# NOVEC Data Center Load Forecast

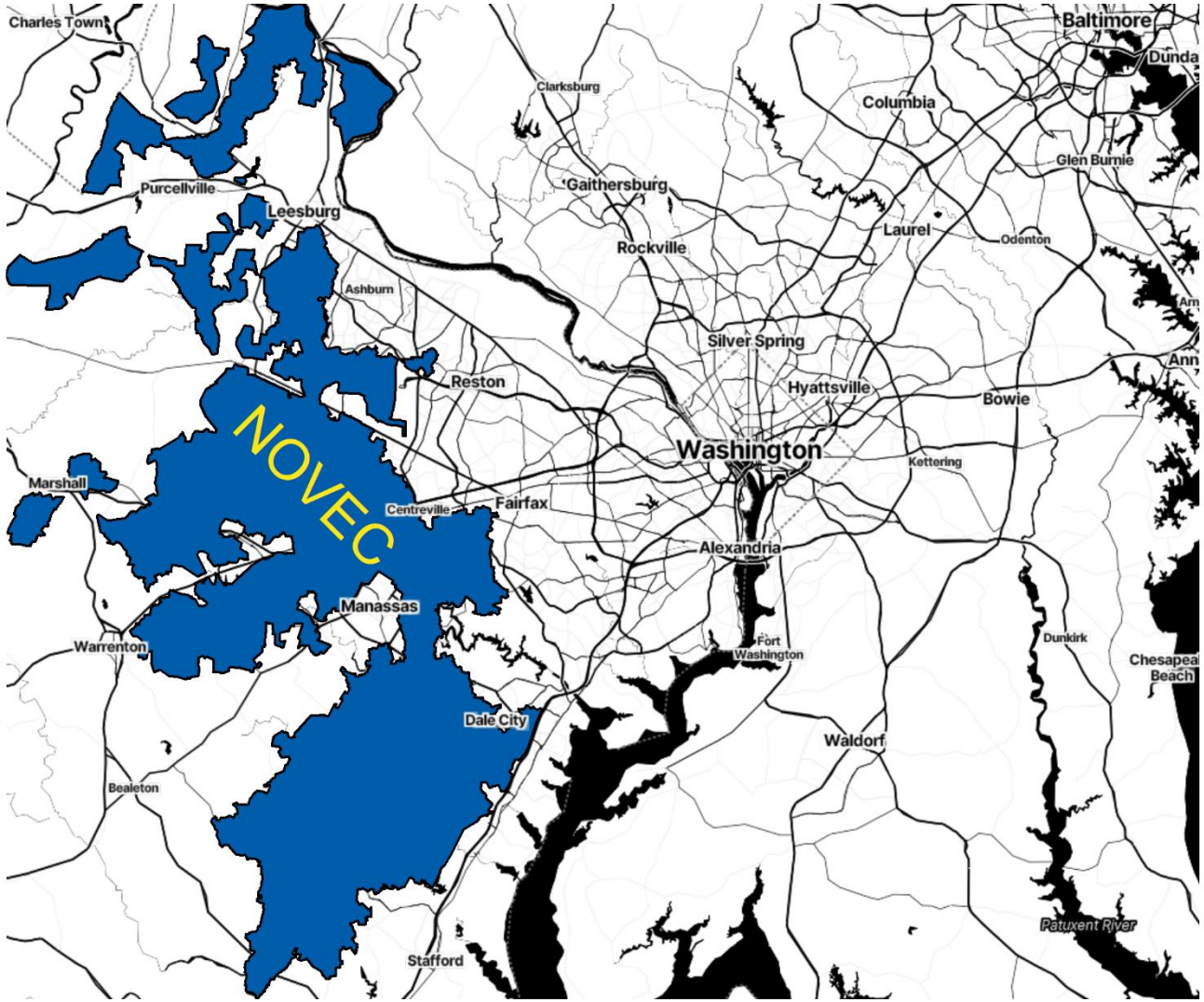
PJM Load Analysis Subcommittee

September 16, 2025

# Overview

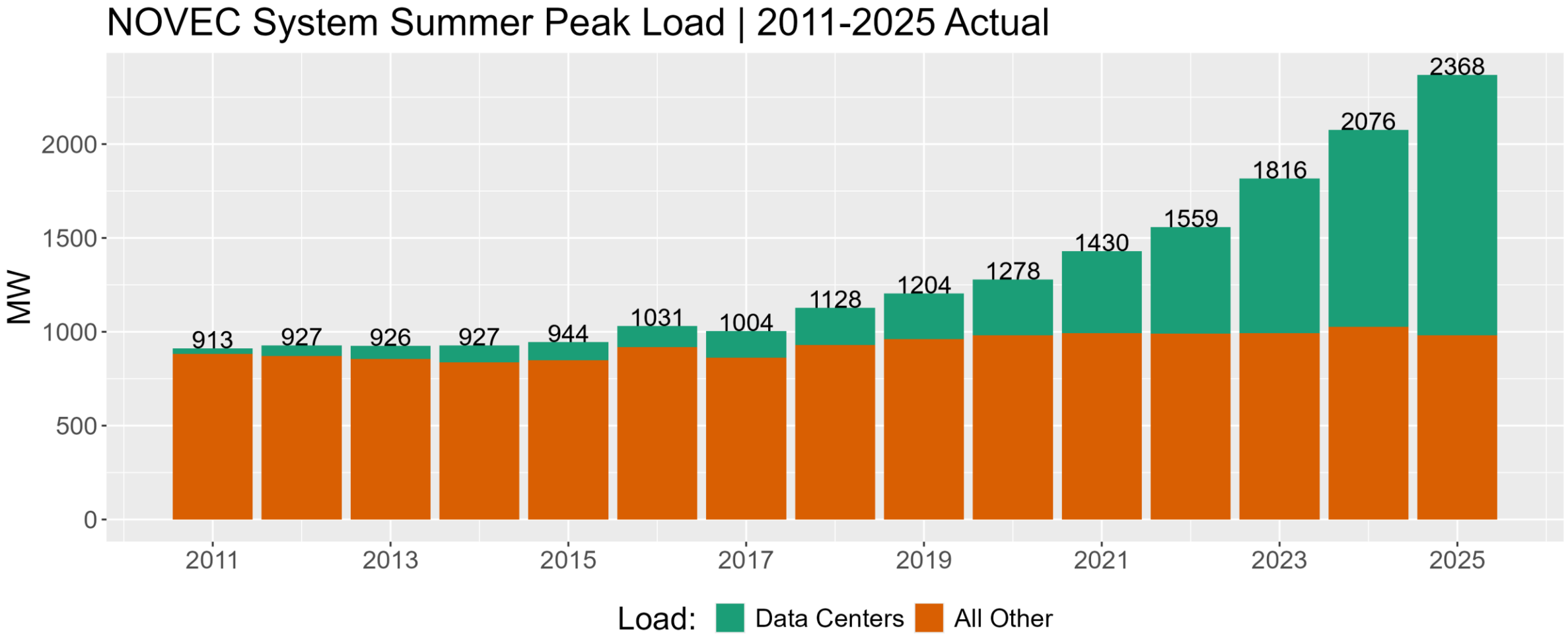
- NOVEC has requested that PJM incorporates an adjustment in the upcoming 2026 PJM Load Forecast to reflect projected data center growth in NOVEC service territory
- Agenda:
  - Brief background on NOVEC
  - NOVEC's forecasting methodology
  - NOVEC 2025 Data Center Load Forecast
  - Comparison of 2025 vs 2024 forecasts
  - Q&A
- Key takeaways:
  - NOVEC has a sound, defensible process for producing data center load forecasts
  - NOVEC's data center forecast should be incorporated as an adjustment in the 2026 PJM Load Forecast

