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# California State Assembly

## UTILITIES AND ENERGY



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Tuesday, May 16<sup>th</sup>  
1:30 p.m. – Swing Space Room 1100

## OVERSIGHT HEARING

### *Annual Oversight Hearing of California's Energy Entities: Focus on Grid Reliability and 2023 Summer Readiness*

In 2020, two extreme heatwaves impacted the western United States and strained electric system operations in California.<sup>1</sup> One of the heatwaves resulted in two days (August 14-15) of rotating outages in the California Independent System Operator (CAISO) territory from 6-9 p.m. These outages marked the first time in nearly 20 years that such rotating outages occurred in California.<sup>2</sup> This event led to extensive effort and collaboration amongst California's energy entities—the California Energy Commission (CEC), the California Public Utilities Commission (CPUC), and the CAISO—to understand the root cause of the event and to develop strategies to ensure such events do not recur.

In May of 2021, the CEC held its Summer 2021 Energy Reliability workshop to discuss their analysis of summer 2021 conditions.<sup>3</sup> The CEC forecast showed there was sufficient anticipated electricity supply to meet demand in summer 2021 under average weather conditions, but if the West were to experience another extreme heatwave there would be a shortfall of 2,300 megawatts (MW).<sup>4</sup> In July 2021, the CEC updated their analysis to show that shortfall could grow to 3,900 MW in some summer evening hours if an extreme weather event were to occur.<sup>5</sup> Unfortunately on July 9, 2021, the day after that CEC summer assessment workshop concluded and in the midst of a western heat wave,<sup>6</sup> the Bootleg fire in Southern Oregon compromised a transmission line coming into California, dramatically

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<sup>1</sup> Berardelli, Jeff, "Another record-breaking heat wave is building in the West," CBS News, September 3, 2020; <https://www.cbsnews.com/news/labor-day-weekend-heat-wave-forecast-western-united-states/>

<sup>2</sup> Pg. 3, CAISO, CPUC, and CEC; "Preliminary Root Cause Analysis: Mid-August 2020 Heat Storm"; October 6, 2020; <http://www.caiso.com/Documents/Preliminary-Root-Cause-Analysis-Rotating-Outages-August-2020.pdf>

<sup>3</sup> CEC, "Session 1 – IEPR Joint Agency Workshop on Summer 2021 Reliability – Reliability Outlook;" May 4, 2021; <https://www.energy.ca.gov/event/meeting/2021-05/session-1-iepr-joint-agency-workshop-summer-2021-reliability-reliability>

<sup>4</sup> Slide 11, Wong, L., CEC Senior Analyst, "Summer 2021 Supply Stack Analysis" presentation; May 4, 2021; <https://efiling.energy.ca.gov/GetDocument.aspx?tn=237646>

<sup>5</sup> Slide 11, Tanghetti, A., CEC, "2021 Summer Readiness – July Update;" July 8, 2021; <https://efiling.energy.ca.gov/getdocument.aspx?tn=238737>

<sup>6</sup> White, R., et al.; "The unprecedented Pacific Northwest heatwave of June 2021;" *Nature Communications*, **14**, 727 (2023).

reducing the amount of electricity coming into the state from the Pacific Northwest. As California relies on imported electricity to meet anywhere between 20-30% of its power needs, the loss of this asset on top of the forecasted heatwave led to very tight grid conditions from July 9-11, 2021. Fortunately, due to the contingency measures put in place following the 2020 heat event, no rotating outages were called.

For 2022, the CEC's summer assessment, which was released concurrently with the 2021 assessment, painted an even grimmer picture for the coming year, noting that "without contingency measures or additional procurement beyond what has been previously planned for, the combination of extreme heat, wildfire, and continued drought could lead to a 5,000 MW shortfall in the CAISO system for summer 2022."<sup>7</sup> The CEC updated their summer 2022 assessment in January 2022, and projected a new shortfall of approximately 2,400 MW during September 2022.<sup>8</sup>

In response, the Legislature, in collaboration with the Newsom Administration, adopted several measures throughout 2022 to buttress California's electricity supply against extreme events. These measures included the creation of the Electricity Supply Strategic Reliability Reserve Program (ESSRRP) at the Department of Water Resources (DWR), the Demand Side Grid Support (DSGS) Program and the Distributed Electricity Backup Assets (DEBA) Program at the CEC, and the authorized extension of the Diablo Canyon Power Plan through 2030.<sup>9</sup> The Legislature also tasked the CEC to develop a \$1 billion Clean Energy Reliability Investment Plan (CERIP) to support investments that address near- and mid-term reliability.<sup>10</sup>

Over Labor Day Weekend 2022 (August 31-September 7), with many of these measures only recently chaptered, California experienced another record heat wave, with temperatures throughout the state exceeding triple digits.<sup>11</sup> On September 6, 2022, CAISO's system demand exceeded 52,000 MW, setting an all-time record.<sup>12</sup> (For context the peak in 2020 was 47,121 MW; for 2021 it was 43,982 MW.<sup>13</sup>) The 6<sup>th</sup> of September was marked by extremely tight grid conditions, with many experts citing a statewide emergency alert sent at 5:48 p.m. to 27 million Californians by the Office of Emergency Services as the final tool which

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<sup>7</sup> CEC, "Summer 2021 and 2022 Reliability Analysis – 7/30/21;"

[https://www.energy.ca.gov/sites/default/files/2021-07/Summer%202021%20and%202022%20Reliability%20Analysis\\_ADA.pdf](https://www.energy.ca.gov/sites/default/files/2021-07/Summer%202021%20and%202022%20Reliability%20Analysis_ADA.pdf)

<sup>8</sup> Tanghetti, A. and Craig, H., *2022 Summer Stack Analysis*, CEC Staff Paper, January 2022;

[file:///C:/Users/shybutla/Downloads/TN241145\\_20220111T150853\\_Staff%20Paper%20-%20Updated%202022%20Summer%20Supply%20Stack%20Analysis.pdf](file:///C:/Users/shybutla/Downloads/TN241145_20220111T150853_Staff%20Paper%20-%20Updated%202022%20Summer%20Supply%20Stack%20Analysis.pdf)

<sup>9</sup> ESSRRP, DSGS, and DEBA were created under AB 205 (Committee on Budget, Chapter 61, Statutes of 2022), AB 178 (Ting, Budget Act of 2022, Chapter 45, Statutes of 2022), and AB 180 (Ting, Budget Act of 2021, Chapter 44, Statutes of 2022); Diablo Canyon was authorized under SB 846 (Dodd, Chapter 239, Statutes of 2022).

