Energy Impacts of Artificial Intelligence

Assembly Utilities and Energy & Privacy and Consumer Protection Committees - Oversight Hearing

January 28, 2026

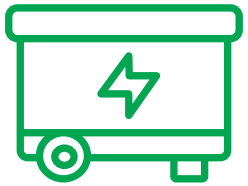
California Energy Commission Data Center Demand Forecast

January 28, 2026

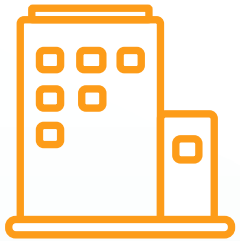
Aleecia Gutierrez
Director, Energy Assessments Division

CEC Data Center Authorities

California Energy Demand Forecast

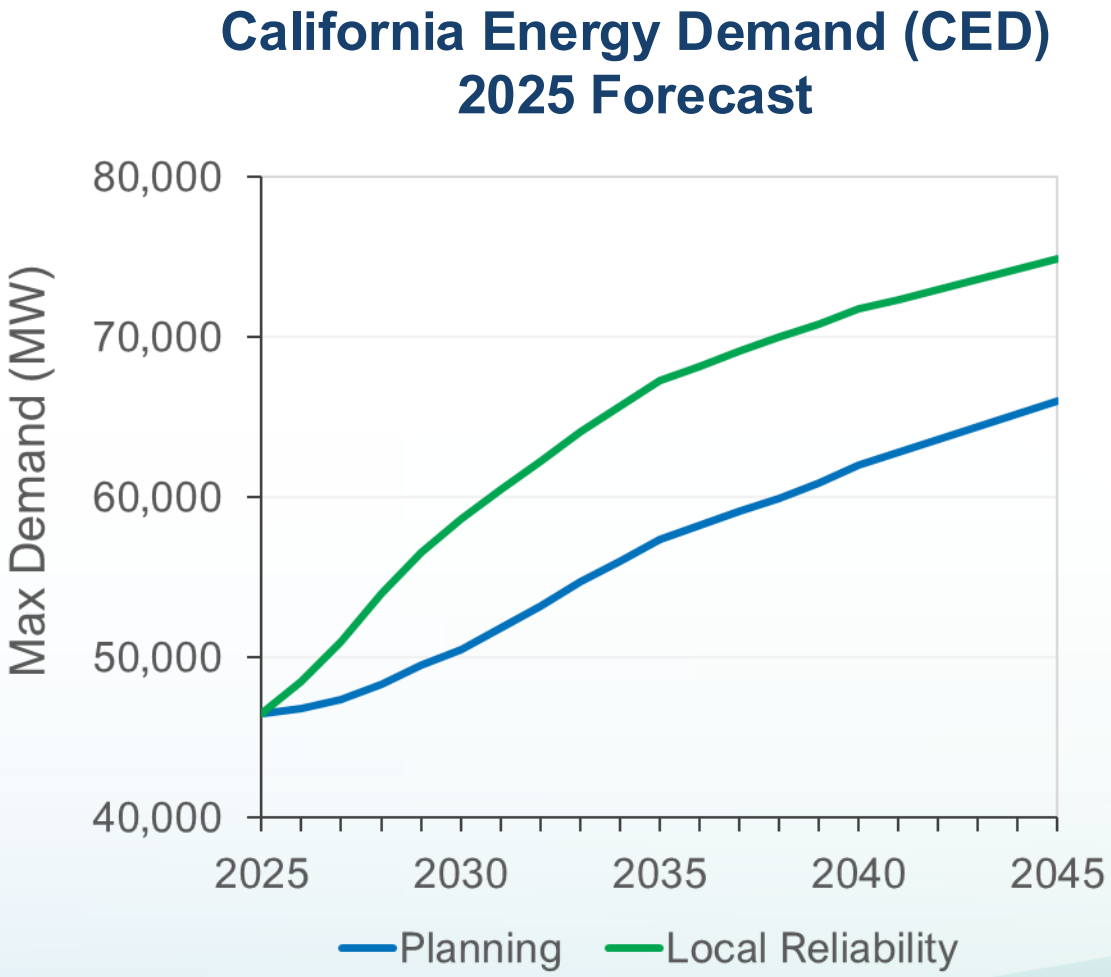


Thermal Power Plant Licensing, Small Power Plant Exemption & Opt-In



Building Efficiency Standards

