Date of Hearing: April 24, 2024

ASSEMBLY COMMITTEE ON UTILITIES AND ENERGY
Cottie Petrie-Norris, Chair
AB 2368 (Petrie-Norris) – As Amended March 21, 2024

SUBJECT: Independent System Operator: outage: review

SUMMARY: Modifies several aspects of the resource adequacy (RA) program to ensure reliable electric service, including permitting the California Independent System Operator (CAISO) to establish a minimum planning reserve margin; requiring the California Public Utilities Commission (CPUC) adopt the 1 day-in-10 year (1-in-10) loss-of-load expectation (LOLE) as the minimum standard for the RA program; and directing the CPUC to regularly conduct a mid-term (2-5 year) assessment of reliability.

Specifically, **this bill**:

1) Authorizes the CAISO to establish minimum planning reserve requirements for participating load-serving entities (LSEs) as deemed necessary and approved by the Federal Energy Regulatory Commission (FERC).

2) Defines "short term" and "midterm" to mean a time period between the present to two years in the future and a time period between two to five years in the future, respectively.

3) Requires the CPUC, in coordination with the CAISO, to establish resource adequacy (RA) requirements, which ensure short term and midterm reliability and maintain a 1-in-10 LOLE while advancing the state's goals for carbon reduction and clean energy, for all LSEs.

4) Requires LSEs to file an integrated resource plan (IRP) to the CPUC that, in addition to existing provisions, ensures system and local reliability on a short-term, midterm, and long-term basis. To accomplish this, the CPUC shall:

    a. Ensure that all resources contracted for the midterm forward period by LSEs are reported to the CPUC and the CAISO using resource counting rules that are equivalent to those used for resource adequacy; and

    b. Biennially assess short-term, midterm, and long-term reliability by conducting probabilistic reliability modeling and reviewing the results of that reliability modeling in a public proceeding.

5) Exempts the CAISO from the CPUC's ex parte communication rules when it consults with the CPUC on matters of reliability, as provided.

EXISTING LAW:

1) Requires the CAISO to ensure the efficient use and reliable operation of the transmission grid consistent with the achievement of planning and operating reserve criteria that are no less stringent than those established by the Western Electricity Coordinating Council and the North American Electric Reliability Council. (Public Utilities Code § 345)

2) Requires the CAISO to perform a review following a major outage that affects at least 10% of the customers of the entity providing the local distribution service that addresses the cause, the response time and effectiveness, and whether the transmission facility owner or operator's operation and maintenance practices enhanced or undermined the ability to restore service efficiently and in a timely manner. Authorizes the CAISO, subject to approval by the Federal Energy Regulatory Commission (FERC), to order appropriate sanctions if it is found that the owner or operator prolonged the response time or was responsible for the outage. (Public Utilities Code § 349)

3) Requires the CPUC, in consultation with the CAISO, to establish resource adequacy requirements for LSEs, facilitate the development or resources, equitably allocate costs of generating capacity, minimize enforcement requirements and costs, and maximize the ability of community choice aggregators (CCAs) to determine the generation resources used to serve their customers. (Public Utilities Code § 380)

4) Requires LSEs to file an IRP to the CPUC that meets greenhouse gas (GHG) emissions reduction targets and clean energy targets; enables each electrical corporation to fulfill its obligations to serve its customers at just and reasonable rates; minimizes impacts on ratepayers' bills; strengthens the diversity, sustainability, and resilience of the bulk transmission and distribution systems; enhances distribution systems and demand-side energy management; and maintains a diverse portfolio of energy resources. (Public Utilities Code § 454.52)

5) Requires the CPUC to establish rules regarding ex parte communication on case categorization issues in its proceedings. (Public Utilities Code § 1701.1)

FISCAL EFFECT: Unknown. This bill is keyed fiscal and will be referred to the Committee on Appropriations for its review.

BACKGROUND:

Resource Adequacy (RA) – The RA process, overseen by the CPUC and CAISO, is designed to identify resources needed to ensure reliability. Following the California energy crisis of 2000-01, the California Legislature enacted AB 380 (Nunez, Chapter 367, Statutes of 2005) to prevent future incidents of widespread blackouts and rolling brownouts due to lack of electricity. This statute established the RA program to guide resource procurement and promote infrastructure investment by requiring that Load Serving Entities (LSEs) procure capacity so that capacity is available to the CAISO when and where needed. The program lives at the CPUC, which must work in consultation with the CAISO to establish RA requirements for all LSEs.

