Decision

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking to Continue Electric Integrated Resource Planning and Related Procurement Processes.	Rulemaking 20-05-003

DECISION DETERMINING NEED FOR CENTRALIZED PROCUREMENT OF LONG LEAD-TIME RESOURCES

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DECISION DETERMINING NEED FOR CENTRALIZED PROCUREMENT OF LONG LEAD-TIME RESOURCES

Summary

This decision makes an initial need determination under the provisions of Assembly Bill (AB) 1373 (Stats. 2023, Ch.367), where the California Public Utilities Commission (Commission) may request that the Department of Water Resources (DWR) procure electricity from diverse long lead-time (LLT) resources on behalf of customers of all load-serving entities (LSEs) under the Commission's integrated resource planning (IRP) purview. This initial need determination totals up to 10.6 gigawatts (GW) of nameplate capacity of the following emerging technologies: up to 7.6 GW of offshore wind (OSW), up to 1 GW of geothermal, up to 1 GW of multi-day long-duration energy storage (LDES), and up to 1 GW of LDES with a discharge period of at least 12 hours.[1] A subsequent informal request consistent with this decision may be sent to DWR within six months of the adoption of this decision asking that they initiate procurement activities.

The amounts selected are maximum amounts; once a procurement request is made, DWR will conduct solicitations and evaluate the quality of bids received, including costs and ratepayer risk provisions, and may procure anywhere between zero and the upper limits included in this decision. This flexibility will facilitate cost containment and minimize ratepayer risks.

The specific resources were selected for this initial need determination because they are technologies that present opportunities to help California achieve our greenhouse gas (GHG) emissions reduction goals for 2045 and beyond, they represent emerging technologies that need to achieve economies of

[1] All capacity values in this decision are in nameplate capacity, which differs from prior procurement orders, which typically used net qualifying capacity.

scale to bring costs down, and/or they are not currently being procured by individual LSEs in significant enough amounts to achieve cost reductions, meet long-term environmental goals, or increase resource diversity. The timing of the need determination herein is also after 2031, thus minimizing potential interference with LSE near-term procurement activities related to LLT resources. Centralized procurement of these resources may also make it easier, in the long term, for LSEs to procure more of these types of resources that may to be vital to achieving our long-term environmental goals.

At the same time, this decision recognizes that electricity rates are rising, creating hardships for ratepayers. Though the DWR centralized procurement mechanism should help bring emerging technologies to scale, the cost of these investments will ultimately impact electricity bills. Accordingly, all possible efforts should be made to contain costs, reduce ratepayer risk, and seek other sources of funding to reduce development costs and share in the long-term costs and benefits.

While we are cognizant that some of the LLT resources targeted by this decision may have higher costs than the prevalent commercialized resources being procured by LSEs today, we also know that these LLT resources are frequently selected as part of our least-cost planning analysis for achieving California's long-term clean energy goals. Failure to make progress towards procurement of these LLT resources in the short term may ultimately lead to even higher ratepayer costs in the long term, if these resources are needed in the future with a shorter development timeline.

While selection of resources for centralized procurement here in this initial need determination decision is intended to create opportunities for these resources to contributing to meeting our clean energy goals for 2045 and beyond,

it is important to note that our determination is only that these resources could contribute to a pathway to meeting those goals, not that these resources represent the only pathway to meeting those goals. We make a considerable need determination here to send a strong market signal about the need for diverse energy resources and to promote economies of scale that are necessary in order to create an opportunity for some emerging technologies to compete with more mature technologies to become part of our clean energy future, particularly given that economies of scale may be necessary for these resources to successfully compete with more mature technologies. All of the resources found needed in this decision comply with the AB 1373 qualification requirements.

The total procurement may result in less than the 10.6 GW of total need determination being contracted for, approved by the Commission, and built. We will continue to monitor the procurement process for these resources and adjust other procurement requirements for LSEs accordingly.

LSEs will not be permitted to opt out of their share of centralized procurement authorized herein. The costs and benefits of any DWR centralized procurement approved will be allocated to all LSEs under the Commission's IRP purview. Additionally, publicly-owned utilities may opt in to allow their customers to share in the benefits of these valuable clean energy technologies.

For Commission LSEs, for geothermal and OSW resources, because they are energy resources, the allocation will be on the basis of forecast annual energy load. For LDES resources, because they are capacity resources, allocation will be based on forecast 12-month coincident peak load. Further details on the allocation of costs and benefits of procurement conducted as a result of this decision will be determined in this proceeding or its successor, and will be

coordinated, as necessary, with the Renewables Portfolio Standard and Resource Adequacy programs.

This decision also requests that, for this LLT procurement, DWR convene a procurement group that includes representatives from, but not necessarily limited to, non-market participants, Tribal Nations, community groups, other state agencies, and LSEs. In addition, the decision sets a tentative schedule of solicitations, asking DWR to conduct two rounds of solicitations for LDES and geothermal, beginning in 2026, and three rounds of solicitations for OSW beginning in 2027.

The Commission and staff will work closely with DWR as partners in the design and conduct of the solicitations. Results will be brought back to the Commission for reasonableness review and approval of proposed costs. Procedurally, Commission review will occur using a mechanism where DWR will submit a formal memorandum to this proceeding or its successor, and the Administrative Law Judge will then open a separate phase, allowing for full consideration of the recommendations and leading to a determination by the Commission that the procurement is just and reasonable. This separate phase will address issues related to DWR's recommendations, reasonableness review of any proposed contracts, and the cost recovery for Commission-approved contracts.

Finally, the Commission will reevaluate the need determination for additional LLT resources in every IRP cycle when considering a Preferred System Plan portfolio.

This proceeding remains open.

1. Background

Assembly Bill (AB) 1373 (Stats. 2023, Ch.367) was passed and signed by the Governor in 2023. AB 1373 authorizes the Commission to request that the Department of Water Resources (DWR) conduct centralized procurement of certain eligible long lead-time (LLT) resources, on behalf of customers of all load-serving entities (LSEs) under the Commission's integrated resource planning (IRP) purview.

By September 1, 2024, the Commission is required to make an initial need determination for procurement using a centralized procurement mechanism. If a need is found, within six months the Commission may then make a request to DWR to exercise the centralized procurement mechanism. In the event that DWR performs centralized procurement on behalf of customers of LSEs under the Commission's purview and it is subsequently approved by the Commission, the Commission must then allocate the costs and benefits of any electric resource procurement conducted by DWR.

To make a need determination for the exercise of centralized procurement by DWR, AB 1373, codified as Public Utilities Code[2] Section 454.52(a)(4), directs that the Commission "determine if there is a need for the procurement of eligible energy resources based on a review of the integrated resource plans submitted by load-serving entities in compliance with the requirements of this section and

[2] Hereafter in this decision, all references to code sections are to the Public Utilities Code, unless otherwise noted.

Section 454.53 and the progress towards meeting the portfolio of resources identified pursuant to subdivision (a) of Section 454.51."[34]

On April 26, 2024, the assigned Administrative Law Judge's (ALJ) ruling (ALJ Ruling) was issued seeking comments on the need and process for centralized procurement of LLTs by DWR in accordance with AB 1373. The ruling discussed resource eligibility, need determination, relationship to LSE procurement, allocation of costs and benefits, and the procurement process and timeline. The ruling also presented the results of a Commission staff and consultant analysis of the cost-effectiveness of offshore wind (OSW), in particular, as well as a qualitative assessment of the other potential eligible resources.

Comments were due by May 24, 2024, and were timely filed by the following parties: American Clean Power – California (ACP-CA); Advanced Energy United (AEU); Alliance for Retail Energy Markets (AReM) and the

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[3] Section 454.53 states, among other things:

> It is the policy of the state that eligible renewable energy resources and zero-carbon resources supply 90 percent of all retail sales of electricity to California end-use customers by December 31, 2035, 95 percent of all retail sales of electricity to California end-use customers by December 31, 2040, 100 percent of all retail sales of electricity to California end-use customers by December 31, 2045, and 100 percent of electricity procured to serve all state agencies by December 31, 2035.

[4] Section 454.51(a) states that the Commission shall:

> Identify a diverse and balanced portfolio of resources needed to ensure a reliable electricity supply that provides optimal integration of renewable energy and resource diversity in a cost-effective manner. The portfolio shall be used by the commission to establish integrated resource planning-based procurement requirements that rely on zero-carbon-emitting resources to the maximum extent reasonable and be designed to achieve the state policy specified in Section 454.53 and any statewide greenhouse gas emissions limit established pursuant to the California Global Warming Solutions Act of 2006 (Division 25.5 (commencing with Section 38500) of the Health and Safety Code) or any successor legislation.