Demand Forecast Process



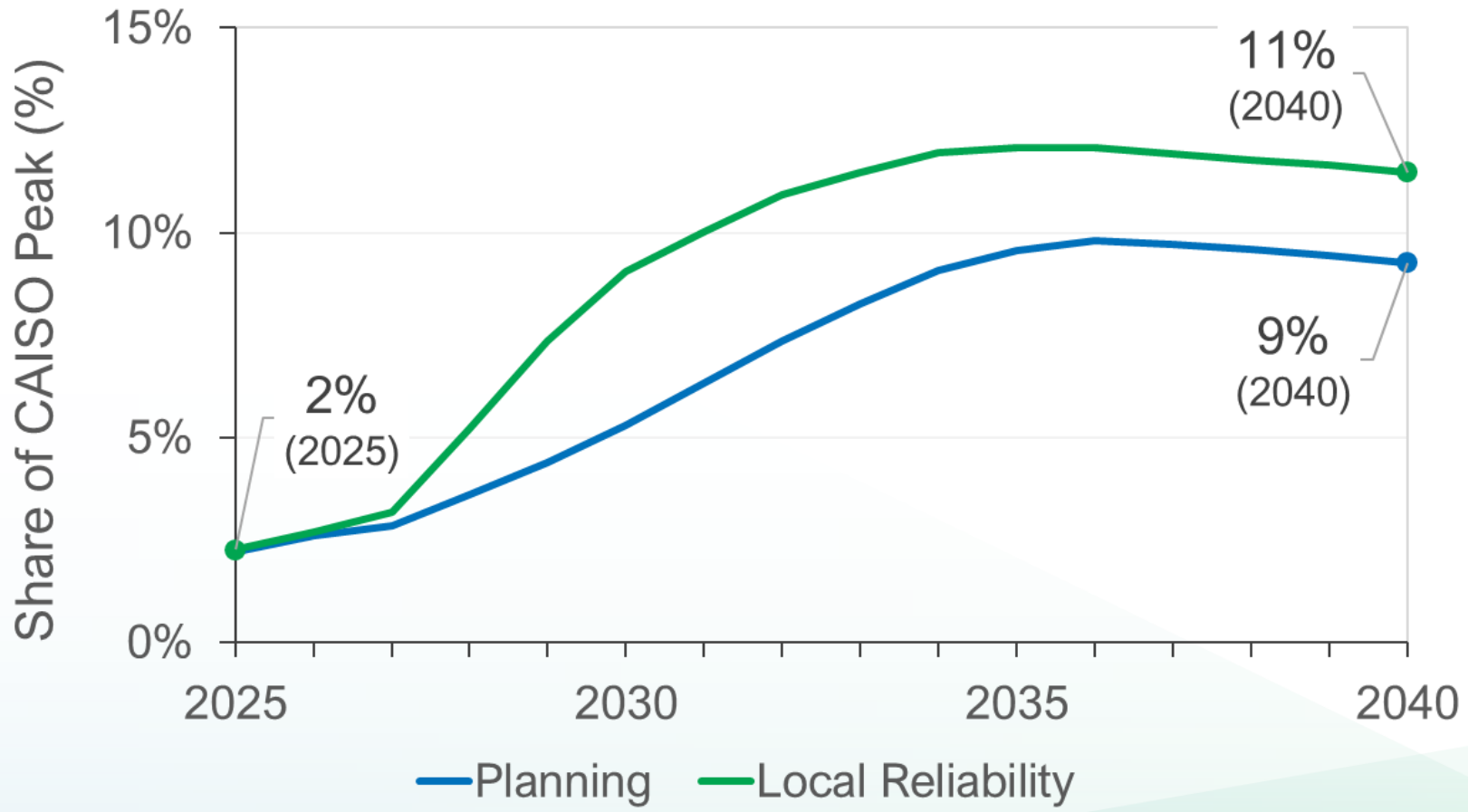
Planning Forecast

- Resource Adequacy
- Integrated Resource Planning
- Transmission Planning Process

Local Reliability Scenario (Higher)

- Transmission Planning Process
- Distribution Planning Process

Data Center Fraction of CAISO Peak



Source: CEC Staff, California Energy Demand (CED) 2025 Forecast

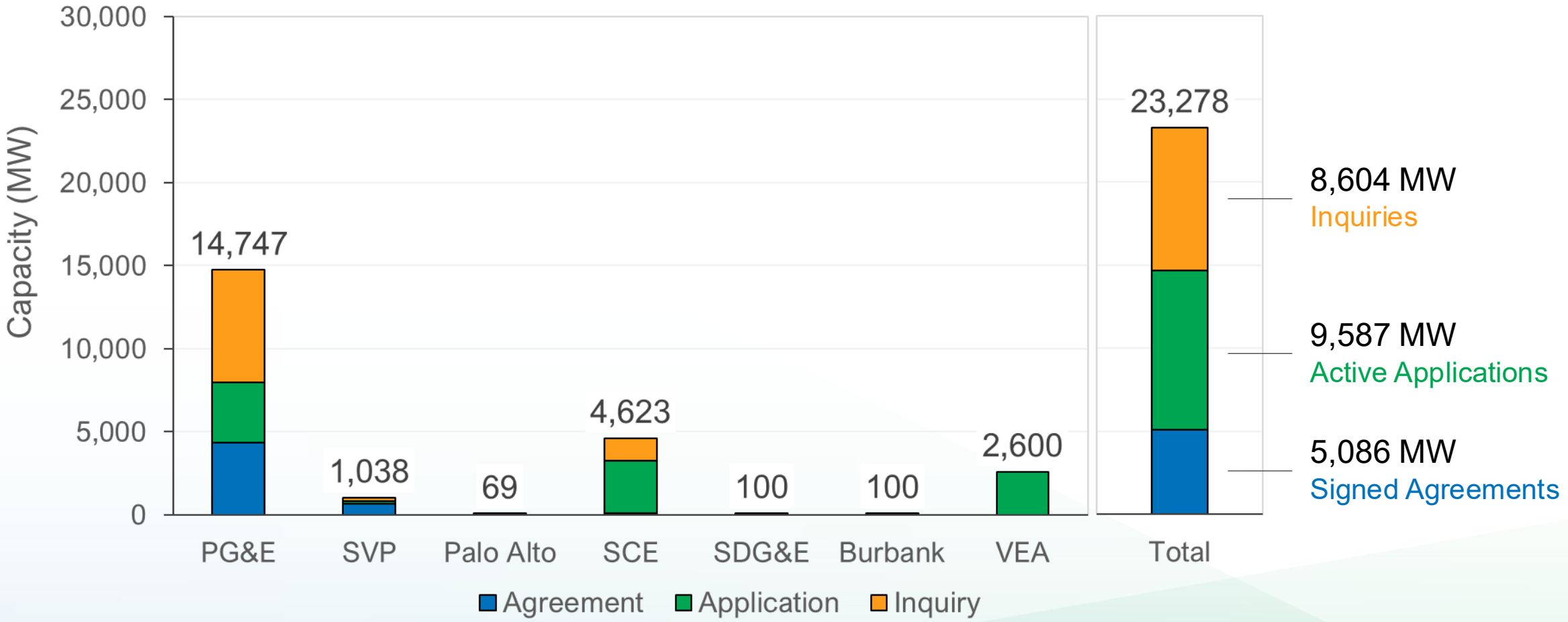
Data Center Forecast Methodology

1. Request data center energization requests from utilities
   - Application status, requested capacity, timeline, location

