

# Large Loads and Climate Impacts

Melissa E. Birchard

Director, Mitigation Program

Georgetown Climate Center

Prepared for February 19, 2026

# Overview

1. What are large loads?
2. What are potential climate impacts of large loads?
3. What is the energy system and regulatory context of large loads?
4. What options are available to states to help address the climate-related impacts of large loads?

# What are large loads?



**An Amazon data center in Oregon;** *Image Source:* "[Indiana regulators approve 'large load' interconnection rules.](#)" *Utility Dive*, Feb. 20, 2025.



**A hydrogen production plant;** *Image Source:* "[Largest hydrogen plant in North America slated for California.](#)" *PV Magazine USA*, June 3, 2025.



**Heavy-duty vehicle charging;** *Image Source:* "[North America's Largest Heavy-Duty EV Charging Hub Powered by Microgrid.](#)" *Prologis*, June 11, 2024.

# Electricity demand from data centers

Largest of data centers **demand ~200 MW of electricity** –  
enough to power hundreds of thousands of homes



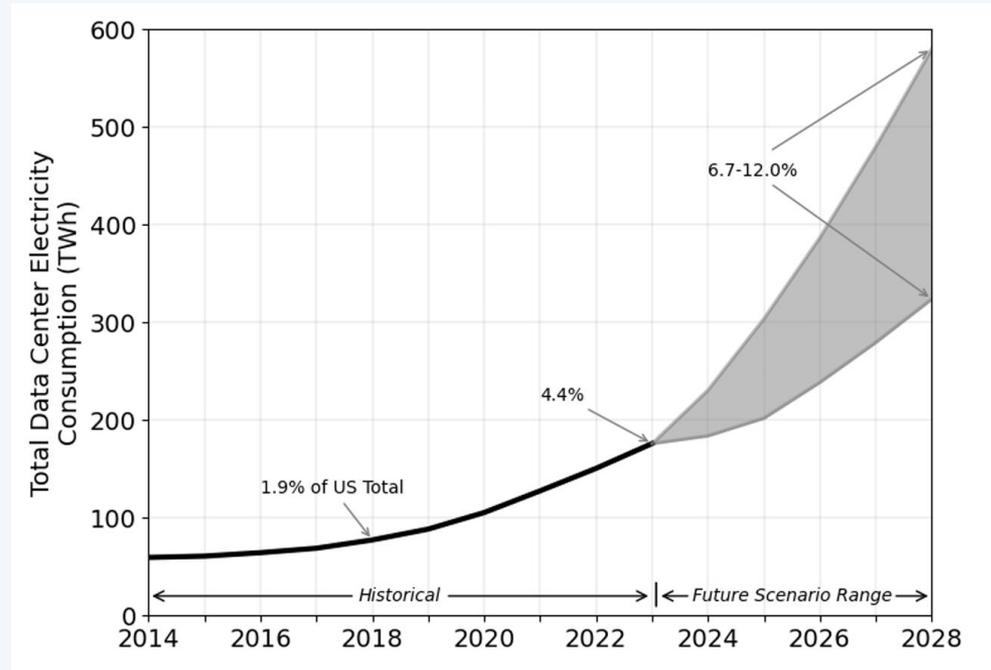
Image Source: [“What is a hyperscale data center?”](#), Data Center Dynamics, Sep.13, 2022.



Image Source: [“What Is a Hyperscale Data Center?”](#), Vertiv Group Corp.