Regents of the University of California (UC Regents), jointly; Bay Area Municipal Transmission Group (BAMx); BHE Renewables, LLC (BHE); Bioenergy Association of California (BAC); Brightline Defense Project (Brightline); California Independent System Operator (CAISO); California Community Choice Association (CalCCA); California Community Power (CC Power); Public Advocates Office at the California Public Utilities Commission (Cal Advocates); Calpine Corporation (Calpine); California Wind Energy Association (CalWEA); Center for Energy Efficiency and Renewable Technologies (CEERT); California Environmental Justice Alliance (CEJA) and Sierra Club, jointly; California Energy Storage Alliance (CESA); Coalition of California Utility Employees (CUE) and California Unions for Reliable Energy (CURE), jointly; Defenders of Wildlife (DOW); Environmental Defense Fund (EDF); Equinor Wind US LLC (Equinor); Fervo Energy Company (Fervo); Form Energy, Inc. (Form); Golden State Wind LLC (Golden State); Green Power Institute (GPI); Hydrostor, Inc. (Hydrostor); Independent Energy Producers Association (IEP); Invenergy California Offshore, LLC (Invenergy California); Large Scale Solar Association (LSA); Mussey Grade Road Alliance (MGRA); Natural Resources Defense Council (NRDC); Oceantic Network (Oceantic); Offshore Wind California (OWC); Pattern Energy Group LP (Pattern); Protect Our Communities Foundation (PCF); Pacific Gas and Electric Company (PG&E); RWE Offshore Wind Holdings, LLC (RWE); San Diego County Water Authority (SDCWA) and City of San Diego, jointly; San Diego Gas & Electric Company (SDG&E); Southern California Edison Company (SCE); Shell Energy North America (US), L.P. (Shell); Solar Energy Industries Association (SEIA); Swan Lake North Hydro, LLC (Swan Lake); The Utility Reform Network (TURN); Union of Concerned Scientists (UCS); and Vineyard Offshore, LLC (Vineyard).

Reply comments were due on June 5, 2024 and were timely filed by the following parties: ACP-CA; AReM and UC Regents, jointly; BAMx; BHE; Brightline; Cal Advocates; CalCCA; CalWEA; CEJA and Sierra Club, jointly; CEERT; CESA; EDF; Environmental Protection Information Center (EPIC); Equinor; Fervo; Form; GreenGen Storage (GreenGen); GPI; Hydrostor; IEP; Invenergy California; MGRA; NRDC; OWC; PCF; PG&E; RWE; SCE; SDCWA and City of San Diego, jointly; SDG&E; Southern California Gas Company (SoCalGas); Shell; SEIA and LSA, jointly; and Vineyard.

Solar Dynamics, LLC (Solar Dynamics) filed a motion to late-file its reply comments on June 6, 2024; the motion was granted by an ALJ ruling on May 7, 2024.

1.1. Submission Date

This portion of this proceeding was submitted on June 6, 2024, upon the filing of Solar Dynamics' reply comments.

2. Issues Before the Commission

The sole issue addressed in this decision is the implementation of AB 1373 (Stats. 2023, Ch. 367), which allows the Commission to request that DWR serve as a CPE for certain LLT resources.[5]

3. Comments of Parties

This section summarizes the content of parties' comments on the April 26, 2024 ALJ Ruling by topic area.

3.1. Resource Eligibility

The ALJ Ruling offered four resource types for consideration for centralized procurement by DWR: OSW, Out-of-State (OOS) wind, geothermal,

[5] Assigned Commissioner's Amended Scoping Memo and Ruling Extending Statutory Deadline, April 18, 2024, at 3.

and long duration energy storage (LDES). Parties commenting on the appropriate resource types to be procured were mixed in their opinions. One theme among a plurality of parties was to focus on OSW procurement. Several developers or representatives of particular industries prefer that the Commission require procurement of their specific LLT resource type.

Among OSW lease holders or developers, including Equinor, Golden State, Invenergy California, RWE, and Vineyard, most suggest an initial need determination for OSW. ACP-CA, Invenergy California, CalWEA, Hydrostor, and Vineyard also suggest that the eligibility criteria for resources should be expanded to include resource diversification and other public policy goals. OWC, Vineyard, and Invenergy California suggest consideration of the additional benefits of OSW, including greenhouse gas (GHG) emissions reduction goals, economic development, job creation, and other non-energy benefits. Brightline suggests that a higher need determination for OSW initially will help costs decline faster, which is important given the timeline for 25 GW by 2045 included in the California Energy Commission's (CEC's) Strategic Plan addressing the AB 525 (Stats. 2021, Ch.231) goals.[6]

CEJA and Sierra Club also argue that the non-energy benefits should be included in the criteria, including the social cost of carbon and air quality benefits. EDF agrees that air quality benefits should be included. PCF also argues the Commission should consider additional risk assessment factors such as location, economic risks, and environmental effects beyond carbon emissions.

CEJA and Sierra Club also argue that an important criterion should be consistency with resource needs to meet Senate Bill (SB) 100 (Stats. 2018, Ch. 312)

[6] The Final AB 525 Strategic Plan is available at the following link: https://www.energy.ca.gov/data-reports/reports/ab-525-reports-offshore-renewable-energy

goals. CEJA and Sierra Club support Central Procurement Entity (CPE) procurement of OSW because it can help lead to faster retirement of natural gas plants. In reply comments, Vineyard agrees. Also in replies, Invenergy and RWE point to other state policy goals, including SB 100 and AB 525, as well as major resource potential, resource diversity, cost reductions from economies of scale, and the need for significant development of common infrastructure. Vineyard and EPIC, in replies, also point to the benefits of economies of scale leading to cost reductions, and state that the cost-benefit analysis conducted to date does not adequately account for this.

BAMx seems to prefer that there not be a need determination made at this time for OSW, because the cost of transmission is too high relative to other available resources.

Form recommends that selection criteria should be weighted toward emerging technologies not yet proven on a large scale, and specifically argue for the inclusion of multi-day storage technologies. Fervo argues that enhanced geothermal should be considered separately from conventional geothermal. AEU agrees. Fervo also argues that reliability should be made an explicit value when evaluating resources over multiple days, because geothermal can provide night-time and winter reliability better than other resources. Fervo suggests that the prioritization criteria highlight grid reliability and regional transmission needs. BHE points out that there should potentially be different treatment for the development of a geothermal field as distinct from a single project, and that initial development of the field is a heavier lift than buildout of a project once the field is already developed.

MGRA argues that pumped storage hydroelectric (PSH) resources should be eligible for consideration, but not the San Vicente project put forward by the

City of San Diego and SDCWA, because it is not cost-effective or cost-competitive. PCF also opposes the San Vicente project, and would like to see public ownership explored for other PSH projects. MGRA is concerned that the costs assumed for PSH in RESOLVE modeling do not reflect the costs of pumped storage in California and the site-specific characteristics make a one-size-fits-all approach inappropriate. SDCWA and the City of San Diego argue that the San Vicente project should be procured by DWR, as contemplated in the language of AB 1373, which provides for characteristics of PSH projects that fit the San Vicente situation. Swan Lake advocates for the procurement of its PSH project in Oregon, even though it does not meet the criteria in AB 1373 that a PSH project be "directly appropriated funding by the state before January 1, 2023."[7]

PCF also argues that OSW and OOS wind are too expensive, and geothermal is already well enough developed and does not need CPE support.

Hydrostor points out that LDES is a broad category, and due to this, each individual technology is valued less in the rating of numerous technologies.

CEERT argues for the inclusion of concentrating solar power (CSP) technologies. Solar Dynamics agrees in reply comments, and suggests that the Commission reassess CSP to reflect the state of CSP technology today and include it in RESOLVE modeling in future IRP cycles.

BAC and GPI argue that bioenergy should be evaluated as a clean firm resource, while GPI acknowledges that emitting resources do not qualify under the language of AB 1373. Still, they argue that these resources should be considered from a broader perspective beyond AB 1373.

[7] *See* Section 454.52(h)(2).

Pattern argues that OOS wind should not be considered a proven technology with no opportunity for cost declines, because the use of a CPE may assist in creating cost savings. Pattern also argues that DWR can be considered an anchor tenant to help develop appropriate transmission buildout.