<sup>10</sup> SB 846 (Dodd, Chapter 239, Statutes of 2022)

<sup>11</sup> Powell, M. and Hubler, S., "California swelters through a Labor Day heat wave, stretching its electricity resources." *New York Times*, September 5, 2022; <https://www.nytimes.com/2022/09/05/us/california-heat-wave-record-labor-day.html>

<sup>12</sup> Jenna Cohen, "California's electricity demand breaks all-time record during severe heat wave," *PBS News Hour*, September 9, 2022; <https://www.pbs.org/newshour/nation/californias-electricity-demand-breaks-all-time-record-during-severe-heat-wave#:~:text=Tuesday's%20peak%20demand%20set%20an,Graphic%20by%20Jenna%20Cohen>.

<sup>13</sup> CPUC Press Release, "CPUC Ensures Electricity Reliability During Extreme Weather for Summers 2022 and 2023," December 2, 2021. <https://www.cpuc.ca.gov/news-and-updates/all-news/cpuc-ensures-electricity-reliability-during-extreme-weather-for-summers-2022-and-2023>

prevented rotating outages from being called.<sup>14</sup> The text alert was unexpected and unprecedented, but did seemingly result in almost 1,200 MW of demand reduction in five minutes.<sup>15</sup> However, as the energy entities have found with other public alerts (i.e., the Flex Alert), the effectiveness can wear with use, making them an inconsistent tool to rely upon. The effect of the text alerts was combined with other measures authorized for the September 2022 heat event by two executive orders, which suspended various restrictions including on the temperature and air quality of exhaust from natural gas power plants, on emissions from ships at port that switched from shore power to burning bunker fuel, and on emissions from customer-side diesel and natural gas generators.<sup>16</sup>

Looking ahead to summer 2023, many of the analyses of grid conditions are forthcoming, with the CAISO Summer Loads and Resource Assessment soon-to-be published and the CEC's Summer Reliability Workshop scheduled for Wednesday, May 17, 2023.<sup>17</sup> Early indications, however, are promising. The Western Electricity Coordinating Council (WECC), the western-wide entity responsible for ensuring electric system reliability, noted in their May 4<sup>th</sup> workshop on western resource adequacy that "all regions [in the West] show adequate reserve margin to meet demand under extreme conditions," though California and the Northwest show increased risk in the evening hours due to their reliance on imports.<sup>18</sup> The CAISO's upcoming presentation on 2023 summer conditions indicates "2023 conditions have improved significantly due to the addition of over 3,000 MW of storage supplies and beneficial hydro conditions."<sup>19</sup>

*The purpose of this hearing is to receive an update from the state's energy entities prior to summer 2023 on the anticipated grid conditions and the state's readiness to meet those conditions. The hearing will serve as the annual oversight hearing of the CPUC and the California Public Advocates Office; however, the focus of the energy entities' presentations will be on electric system reliability, given the extreme conditions Californians have faced over the last three summers and the extensive funding and policy changes put in place to shore up the state's reliability reserves and contingency measures. This hearing will also serve as an opportunity, alongside extensive conversations in the Assembly Committee on Budget, to receive updates on program implementation for many of the energy actions adopted during the 2021-2022 legislative session.*

Ensuring California's electricity grid is reliable in the face of extreme weather events while also undergoing a clean energy transition will require full effort and coordination amongst the

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<sup>14</sup> Justine Calma, "Why a text alert might have helped California keep the lights on," *The Verge*, September 7, 2022; <https://www.theverge.com/2022/9/7/23340821/california-electricity-grid-power-outage-text-phone-alert>.

<sup>15</sup> Murtaugh, D. and Eckhouse, B., "A Text Alert May Have Saved California From Power Blackouts," *Bloomberg*, September 6, 2022, <https://www.bloomberg.com/news/articles/2022-09-07/a-text-alert-may-have-saved-california-from-power-blackouts?leadSource=verify%20wall>

<sup>16</sup> Executive Order N-14-22, issued September 2, 2022; Executive Order N-15-22, issued September 6, 2022.

<sup>17</sup> <https://www.energy.ca.gov/event/workshop/2023-05/summer-reliability-workshop>

<sup>18</sup> Malik, S. and Sargent, A., WECC "Resource Adequacy Discussion Series: Summer Outlook," May 4, 2023.

<sup>19</sup> Slide 9, Millar, N. and Motley, A., "Briefing on 2023 Summer Loads and Resources Assessment results," ISO Board of Governors meeting General Session, May 18, 2023;

<http://www.caiso.com/Documents/BriefingonSummerLoadsandResourceAssessment-Presentation-May2023.pdf>

state's energy entities. This hearing will focus on the short-term year-over-year efforts, but previous<sup>20</sup> and subsequent hearings have and will continue to examine longer-term strategies.

