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Joint Agency Reliability Planning Assessment

SB 846 Fourth Quarterly Report 2024

March 2025 | CEC-200-2024-018

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ABSTRACT

The Joint Agency Reliability Planning Assessment addresses requirements for electric system reliability reporting in Senate Bill 846 (Dodd, Chapter 239, Statutes of 2022). This report provides the 2024 fourth quarterly review of the supply forecast, and risks to reliability in the California Independent System Operator territory and includes an updated analysis for summer 2024.

Keywords: Reliability, Reliability Planning Assessment, Diablo Canyon, SB 846, California ISO, CEC, CPUC, California, electricity, supply and demand, extreme weather, electricity system planning, stack analysis, summer reliability, resource procurement

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EXECUTIVE SUMMARY

Senate Bill 846 (Dodd, Chapter 239, Statutes of 2022) (SB 846) mandated the California Energy Commission (CEC) and California Public Utilities Commission (CPUC) to develop and provide to the Legislature quarterly joint agency reliability planning assessments beginning on or before December 15, 2022. These assessments include updates on electric system demand and supply for the next 5- and 10-year periods, as well as an assessment of electric system reliability under different risk scenarios. The report is also required to provide information on the status of new resources and delays or barriers to their availability to support reliability.

This assessment is the fourth quarterly report of 2024 and provides an update on electric demand and supply for summer 2024 for the California Independent System Operator (California ISO) balancing area. This report does not update the 5- and 10-year-forward projections of system reliability or provide any recommendations to the Legislature; that assessment is done annually in the first quarterly report.

Projected system conditions for this summer have varied from quarter to quarter as new generation projects reached commercial operation earlier or later than projected. As of July, more than 3,500 megawatts (MW) of new nameplate capacity have come online in 2024, with 820 MW of new additions since the August 2024 *Joint Agency Reliability Planning Assessment SB 846 Combined Second and Third Quarterly Report.*

This report includes a brief recap of summer 2024 conditions and shows the results of the resource stack analysis using data collected at the beginning of September 2024. For September, the analysis showed surplus capacity under average and some extreme weather conditions, such as those witnessed in the 2020 heat wave (2020 equivalent event). However, the analysis showed a possible need for contingencies if an extreme weather event equivalent to the 2022 heat wave (2022 equivalent event) were to occur in September 2024.

For September, delays in new generation projects have impacted the overall supply outlook. Under average conditions, there was a surplus of 3,200 MW, down from 4,700 MW. Under a 2020 equivalent event, there was a surplus of 750 MW, down from 2,200 MW. In a 2022 equivalent event, there is a need for contingencies of up to 845 MW, which was reported in the combined second and third quarterly report as a 600 MW surplus.

However, extreme events could have been managed with contingency resources and additional real-time market procurements in September. If there were to be a coincident fire that impacts transmission assets and results in reduced electricity imported to the California ISO balancing area, the state could face up to a 4,000 MW loss of resources. Such an event could lead to the dispatch of contingency resources and calls for energy conservation measures across the state.

CHAPTER 1:
Fourth Quarterly Report

Introduction

This report provides an update to reliability-related activities and developments since the August 2024 *Joint Agency Reliability Planning Assessment SB 846 Combined Second and Third Quarterly Report* [1] was published. The report provides updates for topics required by SB 846.

Supply Forecast

New Megawatts Online June-September 2024

As shown by Table 1, California continues to experience growth in renewable resources, particularly solar photovoltaics (PV) and energy storage.

From June to September 2024, a total of 2,359 MW of new resources have come online and 1,506 MW of Net Qualifying Capacity (NQC). Based on Integrated Resource Planning (IRP) procurement orders and load-serving entities' (LSEs') self-reported contracting for 2024, CPUC staff have projected at least 6,000 MW of new projects would be added to the grid by the end of 2024. Currently a total of 5,000 MW of new nameplate capacity have come online in 2024, and additional resources may come online in the fourth quarter of 2024. Contributing to this shortfall are challenges outlined in previous reports, including permitting, construction, and the interconnection processes. Increased transmission development, approved by the California ISO, should increase the amount of both in-state and out-of-state project development in the coming years.