2. Apply assumptions:
   - Utilization factor (67%): requested capacity vs. max demand
   - Confidence level: Probability of project completion, varies based on application status
   - Ramping: Years to reach full capacity

3. Use interval meter data from existing data centers to develop an hourly load profile

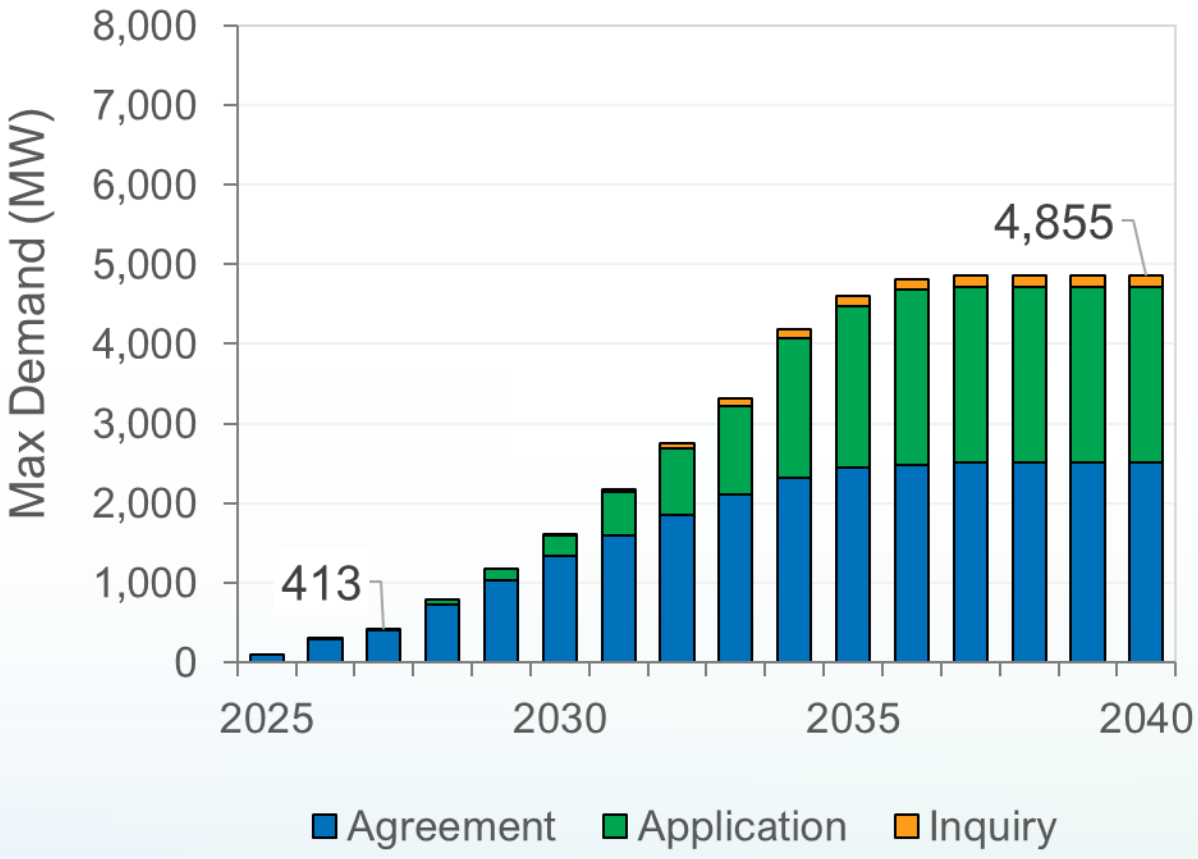
Data Center Capacity Requests



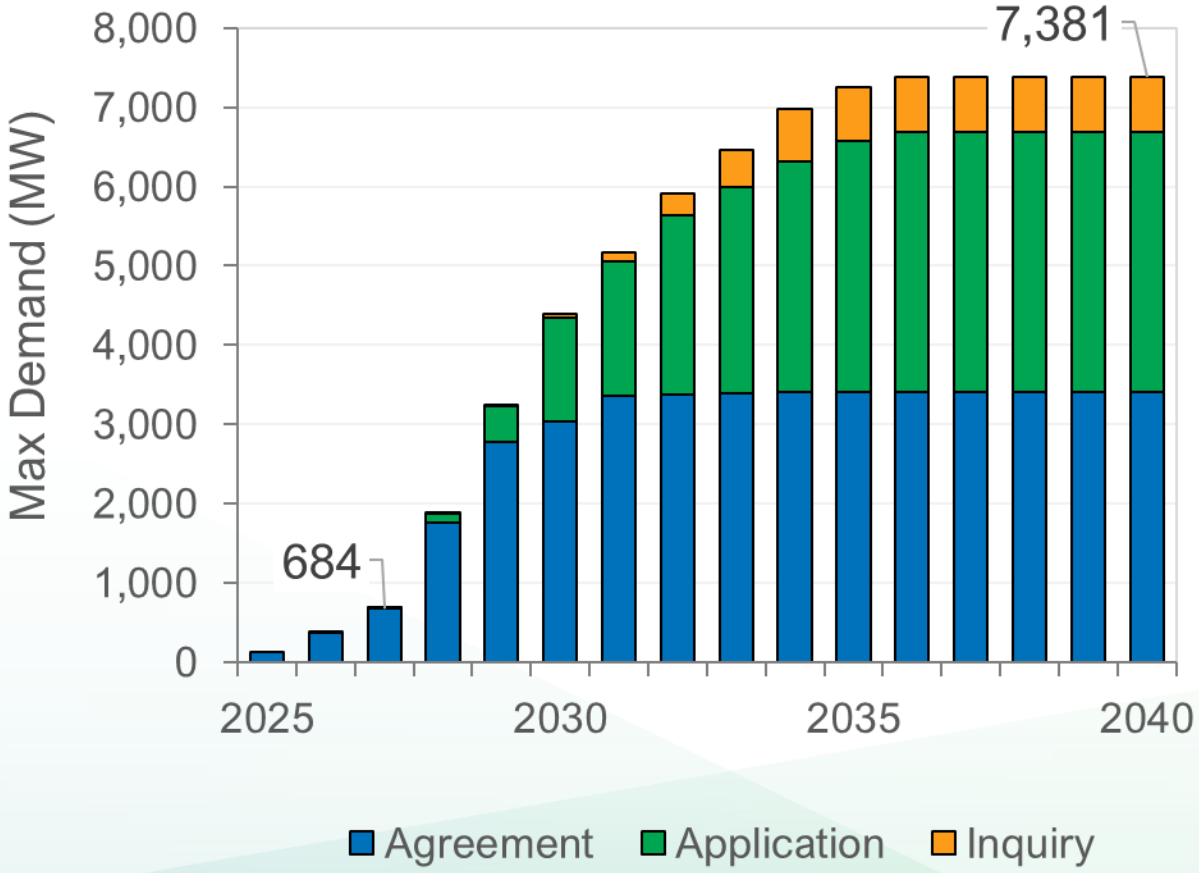
Source: CEC with data from each utility as of December 2025