### ***Findings***

- *Unprecedented action from the state energy agencies, the Newsom Administration, and the Legislature over the last three years has led to enormous investment and policy changes to the reliability regime in California.*
- *The outstanding questions for the Legislature to consider moving into summer 2023 are 1) whether these initiatives are adequate to ensure reliability, 2) how effective each reliability initiative was in 2022 as the Administration discusses its plan for 2023 and beyond, and 3) how these efforts are impacting the electric utilities' ability to engage in the energy market.*
- *If summer 2023 proves to be well-resourced—given the enormous contingency efforts, accelerated procurement, heightened reserve requirements, and the positive hydro outlook—it will be important for the energy entities to review the broader impact of the reliability efforts and consider potential adjustments needed in the resource procurement regime to prevent a rushed process for resource procurement in future cycles and avoid inefficient uses of limited General Fund resources.*

### ***Current Statewide Resource Planning – the Integrated Resource Plans (IRP), SB 100, the Integrated Energy Policy Report (IEPR), and the Resource Adequacy (RA) Program.***

California has a complicated but robust electric planning and procurement regime spread across the CPUC, CEC, and CAISO. This regime guides the current procurement the load-serving entities (LSEs) conduct, and informs short-, mid-, and long-term procurement strategies. The regime is intended to be complementary, where one resource may count toward meeting many facets of an LSE's procurement requirements and planning goals. As shown in Figure 1 below, the main pieces of the regime are the IRP, the related SB 100 Report, the IEPR, and RA.

*The IRP (mid- to long-term procurement)* – Since 2015, with the passage of SB 350 (De León, Chapter 547, Statutes of 2015), California regulators have worked to identify a diverse mix of resources to achieve our clean energy goals. SB 350 requires the CPUC to adopt a process for each LSE to file an IRP starting in 2017 and for each publicly-owned utility (POU) to file an IRP by January 1, 2019. The goal of the IRP is to reduce the cost of achieving greenhouse gas (GHG) emission reductions by looking broadly at system needs, rather than at individual LSEs or resource types, in order to identify generation that reduces GHGs, improves reliability, avoids shuffling resources around, and reduces overall cost. Compliance with the Renewables Portfolio Standard (RPS) program occurs separately, but in concert with, the resource mixes selected by LSEs' IRP filings. The renewables procurement that the RPS requires occurs on three-year compliance periods, ratcheting up to the 60% RPS requirement in 2030. Beyond 2030, LSEs must continue increasing the remaining balance of

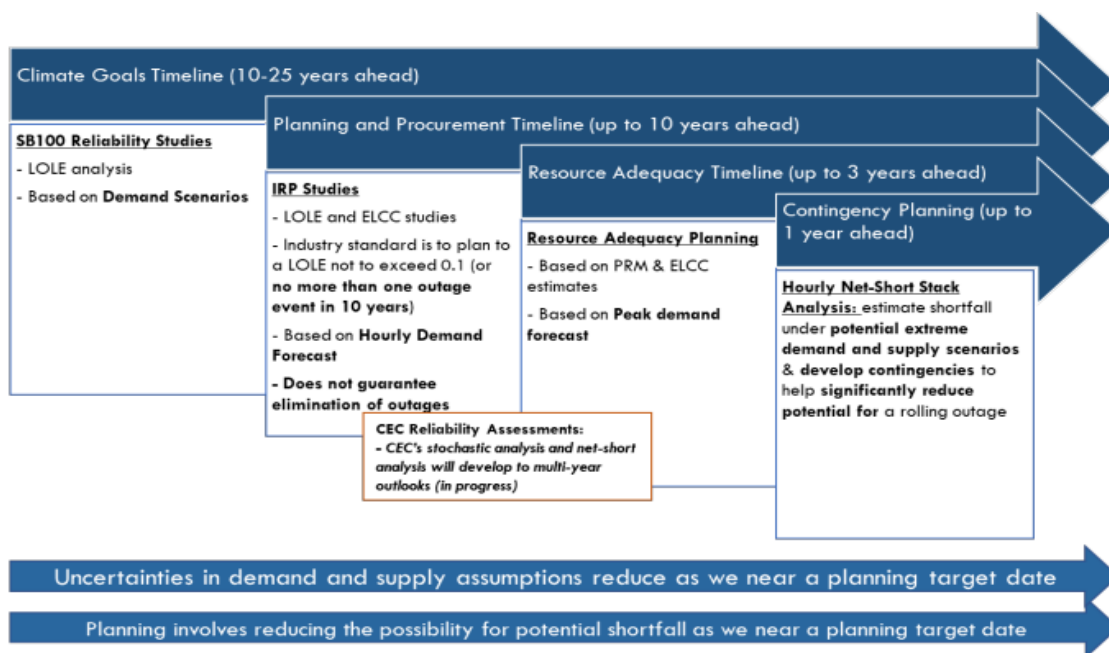
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<sup>20</sup> Joint Information Hearing with Assembly Committees on Utilities and Energy, Natural Resources, and Budget Sub. 6; "A 2030 Vision: Mid-term Actions Needed for the Energy Transition," November 14, 2022. <https://autl.assembly.ca.gov/content/past-informationoversight-hearings>

their portfolios that is zero-carbon to meet the final, 2045 100% zero-carbon electricity requirement.

The IRP operates on a 2-year planning cycle, and forecasts system need 10 years into the future. The most recent IRP analysis identified almost 86 gigawatts (GW) of new resources needed by 2035,<sup>21</sup> arising from a mix of geothermal, land-based wind, offshore wind, solar, battery storage, pumped storage, and demand response.<sup>22</sup> This portfolio represents a more than doubling within 12 years of the current nameplate capacity on the system; an enormous, unprecedented goal.

**Figure 1:** Resource planning across the energy agencies with associated timelines. Source: CEC.<sup>23</sup>



*SB 100 Report (long-term procurement planning)* – While the IRP focuses on what energy mix is best suited to meet our GHG and reliability goals 10 years into the future, the Joint Agency SB 100 Report looks at a planning horizon 22 years out to determine how best to implement the 100%-clean-electricity-by-2045 policy enacted under SB 100 (De León, Chapter 312, Statutes of 2018).<sup>24</sup> The first SB 100 report was finalized in March 2021, and included analyses of many pathways to achieve the state’s 2045 clean energy goal.<sup>25</sup> The SB 100 Report will be updated every four years, with future work focused on system reliability,<sup>26</sup> among other considerations.

