliminary acceptance by PJM in November 2025. In this report, we will provide a clear and detailed summary of NOVEC’s data center forecasting process to promote transparency, development of best practices, and to fulfill the requirements stated in PJM Manual 19 Attachment B.

## Forecasting Process Overview

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NOVEC creates data center load forecasts through a structured, systematic process that incorporates in-depth information on committed data center projects together with fine-scale historical data on data center load behavior. NOVEC’s data center forecasting process uses a “bottom-up” approach: NOVEC develops load forecasts for individual data center buildings that are then aggregated to create campus, substation, delivery point, customer, and system forecasts.

NOVEC updates its data center forecast once per year in sync with the PJM load forecast adjustment timeline. **The same load forecast that we share with PJM is also used internally by NOVEC for planning, budgeting, and financial forecasting and analysis.** NOVEC also shares the forecast with Dominion Energy for transmission planning and operational uses. All three groups, PJM, NOVEC’s internal teams, and Dominion Energy, receive the same forecast with no changes in input data, assumptions, approach, or methodology.

## Project Identification

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Data centers must pass through NOVEC’s planning and contracting process prior to receiving service. These processes are the product of more than 20 years of experience working with our data center customers. NOVEC’s development process provides a clear, consistent, streamlined process for our customers to get electric service to their projects as soon as possible.

One of the primary purposes of NOVEC’s planning and contracting process is to identify serious, bona fide projects from speculative or unserious inquiries. These speculative projects divert valuable planning and engineering resources from real projects. To discourage customers from engaging with us on speculative projects, NOVEC uses a two-pronged strategy with both financial and technical requirements.



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First, the customer is required to put substantial “skin in the game” through various financial deposits and payments. At each stage of the development process, the customer is required to make payment in full *prior* to any work being performed. Additionally, the customer is required to provide additional financial guarantees above and beyond their payments to ensure NOVEC will be made whole in all scenarios.

Second, the customer is required to engage with NOVEC continuously through the planning, design, and construction process. The customer must respond to questions from NOVEC staff and resolve technical issues promptly. The customer must also be actively working on developing their site, for example by obtaining all necessary permits and completing any local zoning processes.

Put together, these two sets of requirements provide a clear process for a prospective customer to demonstrate their level of commitment towards their project. They also create a very high bar for entry that makes it extremely costly and onerous to attempt to “shop” a speculative project or to “reserve” a slot in NOVEC’s queue. Overall, the process has been extremely successful on all fronts.

Projects move through several stages associated with key contractual agreements and development milestones:

### **Pre-Construction Commitment**

1. **LOA: Letter of Authorization.** Official start of the project development process. Customer submits a draft site plan identifying the specific parcel for development, a development timeline, and detailed technical requirements related to their service needs. By requiring detailed technical and geographic information at the start of the process, NOVEC ensures that the customer is not submitting duplicative requests at multiple locations and that multiple customers are not submitting requests for the same location. Customer provides a **standard, non-refundable deposit** to fully fund initial planning and engineering activities associated with test fits, impact studies, and third-party engineering services. Customer also **authorizes funds** for engagement with Dominion Energy Transmission Planning.
2. **WPD: Work Plan in Development.** Plan for service has been developed, NOVEC staff are working through final details such as substation access, buffers, feeder routing, etc. Dominion Energy is engaged for conceptual engineering. NOVEC and Dominion Energy are developing a work plan including construction grade cost estimate and project schedule.



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### Construction Commitment (CC)

3. **WPO: Work Plan Official.** The Work Plan is fully executed. NOVEC has finalized the plan for service, and the customer has finalized their site plan. Customer provides **first Contribution in Aid of Construction (CIAC) payment** to finance initial electric infrastructure construction activities. NOVEC initiates construction activities with Dominion Energy.
4. **E&C: Engineering and Construction Scope Document.** E&C Agreement executed. NOVEC has defined the complete **CIAC payment schedule** associated with key milestones. At each milestone, the customer will make their next CIAC payment and NOVEC will use those funds to finance the next round of procurement, engineering, or construction. NOVEC also begins procurement of long lead equipment.