Data Center Demand Growth

2025 IEPR: Planning



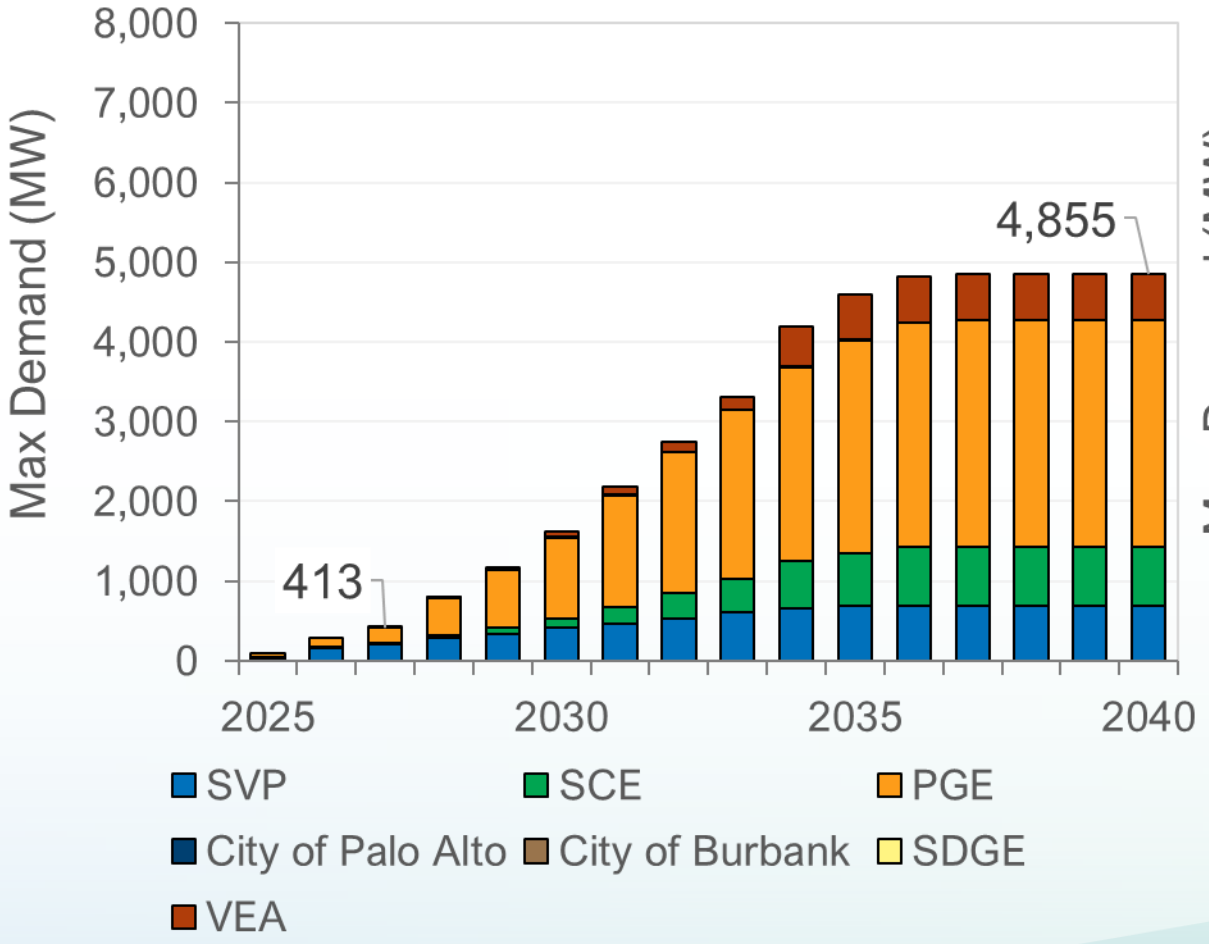
2025 IEPR: Local Reliability



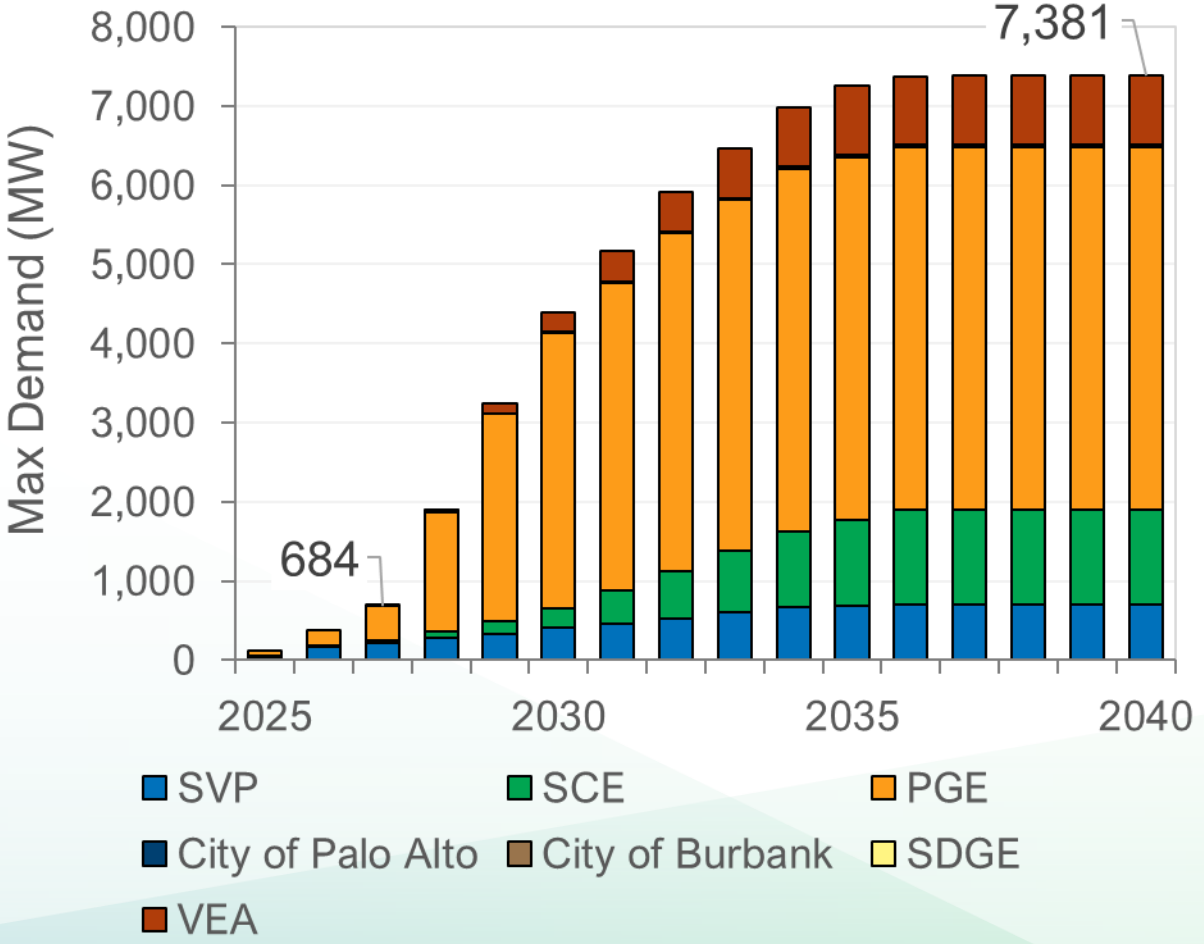
Source: CEC Staff

Data Center Demand Growth

2025 IEPR: Planning



2025 IEPR: Local Reliability



Source: CEC Staff

Data Center Forecasting Challenges

- Lack of historical record
- Confidence levels
- Utility energization queues change frequently
- Proactive planning
- Long-term forecasting
- How differently will future data centers operate compared to existing data centers?

Thank You

Aleecia Gutierrez
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For follow-up questions, please contact:

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AI's Energy Impacts

Leuwam Tesfai