Table 1: New Resource Additions Since June 1, 2024

Technology Type	Nameplate Capacity (MW)	Estimated Sept. NQC MW[2]	Number of Projects
	June 1-September 30, 2024	June 1-September 30, 2024	June 1-September 30, 2024
Storage	1,596	1,342	25
Solar	283	1	11
Hybrid (storage/solar)	300	0	1
Wind	30	13	1

1 The August 2024 *Joint Agency Reliability Planning Assessment SB 846 Combined Second and Third Quarterly Report* is available at https://www.energy.ca.gov/publications/2024/joint-agency-reliability-planning-assessment-sb-846-combined-second-and-third.

2 New projects have not yet made it onto the CPUC's monthly NQC list and have not yet been assigned NQC values. Future quarterly SB 846 reports will include updated NQC amounts for these resources.

Technology Type	Nameplate Capacity (MW)	Estimated Sept. NQC MW[2]	Number of Projects
	June 1-September 30, 2024	**June 1-September 30, 2024**	**June 1-September 30, 2024**
Geothermal	0	0	0
Biomass, Biogas, Hydro	0	0	0
Subtotal Total New SB100 Resources, In-California ISO	**2,209**	**1,356**	**38**
Natural Gas, including Alamitos and Huntington Beach	0	0	0
Total New Resources, In-California ISO	**2,209**	**1,356**	**38**
New Imports, Pseudo-Tie or Dynamically Scheduled	150	150	1
Total New Resources, including Imports	**2,359**	**1,506**	**39**

Source: CPUC staff, California ISO data through September 2024

Note: Data shown here includes new resources added to the California ISO grid since the August 2024 second and third combined quarterly *Joint Agency Reliability Planning Assessment* that have been verified online in the California ISO Generator Interconnection Resource ID Report as of September 30, 2024. CEC resource stack assumptions include additional resources with 2024 Commercial Operations Dates that are not included in the California ISO Generator Interconnection Resource ID Report at this time.

Compliance with CPUC's Procurement Orders

In fall 2024, CPUC staff will be releasing the Summary of Compliance with IRP Procurement Orders (D.19-11-016 and Mid-Term Reliability (MTR) D.21-06-035, and Supplemental MTR D.23-02-040) using the compliance data submitted by LSEs in December 2023. The data show claimed procurement by LSEs towards the MTR requirements, which represents the largest driver of procurement for CPUC jurisdictional LSEs. While compliance with procurement orders will be assessed on an individual basis, collectively LSE procurement efforts have yielded significant new reliability resources and procurement efforts by the LSEs are ongoing.

CPUC staff are monitoring LSE Procurement Progress with IRP Procurement orders. As of the December 1, 2023, CPUC IRP Compliance Filings, LSEs are reporting:

- 3,747 MW NQC of total new procurement towards D.19-11-016, collectively exceeding the 3,300 MW procurement obligation.[3]
- 3,407 MW NQC of total new procurement towards D.21-06-035 (MTR) Tranche 1 obligations has been reported, collectively exceeding the 2,000 MW MTR Tranche 1 Obligation.
- 10,845 MW NQC of procurement as under contract and forecasted to be online by June 1, 2027. This is progress towards the 2021 and 2023 MTR procurement orders which require 15,500 MW NQC by 2028.
- More comprehensive information about compliance with IRP procurement orders can be found on the CPUC IRP Procurement Track website.[4]

Estimates of Planned Resources

There have been no updates since the August 2024 *Joint Agency Reliability Planning Assessment SB 846 Combined Second and Third Quarterly Report.* This data will be updated in the 2025 first quarterly report.

Proceedings and Actions Related to the Diablo Canyon Power Plant (DCPP) Extension

Since the August 2024 *Joint Agency Reliability Planning Assessment SB 846 Combined Second and Third Quarterly Report* was issued, updates in the CPUC rulemaking (R.23-01-007) include the following:

- On March 29, 2024, Pacific Gas and Electric (PG&E) filed Application (A.)24-03-018[5], its first Diablo Canyon Power Plant (DCPP) Extended Operations Cost Forecast application with the CPUC, as ordered in D.23-12-036.
- The Nuclear Regulatory Commission (NRC) continues its review of PG&E's license renewal application for DCPP.[6]
    - The NRC is expecting to issue the Draft Supplemental Environmental Impact Statement (SEIS) for a 45-day comment period sometime in October of 2024.
- On May 30, 2024, the Diablo Canyon Independent Peer Review Panel met to discuss the findings of PG&E's Diablo Canyon Updated Seismic Assessment, published in February 2024.