# Electricity consumption by data centers

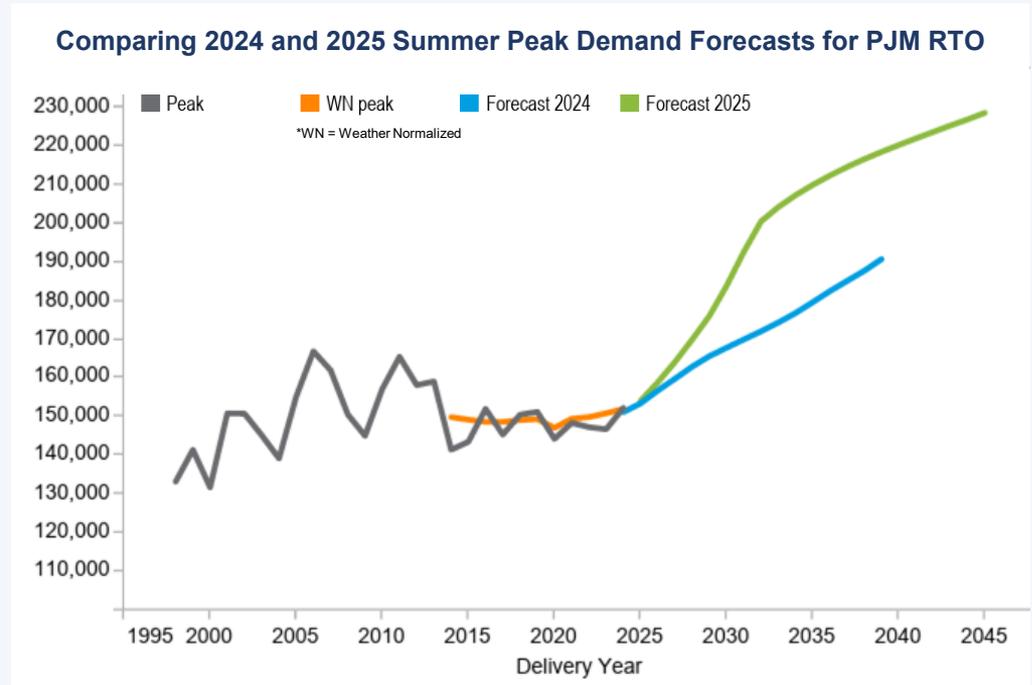
The share of total US electricity consumption by data centers is growing rapidly.



Source: Shehabi et al., [2024 United States Data Center Energy Usage Report](#), Lawrence Berkeley National Laboratory, Dec. 2024.

# Electricity demand growth in the PJM region

Data center demand growth can have a significant effect on state energy and climate planning.



Source: "[PJM Long-Term Load Forecast Report](#)," PJM Interconnection, Jan. 24, 2025.

# What are the potential climate impacts of large loads?

# Potential climate impacts of large loads from electric power generation

**Additional generation to meet growing demand:**

If increased generation is powered by fossil fuels

→ increase in GHG emissions



Chesterfield Power Station; Image Source: [VPM News](#)

# Other potential climate impacts of large loads



Image Source: [Piedmont Environmental Council](#)

- Increase in use of diesel backup generators
- Changes in land use for data center development
- Increased water use

# Climate and energy opportunities & potential challenges from data centers

## Data centers present potential opportunities...

- Large-scale investment in clean energy technologies
- Clean technology innovation
- AI-based solutions
- Community benefits

## ... but also potential challenges.

- Emissions
- Higher electric utility ratepayer costs
- Increased risks to reliability of electric system

# Energy system and regulatory context of large loads

# The regulatory context of large loads

*Regulators at all levels of government are working on solutions*

- FERC has initiated two relevant regulatory proceedings:
  - **December 2025:** Directs PJM to create new and more flexible options for interconnecting co-located large loads, to reduce cost and reliability impacts while accelerating interconnection
  - **October 2025:** DOE/FERC ANOPR on large load interconnections to the transmission system proposes to encourage direct interconnections and more large load demand response