Deputy Executive Director for Energy and Climate Policy
California Public Utilities Commission

January 28, 2026

California Public
Utilities Commission

AI's Grid Impacts

Rules that Govern Energization of Loads

For energization, there are different rules for different types of projects and infrastructure needs.

Rule 15: Distribution Line Extensions
- Extension of electric distribution lines
- Costs covered by ratepayers (through an allowance) and customer.

Rule 16: Service Extensions
- Service facilities that extend from distribution line
- Equipment located on customer site
- Costs covered by ratepayers (through an allowance) and customer.

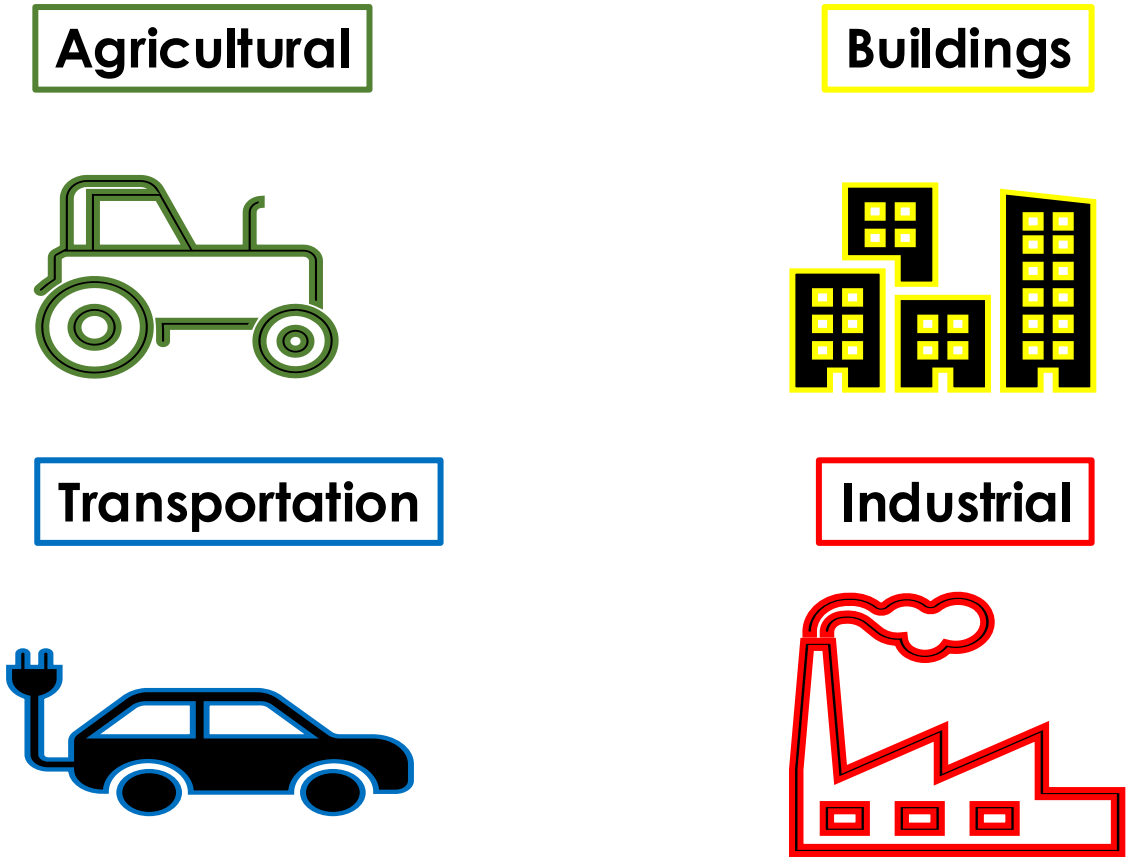
Rule 2: Special Facilities
- Non-standard facility installs
- Costs covered by customer