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3 NQC values listed for compliance with IRP procurement orders are based on IRP's effective load carrying capabilities. More information is available at the CPUC's IRP Procurement Track webpage, available at https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/electric-power-procurement/long-term-procurement-planning/more-information-on-authorizing-procurement/irp-procurement-track.

4 CPUC's IRP Procurement Track webpage, available at https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/electric-power-procurement/long-term-procurement-planning/more-information-on-authorizing-procurement/irp-procurement-track.

5 CPUC, *Decision 24-02-007 - Final Order*, available at: https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M528/K454/528454317.PDF.

6 Status and details pertaining to the NRC process can be found at https://www.nrc.gov/reactors/operating/licensing/renewal/applications/diablo-canyon.html.

    - On August 26, 2024, the Independent Peer Review Panel published its initial review of PG&E's seismic assessment.
    - The IPRP expects PG&E to issue a written response to this initial report within 60 days. PG&E's response will be posted to the CPUC website.
- On July 3, 2024, three NRC Administrative Judges concluded that embrittlement testing was in line with regulations, denying the request for hearing and terminating the proceeding.
- 2024 Spent Nuclear Fuel Offload Campaign
    - Transfer 192 spent fuel assemblies from each spent fuel pool to dry storage.
    - 12 Canisters (containing 32 fuel assemblies each), 1 per week (6-day cycle), from July 22 to October 18 (1 rest week off over Labor Day).

Tracking Project Development

Renewable Energy Project Development Challenges in 2024

Renewable energy project deployment continues to face many of the same challenges as previously reported. These challenges include supply chain shortages for critical equipment, interconnection delays, and permitting and siting approval delays. A project may encounter multiple issues over the course of deployment.

The Tracking Energy Development (TED) Task Force has engaged with over 100 stakeholders and is tracking more than 130 renewable energy projects that are expected to come online over the next two to three years. Of those projects seeking assistance from the TED Task Force, nearly 70 have been delayed from the original in-service date. More than half of those 70 projects cited interconnection issues as the leading cause for delay.

The TED Task Force members are conducting an increased number of meetings with investor-owned utilities (IOUs), being more available for direct discussions with local permitting agencies and developers, and engaging with other state and federal agencies with regulatory oversight of permitting and siting energy projects. The TED Task Force continues to assist as needed when issues arise and collect as much information as possible that will help better understand the problems and find global solutions.

Table 2: Challenges to Renewable Energy Project Deployment

Permitting Delays	Supply Chain Issues	Interconnection Delays
• Local, state and/or federal reviews • Staffing capacity/turnover • Community opposition	• Global competition including from other industries for same technology (i.e. battery) • Longer lead time for circuit breakers and transformers	• Network upgrades (sometimes linked to supply chain issues) • Inverter problems • Deliverability • Grid synchronization

Source: GO-Biz

One of the recent trends is increased local opposition to battery energy storage system (BESS) projects due to fire safety concerns. Recognizing that BESS technology is evolving, as well as California's experience in deploying these projects, it is critical that developers, local jurisdictions and other stakeholders work collaboratively to develop a better and common