### Electric Service Obligation (ESO)

5. **ESA: Electric Service Agreement.** Final contract governing electric service and electric infrastructure signed. The ESA, together with preceding contracts, are structured to ensure that NOVEC recovers the full capital cost of NOVEC-owned infrastructure, ongoing operating and maintenance expenses associated with that infrastructure, as well as power costs, and any administrative costs. These costs are **allocated directly to the cost causing customer** to avoid any cross-subsidization either within or across rate classes. Each ESA is adjusted to reflect the total project cost to ensure complete and equitable cost recovery. NOVEC uses a variety of tools to achieve this goal including: CIAC payments, substantial minimum bills, fixed vs market-based volumetric rates, etc.

For forecasting purposes, NOVEC only includes projects that are actively working their way through our development process detailed above. NOVEC does not include any projects that are purely speculative in nature, for example based on rumors or industry reports. NOVEC also does not generate projections for potential sites that could exist, for example by extrapolating historical rates of development.

### Project Vetting

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In addition to maintaining a robust contracting process, NOVEC staff also further screens projects to ensure that projects at a high risk of failure are not included in the load forecast.

NOVEC staff performs a comprehensive evaluation of each data center project prior to inclusion in the load forecast. This screening and vetting process evaluates all aspects of the project's progress to-date as well as its path forward including (but not limited to): site control, firm site plan, viable path to electric service, and viable path to zoning (if necessary).



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Each project is classified into one of three groups:

1. **Viable Projects:** Viable projects have a viable path to service and are highly likely to come to fruition. These projects are included in the load forecast.
2. **Moderate Risk Projects:** Moderate risk projects have a potential path to service, but there is a major obstacle that could potentially cause the project to fail. These projects are included in the load forecast, but their projected demand is **discounted by 50%** to reflect heightened uncertainty.
3. **High Risk Projects:** High risk projects have critical issues that prevent the project from moving forward and, in their current state, do not have a viable path to service. These projects are **excluded completely** from the load forecast.

This screening process ensures that only the highest quality projects are included in the load forecast.

#### Metered Load Forecast

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NOVEC's data center load forecast is a *metered load* forecast: predicting the expected demand on the electric system. In the project identification and vetting stages, we identify all the data centers that are in-service or expected to be developed, their timelines for construction, building capacities, the electric infrastructure that will serve each facility, and which projects should be discounted or removed from the load forecast based on risk of failure; this constitutes a *capacity* forecast. After the capacity forecast is established, NOVEC uses statistical models developed with data center historical fine-scale load data and predicts the expected demand and energy at each data center to produce a *metered load* forecast.

NOVEC has been serving data centers for more than 20 years and during that time has devoted substantial resources to studying the load profile and usage patterns of our data center customers. While each facility has its own unique operating behavior, we have observed several common features across data centers:

- Data centers tend to have a pronounced two stage life cycle. At initial energization, the customer will have little to no load. New facilities go through a *ramping* phase, gradually increasing their demand over a period of several years. Eventually the facility reaches a *mature* phase where demand remains relatively steady over time.
- Mature data centers tend to have very high load factors and power factors, compared to typical residential and commercial customers.
- Data center demand follows typical calendar patterns with a daily, weekly, and annual cycle. However, the magnitude of the calendar-driven demand fluctuations tends to be far smaller than the typical patterns for residential and commercial demand.



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- Data center demand responds to ambient weather conditions. Data center demand increases in response to hot ambient temperatures, but at a rate far lower than typical residential and commercial demand. In our experience, data center demand does not respond to cold ambient temperatures in any measurable way.

These unique features highlight the need to model the demand of data centers with methods specifically tailored to the characteristics of data center loads, as opposed to standard commercial or industrial load models.