Rule 29/45: EV Infrastructure
- Utility side of the meter service and distribution facilities
- Costs covered mostly by ratepayers

Timely Energization: Critical to California's Economy and Policies

Implementation of SB 410 and AB 50

The CPUC has addressed significant and legitimate concerns about current and future distribution energization delays across all of California's major economic sectors.



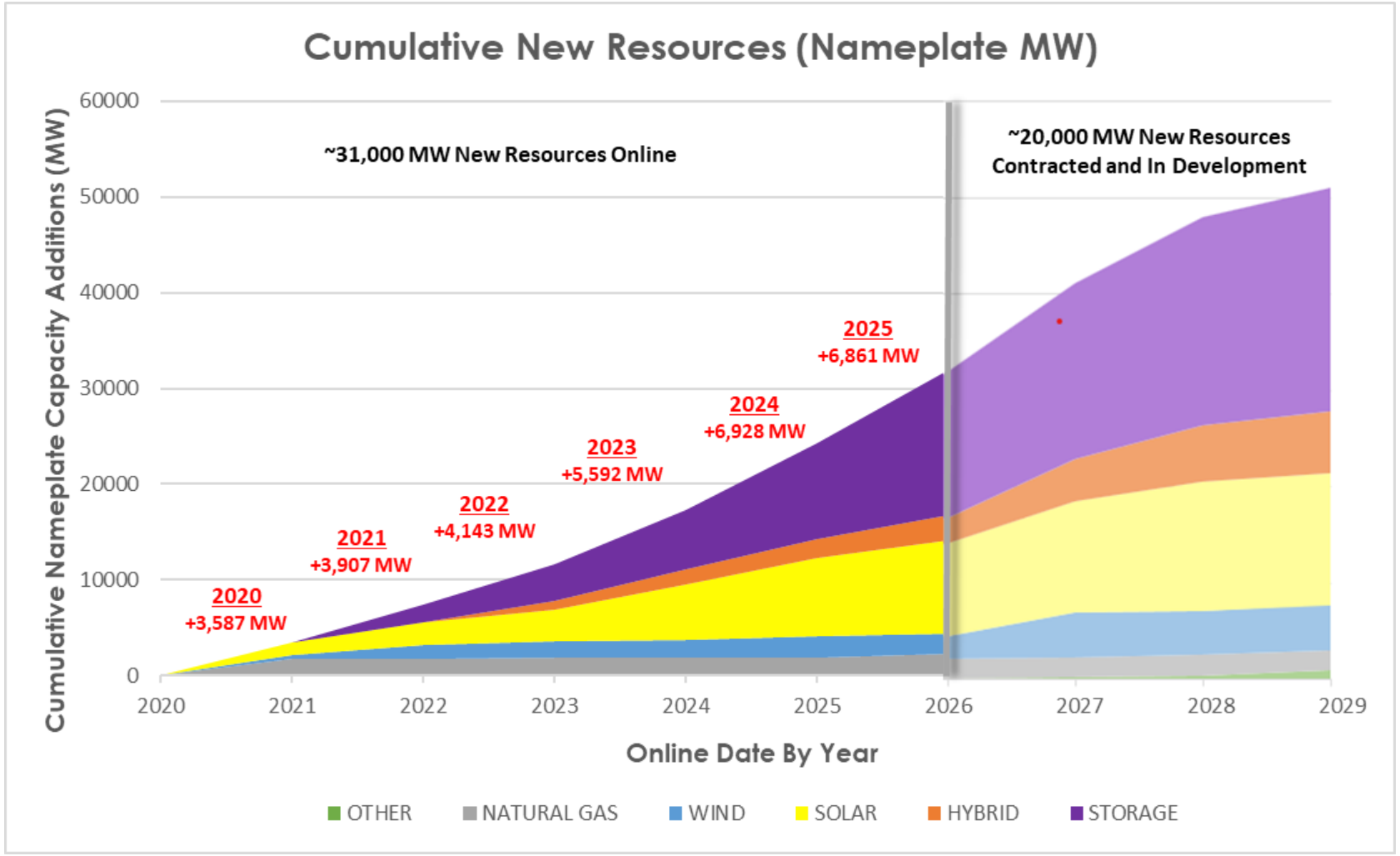
PG&E's Rule 30 Application

On November 21, 2024 PG&E submitted Application (A.)24-11-007 proposing a new Electric Rule 30 tariff to connect transmission-level customers seeking retail service.