CAISO points to examples of merchant-based transmission moving forward with LSE-level contract commitments and clarifies that the financing model used for the SunZia project is not applicable for transmission within the CAISO footprint and was specifically designed to enhance opportunities for construction of new transmission in locations currently outside of the CAISO balancing area to facilitate delivery of critically needed resources. In reply comments, AReM and UC argue that there is no consensus for how transmission costs should be treated as part of CPE procurement, and recommend that the Commission set up a process to explore these issues in greater detail. In the meantime, AReM and UC recommend that OOS wind not be eligible for procurement by DWR.

LSE representatives commented with mixed opinions. CalCCA, PG&E, and SCE suggest only considering OSW for centralized procurement, and not any other resource type, and CalCCA would support it only if it does not interrupt individual LSE procurement. Calpine states that the CPE should not be asked to procure resource types that LSEs are already procuring. SDG&E suggests that more criteria should be included prior to making a determination. CalCCA also suggests the five-year lead-time requirement for resources to qualify for use of the CPE in AB 1373 should not include transmission or interconnection time, but rather only time for the resource itself to come online. In reply comments, CalCCA states that OOS wind and geothermal have not been demonstrated to take more than five years and LSEs have already demonstrated

the ability to procure them individually. Fervo, however, provides evidence for geothermal projects taking five years or more to develop, arguing that the average is closer to seven years.

PG&E prefers no technology carve-outs, especially for pumped storage. PG&E also comments that the criteria set forth in the ALJ Ruling should be more clearly defined and include more comprehensive condition descriptions.

SCE recommends that the eligibility criteria include the primary question about whether LSEs can procure on their own. SCE suggests that it is premature to conclude that LSEs can't procure any of the resources. SCE also suggests that the investor-owned utilities (IOUs) should be the CPE instead of DWR. If the Commission moves forward with DWR CPE procurement with technology carve-outs, which SCE does not suggest, then SCE proposes that the technology types be limited to those that are not widely demonstrated. However, SCE also argues that procurement of emerging technologies is also questionable, stating that it is unclear why customers should pay to transform an industry that is not commercially ready, given the many affordability pressures facing customers right now.

CalCCA recommends including resource diversity as an explicit criterion, as do ACP-CA, CalWEA, CEERT, and Invenergy. In reply comments, Fervo agrees. CalCCA comments that there can be many reasons for otherwise cost-effective resources not being procured in sufficient volumes, including limited availability, transmission and interconnection backlogs, deliverability uncertainty, and large infrastructure needs (such as ports for OSW). CalCCA recommended that the Commission take on these challenges directly, rather than relying on a CPE.

Shell argues that a CPE should be used only when a compelling need to overcome market failures can be identified, such as for OSW currently.

ACP-CA suggests that the CPE structure be assessed for its ability to overcome other challenges/hurdles such as port and transmission infrastructure investment, and expand cost-effectiveness to include economic reliability and GHG benefits over the course of the energy transition.

Finally, IEP prefers that the Commission not list chosen resource types, but rather list only the criteria or attributes of the resources. In reply comments, ACP-CA argues that AB 1373 specifically requires the Commission to "specify resources"[8] for DWR central procurement, and thus attributes are not enough.

In reply comments, SoCalGas suggests that carbon capture and storage (CCS) and gas-to-hydrogen combustion are emerging technologies providing clean firm electricity that should be considered for procurement by a CPE. Calpine and MGRA also raised CCS as an option in their opening comments, whereas UCS points out that procuring emitting resources by the CPE is prohibited by the language of AB 1373, which states that DWR can only procure a resource that does not "increase the state's dependence on any fossil fuel-based resources," "does not generate electricity using fossil fuels or fuels derived from fossil fuels," and "does not use combustion to generate electricity, unless that combustion use is ancillary and necessary to facilitate geothermal electricity generation."[9] CalCCA and NRDC also point out in replies that combustion and emitting technologies are not eligible under the AB 1373 provisions. IEP suggests that these technologies be considered in the future outside of AB 1373.

[8] *See* Section 454.52(a)(4)(B).

[9] *See* Section 454.52(h)(1)(D) and (E).

3.2. Need Determination

On the topic of the amount of procurement of particular resources that the Commission should request from the CPE, parties have presented very mixed opinions.

While a good number of parties comment that the preferred system plan (PSP) portfolio is a reasonable place to start for determining need for the various resource types considered, some parties raised specific concerns about that as a need determination source.

PG&E does not support the PSP as a starting point for an OSW need determination, PG&E does not support centralized procurement by DWR for other technology types for a need determination by September 1, 2024, but argues that the PSP portfolio is a reasonable basis for considering use of the CPE for such resources at a later time in this proceeding, or in a successor proceeding. PG&E also would prefer that the procurement be done based on attributes that the technology type fulfills, broken down into daily, monthly, or yearly generation profiles.

SCE points out that inclusion of a resource in individual LSE IRPs does not necessarily indicate a need, either for reliability or GHG reduction purposes. SCE also argues that the cost-benefit analysis presented in the ALJ Ruling does not help determine the optimal amount of OSW for the portfolio, but rather just analyzes the various amounts of OSW forced into the portfolio. SCE does support 1 GW of OSW as a prudent start to use DWR as a CPE, arguing this amount is large enough to support a viable project but small enough to minimize risks to customers. PG&E supports DWR soliciting for procurement of up to 3 GW of OSW, but urges the adoption of off-ramps in the event that the projects are too expensive.

SCE comments that there is no need for cost-benefit analysis to determine need, but it can be useful for informing a confidential cost cap and an initial procurement limit for DWR. SCE also states that a cost-benefit analysis alone should not serve as a minimum basis for a non-zero need determination. Instead, SCE suggests that IRP procurement requirements should be driven by matching system needs informed by IRP modeling with the resource attributes that must be satisfied by the procurement, rather than requiring resource-specific technology carve-outs. SCE argues that deviating from competitive, attribute-based procurement often results in uneconomic or suboptimal cost results for consumers. Thus, SCE argues that procurement should be limited to the amount required to bring an emerging technology to the point of being commercially viable.

SDG&E does not support a need determination by specific technology. Rather, SDG&E argues that all eligible resources should be allocated to participate in a least-cost solicitation, with the best-priced resources selected.

CalCCA is concerned that using the PSP resource amounts has risks, including outdated data, especially for OSW. CC Power similarly argues that the OSW cost estimates are too low in the National Renewable Energy Laboratory Annual Technology Baseline. CalCCA also argues that the PSP does not adequately consider LSE planned capacity, and argues that any need determination made by the Commission here must adequately consider the LSEs' right to self-procure ahead of authorizing any centralized procurement. Ultimately, CalCCA argues that the Commission should delay making any need determination until more recent LSE procurement data is available, stating that more OSW through 2028 will be represented than was included in Table 1 of the ALJ Ruling.

LSA generally supports using the PSP as a starting point, except for the OSW amount because it was not selected by RESOLVE but rather forced in on the basis of LSE plans. SEIA supports the Commission making a need determination for OSW of up to 4.5 GW, but proceeding with caution. Invenergy suggests a 4.5 GW minimum, but a total target of 10 GW.

Calpine argues that the Commission should use the least-cost portfolio and not the core portfolio that was selected as the PSP, to determine a need for CPE procurement. Calpine would support an OSW need determination of 1 GW now, and no more than 4.5 GW, stating that OSW is the only resource for which the case for CPE procurement is clear.

IEP supports 4.5 GW of OSW as a need determination through the PSP, because it aligns with the amount of transmission planning at the CAISO and limits risks to ratepayers by not over-committing to a resource with potentially uncertain procurement costs. IEP would also support an amount of up to 4 GW of OOS wind, because that represents the difference between the PSP portfolio amounts and those planned to be procured by the LSEs in their plans.

BHE makes a similar argument that the amount of procurement ordered through a CPE should be the gap between the PSP resource amounts and those already procured in response to the mid-term reliability (MTR) procurement order (D.21-06-035), in order to prevent a tight market for firm capacity.

The majority of the parties representing OSW interests support a 10 GW need determination for OSW development by 2035. Vineyard, Golden State, and Equinor assert that 10 GW is the full lease amount so far, arguing that a need determination of that amount would send the strongest market signal that California wants to develop the potential. Oceantic also agrees. In reply comments, Invenergy argues that California will only achieve the necessary

economies of scale to reduce costs and maximize benefits if the initial need determination is robust, and also states that the 10 GW need not be procured all at once.

Golden State and OWC also support the rationale for procuring LLTs as a "public good"[10] on behalf of all ratepayers. Vineyard also suggests that the solicitations for OSW can be broken up into 2 GW tranches evenly spaced out through 2035. Equinor supports the provision that DWR not be required to procure the full amount of the need determination, and that multiple successive solicitations could be prudent. CUE/CURE also support a need determination of 10 GW of OSW by 2035.