# About NOVEC




- NOVEC: Northern Virginia Electric Cooperative
- Largest US electric distribution cooperative by KWH sales
- Service Territory: 651 square miles of primarily suburban/exurban
- Meters: Approx. 180,000 (~275 per square mile)
- Data Centers: NOVEC serves 60+ data centers with approx. load of 1,300 MW
  - Contribution:
  - Energy: 69% (Aug. 24 – Jul. 25)
  - Peak Load: 59% (Jul. 25)

# Rapid Load Growth for NOVEC




Source: NOVEC

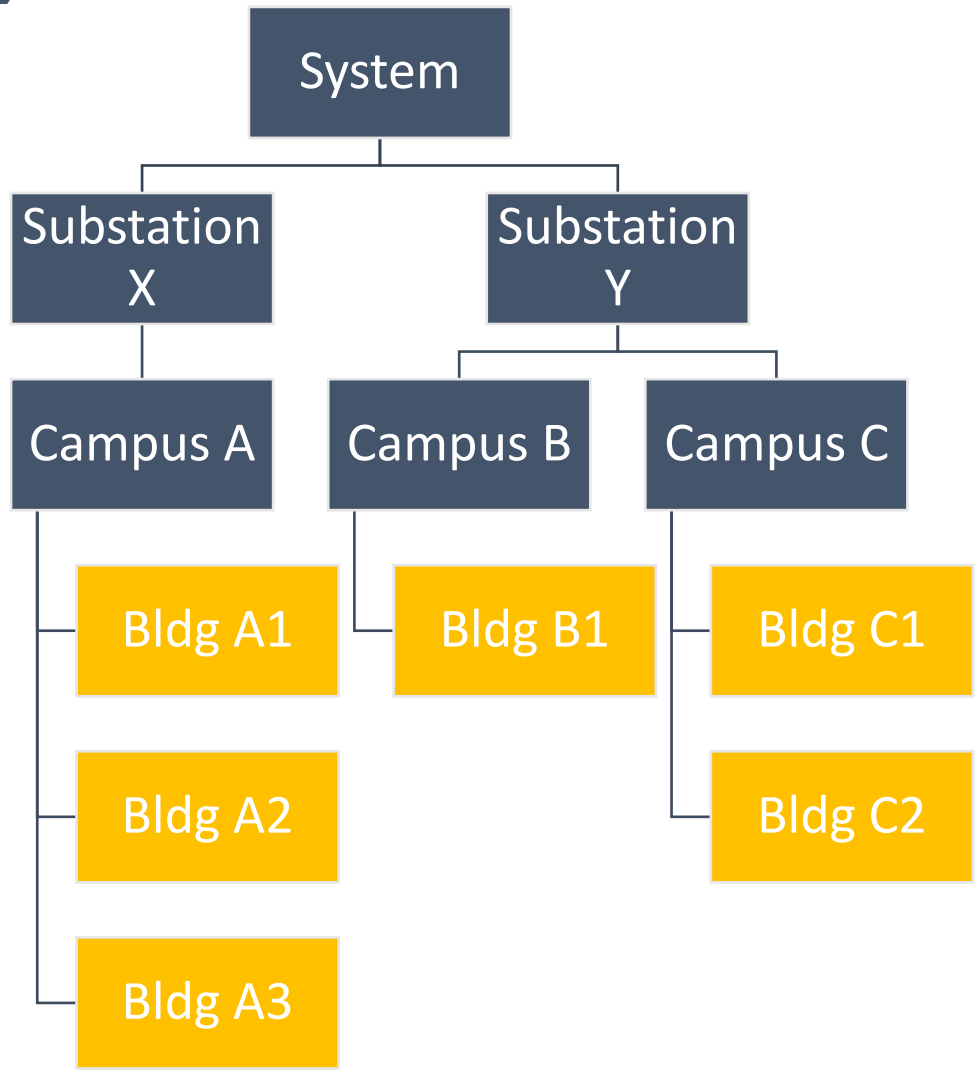
# Data Center 101

- Key terms:
- Contracted capacity – nameplate capacity of the building's electric service
- Metered demand – building's actual usage
- Utilization rate – metered demand as a percentage of contracted capacity