Related to Other Tariffs

Voltage Category	Generation		Load	
	Wholesale	Retail	Wholesale	Retail
Distribution	FERC Wholesale Distribution Tariff (WDT) (Interconnection)	CPUC Rule 21	FERC Wholesale Distribution Tariff (WDT) (Service)	CPUC Electric Rules 15 & 16
Transmission	Large Generator Interconnection Agreements	CAISO's FERC Open Access Transmission Tariff (OATT)	FERC Transmission Owner (TO) Tariff	**Proposed CPUC Electric Rule 30** (50-230 kV)

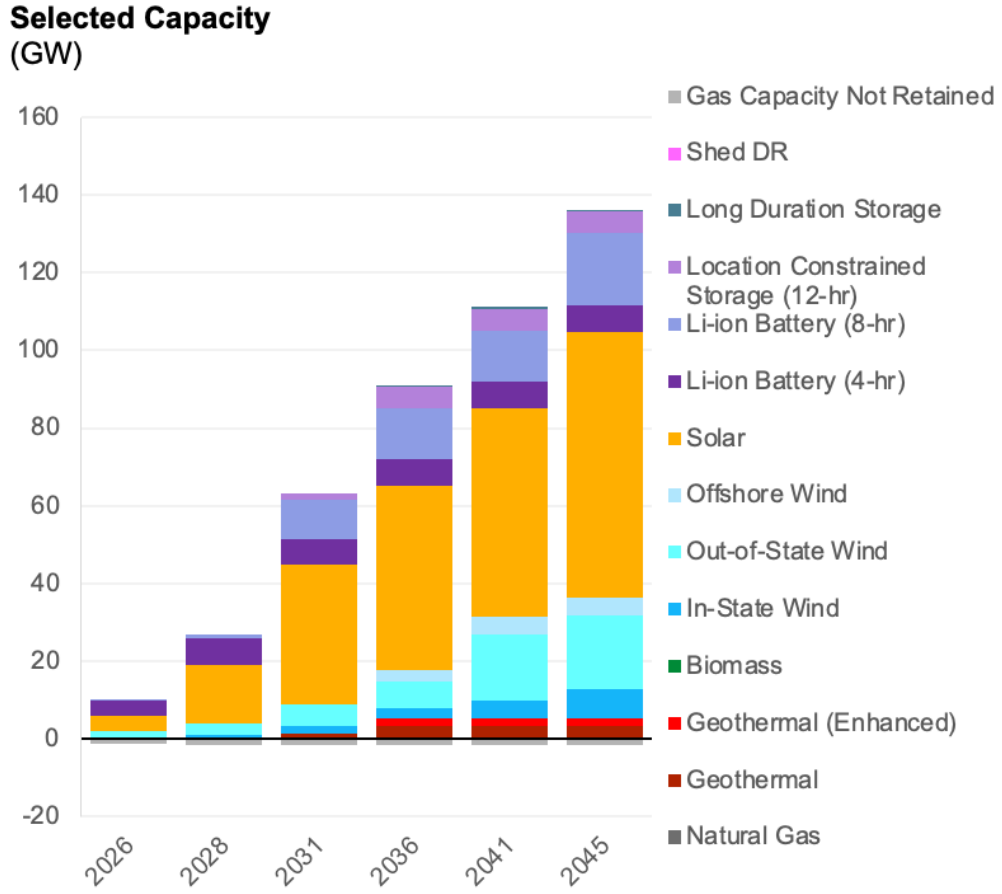
Total New Energy Resources Online and Under Contract



Note: Data shown here shows a snapshot of new resources added to CAISO grid Q12020 – Q4 2025, including specified CAISO imports. Also shown is a projection of future new resources based on contracts in place by December 2025. "Other" resources includes geothermal, biomass, biogas, and hydropower. Prior versions of this chart indicated 7,052 MW came online in 2024; however subsequent data corrections to CAISO COD records now indicate the 2024 total was 6,928 MW.

IRP Proposed Decision Transmission Portfolios and Additional Procurement Order

Base Case Portfolio for 26-27 Transmission Planning Process



- **The Proposed Decision's includes a need determination of 6 GW total, with 2 GW required by 2030 and 4 GW required by 2032**
- Procurement obligations would be allocated to all jurisdictional LSEs
- Requires that 50% of the ordered capacity come from energy-generating (i.e., non-storage) resources to encourage resource diversity and ensure that the storage on the system has enough energy to be charged
- The proposed order would be in response to system need from 2029 to 2032

General Order 131 Electrical Infrastructure Permitting Updates (SB 529)

- **Allow Applicant-Prepared Draft Versions of Environmental Documents**
- **Require Pre-Filing Consultation**
- **Authorize Pilot Program to Explore Faster CEQA Review**
- **Implement Presumption of Need for Projects**
- **Clarify Advice Letter Protests**
- **Simplify and Modernize Reporting Requirements**

Thank You

For follow up questions, please contact:

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CAISO Treatment of Large Loads – Planning and Load Interconnection