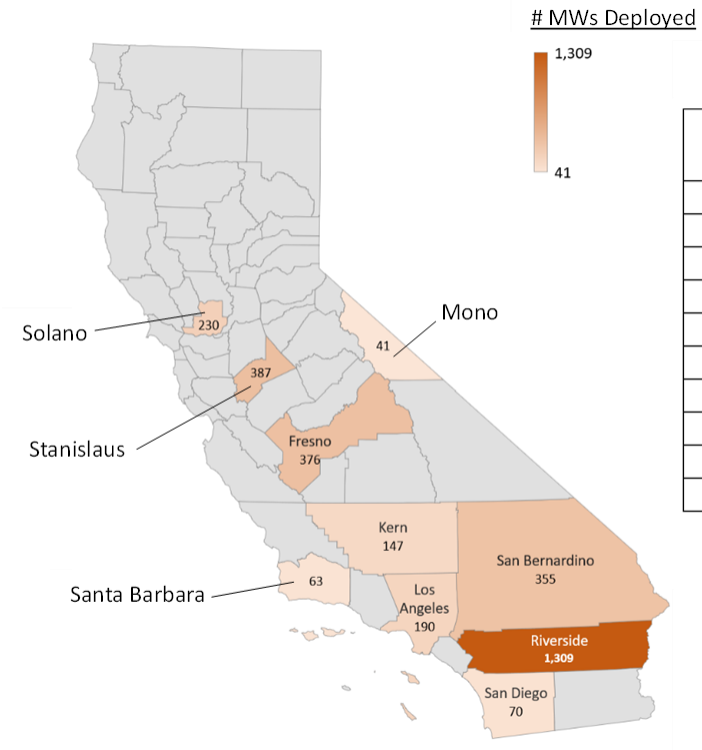
understanding of how BESS technology can be designed and installed properly to operate safely and reliably.

The TED Task Force is working with several industry associations to increase availability of educational and safety resources as well as deepening engagement with local governments, including those seeking to update and/or create renewable energy ordinances for their jurisdiction. The TED Task Force members have provided support by sharing resources, connecting with experts in the field of fire safety and technology related to renewable energy projects, as well as consulting with other states that are working on similar issues. The TED Task Force will actively continue to convene and facilitate discussions for stakeholders on development of best practices for siting and permitting, community engagement, safety enhancements, training and other ways to improve BESS project deployment.

Renewable Energy Projects Deployed in 2024

Despite the challenges to deployment, new projects have come online and are providing energy to millions of Californians. There were 70 projects totaling 3,510 MW that came online between January and July 2024. Figure 1 shows a map, as well as a list of the top 10 counties by MW where these projects were deployed. Additional information on energy projects online and operating can be found on the state's infrastructure website at build.ca.gov.

Figure 1: Top 10 Counties by MW Deployed, January-July 2024



COUNTY	# MWs DEPLOYED
Riverside	1309
Stanislaus	387
Fresno	376
San Bernardino	355
Solano	230
Los Angeles	190
Kern	147
San Diego	70
Santa Barbara	63
Mono	41

Source: GO-Biz

Reliability Assessment

The reliability assessment approach used for this report is consistent with the Summer Resource Stack Analysis published by the CEC in prior quarterly Joint Agency Reliability Planning Assessments. The assessment compares an hourly projection of anticipated supply against the projected hourly demand plus the reserve margin for the peak day of each month (July through September). For CPUC LSEs, a 17 percent planning reserve margin (current resource adequacy planning standard) is equivalent to average conditions, while 22.5 and 26 percent planning reserve margins are comparable to 2020 and 2022 equivalent events, respectively. Generally, the Summer Resource Stack Analysis conservatively identifies the maximum hourly need for contingencies in summer 2024 for each equivalent event.

California ISO Area: Updated Resource Stack Analysis Results for Summer 2024

As shown in Table 3, there were various changes to the resource stack since the release of the August 2024 *Joint Agency Reliability Planning Assessment SB 846 Combined Second and Third Quarterly Report*. Notably, the total supply has seen a decrease, dropping from 57,867 MW in the third quarter to 56,491 MW, representing a reduction of 1,376 MW. The most significant changes are seen in the New Batteries Nameplate capacity category, which has decreased by 719 MW, falling from 2,102 MW to 1,383 MW.

Additionally, the Existing Resources category has seen a reduction of 651 MW, falling from 45,643 MW to 44,992 MW. The reduction in Existing Resources is due to a data quality issue where some resources were added to the NQC list but did not declare commercial operations. A correction was made to the data, which led to the decrease.

While improvements in supply were anticipated in earlier quarterly assessments, delays in new generation projects, particularly in battery storage, have impacted the overall supply outlook. A total of 37 projects have moved their online dates out of the summer period, leading to a reduction in available capacity. Notably, 719 MW of this reduction comes from delayed battery storage projects.