# Forecast Overview

- NOVEC generates a data center load forecast as part of its load forecasting processes
- Long-term (10+ year) forecast updated annually
  - Key stakeholders:
    - NOVEC (power supply, finance, system planning, etc.)
    - Dominion Energy (transmission planning)
    - PJM (large load adjustment)
- Medium-term (13 month) forecast updated monthly
  - Key stakeholders:
    - Dominion Energy (transmission operations)
- All stakeholders receive the same load forecast

# Methodology Overview




- NOVEC utilizes a bottom-up forecasting approach for data centers
  - Forecast load on individual buildings
  - Aggregate building loads to campus, substation, region, system
- Three step approach:

1. Identify projects
2. Produce metered load forecast for each building
3. Eliminate/down-rate projects at high risk of failure

# Phase One: Planning

- Goal: Collect detailed information on all current and future data centers
- Key features:
  - Site plan including building capacities
  - Electric infrastructure to serve each project (e.g., on-site vs off-site substation)
  - Precise geographic location (parcel/address)
  - Building energization timelines
- Approach: NOVEC's data center contracting/project development queue
- Projects in NOVEC's development queue and active data centers are the only projects included in NOVEC's load forecast
  - No projects based on trend extrapolation, industry rumors, press releases, etc.

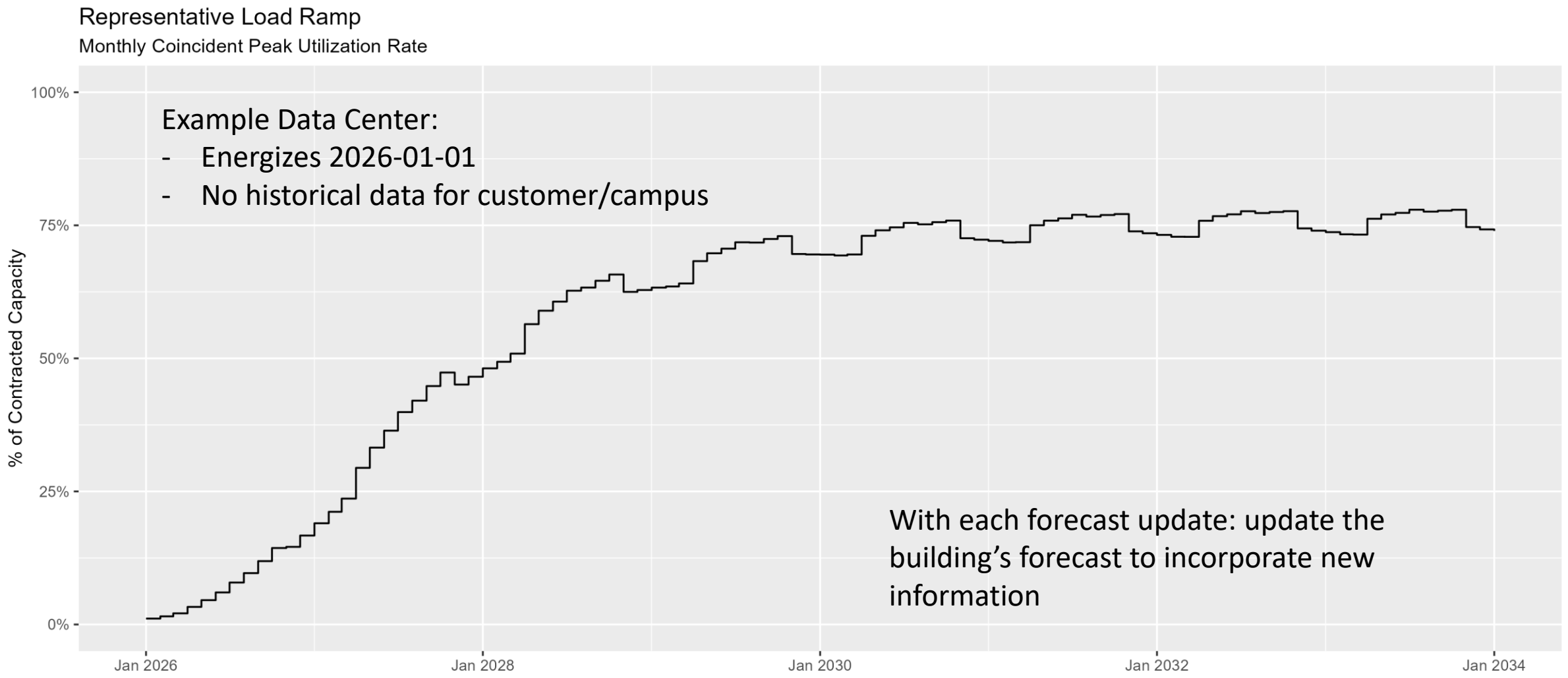
# Contracting/Project Development Process