CalWEA also supports 10 GW of OSW as a need determination, stating that the 4.5 GW in the PSP is not enough. CalWEA argues that updates to RESOLVE would likely show, particularly with reduced transmission costs, that the 10 GW quantity can be delivered at reasonable cost and without significant cost risk.

OWC also supports a 10 GW OSW need determination, arguing that the analysis presented so far does not adequately value diversity benefits. OWC also wants additional consideration of increased federal funding available, and other contributions to the public good, including economic development and job creation. In addition, OWC argues that the Commission should also consider electricity needs to reach the goals in SB 100, the 2022 California Air Resources Board (CARB) Scoping Plan, which calls for 20 GW of OSW by 2045, and the CEC's AB 525 report, calling for 25 GW of OSW by 2045. Brightline also points to

[10] See April 26, 2024 ALJ Ruling at 23.

the AB 525 report on OSW, stating that the PSP should not be the exclusive source of need.

EDF also supports a need determination of 7.6 to 10 GW of OSW by 2035 to ensure that leases already awarded reach their full capacity. EDF also comments that the need determination should take a least-regrets approach and build as much as possible, then leverage the tools available to DWR as the CPE to help protect ratepayers so they do not over-buy in the near term. EDF would also support using DWR as the CPE to procure LDES and geothermal later. In reply comments, EDF also points out that the 7.6 GW-10 GW range represents full lease capacity and the cost-effectiveness analysis was too limited temporally to capture the full benefit of OSW over its expected useful life, a point which NRDC also made in opening comments. EDF argues that procurement of OSW is needed now in order to ensure cost-effective procurement through 2045.

In reply comments, EPIC supports a 7.6 GW need determination for OSW as it was shown in the Commission staff's cost-benefit analysis to represent the level after which ratepayer risks increase. Therefore, EPIC argues this is the minimum need that should be found, and AB 1373 was passed to catalyze the OSW industry, necessitating a "leap of faith."[11]

NRDC comments that the staff analysis is a step in the right direction and a reasonable basis for a need determination currently.

CESA is concerned that the PSP understates the need for LDES technologies and the capacity expansion model does not include sufficient LDES durations and technologies as candidate resources with associated cost figures. Hydrostor comments that the PSP was not developed with the intent to support

[11] EPIC June 5, 2024 Reply Comments at 4.

LLT procurement by a CPE. Hydrostor is particularly concerned about technology neutrality in the LDES category, especially those technologies that are not lithium-ion batteries. In reply comments, Hydrostor points out that many parties arguing in comments that LSEs can procure LDES on their own appear to be referring mainly or exclusively to lithium-ion batteries, and that this is not true for other diverse and emerging LDES technologies.

GreenGen, in reply comments, argues that analysis of the LDES category has been heavily weighted toward lithium-ion batteries, which have a much shorter asset life and do not provide critical grid stability services provided by turbine-based technologies like PSH. GreenGen also points out that PSH technologies do not degrade with each cycle and have useful lives of more than 50 years, which will help stabilize costs over the long term.

AReM argues that lithium-ion batteries should not be eligible to be purchased by the CPE; instead, DWR should focus on other LDES technology types in need of economies of scale and with known longer development times. Hydrostor agrees.

CESA argues that the LDES procurement to date is insufficient to meet PSP requirements, and therefore a need determination should be made for LDES to be procured by DWR.

CESA points to a joint study conducted by Energy and Environmental Economics (E3), Form Energy, and the CEC[12] that reflects the LDES candidate resources with longer durations and accurately reflects the impact of multi-day weather events, modeling the multi-day inter-temporal effects within the resource selection optimization. CESA and Form both argue that intra-day and

[12] The cited study is titled "Assessing the Value of Long-Duration Energy Storage in California." California Energy Commission Publication Number CEC-500-24-003.

multi-day storage will likely play an essential role in decarbonizing the electricity sector effectively, noting that the Joint CEC study identifies the need for 5-37 GW of LDES by 2045.

Form further argues that the fact that a specific cost-benefit analysis was not conducted for non-OSW resource types should not prevent the Commission from making a need determination for the other resource types. Form recommends CPE procurement of at least 1 GW of emerging LDES technologies by 2031, including 500 megawatts (MW) of multi-day storage, with at least 2 GW by 2035.

AEU comments that there was a disparity between the analysis done for OSW and other resource types, and is particularly concerned that the use of 8-hour lithium-ion batteries as a proxy for other resources biases the analysis against geothermal system and LDES. AEU strongly recommends that enhanced or advanced geothermal systems be treated as a separate resource type.

AEU also argues that AB 1373 does not make reference to a quantity of resources, but rather requires the Commission to specify the resources that should be procured to meet that need. Thus, AEU argues that the Commission need not specify the exact quantity of need, but can do this during the six-month period before making the request to DWR to procure. Thereafter, AEU argues that DWR has the flexibility to structure the number and timing of competitive solicitations.

CEJA and Sierra Club comment that the PSP is a reasonable starting point for a need determination, but the high gas retirement scenario should be used to better reflect SB 100 goals. CEJA and Sierra Club also comments that the cost-benefit analysis presented is incomplete, because it fails to meaningfully account for the economic benefits of public entity procurement and the non-energy

benefits that result from the construction of diverse resources, including lower air pollution and GHG reductions.

PCF comments that no threshold has been met in the analysis to trigger CPE procurement. PCF especially opposes the CPE being used to procure OSW and OOS wind, but may support LDES. PCF would recommend that the Commission consider authorizing DWR to build and own any additional PSH resources located in California that are cost-effective, reduce GHG emissions, and determined to be needed. PCF further argues that geothermal and PSH resources are already well developed and procurement by DWR would merely serve to reallocate those already-in-use resources to other buyers.

Cal Advocates supports a non-zero need determination for DWR, and comments that the cost-benefit analysis conducted on OSW offers a reasonable basis to conclude that higher levels of OSW are more likely to produce negative net benefits for ratepayers under current assumptions. TURN supports that the need determination be made with each IRP cycle when considering the PSP to be adopted.

3.3. Relationship to Load-Serving Entity (LSE) Procurement

A majority of parties in comments support the concept that the LLT procurement by DWR as a CPE should be conducted as a public good.[13] IOUs, CalCCA, most trade associations, and LLT developers all support this as a general principle. The notable exception is Cal Advocates, which points out that GHG reduction is a fundamental statutory obligation of the IRP process, with or without centralized procurement.

[13] *See* April 26, 2024 ALJ Ruling at 23.

Cal Advocates supports the Commission making a small initial need determination by September 1, 2024, and reevaluating need during the consideration of future PSP portfolios. Cal Advocates further points out that actual cost reductions achieved by DWR procuring an initial tranche of procurement of OSW could move the resource closer to cost-competitiveness in individual LSE solicitations; further volumes of OSW could then be obtained by LSEs without centralized procurement.

Another theme of agreement in the majority of comments with respect to the relationship of DWR centralized procurement and that of LSEs was on the issue of allowing a six-month period following the need determination for publicly-owned utilities (POUs) to elect to participate in a DWR solicitation, prior to DWR initiating the solicitation.

Many parties also agreed that the need determination by the Commission should be reconsidered with every IRP cycle, including PG&E, TURN, Invenergy, LSA, Shell, and Vineyard, to name a few. Equinor prefers that the solicitation process by DWR be decoupled and designed outside of the context of PSP adoption and the IRP cycles, and tracked separately. BHE and ACP-CA believe the PSP should be used with flexibility for a more frequent need determination, if needed. GPI opposes this decoupling in reply comments, particularly because assessing need as part of the PSP development process will ensure that transmission development is evaluated at the same time. ACP-CA and Invenergy also request that need determinations not be reduced in subsequent IRP cycles, once made, in order to avoid market confusion.

A more controversial topic in the area of the relationship between potential DWR procurement and LSE procurement is the subject of whether individual

LSEs should be allowed to opt out of paying for their share of DWR procurement, in favor of making their separate contracts for needed resources.

CalCCA argues that the Commission must adhere to provisions in Sections 454.51 and 454.52, which include the right of self-procurement by CCAs. CalCCA argues that these provisions mean that there should be an opt-out opportunity for LSEs, in the six-month period between when the Commission makes a need determination and when the request it made to DWR to procure. SDG&E also supports the opportunity for LSEs to opt out. MGRA argues that LSEs should be allowed to opt out in order not to penalize early actors.