In the August 2024 *Joint Agency Reliability Planning Assessment SB 846 Combined Second and Third Quarterly Report*, the CEC projected this summer to have sufficient electric system resources to support all system demand conditions. However, in this quarterly update, the CEC resource stack analysis shows that there would be a need for about 845 MW of contingencies if the state experienced a 2022 equivalent event in September.

Table 3: Comparison of Summer Assessment Results for September 2024

	2024 1st Quarterly Report	2024 2nd and 3rd Quarterly Reports	2024 4th Quarterly Report	Change Since Last Update
Supply				
Demand Response	1,115	1,052	1,052	**–0**
Existing Resources*	43,556	45,643	44,992	**▼651**
New Batteries Nameplate**	3,327	2,102	1,383	**▼719**
Wind	1,382	1,325	1,326	**▲1**
Solar	1,643	1,745	1,738	**▼7**

	2024 1st Quarterly Report	2024 2nd and 3rd Quarterly Reports	2024 4th Quarterly Report	Change Since Last Update
Resource Adequacy Imports	6,000	6,000	6,000	**–0**
Total (MW)	**57,022**	**57,867**	**56,491**	**▼1,376**
Demand				
2023 CEC Demand Forecast – 2024 Sept. Peak Demand	**45,972**	**45,972**	**45,972**	**–0**
Surplus/Shortfalls				
Planning Standard	4,000	4,765	3,265	**▼1,500**
2020 Equivalent Event	1,500	2,253	753	**▼1,500**
2022 Equivalent Event	-90	655	-845	**▼1,500**

Source: CEC staff with California ISO data
*Values are in resource adequacy NQC MW.
**Decrease in this category means that resources have come online or have an updated online date but generally means they are no longer considered new and have been moved to Existing Resources.

Contingency Resources

The agencies and the California ISO are continuing to track contingency resources to provide support during an extreme event. The updated contingency list for 2024 includes the addition of 2,859 MW of once-through cooling resources to the Electricity Supply Strategic Reliability Reserve Program. Contingency resources, identified in Table 4, are expected to provide up to 4,200 MW during extreme events and may be called upon to cover contingency needs identified in real time grid operations.

Table 4: Contingency Resources for Summer 2024

Type	Contingency Resource	Available MW July	Available MW August	Available MW September
Strategic Reliability Reserve (SRR)[7]	DWR's[8] Electricity Supply Strategic Reliability Reserve Program	3,130	3,130	3,130
SRR	Demand Side Grid Support	373	480	515
SRR	Distributed Electricity Backup Assets (under development)	0	0	0
CPUC	Ratepayer Programs (Emergency Load Reduction Program, Smart Thermostats, etc.)	247	238	233

7 The SRR consists of three programs including the Distributed Electricity Backup Assets Program, Demand Side Grid Support Program, and the Electricity Supply Strategic Reliability Reserve Program.
8 Department of Water Resources

Type	Contingency Resource	Available MW July	Available MW August	Available MW September
CPUC	Imports Beyond Stack*	25	25	25
CPUC	Capacity at Co-Gen or Other Units Above Resource Adequacy	794	364	474
Non-Program	Balancing Authority Emergency Transfers	300	300	300
Non-Program	Thermal Resources Beyond Limits: Gen Limits	40	40	40
Non-Program	Thermal Resources Beyond Limits: Gen Limits Needing 202c	25	25	25
	Total	**4,934**	**4,602**	**4,742**

*Estimates based on IOU excess procurement reports from 2024.
Source: CEC staff with California ISO, DWR, and CPUC data.