- NOVEC has developed a robust planning and contracting process for data centers using contracts with financial obligations and key milestones
- **Pre-Construction Commitment**
  - Non-refundable deposit
  - Technical specifications for project including precise geographic location
- **Construction Commitment**
  - Begins Contribution in Aid of Construction (CIAC) payments
  - Finalized project scope for electric infrastructure
  - Long lead-time item procurement
  - Construction begins
- **Electric Service Obligation**
  - Electric Service Agreement (ESA) executed including tariff
  - Project energized

# Phase Two: Forecasting

- Goal: Generate a metered load forecast for each building identified in the planning phase
- Approach: Statistical modeling
- Econometric models were developed and are used by NOVEC staff to predict building-level utilization rates (metered demand/contracted capacity) conditional on:
  - Calendar factors (day of week/day of year)
  - Weather factors (cooling degree days)
  - Past behavior at the customer, campus, and/or building-level when available
- Building-level forecasts are aggregated to campus/substation/region/system as needed

# Example Utilization Rate Forecast



# Phase Three: Screening

- Goal: Eliminate or down-rate projects at risk of failure
- Approach: Holistic review of every project prior to each forecast update with expert analysis from NOVEC planning team
- Screening parameters include (not exhaustive):
  - Ownership/control of land
  - Firm site plan
  - Viable path to electric service
  - Viable path to zoning
- Lessons Learned: Screening on contract status alone is not sufficient to fully characterize the risk of project failure

# Project Screening Categories

## Viable

- Viable path to service and highly likely to come to fruition
- Include in load forecast

## Moderate-Risk

- Potential path to service but outstanding concerns must be resolved
- Down-rate by 50%

## High-Risk

- Critical issues prevent the project from progressing in its current state
- Exclude from load forecast

# NOVEC Data Center Forecast

## August 2025 Forecast Vintage

- Forecast generated August 2025
  - Distributed to NOVEC internal teams, DOM transmission planning, and DOM transmission operations
- **NOVEC requests PJM incorporate this forecast as an adjustment to the upcoming 2026 PJM Load Forecast**