<sup>21</sup> Pg. 47; 30 MMT scenario resource stack; CPUC, *Decision Ordering Supplemental Mid-term Reliability Procurement (2026-2027) and Transmitting Electric Resource Portfolios to CAIS for 2023-2024 TPP*; D. 23-02-040; February 23, 2023. <https://docs.cpuc.ca.gov/SearchRes.aspx?DocFormat=ALL&DocID=502956567>

<sup>22</sup> Pg. 48; CPUC, D. 23-02-040; *Ibid.*

<sup>23</sup> Pg. 3, Hannah Craig, CEC, “Summer Stack Analysis for 2022-2026” CEC Staff Paper, July 2022; file:///C:/Users/shybutla/Downloads/TN244116\_20220719T115430\_Staff%20Paper%20-%20Revised%20Summer%20Stack%20Analysis%20for%202022-2026%20(1).pdf

<sup>24</sup> CEC, CPUC, & CARB; *2021 SB 100 Joint Agency Report: Achieving 100 Percent Clean Electricity in California: An Initial Assessment*,” March 2021.

<sup>25</sup> Pg. 12, *2021 SB 100 Report*.

<sup>26</sup> Pg. 1, *2021 SB 100 Report*.

*The IEPR (demand forecast)* – Alongside the IRP and SB 100 Report, which focus on potential mid- and long-term procurement needs for the electricity system, the CEC conducts an IEPR to forecast all aspects of energy industry supply, production, transportation, delivery, distribution, demand, and pricing. The CEC is then required to use these assessments and forecasts to develop energy policies that conserve resources, protect the environment, ensure energy reliability, enhance the state's economy, and protect public health and safety. The CEC adopts an IEPR every two years with updates every other year. The information generated from the IEPR's demand forecast informs the IRP and RA processes at the CPUC. The most recent IEPR focuses on a 15-year planning horizon.

*RA (short-term procurement)* – Running concurrently with these planning streams is the RA compliance process at the CPUC and CAISO. While the IRP and SB 100 Report focus on potential future needs, RA is designed to identify resources needed to ensure reliability *today*. 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, as well as meet federal requirements for reliability planning. This statute established the RA program at the CPUC, which must work in consultation with the CAISO to establish RA requirements for all LSEs. The current RA program consists of three categories of requirements — system, local, and flexible capacity — for each month of a given year. System requirements are determined for each LSE based on the CEC's IEPR electricity forecast plus a 15% planning reserve margin (PRM).<sup>27</sup> Local requirements are determined based on an annual CAISO study using a 1-10 (once in ten years) weather year and an N-1-1 contingency.<sup>28</sup> The 1-10 standard is a common standard in electricity planning and is used by the WECC as its reserve margin baseline, although California uses it more selectively in its reliability programs. 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.

***The Safety Nets: CAISO backstop procurement and DWR's Strategic Reliability Reserve.*** RA rules require that where there is a failure to provide sufficient resources, the CAISO is compelled to utilize centralized backstop procurement mechanisms in order to maintain electric system reliability. Centralized backstop procurement occurs when the CAISO contracts with a generator to address the observed shortfall. Under Federal Energy Regulatory Commission (FERC) rules, the CAISO, like all other balancing authorities, must ensure system reliability or face penalties from FERC. The CAISO has two mechanisms for centralized backstop procurement: Reliability Must Run (RMR) and the Capacity Procurement Mechanism (CPM). A resource receiving RMR designation must continue to

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<sup>27</sup> The CPUC has recently adopted changes to RA, including increasing the planning reserve margin from 15% to 16% for 2023 and 17% for 2024, with the IOUs procuring between 21-22.5% for summers 2022 and 2023.

<sup>28</sup> 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).

operate and is compensated at a rate set by the CAISO, per FERC approved tariffs. RMR contracts can be expensive relative to procurement through the CPUC process, especially considering the limited operating parameters of the contracted resources. The use of RMR contracts declined after implementation of the local RA program. For 2023, three powerplants make up the CAISO RMR resource portfolio, as listed in Table 1.

**Table 1:** 2023 CAISO RMR contracted powerplants.<sup>29</sup>

Owner	Unit	MW
Starwood Energy Group	Greenleaf II Cogen	49.2
KES Kingsburg, LP	Oakland, Unit 1	55
Dynegy Oakland, LLC	Oakland, Unit 2	55

CPM can be used for resources that may be needed in the following year and where the resource is at risk of retirement. Like RMR contracts, CPM contracts are also, generally, at a higher price relative to generation procured through the CPUC process. The CAISO does not currently have any CPM resources for 2023. The CAISO did use the CPM tool during the summer of 2021, at the written request of the CPUC. Eight rounds of CPM designations were issued and more than 1,600 MWs of capacity were included. The procurement costs of both mechanisms are shouldered by ratepayers in the insufficient Local Capacity Area or by all ratepayers of the LSE(s) lacking the adequate RA.