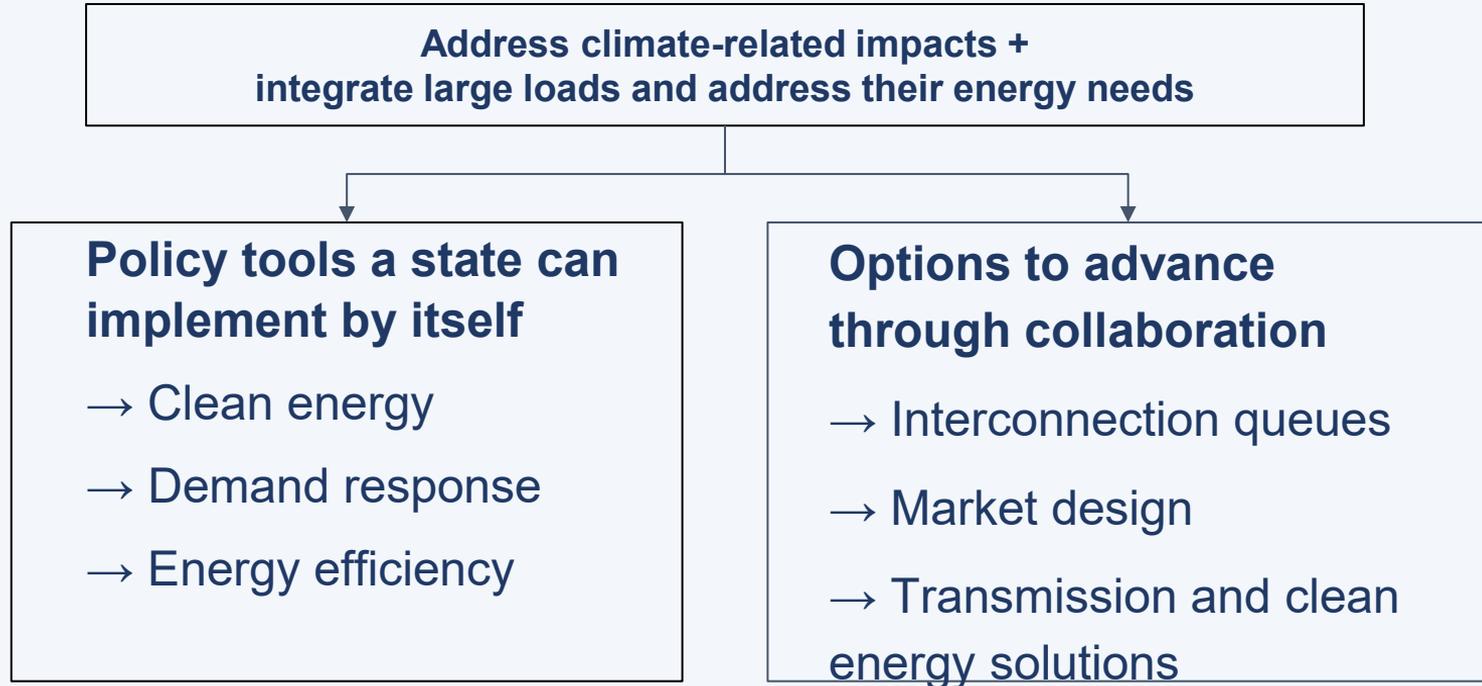
# The regulatory context of large loads

## *Regulators at all levels of government are working on solutions*

- State utility regulators, governors, and legislatures are taking numerous actions to mitigate the impacts of data centers, while incentivizing or enhancing their potential benefits
  - **State PUCs** – e.g. establishing **electric rates and tariffs specific to large loads, creating clean renewable energy purchase options, allocating costs to cost-causers**
  - **State legislatures** – passing legislation to **address large load impacts, e.g. to encourage use of clean energy, efficiency, demand response**

# Solutions to address climate impacts of large loads

# Solutions to address climate impacts of large loads



# Policy tools a state can implement

## Clean Energy

- Require or incent large loads to bring new clean generation (“BYOG”), battery storage
  - Ex: Colocation, procurements, contracts
- Invest in utility or state clean energy procurement fund
- Invest in onsite and nearby distributed generation
  - Ex: Rooftop solar, community solar, microgrids

# Policy tools a state can implement

## Demand Response (DR)

- Reducing / shifting of electricity use during peak periods of energy demand
- Can help reduce emissions if total generation is lower
  - If backup generators turned on, can increase emissions
- Can reduce need for new energy system investments

# Policy tools a state can implement

## Categories of demand response for large loads:

- Curtailment options
- On-site data center load flexibility
- Participation in state/utility DR programs
  - Can be geographically targeted
- Participation in virtual power plant (VPP) programs
  - Can be geographically targeted

# Policy tools a state can implement

## Energy Efficiency

- Establish energy efficiency standards
- Allow for energy efficiency audits
  - Periodic, comprehensive
- Require regular reports on onsite demand projections, including anticipated efficiency changes
- Encourage investments in local community energy efficiency programs

# Multi-state and regional collaboration

## Interconnection queue reform

- Enable renewable energy resources to more quickly and successfully integrate with the electric system
- Improve energy storage availability

## Wholesale market redesign

- Incent battery storage

# Multi-state and regional collaboration

## Transmission solutions

- ***Advanced transmission technologies***
  - Grid enhancing technologies and reconductoring
- ***Interstate and interregional transmission***
  - Participation in regional and interregional planning
  - Procure generation and transmission on a multi-state basis
- ***Establish state transmission authority***

# Thank You

Melissa E. Birchard

Director, Mitigation Program

Georgetown Climate Center

[melissa.birchard@georgetown.edu](mailto:melissa.birchard@georgetown.edu)

GEORGETOWN CLIMATE CENTER