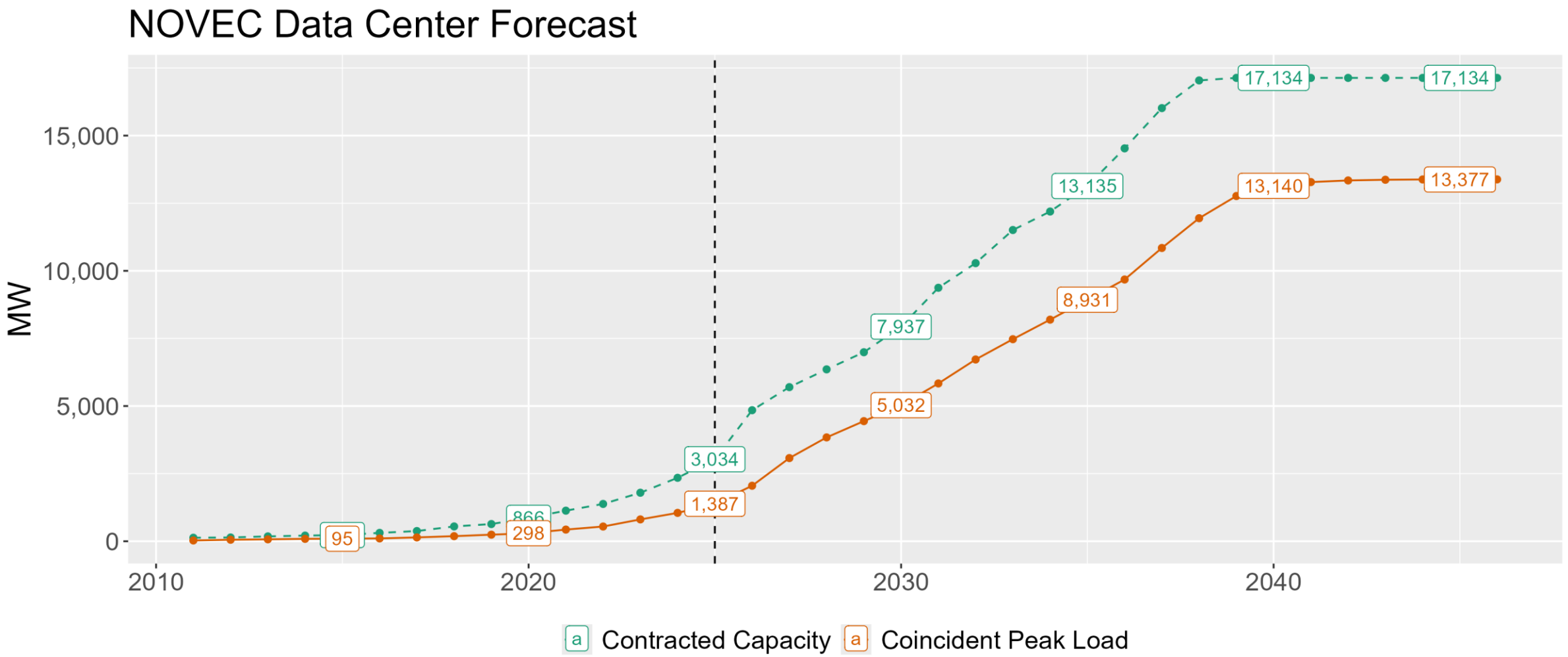
# Near-term Forecast

## August 2025 Forecast Vintage

| | Actual | | | | | Forecast | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Jul 2021 | Jul 2022 | Jul 2023 | Jul 2024 | Jul 2025 | Jul 2026 | Jul 2027 | Jul 2028 | Jul 2029 | Jul 2030 |
| Data Centers (#) | 35 | 38 | 50 | 59 | 67 | 95 | 110 | 119 | 130 | 140 |
| Yr-Yr Change | 6 | 3 | 12 | 9 | 8 | 28 | 15 | 9 | 11 | 10 |
| Contracted Capacity (MVA) | 1,131 | 1,380 | 1,794 | 2,347 | 3,034 | 4,846 | 5,699 | 6,356 | 6,990 | 7,937 |
| Yr-Yr Change | 265 | 249 | 414 | 553 | 687 | 1,812 | 853 | 657 | 634 | 947 |
| **Coincident Peak Load (MW)** | **432** | **545** | **808** | **1,050** | **1,387** | **2,053** | **3,076** | **3,840** | **4,442** | **5,032** |
| **Yr-Yr Change** | **134** | **113** | **263** | **242** | **337** | **666** | **1023** | **764** | **602** | **590** |