NOVEC develops a metered load forecast for each individual data center building using a set of econometric models developed by NOVEC staff. The models are designed to capture all the critical features of the data center load profile related to the ramping process as well as calendar and weather fluctuations. The models are trained using NOVEC's repository of historical load data which spans more than a decade of hourly, building-level data center load readings. This rich data set allows us to generate a unique metered load forecast for each building that takes into account how that customer has operated facilities at other campuses, how the customer has operated other buildings on the same campus, and how they have operated that specific facility (when available).

#### NOVEC August 2025 Data Center Forecast

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In September 2025, NOVEC provided PJM a monthly coincident peak load forecast for 2025-2046. This forecast was generated in August 2025 using projects identified through the end of July 2025 as well as econometric models estimated with metered load data through the end of July 2025. This same forecast was also provided to NOVEC's internal teams and Dominion Energy. The forecast is summarized in Table 1 below.

In the near-term, NOVEC is anticipating unprecedented growth in data center load. Over the next five years, NOVEC expects that data center summer peak loads will grow from roughly 1,400 MW in 2025 to more than 5,000 MW in summer 2030. This load growth will be driven by the construction and energization of more than 60 data center buildings within NOVEC's service territory. Additionally, several major customers currently limited by transmission constraints in Eastern Loudoun County, VA, will be able to access their full contracted capacity as these constraints are removed in early 2026. This will further support near-term growth. Based on the projects currently in planning and construction, NOVEC anticipates robust growth will continue through the late 2030s.

NOVEC provides a long-term forecast through 2046 to meet PJM's need for a 20-year outlook. However, NOVEC's forecasting process is based solely on committed data center projects with signed contracts; the vast majority of these projects are scheduled for delivery within the next decade. NOVEC does not perform any type of extrapolation or estimation of potential projects that could be developed; the forecast is limited exclusively to actual projects that are currently in development. As a result, load growth slows markedly over the final years of the forecast. This



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trend reflects the lack of projects with signed contracts for delivery during that timeframe and should not be interpreted as a projection that growth will not or could not continue at a robust pace during that period. Based on our current project queue, we expect data center loads to grow to more than 13,000 MW by 2040.

Note that the values reported in the forecast are projections of *metered demand*. The totalized *capacity* of facilities included in NOVEC's data center forecast is approximately 17,000 MW.

### Future Developments

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NOVEC receives new customer inquiries for data center projects on a regular basis. New projects may be included in future forecast updates. As noted, each project will need to work its way through NOVEC's strict contracting and vetting process before it can be included in the load forecast.

### Conclusion

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NOVEC has developed a robust and systematic process to produce data center load forecasts. Our approach uses a bottom-up methodology, combining detailed information on upcoming projects under contract and strict vetting by NOVEC staff, together with careful demand modeling using historical load data. The result is a sound and defensible forecast that can be used with confidence by PJM, Dominion Energy, and NOVEC's internal teams.

In this report, we have provided a summary of our approach not just to fulfill the requirements of PJM Manual 19 Attachment B, but also to promote transparency and the development of best practices across the industry. Rigorous forecasting and planning are critical to managing the challenges created by rapid load growth. NOVEC remains committed to developing solutions to these challenges and to providing safe, reliable, and affordable electric service to all of our members.



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*Table 1: NOVEC Data Center Coincident July Peak Load Forecast (August 2025)*

	Year	MW	
Actual	2025	1,387	
	2026	2,053	
	2027	3,076	
	2028	3,840	
	2029	4,442	
	2030	5,032	
	2031	5,835	
	2032	6,721	
	2033	7,472	
	2034	8,194	
	2035	8,931	
	Forecast	2036	9,679
		2037	10,845
2038		11,945	
2039		12,766	
2040		13,140	
2041		13,281	
2042		13,342	
2043		13,367	
2044		13,378	
2045		13,377	
2046		13,380	

Note: Forecast developed by NOVEC August 2025 based on projects identified through the end of July 2025 and econometric models estimated with metered load data through the end of July 2025.