In June 2022, AB 205 (Committee on Budget, Chapter 61, Statutes of 2022), AB 178 (Ting, Budget Act of 2022, Chapter 45, Statutes of 2022), and AB 180 (Ting, Budget Act of 2021, Chapter 44, Statutes of 2022) were signed into law. These three pieces of legislation collectively established the ESSRRP,<sup>30</sup> which set forth new responsibilities and activities for DWR, separate from the State Water Project, to procure—or even outright own and operate—energy resources to provide backstop reliability for the CAISO balancing area. These resources are meant to operate “outside” of CAISO’s market, meaning they do not regularly schedule into the market, and only operate during grid emergency events, as specified. For 2022 (which only encompassed 6 months of program development, given the June passage of the statute), DWR procured approximately 1.6 GW of imported energy and 202 MW of emergency and temporary power generators,<sup>31</sup> with an allocated combined budget of roughly \$249 million for the year.<sup>32</sup> In 2023, the ESSRRP includes up to 171 MW

<sup>29</sup> Millar, Neil; “Memorandum to ISO Board of Governors RE: Update on results of reliability must-run extensions for 2023,” October 19, 2022; <http://www.caiso.com/Documents/ReliabilityMust-RunContractsUpdate-Oct2022.pdf>

<sup>30</sup> Confusingly, the administration uses the term Strategic Reliability Reserve (SRR) as an umbrella term for three programs – the Electricity Supply Strategic Reliability Reserve program mentioned here, the Demand Side Grid Support program, and the Distributed Electricity Backup Assets program.

<sup>31</sup> 202 MW represents total from both the 82MW from the “>5 MW” generator bucket and the 120MW from the State Power Augmentation Program.

<sup>32</sup> DWR, *Progress Report: Electricity Supply Reliability Reserve Fund*, January 31, 2023.

of emergency and temporary power generation, as well as the potential to include otherwise retiring once-through cooling natural gas powerplants. Additionally, DWR previously purchased and has available 120 MW (four separate natural gas peaker plant units), which were bought using an emergency appropriation in 2021 outside the standard Legislative review process, and are now funded by the ESSRRP.

Interestingly, some resources previously designated as CAISO RMR are now part of the ESSRRP.<sup>33</sup> Procurement of resources in the ESSRRP is currently paid for through budget appropriation, with the Governor’s January 2023 budget requesting an additional \$800 million over 4 years after \$1.5 billion was authorized in 2022 to stand up the program.<sup>34</sup> However, the longevity of such appropriation, and the longevity of the ESSRRP itself, remains a topic of ongoing discussion.

***Actions Taken to Address Reliability – Inside the Current Procurement Regime.*** The regulatory framework of the IEPR, IRP (or long-term procurement planning, as it was previously known), and RA has been in place since the early 2000s, operating with relative stability. However, since that time, market fundamentals have changed to the point that it may be prudent for the energy agencies to re-evaluate the planning regime governing the market and the standards it uses. Some of these trends include:

- Increased role of community choice aggregators (CCAs) – Procurement decisions are now being made by more than 40 CCAs and electric service providers (ESPs), as well as the six investor-owned utilities (IOUs); with the role of the IOUs in procurement shrinking substantially since the early 2000s. Prior to the expansion of CCAs into procurement, the CPUC relied heavily on the IOUs’ bundled procurement plans to establish and enforce obligations for contracting for existing resources beyond the RA program (i.e., mid- or long-term resources). Via the bundled procurement plans, the CPUC requires the IOUs to contract for a certain amount of forward energy and capacity to minimize financial risk to bundled customers. The CCAs are not similarly obligated to maintain forward contract positions (though many of them do), or share them with the CPUC, for energy and capacity.<sup>35</sup>
- Increased capacity (RA) market tightness – over the last 20 years, over 20 GWs of aging natural gas plants have retired in the state.<sup>36</sup> This statewide trend has been mirrored throughout the west, where aging, inefficient powerplants have been retired due to market and regulatory pressure, leading to capacity tightness across the western U.S. This market tightness has led to increased potential for high energy prices during scarcity conditions, as utilities are no longer adequately hedged, and the potential for energy suppliers to exert market power over buyers desperate for any megawatt to meet RA compliance and ensure reliability. This committee has been made aware of circumstances in the 2022 and 2023 RA showings where utility

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<sup>33</sup> The 27.5 MW Channel Islands power was released in December 2022 from the RMR obligations, and now is listed as a 2023 resource in the SRR.

<sup>34</sup> Cornett, Sarah; LAO, *The 2023-24 Budget: Proposed Energy Policy Changes*, March 2023; <https://lao.ca.gov/reports/2023/4735/Proposed-Energy-Policy-Changes-031023.pdf>

<sup>35</sup> Pg. 5; McGarry, J.; Ortego, J.; and Raffan, N., CPUC Energy Division Staff Options Paper, “Reliable and Clean Power Procurement Program,” Attachment A to D.23-02-040, R.20-05-003; January 2023.

<sup>36</sup> Pg. 5; McGarry, 2023; *Ibid*



buyers offered astronomical prices for resources, and still received no bids from suppliers.

- Increasing GHG reduction goals – California’s utilities will need to contract for significant amounts of new clean energy resources to meet our 2045 100% clean energy policy. Ensuring reliability while these new resources come online, some with potentially significant delays, will be paramount, and will take enormous effort from the energy agencies to ensure a smooth transition.

Following the 2020 rotating outages, the state energy entities issued a Joint Reliability Contingency Plan to address immediate actions that could be taken to ensure a reliable electric supply moving into summer 2021 and beyond.<sup>37</sup> These efforts included increased funding for the statewide Flex Alert, which is a media campaign to alert Californians to conserve electricity during net peak hours; establishing an Emergency Load Reduction Program (ELRP) at the CPUC to compensate customers for load reduction during an energy emergency; and squeezing extra power from existing thermal power plants or increasing imports, where possible, from California’s POU balancing authorities. The contingency plan also outlined basic communication protocols between the various energy entities, their jurisdictional utilities and generators, and the public up to seven days prior to an emergency event.