The RA market has experienced significant constraint recently, largely driven by resource retirements across the western U.S. and the growing frequency of extreme weather events. For example, in 2020, two extreme heatwaves impacted the western United States and strained electric system operations in California.[1] One of the heatwaves resulted in two days (August 14-15) of rotating outages in the CAISO territory from 6-9 p.m. These outages marked the first time

[1] CBS News; "Another record-breaking heat wave is building in the West"; September 2020. https://www.cbsnews.com/news/labor-day-weekend-heat-wave-forcast-western-united-states/.

in nearly 20 years that such rotating outages occurred in California.[2] This event led to extensive effort and collaboration amongst California's energy agencies to understand the root cause of the event and to develop strategies, which are promulgated in a Final Root Cause Analysis report (heretofore referred to as the RCA),[3] to ensure such events do not recur, including making changes to the RA program.

The current RA program consists of system, local, and flexible requirements for each month of a compliance year. System requirements are determined for each LSE based on the CEC's integrated energy policy report (IEPR) electricity forecast plus a 17% planning reserve margin (PRM) for 2024-25.[4] Due to higher energy demand in hotter months, the effective PRM increases to between 20-22.5% for the three large investor-owned utilities (IOUs) in the summers of 2024 and 2025.[5] Local requirements are determined based on an annual CAISO study using a 1-in-10 LOLE and an N-1-1 contingency.[6] Flexible requirements are based on an annual CAISO study that currently looks at the largest three-hour ramp for each month needed to run the system reliably. In October, LSEs must demonstrate that they have procured 90% of their system RA obligations for the five summer months (May-September) of the following year, as well as 100% of their local requirements, and 90% of their flexible requirements for each month of the coming compliance year. There is an additional monthly reporting requirement for RA, where LSEs must demonstrate they have procured 100% of their monthly system and flexible RA obligation.

Integrated Resource Planning (IRP) – SB 350 (de León, Chapter 737, Statutes of 2015) directed the CPUC to ensure that California's electric sector meets its greenhouse gas (GHG) emissions reduction and clean energy goals while maintaining reliability at the lowest possible costs. In response, the CPUC has developed the IRP process, which repeats every two years to continually reassess the electricity sector's contribution to the state-wide GHG reduction goals. To evaluate need, the CPUC takes a 10-year-ahead look and compares demand with existing generation, new resources, and retiring resources. In the most recent IRP decision, the CPUC adopted a 2023 portfolio that reduces 25 million metric ton (MMT) by 2035 as compared to the previously adopted 38 MMT by 2030 planning target.[7] The portfolio reflects the resource preferences of CPUC jurisdictional LSEs and includes an expectation that over 56 gigawatts (GW) of new clean energy resources – including solar, battery storage, and offshore wind – will be built to serve load by 2035, including 4.5 GW of offshore wind.

Mid-term reliability – One recommendation from the RCA was greater resource planning and development in mid-term time frames.[3] Many signs point to the need for ensuring sufficient resources are available in the years between the RA's scope (< 2 years) and the IRP's scope (> 10 years): electric demand is projected to increase; the impacts of climate change are

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[2] CAISO, CPUC, CEC; "Preliminary Root Cause Analysis: Mid-August 2020 Heat Storm"; October 2020.
[3] CAISO; *Final Root Cause Analysis Mid-August 2020 Extreme Heat Wave*; January 2021.
[4] The 17% PRM represents an increase relative to the 16% PRM applicable in 2022 and the 15% applicable from 2005-21. CPUC; "Fact Sheet on Decision in Phase 3 of the Implementation Track in the Resource Adequacy (RA) Proceeding (R. 21-10-002); July 2023; https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/resource-adequacy-homepage/fact-sheet-on-ra-d2306029-on-implementation-track-phase-3.pdf
[5] The 20-22.5% effective PRM represents an increase relative to the 15% effective PRM before 2022.
[6] N-1-1 Contingency: A sequence of events consisting of the initial loss of a single generator or transmission component (Primary Contingency), followed by system adjustments, followed by another loss of a single generator, or transmission component (Secondary Contingency).
[7] D. 24-02-047, R. 20-05-003, CPUC; *Decision Adopting 2023 Preferred System Plan and Related Matters, and Addressing Two Petitions for Modification*; February 2024.