Recent and Upcoming Activities

The following activities occurred recently or are projected for the next quarter:

- In September 2024, the CPUC issued resource adequacy obligations for program year 2025 under the newly implemented slice of day paradigm whereby all LSEs must demonstrate resources under contract to meet their load plus a 17 percent planning reserve margin (PRM) for each hour of the day. LSE filings for Year Ahead resource adequacy obligations are due at the end of October 2024.
- On August 22, 2024, the CPUC issued a Decision Determining Need for Centralized Procurement of Long Lead-Time Resources (D.24-08-064)[9] implementing Assembly Bill 1373 (Garcia, Chapter 367, Statutes of 2023). The decision seeks to contain costs by establishing broad resource categories, where possible, to encourage competition; maximizing opportunities to reduce project expenses over the long term, including a series of solicitations to leverage declining costs over time; and establishing the identified resource need as maximums. Additionally, the decision highlights the need for funding sources other than electricity bills to support these efforts.
    - A "need determination" is defined as the maximum value determined by the CPUC that could be procured by DWR for specified resource types and/or resource attribute(s). The decision makes the need determination shown in Table 5 for long-lead time resources, outlining maximum quantities, initial round of solicitation dates, and online dates for potential procurement.
    - These specific resources were selected because they are technologies that present opportunities to help California meet its GHG emissions reduction goals for 2045 and beyond.

9 CPUC, Decision Determining Need for Centralized Procurement of Long Lead-Time Resources (D.24-08-064), available at https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M539/K202/539202613.PDF.

- Any resulting procurement will be on behalf of all energy providers within CPUC jurisdictional areas.
- For CPUC approval of successful procurement, DWR would submit a memorandum to the CPUC, kickstarting a public stakeholder process, and a decision and authorization of cost recovery if necessary.

Table 5: AB 1373 Need Determination Quantities

Resource Type	Maximum Quantity	Solicitations Beginning	Online by
Long Duration Energy Storage: 12-hour+ duration	1 GW	2026	2031-2037
Long Duration Energy Storage: multiple day duration	1 GW	2026	2031-2037
Geothermal	1 GW	2027	2031-2037
Offshore Wind	7.6 GW	2027	2035-2037

Source: Fact Sheet for Decision for AB 1373 Centralized Procurement[10]

- During quarter three and quarter four of 2024, the CPUC's Resource Adequacy Proceeding (R.23-10-011) will consider modifications to the PRM for compliance year 2026 based on the results of CPUC's annual Loss of Load Expectation study. The analysis included approximately 10 GW of new generation set to come online between January 2024 and August 2026, updated weather data, and the most recent *Integrated Energy Policy Report (IEPR)* managed peak forecast for 2026. Initial results, including the recommended PRM for 2026, were published on July 22, 2024, and a stakeholder workshop was held on July 25 to discuss results. During review, logic errors were identified in the slice-of-day monthly PRM calibration tool; in response, CPUC has modified the PRM calibration tool and released updated PRM results on August 30, 2024.
- At the August 14, 2024, CEC Business Meeting, a grant agreement with the City of Roseville was approved. This agreement will include the purchase, install, and performance reporting of efficiency upgrades to improve the performance of two generators operated by Roseville Electric Utility under the Distributed Electricity Backup Assets Program. The project will install evaporative coolers and natural gas compression to allow the combined output to increase by 9.5 MW, from 44.5 MW to 54 MW.
- At the September 11, 2024, CEC Business Meeting, a grant agreement with the Regents of the University of California; University of California, San Diego, was approved. The agreement will include the purchase, install, and performance reporting of a 9.8 MW, 4-

10 CPUC, Fact Sheet: Decision Determining Need for Centralized Procurement of Long Lead-time Resources (AB 1373 Implementation) (R.20-05-003), available at https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/integrated-resource-plan-and-long-term-procurement-plan-irp-ltpp/ab1373/final_decision_-ab1373_factsheet_pdf.pdf.

hour battery energy storage system under the Distributed Electricity Backup Assets Program.

- The Demand Side Grid Support Program began the stakeholder process in fall 2024 for potential modifications to the Demand Side Grid Support Program guidelines that would become effective for the 2025 program season.
- A Demand Analysis Working Group Meeting on October 21, 2024, reviewed methodology and preliminary results for load modifiers to the electricity demand forecast. Annual impacts and hourly profiles for the Additional Achievable Fuel Substitution and Additional Achievable Transportation Electrification were discussed to solicit feedback from utilities, other agencies, and the public.
- An *IEPR* Workshop on November 7, 2024, will present the complete annual and hourly results for the Additional Achievable Fuel Substitution, Additional Achievable Transportation Electrification, Additional Achievable Energy Efficiency, and Distributed Generation load modifying scenarios.
- A Demand Analysis Working Group Meeting will be held the week of November 18, 2024, to review methodology and preliminary results for the annual, hourly and peak baseline electricity demand forecasts to solicit feedback from utilities, other agencies, and the public. Differences from previous forecast will also be discussed.
- An *IEPR* Workshop on December 12, 2024, will present the complete results for the annual, hourly and peak forecasts of electricity demand.