Aside from this contingency plan, the CPUC also took action to direct their jurisdictional entities (LSEs) to procure as much power, as quickly as possible. This included directed procurement orders in the IRP to address potential mid-term reliability shortfalls, but also increases to the LSE RA requirements to address short-term reliability challenges. In December 2021, the CPUC ordered Pacific Gas & Electric (PG&E), Southern California Edison (SCE), and San Diego Gas & Electric (SDG&E) to “meet a revised targeted procurement range of 2,000-3,000 MW for summers 2022 and 2023” resulting in “an effective PRM [for these 3 IOUs] of 20%-22.5%.”<sup>38</sup> The remaining LSEs would be held to the 15% PRM in 2021 and 2022. Any costs the IOUs incur from exceeding their 15% PRM would be socialized amongst all LSE ratepayers. The CPUC reports that for September 2022, the CPUC-jurisdictional LSEs were deficient in meeting their individual RA requirements by ~1,138 MW; however the effective PRM of the IOUs pushed this deficit to a surplus of 252 MW, exceeding the 15% PRM in aggregate. In other words, the CPUC’s ad hoc adjustment to the effective PRM eliminated the deficit, by their own estimate. However it is unclear whether the resources the IOUs maintained or procured to meet their effective PRM were in excess, or if they prevented other LSEs from achieving their PRMs for that time.

In June 2022, the CPUC ordered the minimum PRM of all its jurisdictional LSEs to increase to 16% for 2023 and 17% for 2024.<sup>39</sup> This increased PRM across all LSEs does not change the higher “effective PRM” requirements of the IOUs; rather, “IOUs will continue to target

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<sup>37</sup> CEC, CPUC, and CAISO, “2021 Joint Agencies CAISO Balancing Authority Area Electric Reliability Contingency Plan,” August 2021;

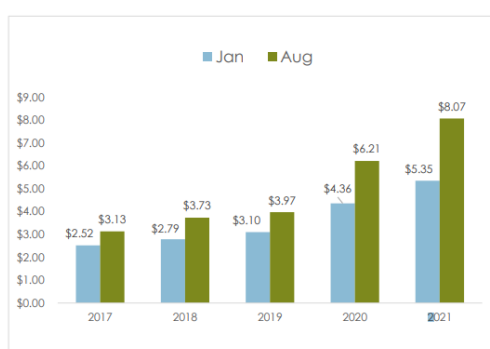
<sup>38</sup> Pg. 161, Order Paragraph #3, D. 21-12-015, *Phase 2 Decision Directing PG&E, SCE, and SDG&E to Take Actions to Prepare for Potential Extreme Weather in the Summers of 2022 and 2023.* R. 20-11-003, December 6, 2021.

<sup>39</sup> Pg. 125, Order Paragraphs #7 & #8, D. 22-06-050, *Decision Adopting Local Capacity Obligations for 2023-2025, Flexible Capacity Obligations for 2023, and Reform Track Framework*, R. 21-10-002, June 24, 2022.

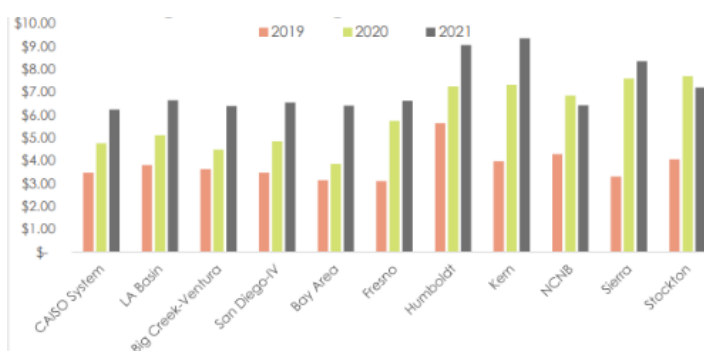
the same MW totals for contingency resources, despite the change in LSE RA requirements.”<sup>40</sup> It is unclear how LSEs unable (or unwilling) to meet their 2022 15% PRM will meet these higher targets for 2023 and 2024. It is also important to note that, in the balancing act between costs and uncertainty that is reliability planning, ratepayers pay all of the costs of capacity secured to meet the higher effective PRM.

These changes, alongside resource tightening western-wide given the extreme weather events, have led to a massive constriction in the resource adequacy market. LSEs have rushed, practically at any cost, to buy resources needed to meet RA obligations for the next few summers; and energy sellers have seemingly taken note. As shown in Figures 2 and 3 below, both system and local RA prices have been increasing significantly over the last few years, and are projected to be even higher for the coming summers.

**Figure 2: Weighted Average Price of System RA (\$/kW-month).**<sup>41</sup>



**Figure 3: Weighted Average Prices for Local RA (\$/kW-month).**<sup>42</sup>



These changes to the RA market are not isolated to the LSEs. The POU have likewise raised concern over their ability to procure RA. In a recent letter to the CEC, the California Municipal Utilities Association noted examples of POU attempting to procure resources for the upcoming summer but receive no bids or only a single bid at an exorbitant price.<sup>43</sup>

Non-CPUC-jurisdictional LSEs do not necessarily tie their load forecasts to the CEC’s IEPR load forecast, do not all have a 15% PRM (speculated), and do not file their RA plans with the CPUC. Without this information, it is unclear how the rest of these entities (which make up ~10% of the remaining load in CAISO, although there are also POU that act as their own balancing authority (e.g. Los Angeles Department of Water & Power) or are a member of a joint authority (e.g. Roseville Electric)) are performing. As a result, AB 209 (Committee on Budget, Chapter 251, Statutes of 2022) established a process where POU within CAISO collaborate with the CEC to “develop recommendations about approaches” to determine an appropriate minimum PRM for POU. This process is meant to conclude by December 31, 2023. Similar to LSE potential difficulties in meeting the PRM for 2023 and 2024, it is unclear how the POU—should the CEC process result in higher PRMs for some of them—

<sup>40</sup> Pg. 22, D. 22-06-050, *Ibid*.

<sup>41</sup> Figure 4, pg. 29, CPUC, *2021 Resource Adequacy Report*, April 2023; [https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/resource-adequacy-homepage/2021\\_ra\\_report\\_040523.pdf](https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/resource-adequacy-homepage/2021_ra_report_040523.pdf)

<sup>42</sup> Figure 5, pg. 31, *2021 Resource Adequacy Report*, *Ibid*.