accelerating and creating new demands on the state's electricity resources; more and more resources are reaching the end of their lifetime and retiring; and the building of new resources is being delayed from siting and permitting woes. Indeed following the unprecedented heat wave in August 2020, the CPUC has expedited action to develop additional resources that ensure reliability in case of more extreme summer heat events, and ordered the procurement of capacity totaling to more than 26,000 MW to come online between the years 2021 and 2027 during the IRP proceedings.[8]

Since these decisions are made with urgency and limited modeling, the CEC has begun to conduct further analyses and modelling to provide situational awareness to and affirm the CPUC's decision. In their evaluation for the period 2023-26, for which the CPUC ordered the mid-term resource procurement of 11,500 MW of new net qualifying capacity to come online,[9] the CEC found that the ordered resource procurement appeared to be sufficient to meet a 1-in-10 LOLE target, indicating system reliability.[10]

COMMENTS:

1) *Author's statement.* According to the author, "California has experienced reliability events twice in the past three years. Blackouts disproportionately impact California's most vulnerable populations. Grid outages are not only expensive—one event can cost the state over $2 billion —but also hinder emergency services, increasing their demand while impeding their response capabilities. AB 2368 aims to make California's electric grid more reliable and prevent future grid emergencies by directly tackling three significant gaps in California's electric reliability framework. First, it modernizes the Resource Adequacy (RA) program and establishes a reliability metric that is already widely used around the U.S. and the world, requiring the California Public Utilities Commission (CPUC) to benchmark the likelihood of blackouts or grid emergencies based on existing resource procurement. Second, the bill addresses a major blind spot in the CPUC's planning horizon; whereby reliability is not systematically or transparently assessed in the two-to-five year ahead timeframe to address shortfalls before it's too late. Third, the bill aims to harmonize the three separate procurement programs run by the CPUC by requiring the use of consistent standards and methods. The present lack of coordination means the California Independent System Operator's (CAISO) is not able to holistically assess resource sufficiency and anticipate future challenges. Together, these measures will modernize our reliability programs to better ensure a reliable electric supply for all Californians in the face of increased uncertainty from climate change and while we are transitioning our grid to 100% clean resources."

2) *Warding off the squeeze.* Emergency contracting, by nature, is more expensive since time-strapped utilities cannot wait for lower bidders when energy is urgently needed. During the 2020 rolling blackouts event, wholesale prices on California's electricity

[8] D. 19-11-016 ordered 3,300 MW to come online 2021-23, D. 20-12-044 ordered 7,500 MW to come online 2023-25, D. 21-06-035 ordered 11,500 MW to come online 2023-26, and D. 23-02-040 ordered 4,000 MW to come online 2026-27.
[9] D. 21-06-035, R. 20-05-003, CPUC; *Decision Requiring Procurement to Address Mid-Term Reliability*; June 2021.
[10] CEC; "Midterm Reliability Analysis"; September 2021.

market surged, some above $3,800/MW-hour, equating to roughly 100 times the typical cost.[11] The same thing happened during the extreme heat wave in September of 2022.[12]

The latest increases in the effective PRM for LSEs have led to a market rush too, practically at any cost, to buy resources needed to meet RA obligations. Energy sellers have seemingly taken note. While nowhere near the same extent as squeezes during extreme weather events, both system and local RA prices have increased significantly over the last few years, and are projected to be even higher for the coming summers.[13]

As the RCA recommended, more granular resource planning and development in mid-term time frames will be crucial in ensuring reliability and cost-effectiveness of California's electrical grid, particularly as climate change continues to exacerbate the frequency and magnitude of extreme heat events. Since the CPUC has outlined expectations that mid-term reliability resources be fully deliverable and qualify for RA to achieve compliance,[14] this bill appropriately codifies and couches the practice of assessing mid-term reliability needs in the RA program.