Assembly Utilities and Energy Committee
January 28, 2026

Neil Millar, VP Transmission Planning and Infrastructure Development

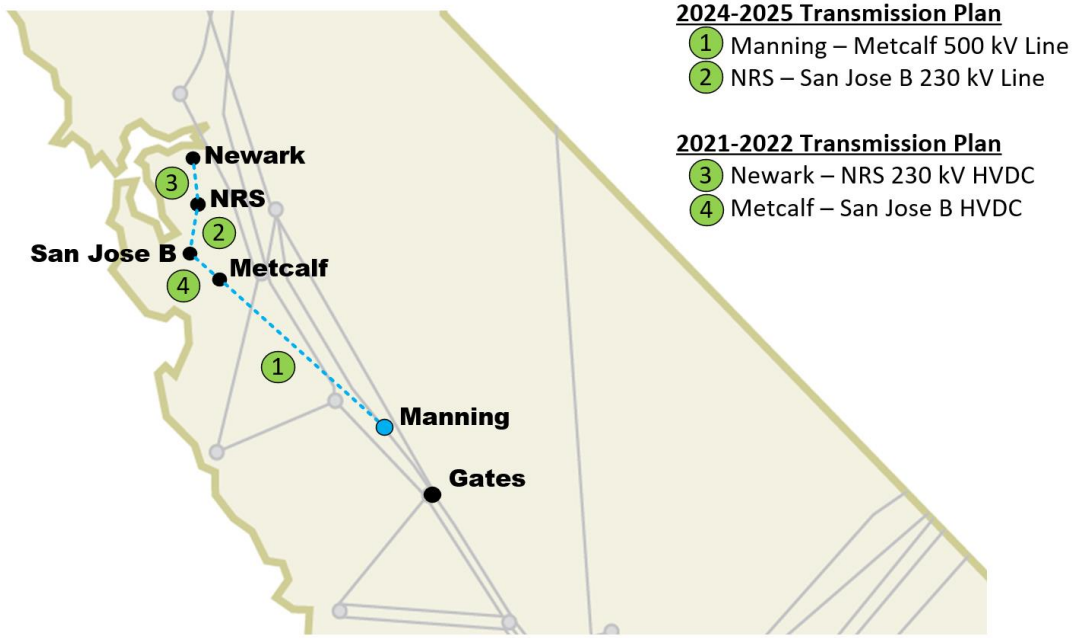
The CAISO has several roles in supporting large loads in our footprint

- The CAISO conducts the transmission expansion planning supports the process focusing on reliability
- Supports the load interconnection (i.e. energization) process led by the utilities
- Ensures system reliability needs are met through the development of any required standards

Transmission planning accounts for data centers and other large loads

- Large loads are incorporated into the Energy Commission's forecasts
- The resource needs form part of the CPUC's resource planning requirements
- The CAISO's planning process relies on these key inputs
- Significant transmission has already been advanced to meet load growth in part driven by data centers and other large loads

Recent Transmission Projects heavily driven by large load forecast increases



Projects (3) and (4) were modified in November 2024 to provide increased capacity to the area and better position the system for additional expansion. (3) was converted to an AC solution.

Load interconnection requests are primarily managed by the local utility

- The CAISO leads transmission planning and generator interconnection
- The transmission owners (utilities) lead the load interconnection study processes
- The end customer rates and terms of service are established by the local regulatory authority – usually the CPUC
- The CAISO supports the process focusing on reliability:
  - Reviews load interconnection studies to ensure network reliability and ensure alignment with transmission planning
  - Shares responsibility for technical standards impacting overall system reliability

Next steps

- Ongoing discussions with State agencies
- Exploration of technical standards with utilities and North American Electric Reliability Corporation (NERC)
- Monitoring Federal Energy Regulatory Commission (FERC) consideration of rulemakings for large loads and for co-located load and generation
- Development of Issue Paper and Stakeholder Information Session on large loads
  - Affirm current roles and responsibilities
  - Explore outstanding policy issues
  - Emphasize consideration and development of technical standards

Background slides

Emerging technical concerns

- Power quality (Harmonics, voltage variation, etc.)
- Rapid ramping
- “Pulsating” load characteristic, as observed with AI training
  - Can trigger critical dynamic system frequencies and “force” system oscillations
  - Can cause sub-synchronous resonance issues with nearby rotating machines
- Voltage and Frequency ride-through – avoiding system shock
- Minor but persistent load fluctuations triggering inertial response impacts

AI's Energy Impacts

Leuwam Tesfai
Deputy Executive Director for Energy and Climate Policy
California Public Utilities Commission

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AI's Ratepayer Impacts

Proposed Rule 30 Cost Recovery Process

- Large Load Customer pays in advance for certain facilities; For other facilities cannot pay in advance but customer can expedite work by providing pre-funding loan.
- Work for certain facilities performed by PG&E or in-kind by Customer; other facilities work must be performed by PG&E.

SB 57: Implementation of Data Center Cost Shift Impact Assessment

- Conduct Data Center Cost Shift Assessment
  - Assess IOU costs of new electrical loads driven by data centers, potential cost shifts to existing customers, mitigation strategies through rate design
  - Assessment due January 1, 2027
- Referenced in the Governor's January 2026 Budget Summary; implementation supported by 3.0 permanent positions.

Thank You

For follow up questions, please contact:

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The Public ADVOCATES OFFICE

Data Centers, Ratepayer Implications, and Safeguards

Karin Hieta, Program Manager
Energy Infrastructure Branch

January 28, 2026

The Public ADVOCATES OFFICE

Mission

- Obtain the lowest possible rates for customers consistent with safe, reliable service, and the state's energy and climate goals.
- Advocate for customers of investor-owned utilities before the California Public Utilities Commission (CPUC) and in other forums.
- Focus on issues affecting customers of electric, gas, water, and telecommunications services.

Data Centers Are Driving New Load Growth

- Extremely energy-intensive facilities
- Large, concentrated demand in specific locations
- Driving billions in proposed grid upgrades
- Load forecasts are uncertain and can change quickly

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Data Centers Can Lower Costs – But Only If Risks Are Managed

- High, sustained usage can help offset grid costs
- That benefit depends on:
  - Facilities actually being built
  - Energy use matching projections
  - Long-term operation
- Without safeguards, costs may shift to existing customers

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Guiding Principles to Protect Ratepayers

1. REVENUE CONTINUITY
2. CAUSAL COST ALLOCATION
3. CONSISTENT REGULATORY PRACTICES
4. TRANSPARENCY AND OVERSIGHT

Need for Proactive Planning

- Avoid overbuilding driven by speculative load forecasts
- Reassess transmission projects prior to construction
- Coordinate across agencies to align planning assumptions

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