<sup>43</sup> CMUA Letter to Siva Gunda, “AB 209 (2022) Planning Reserve Margin Process and Reliability,” March 22, 2023.

will be able to meet higher RA targets for subsequent summers, given the lack of bids many are currently receiving.

For mid-term reliability, as updates to IEPR demand forecasting and IRP modeling assumptions evolved, the CPUC utilized the IRP proceeding to order new near- and mid-term resources, requiring all LSEs to bear some responsibility for their costs. Beginning in 2019, these procurement orders were issued outside the IRP cadence due to the urgent nature of the procurement need, and resulted in the CPUC calling for 3.3 GWs to incrementally come online from 2021-2023<sup>44</sup> and 11.5 GWs to come online from 2023-2026.<sup>45</sup> Recently the CPUC called for an additional 4 GW to come online from 2026-2027.<sup>46</sup> These orders call for the new resources to be classified as net qualifying capacity (NQC), so the IRP procurement will ensure RA eligibility for these new resource additions. Importantly, the 2021 mid-term order for 11.5 GWs specified certain resource attributes that must be procured, specifically calling for 1 GW of long-duration storage and 1 GW of firm resources, referred to as “long-lead time” resources.<sup>47</sup> However, in its 2023 IRP decision, the CPUC extended the delivery timeline for these long-lead time resources to 2028, citing potential delays for these projects.<sup>48</sup>

While these decisions mark an unprecedented level of procurement ordered by the CPUC, at 18.8 GWs over six years, they represent little more than half of the additional resources needed by 2030 to meet the adopted IRP system portfolio, which calls for approximately 35 GWs by the end of the decade.<sup>49</sup> Procurement is needed, urgently. But the procurement orders have raised concerns that the just-in-time, order-by-order approach leads to uncertainty for the LSEs, and presents the potential for the broader market to constrain further or increase costs, as LSEs rush to procure anything and everything to meet the targets. It appears as if the resources called for to meet the 2021-2022 requirements are coming online; while the projects required for 2023 are contracted but their online dates are uncertain.<sup>50</sup> While this progress is positive and demonstrates a level of urgency for procurement not seen in decades, from both the CPUC and LSEs, these procurement orders also suggest that the historic planning efforts of the energy agencies may be inadequate to meet our current needs, and must also urgently evolve to ensure reliability at least-costs while transitioning the electricity sector to meet our clean energy goals.

***Extraordinary Actions Taken to Address Reliability – Outside the Current Procurement Regime.*** The 2022-23 budget package planned for \$9.6 billion over five years for clean energy programs and reliability efforts, with the reliability efforts accounting for approximately \$4.5 billion of that package, as show in Table 2.

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<sup>44</sup> D. 19-11-016, CPUC, *Decision Requiring Electric System Reliability Procurement for 2021-2023*, R. 16-02-007, November 7, 2019.

<sup>45</sup> D. 21-06-035, CPUC, *Decision Requiring Procurement to Address Mid-term Reliability (2023-2026)*, R. 20-05-003, June 24, 2021.

<sup>46</sup> D. 23-02-040, CPUC, *Decision Ordering Supplemental Mid-term Reliability Procurement (2026-2027) and Transmitting Electric Resource Portfolios to California Independent System Operator for 2023-2024 Transmission Planning Process*, R. 20-05-003, February 23, 2023.

<sup>47</sup> Not defined as such, but rather resources that must have no on-site emissions (or are RPS eligible), have at least an 80% capacity factor, and be available continuously during the evening peak and all weathers.

<sup>48</sup> D. 23-02-040, *Ibid.*

<sup>49</sup> Pg. 8, D. 23-02-040, *Ibid.*

<sup>50</sup> Pg. 9, D. 23-02-040, *Ibid.*

**Table 2:** Summary of 2022 Energy Reliability Investment. (\$ in millions)<sup>51</sup>

Program	Agency	21-22	22-23	23-24	24-25	25-26	Multiyear Total
ESSRRP Assets	DWR	\$1,500	\$700	\$20	\$75	\$75	\$2,370
Planning support for Reliability	DWR	\$0	\$3	\$0	\$0	\$0	\$3
DOE Grid Resilience grant program Match	CEC	\$0	\$5	\$0	\$0	\$0	\$5
DEBA	CEC	\$550	\$0	\$100	\$25	\$25	\$700
Residential Solar & Storage	CPUC	\$0	\$0	\$900	\$0	\$0	\$900
Transmission & Energy Financing	IBank	\$0	\$200	\$50	\$0	\$0	\$250
DSGS	CEC	\$200	\$0	\$95	\$0	\$0	\$295
All Program Total							\$4,523

Governor Newsom’s January 2023 budget proposes some reductions to these energy activities, but would maintain the vast majority of the planned funding. Moreover, a large share of this funding—\$3.3 billion across five years—is for three programs intended to increase statewide electricity reliability, which the Governor does not propose any reductions. Together, the administration refers to these three programs as the “Strategic Reliability Reserve,” and they include:

- 1) *Electricity Supply Strategic Reliability Reserve Program (ESSRRP, \$2.3 Billion)*. As noted above, this program funds DWR to secure additional electricity resources to help ensure summer electric reliability. For 2022 (which only encompassed 6 months of program development, given the June passage of the statute), DWR procured approximately 1.6 GW of imported energy through IOUs and 202 MW of emergency and temporary diesel and natural gas power generators,<sup>52</sup> with a dispersed budget of roughly \$249 million for the year.<sup>53</sup> For context, the rotating outages in 2020 were caused by a shortfall of about 500 MW. 2023 activities of the ESSRRP include up to 171 MW of procured emergency and temporary power generation, as well as ongoing negotiations to include retiring once-through cooling natural gas powerplants into the ESSRRP portfolio. Ongoing DWR activities also include the operation of 120 MW of state-owned peaker power plant units, originally purchased in 2021. As of April 30, 2023, approximately \$385 million of the program funds had been disbursed, but the Administration notes \$654 million alone was allocated for all contracts that support summer 2022 resources, even though not all those funds have been dispersed, with some of those contracts being multi-year.<sup>54</sup> The Administration also notes plans to budget more than \$1 billion for costs associated with again extending the operation of once-through-cooled natural gas power plants.