SCE and PG&E oppose the idea that LSEs should be allowed to opt out, as do Calpine, NRDC, GPI, and Vineyard. In reply comments, PG&E argues that LSEs can still procure and coordinate with DWR to avoid duplicative procurement. SCE argues that the nonbypassable charge to recover CPE procurement costs should be imposed on all LSE customers. SCE argues that, by definition, a need determination for procurement by a CPE should only be made by the Commission when LSEs are unable to procure a necessary LLT resource.

AReM and UC Regents, in reply comments, state that the size and complexity of LLT projects is beyond the ability of individual LSEs to handle, so procurement would be more cost-effectively and efficiently undertaken by DWR. CalCCA disputes a similar points made by CUE/CURE, by citing to joint powers authority procurement such as that described by CC Power in its comments.

CC Power points out that even though most parties agree that OSW is the best candidate for CPE procurement, in part because the LSEs have not yet procured it, CC Power has already initiated a solicitation for OSW and consideration of next steps. In addition, CC Power has signed a memorandum of understanding (MOU) with the CADEMO OSW demonstration project, which

will develop four floating turbines using existing technology in an area where some electrical infrastructure already exists due to its location near historical oil exploration equipment.

AEU argues that participation in CPE procurement should be optional for POUs, CCAs, and other LSEs, and that DWR should use a subscription model for participation in its contracting.

Invenergy suggests that the Commission plan for a transition from the CPE to LSE procurement in areas where a need is found but the CPE may no longer be needed.

The CAISO comments chiefly expressed concern that the CPE procurement be reflected in IRP portfolios so that the CAISO can take the resources into account in its annual transmission planning. GPI also commented that the impact of the CPE need determination on the Transmission Planning Process (TPP) is unclear. GPI is concerned that offsetting the need determination from PSP adoption may impact IRP efficiency, pointing out that that the recent PSP may not align with this need determination for LLT resources. GPI is also concerned about the interaction with the reliable and clean power procurement program (RCPPP) expected to be considered in this proceeding later this year. GPI comments that the LLT need determination for DWR should be assessed in the near term on the same timeframe as other procurement orders prior to the adoption of the RCPPP.

3.4. Allocation of Costs and Benefits

The chief recommendation in the ALJ Ruling around allocation of costs and benefits was that the allocation methodology could mirror the one adopted recently related to the costs for the extension of the Diablo Canyon Power Plant (Diablo Canyon). The method is similar to the Cost Allocation Mechanism

(CAM) originally authorized in D.06-07-029, except that costs are spread uniformly across all LSEs subject to the Commission's Resource Adequacy authority, rather than being differentiated by IOU territory. The ALJ Ruling proposed using a 12-month coincident peak lead method to allocate costs and benefits to each LSE's customers.

In its comments, SCE suggests that cost and benefit allocation could be one based on energy load share if the purpose of the CPE procurement is GHG reduction. Otherwise, if the procurement is for reliability purposes, then SCE suggests that the proposed 12-month peak allocation is appropriate. PG&E and SDG&E agree with the proposed 12-month coincident peak load. In addition, PG&E specifies that costs are allocated based on forecasting for the applicable year, as opposed to the most recent full year, to remain consistent with the cost allocation for the costs of keeping Diablo Canyon open. CalWEA suggests that the 24-hour slice-of-day framework in resource adequacy should be used as a methodology source for allocation, rather than peak load.

CEJA and Siera Club argue that the CAM for resource adequacy has not been entirely successful, though they do not define their criteria, and therefore they suggest the Commission proceed with caution to ensure environmental, equity, and ratepayer protections are upheld.

Parties were also concerned about the provisions allowing for POUs and/or LSEs to elect to purchase additional resources from DWR on a voluntary basis, beyond the need determination made by the Commission.

PG&E suggests that LSEs and POUs submit their requests for additional procurement by DWR on a capacity basis. SCE suggests that incremental costs should be separately tracked so they are not imposed on other non-participating LSE customers. Further, SCE argues that additional procurement for POUs and

other LSEs should be allocated based on the marginal capacity procured. SDG&E agrees that incremental costs should be allocated solely to the LSEs/POUs to avoid any cost shift onto other customers. CalCCA agrees, stating that the Commission must ensure that additional volumes do not increase the costs to those that have central procurement costs allocated to them but did not request additional volumes.

Cal Advocates argues that the Commission should count any voluntary participation from POUs within the CAISO footprint towards the total need determination for DWR centralized procurement. Then, according to Cal Advocates, any participation by non-CAISO POUs should not reduce the total CAISO footprint need determination, as a general matter.

Shell argues that it would be more appropriate, in this case, to allocate the costs and benefits in a similar way to the voluntary auction/market offer (VAMO) process used to allocate the voluntary purchase of renewables from IOUs by other LSEs. Shell also argues that all attributes (energy, capacity, renewable energy credits (RECs), and GHG reduction value) should be allocated to LSEs.

NRDC argues that DWR can design its solicitation and contracting process in such a way as to allow LSEs to procure resources beyond the levels in the Commission's need determination.

Several parties also commented on the likely need for non-energy-related costs, particularly for infrastructure related to OSW development. SCE suggests there should be a distinction made in the solicitation process for costs directly related to the electric system and its development which can be recovered through electric rates and those other costs, such as port and manufacturing facility infrastructure, which are not appropriate to be recovered in electric rates.

For these reasons, SCE supports the development of cost caps. SDG&E suggests that these related infrastructure costs be included in the net present value (NPV) calculations when ranking bids. CalCCA suggests that any costs incurred by developers must be included in the bids, and be part of the bid selection process. However, CalCCA argues that the Commission must then determine if infrastructure costs are to be separate from the contract for the generation resource. Form suggests that the infrastructure costs should be considered alongside bids from resources that do not require these costs, in order to fairly compare costs.

CAISO also commented on the transmission costs associated with OSW development. CAISO communicates its commitment to both seeking to prudently manage expenditures that could be the subject of cost recovery processes, as well as providing industry transparency on the pace of transmission development activities and associated cost exposure.

Cal Advocates comments that adding additional costs for port infrastructure to the net benefit analysis reduces the possibility that any OSW is cost-effective.

Cal Advocates also brings up the idea of potentially assigning DWR as the backstop procurement entity in the event that LSEs fail to meet their LLT procurement requirements in D.21-06-035, as amended by D.22-02-004 and D.24-02-047. SDG&E agrees that DWR should be asked to provide backstop procurement for those MTR LLT resources in the event that LSEs fail to procure their required share. AReM also comments that DWR could be an effective backstop procurement entity. UCS comments that the Commission should clarify

whether DWR is acting in a "frontstop" or a "backstop" capacity.[14] For example, UCS argues that DWR procurement of OSW would be "frontstop," whereas DWR may want to act as a backstop for OOS wind.

3.5. Procurement Process and Timeline

The ALJ Ruling proposed an application process for the Commission to consider whether to authorize cost recovery through a nonbypassable charge for the resources procured by DWR. Parties were fairly split on whether an application is appropriate or whether a Tier 3 advice letter should be used for Commission approval of any contracts.

SCE, PG&E, and SCE all support the application process, as does CalCCA. TURN, CEJA, and Sierra Club agree.

Numerous parties state that they would prefer a Tier 3 advice letter as the vehicle, including Equinor, Invenergy, ACP-CA, and Hydrostor. Cal Advocates would also be supportive of a Tier 3 advice letter process. Form suggests that an application is appropriate for DWR procurement, but a Tier 3 advice letter for IOU procurement.

Several parties comment that DWR may not be as experienced in handling large solicitations as the IOUs, and the IOUs should be considered to assist DWR. Form makes this point, as does PG&E. SCE suggests that the Commission should consider requesting an IOU to assist DWR in conducting the solicitation, bid evaluation, and/or contract negotiation, with reimbursement for costs by DWR once determined as reasonable by the Commission. GPI suggests that DWR should not be the CPE for all long lead-time resources because of its track record for expensive contracts. GPI suggests instead that the CPE structure in the

[14] UCS Opening Comments, May 24, 2024, at 2-3.

resource adequacy program, where the IOUs are required to establish independent entities with firewalls to their internal procurement activities, may be the best approach for some of the LLT resources.