3) *Getting in alignment.* As mentioned above, the CAISO currently uses a 1-in-10 LOLE to assess local RA needs. However, system RA, also known as the PRM, is set at a threshold of 17% for most LSEs, and 20-22.5% for the large IOUs. This bill sets a system-wide RA goal as a 1-in-10 LOLE. While not explicitly requiring the 1-in-10 LOLE to be the PRM, the language in this bill does provide strong indication to the CPUC and CAISO to update the PRM to be a 1-in-10 LOLE. It is unclear to this committee at this time what the effect of making the PRM reflect a 1-in-10 LOLE would be; perhaps the PRM would decrease relative to 17% or it might increase. The consequence of a 1-in-10 LOLE increasing the effective PRM is further market constraint, and a further rush to procure more resources from a shrinking supply; in other words, the potential to increase costs. Such a consequence is counter to the author's intent of this bill, which seeks to add more clarity and certainty in RA rules such that expensive, emergency procurement can be minimized as much as possible.

   The impact of a 1-in-10 LOLE for the PRM was discussed during a CAISO RA modeling workshop in March 2024.[15] The workshop participants seemed to acknowledge that the 1-in-10 LOLE was industry standard practice. However, some raised concern that the implications of adopting a 1-in-10 LOLE for the PRM were unknown at the time. Given this uncertainty and the severe constraints in the RA market, stakeholders advocated for the CAISO to evaluate whether there is even additional capacity available for

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[11] NY Times; "California Expresses Frustration as Blackouts Enter 4th Day"; August 2020; https://www.nytimes.com/2020/08/17/business/energy-environment/california-blackout-electric-grid.html.
[12] Energy Institute at Haas, UC Berkeley; "How High Died California's Electricity Prices Get?"; September 2022; https://energyathaas.wordpress.com/2022/09/12/how-high-did-californias-electricity-prices-get/.
[13] CPUC; *2021 Resource Adequacy Report*; April 2023.
[14] CPUC; "Energy Division Staff's Responses to Frequently Asked Questions on Mid-Term Reliability Procurement Decision (D.) 21-06-035"; August 2021; https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/integrated-resource-plan-and-long-term-procurement-plan-irp-ltpp/d2106035_faq_20210824.pdf.
[15] https://stakeholdercenter.caiso.com/Comments/AllComments/a79881e1-374a-4d13-aa17-cbbf7e631b3a

procurement prior to ordering any changes to the PRM, and even suggested whether a phase-in approach might be warranted for parties to meet their PRM more gradually.[16]

The 1-in-10 LOLE standard is a dynamic value that must be periodically computed. Whereas the historical PRM is a flat percentage value, not specific to LSE needs or season. Because of these inherent differences, the impact of applying the 1-in-10 LOLE to the PRM will remain uncertain until more modeling is done. Regardless, the 1-in-10 LOLE seems to be industry standard.[17] Moreover, the CPUC recently adopted the standard for the IRP,[18] recognizing it as crucial for assessing grid reliability. Thus, establishing the 1-in-10 LOLE standard in statute to assess short-term and mid-term reliability in the RA program as this bill proposes would provide alignment across institutions and between the RA and IRP processes.

4) *Prior legislation.*

AB 205 (Committee on Budget), among other things, authorized the Department of Water Resources (DWR) to contract for, purchase, finance or otherwise secure electrical generation to create additional capacity during extreme energy grid events, and established the Strategic Reliability Reserve to fund these actions. Status: Chapter 61, Statutes of 2022.

SB 618 (Bradford) required, explicitly, the IRPs of all LSEs to contribute to a diverse and balanced portfolio of resources needed to ensure a reliable electricity supply, meet certain environmental goals, and prevent cost shifting among LSEs. Status: Chapter 431, Statutes of 2017.

SB 350 (de León), among other things, increased the RPS and directed the CPUC to develop a process by which LSEs submit IRPs to the CPUC for review or for certification. Status: Chapter 737, Statutes of 2015.

REGISTERED SUPPORT / OPPOSITION:

Support

Clean Energy Buyers Association
Microsoft Corporation

Opposition

None on file.

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[16] Comments from the Six Cities in CAISO RA proceeding March 14 workshop, https://stakeholdercenter.caiso.com/Comments/AllComments/a79881e1-374a-4d13-aa17-cbbf7e631b3a
[17] FERC, The Brattle Group, Astrape Consulting; "Resource Adequacy Requirements: Reliability and Economic Implications"; September 2013.
[18] D. 24-02-047, CPUC