<sup>51</sup> As reported by the Legislative Analyst’s Office, based on numbers from October 19, 2022.

<sup>52</sup> 202 MW represents total from both the 82MW from the “>5 MW” generator bucket and the 120MW from the State Power Augmentation Program.

<sup>53</sup> DWR, *Progress Report: Electricity Supply Reliability Reserve Fund*, January 31, 2023.

<sup>54</sup> Data request from the Legislative Analyst’s Office on May 2, 2023; response provided on May 7, 2023 from DWR and shared with this committee.

- 2) *Demand Side Grid Support (DSGS, \$295 Million)*. This new program, administered by the CEC, provides customer incentives to reduce net electricity load during extreme events. In the summer of 2022, utilities began enrolling participants in the program, which pays customers to reduce their energy usage during summer peak evening hours when the electric grid is strained. The Administration reported in March 2023 that approximately 300 MW had been enrolled over the summer into the program, with \$14 million of the funds committed. As part of the Newsom Administration’s May Revise, they are proposing to increase the 3 year commitment by an additional \$95.4 million even though the majority of the funds allocated in 2022 remain unspent.<sup>55</sup>
- 3) *Distributed Electricity Backup Assets (DEBA, \$700 Million)*. This new program, administered by the CEC, provides incentives for certain distributed energy resources that can be used to support the state’s electrical grid during extreme events. The CEC is still developing the program, which is intended to fund zero- or low-emissions technologies such as fuel cells and energy storage at both existing energy facilities and new facilities. As part of the Newsom Administration’s May Revise, they are proposing to increase the 3 year commitment by an additional \$53 million even though none of the funds allocated in 2022 have been spent, aside from administrative costs.<sup>56</sup>

In addition to these budget actions, SB 846 (Dodd, Chapter 239, Statutes of 2022) authorized the extension of the Diablo Canyon Power Plant (DCPP)—which was scheduled to retire by 2025—through 2030. Diablo Canyon is California’s last remaining nuclear power plant, and the state has identified it as a valuable near-term source of zero-carbon energy during the transition to greater renewable resources. While the legislation authorized an extension, DCPP still has to receive required permits at the local, state, and federal levels in order to continue operations. SB 846 also authorized the following expenditures:

- 1) *Loan to Pacific Gas & Electric (PG&E) (up to \$1.4 Billion)*. The Legislature specified intent to provide a General Fund loan of up to \$1.4 billion to PG&E to support extended operations at Diablo Canyon. The Legislature has authorized \$600 million of this total so far. The potential remaining \$800 million is subject to a future appropriation, and has been requested by the Administration during the 2023 May Revision. PG&E was awarded a \$1.1 billion federal grant from the U.S. Department of Energy in November 2022 and is expected to use this award to partially pay back the state for loans it ultimately receives, per the terms of SB 846 and the DWR-PG&E loan agreement.
- 2) *Clean Energy Reliability Investment Plan (CERIP, \$1 Billion)*. Senate Bill 846 also included legislative intent to provide a total of \$1 billion from the General Fund from 2023-24 through 2025-26—\$100 million in 2023-24, \$400 million in 2024-25, and \$500 million in 2025-26—to support the CERIP, which CEC recently updated. The legislation required the plan to support investments that address near- and mid-term reliability needs and the state’s GHG and clean energy goals. In accordance with the legislation, the administration proposes to provide \$100 million in 2023-24 for

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<sup>55</sup> Table 2, BCP DF-46 for Clean Energy Reliability Investment Plan, May 12, 2023.

<sup>56</sup> *Ibid.*

CERIP-identified activities. Specifically, the Governor’s May Revise proposes: (1) \$32 million for DWR to develop a proposed new central procurement role; (2) \$15 million to help new energy resources come online; (3) \$8 million to support engagement with community-based organizations; (4) \$2 million to support transmission planning; (5) \$33 million for extreme event support, including additional funding for DSGS and DEBA programs mentioned above; and (6) \$10 million for various administrative expenditures.<sup>57</sup>

***Where Does that Leave Us for Summer 2023 and Beyond?*** Since the 2020 rotating outages the state energy entities, the Governor’s office, and the Legislature have invested an enormous amount of funding and adopted numerous policy changes in an effort to ensure the electricity grid is able to withstand future extreme events. These efforts have occurred within a western electricity market that was already tightening due to reduced supply and increasing demand. *The outstanding questions for the Legislature to consider moving forward into summer 2023 are whether these initiatives are adequate to ensure reliability, and how these efforts are impacting the LSEs’ and POUs’ ability to engage in the energy market.*

Such direct state investment and procurement orders provide clear market signals that there is additional, long-term demand for electrical capacity in California, making additional resource build-out—especially for those resources qualifying for RA—almost a risk-free investment for developers. But such action may also create market contraction in the short-term, as new projects hit supply-chain or regulatory delays, granting the remaining available resources outsized market power and the leverage to offer exorbitant prices as has already been witnessed. How these various initiatives interact to ensure reliability and stabilize the market remains for the energy entities to sort out. In the short-term, the early signals for the 2023 summer reliability outlook look positive, suggesting that the energy entities may have the opportunity to evaluate, reflect, and plan. This hearing serves as just such an opportunity.

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<sup>57</sup> *Ibid.*