Numerous parties also request that there be a process to develop pro forma contracts or other materials prior to DWR soliciting for any contracts. PG&E comments that DWR, Commission staff, IOUs and other LSE representatives should develop a contract structure, including a pro-forma contract, to help developers understand expected terms and considerations. PG&E argues this will help developers form their bids in a solicitation. PG&E also suggests that protocols should be set up for project eligibility, such as CAISO queue position, land rights, federal lease agreements, etc. SDG&E would support a workshop process for the development of a CPE contract template. CalCCA suggests that prior to initiating procurement activities, DWR should provide its procurement plan, including timelines and contract structures, on the record before the Commission, so that parties can weigh in before the Commission makes a final determination and DWR begins any procurement activities.

In reply comments, ACP-CA disagrees that DWR needs to present a detailed plan before proceeding with procurement, arguing that the AB 1373 requirements are already sufficiently stringent and comprehensive.

In opening comments, CalCCA also stresses the importance of off-ramps baked into the procurement plan. SCE agrees, and stresses the importance of guardrails as part of the DWR solicitation process, to minimize risks to customers. SCE specifically mentions the following elements: use of a competitive solicitation process, establishment of a procurement review group (PRG), Commission approval, flexibility to procure less than the maximum

identified need, procurement limits, and a confidential cost cap based on IRP assumptions, industry data, and studies. SCE states that the cost cap can be kept confidential so that bidders do not raise their bids to the level just below the cap. BAMx agrees in reply comments.

Many parties in comments oppose the use of a cost cap, whether confidential or not, including ACP-CA, Equinor, Golden State, Oceantic, and Vineyard. Oceantic argues that cost caps would interfere with potential developer bidding that can help illustrate the risk, value, and opportunities. Oceantic also argues that ratepayers will be protected from bids that are too high by the fact that DWR will not be required to purchase up to the total need determination amount, and thus DWR and the Commission may decide to reject bids after evaluating the results of the solicitation. Vineyard agrees with these points in reply comments.

LSA stresses the importance of offramps to minimize risk to consumers.

Another issue discussed in the ALJ Ruling was a structure for a PRG designed to advise DWR on procurement activities and outcomes. The ALJ Ruling suggested that the PRG for DWR should be made up of non-market participants.

SCE strongly advises that the Commission consider allowing LSE representatives to serve on the PRG to DWR, as the LSEs have a vested interest in representing their customers. CalCCA agrees and suggests that the PRG should include at least one representative from each LSE type, including non-market participant CCA representatives.

Cal Advocates suggests that the PRG for DWR be modeled off of IOU PRGs. If the Commission approves a project or multiple projects, Cal Advocates suggests that DWR continue to meet with the PRG to provide progress updates

and host any additional meetings for delays, disputes, or any changes to the contract price.

CEJA and Sierra Club suggest that the PRG involve impacted communities, including an option where a community member or organization can participate without reviewing confidential information. Generally, CEJA and Sierra Club suggest that DWR should work with local communities for consideration of their input on contracts. In reply comments, Brightline specifically recommends separate engagement with Tribal Nations. Brightline also suggests that the Commission encourage DWR to take into account the U.S. Department of Energy's (DOE) requirements that applicant projects include Community Benefit Plans.

DOW suggests that the PRG include staff from the California Department of Fish and Wildlife and the Governor's Office of Planning and Research, as well as non-market participants to provide technical assistance for evaluating potential for environmental and land-use conflicts.

IEP recommends a diverse PRG with industry and community representation.

Another issue parties commented on is the timing of solicitations. ACP-CA, Form, Oceantic, and CESA state that the timeline in the ALJ Ruling is too long for OSW. Golden State and RWE recommend an initial solicitation no sooner than 2026 but no later than 2028. Oceantic suggests that the first solicitation be in 2025. RWE and Oceantic would prefer solicitations on a periodic schedule, around every two years, for additional capacity after the initial solicitation. Equinor also supports periodic solicitations.

Several parties brought up the concept of DWR soliciting for an open-book contract structure, where developers would be paid based on actual costs, with

an agreed-upon profit margin. Some parties argue this could be a good option for OSW, since the costs are completely unknown. The approach would be similar to cost-of-service regulation of utilities, where at least initially the contract cost would be transparent to the Commission. BHE, CalWEA, CEERT, IEP, and TURN recommend that the Commission consider this option. SCE agrees in reply comments, and also recommends cost benchmarks and potential off-ramps to protect customers. PG&E also wants the procurement to show a net benefit for customers, along with supporting off-ramps or guardrails.

TURN also generally comments that the Commissions should encourage DWR to consider a variety of alternative contract structures designed to lower costs and maximize ratepayer benefits. GreenGen agrees in reply comments.

Finally, Cal Advocates recommends that DWR be required to procure bridge capacity in the event of project delays for its assigned procurement.

4. Discussion

This section discusses the determinations that the Commission is making for procurement of several LLT electricity resources in advance of the September 1, 2024 deadline in AB 1373.

AB 1373, codified as Section 454.52(a)(4), directs that the Commission "determine if there is a need for the procurement of eligible energy resources based on a review of the integrated resource plans submitted by load-serving entities in compliance with the requirements of this section and Section 454.53 and the progress towards meeting the portfolio of resources identified pursuant to subdivision (a) of Section 454.51."

First, as proposed in the ALJ Ruling and supported by the vast majority of parties filing comments, the Commission will plan to evaluate the need for procurement of LLT resources by a CPE on behalf of LSEs under the

Commission's IRP purview with every IRP cycle when the PSP portfolio is being considered. Because numerous factors associated with electricity planning are changing constantly, including cost assumptions, available technologies, and progress toward GHG emissions reduction goals, it is logical that the need for CPE investment in LLT resources should be considered periodically.

Second, the ALJ Ruling also proposed that any non-zero need determination made by the Commission be a maximum procurement amount, but that DWR not be required to procure the full amount if the cost is not reasonable. In other words, DWR would solicit up to the maximum amount requested by the Commission, but DWR could procure any amount less than that, including zero. The ALJ Ruling proposed that DWR not procure these resources at any cost. Almost every party agreed with this proposal in comments. This is also the simplest form of cost containment we can provide for ratepayers in this endeavor, though it is not the only cost containment measure contemplated herein (*e.g.,* Commission review of contracts, pursuant to this decision).

If developers do not offer contract pricing that is attractive from a ratepayer perspective at the time of the offers, their resources are not guaranteed to be bought. Therefore, we will include this policy in our need determinations herein. All amounts will be maximums, with zero as the minimum.

4.1. Resource Types to be Procured

AB 1373, in the sections codified as Section 454.52(h)(1)-(2), defines criteria for resources that are eligible to be centrally procured, as follows:

> (1) Only a resource that meets all the following requirements is eligible to be procured by the Department of Water Resources pursuant to this section:

(A) The resource directly supports attainment of the goals specified in Section 454.53 without increasing the state's dependence on any fossil fuel-based resources.

(B) The resource is determined by the Commission to not be under contract at sufficient levels as shown in load-serving entities' most recent individual integrated resources plans submitted to and reviewed by the Commission pursuant to this section to achieve the goals specified in Section 454.53.

(C) The resource has a construction and development lead time of at least five years.

(D) The resource does not generate electricity using fossil fuels or fuels derived from fossil fuels.

(E) The resource does not use combustion to generate electricity, unless that combustion use is ancillary and necessary to facilitate geothermal electricity generation.

(2) Resources from a pumped hydroelectric facility may be procured by the Department of Water Resources pursuant to this section if the pumped hydroelectric facility does not exceed 500 megawatts and has been directly appropriated funding by the state before January 1, 2023.

The ALJ Ruling recommended that the Commission consider centralized procurement for a LLT resource that provides resource diversity, is needed to meet the goals of Section 454.53, and has already been identified as needed in a PSP portfolio, if it also provides one or both of the following benefits:

- Addresses procurement challenges for existing technologies, such as when LSEs are currently unable or unwilling to procure the resource individually or at the scale required, because of the size and/or risk profile of the technology; or
- Supports market transformation for emerging technologies, where the initial procurement creates the potential for future cost reductions through economies of

scale or learning about the best ways to conduct resource development.

The ALJ Ruling explicitly identified four potential resource types that meet the criteria given in the statute: OSW, geothermal, LDES, and OOS wind. Each of these resource types has already been identified as part of the most recently-adopted PSP portfolio in D.24-02-047.

We appreciate many parties' thoughtful comments on the appropriate criteria to be used to select the candidate LLT resources to be procured by a CPE. We agree with the many parties who asked us to explicitly consider resource diversity as an important and primary criterion to consider in evaluating the need for specific LLT resources. We also note that Section 454.52(a)(1)(J) states that LSEs must "maintain a diverse portfolio of energy resources, which may include eligible energy resources procured by the [DWR]."