APPENDIX A:
Acronyms and Abbreviations

BESS – Battery energy storage system

California ISO – California Independent System Operator

CEC – California Energy Commission

CPUC – California Public Utilities Commission

DCPP – Diablo Canyon Power Plant

DWR – Department of Water Resources

GO-Biz – Governor's Office of Business and Development

IRP – Integrated Resource Planning

LSE – Load-serving entity

MTR – Mid-term reliability

MW - Megawatts

NQC – Net qualifying capacity

PG&E – Pacific Gas and Electric

PRM – Planning Reserve Margin

PV – Photovoltaics

SB – Senate Bill

SRR – Strategic Reliability Reserve

TED – Tracking Energy Development

APPENDIX B:
Glossary

For additional information on commonly used energy terminology, see the following industry glossary links:

- California Energy Commission Energy Glossary, available at https://www.energy.ca.gov/resources/energy-glossary
- California Independent System Operator Glossary of Terms and Acronyms, available at http://www.caiso.com/Pages/glossary.aspx
- California Public Utilities Commission Glossary of Acronyms and Other Frequently Used Terms, available at https://www.cpuc.ca.gov/glossary/
- Federal Energy Regulatory Commission Glossary, available at https://www.ferc.gov/about/what-ferc/about/glossary
- North American Electric Reliability Corporation Glossary of Terms Used in NERC Reliability Standards, available at: https://www.nerc.com/pa/Stand/Glossary%20of%20Terms/Glossary_of_Terms.pdf
- US Energy Information Administration Glossary, available at https://www.eia.gov/tools/glossary/

Integrated Energy Policy Report (IEPR)

Senate Bill 1389 (Bowen, Chapter 568, Statutes of 2002) requires the California Energy Commission to prepare a biennial integrated energy report. The report, which is crafted in collaboration with a range of stakeholders, contains an integrated assessment of major energy trends and issues facing California's electricity, natural gas, and transportation fuel sectors. The report provides policy recommendations to conserve resources, protect the environment, ensure reliable, secure, and diverse energy supplies, enhance the state's economy, and protect public health and safety. For more information, see the CEC Integrated Energy Policy Report Web page.

Investor-owned utility (IOU)

Investor-owned utilities (IOUs) provide transmission and distribution services to all electric customers in their service territory. The utilities also provide generation service for "bundled" customers, while "unbundled" customers receive electric generation service from an alternate provider, such as a community choice aggregator. California has three large IOUs offering electricity service: Pacific Gas and Electric, Southern California Edison, and San Diego Gas & Electric.

Load-serving entity (LSE)

A load-serving entity is defined by the California Independent System Operator as an entity that has been "granted authority by state or local law, regulation or franchise to serve [their] own load directly through wholesale energy purchases."

Net qualifying capacity (NQC)

The amount of capacity that can be counted towards meeting resource adequacy requirements in the California Public Utilities Commission's (CPUC's) resource adequacy program. It is a combination of the CPUC's qualifying capacity counting rules and the methodologies for implementing them for each resource type, and the deliverability of power from that resource to the California Independent System Operator system. CPUC Integrated Resource Planning procurement orders (D.19-11-016, D.21-06-035, D.23-02-040) also require counting of resources for compliance using the associated NQCs, which can be different to those used in the RA program, depending on the resource type and order.

Planning reserve margin

Planning reserve margin (PRM) is used in resource planning to estimate the generation capacity needed to maintain reliability given uncertainty in demand and unexpected capacity outages. A typical PRM is 15 percent above the forecasted 1-in-2 weather year peak load, although it can vary by planning area.

Power plant

A centralized facility that generates and stores electricity to meet the energy demands of a specific area or grid. It includes generating units and storage resources to produce and supply electrical energy effectively.