# Long-term Forecast

## August 2025 Forecast Vintage

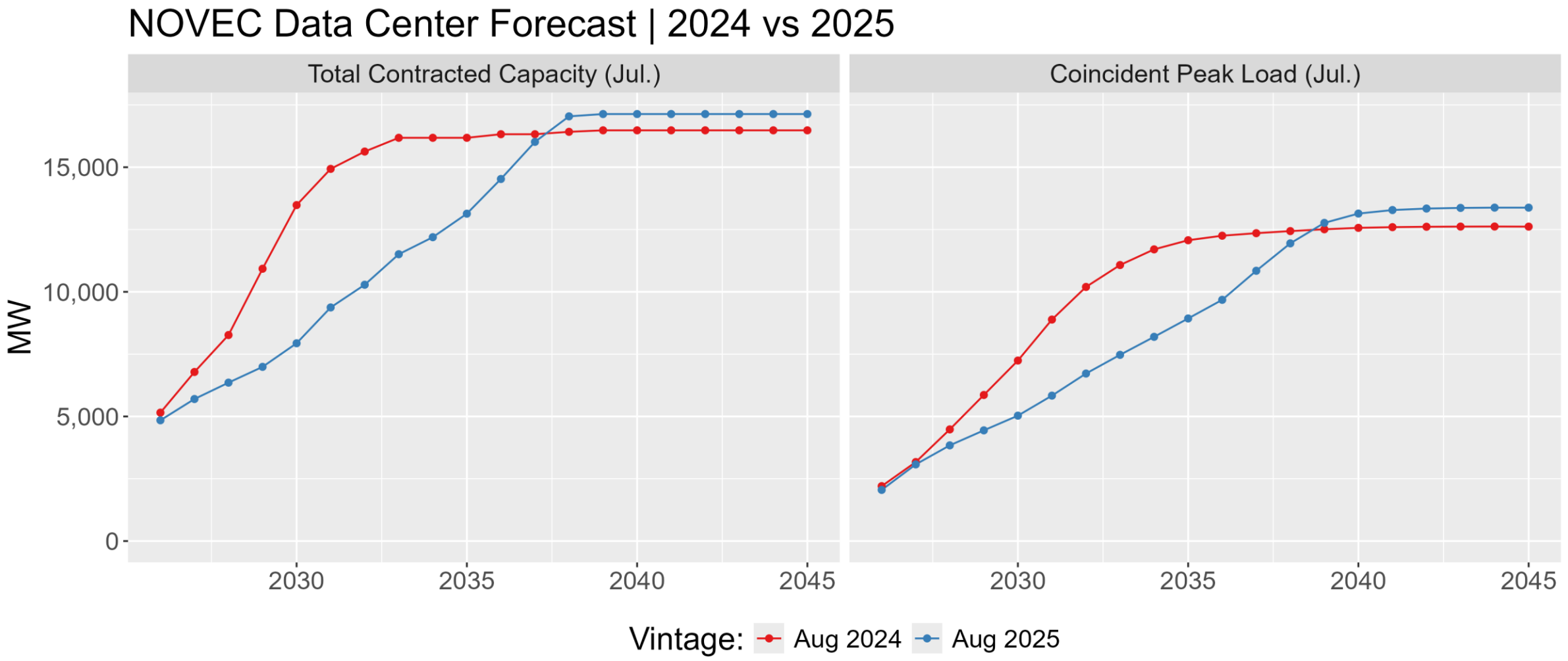


# Forecast Updates: 2024 vs 2025

- Updates for the 2025 Forecast:

1. New Dominion Transmission timelines and queue process
   - Impact: *Substantial* reduction in medium-term load growth
2. New projects added
   - Impact: small increase in long-term capacity/load
3. Updates to existing project timelines
   - Net impact: minor reduction in near-term growth
4. Re-trained load models with latest metered load readings
   - Net impact: negligible change in projected utilization rates

# Forecast Updates: 2024 vs 2025



# Summary

- Goal: Present on NOVEC's load forecast adjustment request as required by PJM Manual 19 Attachment B
- Key takeaways:
  - NOVEC has a sound, defensible process for producing data center load forecasts
  - NOVEC's data center forecast should be incorporated as an adjustment in the 2026 PJM Load Forecast
- NOVEC Forecast Adjustment Timeline:
  - ✓Sep 5: Submitted to PJM Load Analysis Team
  - ✓**Sep 16: Present at PJM LAS**
  - ❑Sep-Dec: Respond to inquiries from PJM staff
  - ❑Sep-Dec: Prepare written document for PJM Load Forecast