Section 454.52(a)(2)(B) also states that "the commission may approve procurement of resource types that will reduce the overall emissions of greenhouse gases from the electricity sector and meet the other goals specified in paragraph (1), but due to the nature of the technology or fuel source may not compete favorably in price against other resources over the time period of the integrated resource plan."[15]

This represents a second important criterion for the selection of LLT resources to be centrally procured. We are intentionally focused on resources that we believe could be important to the electricity sector as a whole in achieving California's SB 100 goals by 2045, but which will be inherently more

[15] Paragraph (1) refers to the requirement for LSEs to periodically submit individual IRPs, and to address certain policy requirements within them, including, but not limited to, minimizing bill impacts, maintaining just and reasonable rates, and meeting GHG and RPS goals.

expensive due to their emerging nature and the fact that they are not currently commercially available at competitive prices.

In this way, our action with respect to the LLT resources selected in this decision is intended to bring about market transformation of particular technologies, similar to the manner in which early IOU ratepayer investments authorized via Commission-authorized centralized procurement in solar, wind, and battery storage helped bring down the cost of those technologies in California and worldwide.

Herein, we are explicitly asking LSE ratepayers, through the central procurement mechanism, again to take on the responsibility for making an initial investment in several promising emerging technologies that may prove to be important for achieving SB 100 GHG reduction goals in the electricity sector, as public goods on behalf of all ratepayers under our IRP purview, regardless of their specific LSE.

Because we are taking this general approach to market transformation of particular electricity resources, we necessarily must be resource-specific. Once these technologies are available in a widespread manner at lower costs, we will expect them to be able to compete favorably in procurement by LSEs and to be procured in further significant quantities. But right now, the resources we are selecting are inherently more expensive and would be unlikely to be selected in volumes high enough to lead to market transformation by an individual LSE in a least-cost procurement solicitation.

We do expect that some LSEs may begin or have already begun to procure some of these LLT resources in some quantities, and nothing in this decision is intended to prevent or prohibit such procurement. Rather, our approach anticipates that some LSE procurement may occur. In the future, when LSE

procurement of these resources is becoming more common, the Commission can limit, reduce, or refine centralized procurement for certain LLT types.

In authorizing procurement up to the amounts detailed in this decision, we seek to create the opportunity for these resources to bid on a competitive basis in order to facilitate this potential market transformation. We do not determine that this volume of these resources is necessary to meet our SB 100 goals.

We also acknowledge the points raised primarily by CalCCA that we are required by Section 454.51(d) to "permit community choice aggregators to submit proposals for satisfying their portion of the renewable integration and diverse resources need identified in subdivision (a)." Subdivision (a) refers to the identification by the Commission of a "diverse and balanced portfolio of resources needed to ensure a reliability electricity supply that provides optimal integration of renewable energy and resource diversity in a cost-effective manner."

The November 1, 2022 individual IRP filings of LSEs represented the LSE proposals for procuring the diverse resources considered herein. We acknowledge that numerous LSEs, including CCAs, have identified planned resources in their November 1, 2022 individual IRP filings showing an intent to purchase a number of emerging resources, including chiefly OSW, LDES, and geothermal resources. CCAs have shown great initiative in response to the D.21-06-035 requirements and in bringing the CADEMO project under a memorandum of understanding that could lead to a contract. Our intent is not to interfere with any of these efforts or penalize early action by some LSEs for some resources.

At the same time, we also must harmonize the self-provision opportunity for CCAs with the criteria for LLT resources to qualify for CPE procurement that

were added by AB 1373, including: "the resource is determined by the commission to not be under contract at sufficient levels as shown in load-serving entities' most recent individual integrated resource plans submitted to and reviewed by the commission pursuant to this section to achieve the goals specific in Section 454.53 [SB 100 goals]."

While we acknowledge that a number of LSEs have some potential LLT resources under contract in some amounts as shown in the December 1, 2023 and June 1, 2024 confidential procurement data filings, these amounts, while encouraging, are so far not at sufficient levels of LLT resources to achieve our long-term climate goals in SB 100. Thus, the Commission is taking action here to seek CPE procurement that will assist in making it possible for LSEs to procure the necessary LLT resources in the long run.

All LSEs are encouraged to take actions that will contribute to achieving the SB 100 goals, and smaller contracts can offer individual LSEs important portfolio development opportunities, as well as learning opportunities for LSEs in general. In addition, we note below that the quantities of resources procured by DWR will not be the full amount of resources needed in a particular category, which expressly leaves room for LSEs to procure some resources in smaller quantities for various unique reasons.

It is also important to acknowledge here that these resources do not represent the only pathway to achieving our SB 100 goals. We establish this procurement mechanism to enable these resources to compete with more mature technologies to serve as part of our SB 100 energy portfolio.

Thus, our next key criterion is to select resources that are unlikely to be procured by individual LSEs in significant enough amounts due to procurement challenges and market barriers such as risk, size, and cost. If a resource is already

under contract in significant amounts and is a commercially-available technology, we do not intend to select it as an LLT resource to be procured by DWR as the CPE at this time.

In short, we are viewing the ability to ask DWR to procure resources as a CPE as a unique tool to be used strategically for a chiefly market transformation purpose, for technologies that are likely to be necessary and important to achieving SB 100 GHG reduction goals, but are not yet being procured in sufficient quantities by LSEs.

However, in response to parties' comments on the proposed decision, we do make some provisions to allow some commercialized technologies, including conventional geothermal and PSH, to compete in some categories of procurement authorized herein, because these technologies face barriers to being contracted in the amounts necessary to meet our long-term GHG emissions goals and resource diversity objectives, similar to the emerging technologies identified. In addition, allowing some competition by commercialized technologies can serve to keep costs lower for ratepayers overall. Finally, all of the selected resources meet the criteria outlined in AB 1373, codified in Public Utilities Code Section 454.52(h)(1)(A)-(E).

Turning to the specific resource types, we believe the categories included in the ALJ Ruling are the appropriate ones for current consideration, including: OSW, OOS wind, geothermal, and LDES. However, in keeping with comments from several parties representing LDES and geothermal interests, those categories are appropriate to be further differentiated. In a similar fashion to how we have treated wind energy as three separate categories (OSW, OOS wind, and in-state wind), the LDES and geothermal categories are sufficiently diverse potentially to justify sub-categories.

Within the geothermal category, there are numerous geothermal projects that have been developed in California and the West over the past several decades. Conventional geothermal, also known as hydrothermal,[16] is a fully-commercialized technology, though it may have a higher cost structure than some other resource types due to numerous factors, including its complexity and the need to develop a geothermal field as a fuel source ahead of smaller and more modular generation projects.

As pointed out by SCPA in comments on the proposed decision,[17] DOE has several initiatives underway to develop what is referred to as "next-generation" geothermal power.[18] DOE distinguishes conventional/hydrothermal geothermal technologies from "next-generation" technologies, which include both enhanced geothermal systems (EGS) and closed-loop geothermal systems. Some parties also use the term "advanced" geothermal, though it is not totally clear from the record in this proceeding how advanced geothermal may differ from EGS or closed-loop systems.

According to DOE, the next-generation technologies generally enjoy several advantages, including transferrable technology, supply chains, and workforce transferability, that may help them achieve scale rapidly. For purposes of the need determination in this decision, we are geothermal-technology

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[16] *See* DOE publication Pathways to Commercial Liftoff: Next-Generation Geothermal Power. March 2024 at 10. Available at the following link: https://liftoff.energy.gov/wp-content/uploads/2024/03/LIFTOFF_DOE_NextGen_Geothermal_v14.pdf

[17] SCPA opening comments on proposed decision at 8.

[18] *See* DOE publication Pathways to Commercial Liftoff: Next-Generation Geothermal Power. March 2024, available at the following link: https://liftoff.energy.gov/wp-content/uploads/2024/03/LIFTOFF_DOE_NextGen_Geothermal_v14.pdf

neutral, but hope to see fast development of additional options for developing all geothermal types to serve California power needs.

Enhanced geothermal systems (EGS) are an emerging technology identified by DOE[19] as needing a pathway to commercialization that will require significant capital investment. DOE defines EGS, as distinct from conventional geothermal, in the following manner:

> A naturally occurring geothermal system, known as a hydrothermal system, requires three key elements to generate electricity: heat, fluid, and permeability, which is when fluid can move freely through the underground rock.
>
> In many areas, however, the underground rock is hot but there is not enough natural permeability or fluids present. In those cases, an [EGS] can be used to create a human-made reservoir to tap that heat for energy.
>
> In an EGS, fluid is injected deep underground under carefully controlled conditions to create new fractures and cause pre-existing fractures to re-open, creating permeability. Increased permeability allows fluid to circulate throughout the more fractured hot rock, and the fluid becomes hot as it circulates. Operators pump the hot water up to the surface, where it generates electricity for the grid.
>
> EGS could facilitate geothermal development beyond traditional hydrothermal regions, thereby extending geothermal energy production nationwide. EGS advances are being demonstrated worldwide today, in both the public and private sectors.

EGS can use a closed circuit for the fluid underground. EGS can also access deeper and hotter thermal sources, making them easier to site in diverse locations throughout the country, including in California. Finally, like all forms of geothermal energy, EGS has a high capacity factor, but also more flexibility and dispatchability than conventional geothermal.

Closed-loop geothermal systems are also identified as a next generation geothermal technology by DOE and are described below.

> Closed loop geothermal systems circulate fluids entirely within boreholes closed to the environment. Many closed loop geothermal designs are in development, including coaxial systems that inject and produce from a single borehole; U-tube type systems wherein there are separate injection and production wells; and systems that use thermally conductive materials around the wellbore to enhance nearby heat conduction.
>
> Closed loop systems leverage a single drilled pathway, and therefore do not require hydraulic fracturing to create fluid pathways, reducing potential risks to environment and human health associated with hydraulic fracturing fluids. As opposed to EGS, which benefits from having many fracture pathways and thus substantial surface area to allow circulating fluid to conduct heat from rock, closed loop systems have only the surface area created by the drilled borehole conveying the fluid.[20]

Due to the important resource diversity offered by all forms of geothermal resources, and the potential for both coonentional and next-generation geothermal to be important in meeting the SB 100 goals, we will make a need determination for an amount of geothermal resources generally. The purpose is to assist both with the increased deployment of geothermal resources generally and potentially to assist with the commercialization of all forms of advanced and/or next-generation geothermal resources, including but not limited to the DOE definition, in California and worldwide.

In making a need determination herein for geothermal resources, we note that there is an enormous amount of technical potential for geothermal energy in

[20] *See* DOE Pathways to Commercial Liftoff: Next-Generation Geothermal Power, at 11-12. Available at the following link: https://liftoff.energy.gov/wp-content/uploads/2024/03/LIFTOFF_DOE_NextGen_Geothermal_v14.pdf

the United States, with a large proportion of it available in California.[21] We also note that the Commission has already ordered LSEs to procure 1 GW of clean, high-capacity-factor capacity in D.21-06-035. This procurement order is still outstanding, and LSEs are actively soliciting available qualifying resources. We expect a significant portion of this requirement to be met by some form of geothermal resources. Therefore, we will make a clear distinction in eligible online-dates, as discussed further in Section 4.3 below, in order for CPE procurement not to interfere with relevant LSE procurement. We will also reassess the need for additional geothermal resources, including potentially creating a separate category for next-generation geothermal resources, in subsequent cycles of IRP and after at least one initial round of CPE solicitations.

Within the LDES category, so far most LDES has been procured by LSEs seeking storage with at least an 8-hour dispatch capability. This approach lends itself to procurement of lithium-ion batteries, because they are the cheapest and most modular form of storage, and can be stacked to meet the 8-hour-minimum long-duration requirements.

PSH is another conventional LDES technology that, similar to conventional geothermal, has been commercialized for decades but still may represent a higher-cost option compared to other resource options, particularly compared to lithium-ion batteries currently. While PSH may be more expensive because of the complex siting and infrastructure development required, it is still a well-established technology option. AB 1373 includes special provisions for PSH eligibility for purchase by a CPE, requiring any project to be under 500 MW in size and have been directly allocated state funding prior to January 1, 2023.

[21] *See* DOE publication "Geovision: Harnessing the Heat Beneath Our Feet," May 2019, available at the following link: https://www.energy.gov/eere/geothermal/geovision

In the LDES category we agree with Form that as we increase the amount of intermittent resources on our electric grid, we will also increase the need for longer-durations of storage, including greater than 8-hour, as well as multi-day, storage. Our modeling of the LDES category has been necessarily limited by the information we have to rely on for commercially available technologies. Our primary capacity expansion model, RESOLVE, is not currently set up to capture all of the inter-day dynamics related to resources that can be available for long periods of time, such as multi-day storage technologies. Our capacity expansion modeling analysis is based on a limited number of representative days, which can sometimes smooth away fluctuations in generation, load, and other factors that occur during real-world weather conditions. There is also sometimes imperfect information available regarding changing dynamics that affect this type of analysis, such as real-world weather conditions reflecting extreme temperatures, fuel shortages, renewable energy lulls, and reliability events. For these reasons, our capacity expansion modeling analysis using the RESOLVE model may not always identify the need for resources such as multi-day storage that could present value not yet captured in the modeling results.

In addition to PSH, there are several emerging and developing technologies that can meet a minimum need of 12-hour storage, as well as multi-day storage. More specific duration requirements may be addressed in the procurement request made to DWR within six months. These categories should be differentiated from lithium-ion batteries, as uniquely useful to be pursued by a CPE to help develop the technologies and economies of scale necessary to make them widely available and commercially competitive.

Thus, we make a need determination for both 12-hour (or more) storage and multi-day storage, as long as they do not rely on already-commercialized lithium-ion batteries.

PSH projects will also be allowed to compete in either of the LDES categories, but must show that they are eligible under the provisions of Public Utilities Code Section 454.52(h)(2).

In addition, a majority of parties appear to agree in comments that OSW is an obvious fit for CPE procurement. It represents a significant resource that, if developed, would bring numerous benefits to California, both energy and non-energy benefits (such as economic and port development), assuming it can be developed at reasonable cost. Though many LSE plans indicate interest in procuring OSW, it also has not been contracted in any significant way by LSEs to date. Thus, asking a CPE to procure OSW would not interfere with LSE procurement. For all of these reasons, we make a need determination for procurement of an amount of OSW.

We note that we are not persuaded to select OOS wind for procurement by a CPE at this stage. OOS wind has already been successfully procured in reasonably significant amounts by LSEs. In addition, recent developments with subscription models for transmission access to OOS wind may help improve the ability of LSEs to procure additional amounts of OOS wind. Thus, we will not include a need determination for any OOS wind in this decision. We will watch the market for OOS wind and potentially consider the use of a CPE for OOS wind in the future.

In summary, as stated above in this section, the Commission finds a need for the centralized procurement of four different types of resources: 1) geothermal resources; 2) 12-hour or more emerging LDES technologies, that are

not lithium-ion batteries; 3) emerging multi-day LDES technologies, that are not lithium-ion batteries; and 4) OSW.

4.2. Need Determination

For clarity, we begin with an explicit definition of "need determination" in the context of AB 1373 determinations by this Commission. We will define "need determination" as follows: the maximum value determined by the Commission to be procured by a CPE for a given resource type and/or resource attribute(s), on behalf of all LSEs under the Commission's IRP purview.

The most recent PSP portfolio adopted in D.24-02-047 included the following resource need amounts (in nameplate) by 2035 that are relevant to the eligible resources already discussed above:

1. Geothermal: 2,000 MW;
2. Generic LDES: 500 MW;
3. 8-hour batteries: 2,800 MW;
4. PSH: 500 MW; and
5. OSW: 4,500 MW.

As most parties are aware and has been covered numerous times with respect to the assumptions used for RESOLVE capacity expansion modeling, in the LDES category certain technologies are used as proxies for the category as a whole, since the category contains a diverse set of technologies. Thus, for the purpose of making a need determination for DWR to solicit for, we will look at the total LDES in the portfolio, which is 3,800 MW by 2035.

In considering how much of each type of resource to determine is needed, for the geothermal and LDES categories, we determine that it is reasonable to make a need determination for roughly half of the quantities shown in the PSP portfolio to be procured using the CPE mechanism. Procuring up to this maximum amount will make a significant investment in the resource types

identified, while still leaving significant volumes for LSEs to procure on their own, assuming the planned-for market transformation occurs and costs are reduced during or after the DWR procurement phase.

This means, we are making a need determination for up to 1,000 MW of geothermal and up to 2,000 MW of emerging (non-lithium-ion) LDES (up to 1 GW of 12-hour+ duration and up to 1 GW of multi-day). As mentioned above, asking a CPE to procure the first half of these categories still leaves room for LSEs to procure more of these types of resources, should they so choose and/or if costs come down. It is also likely that future PSP portfolios may show the need for additional amounts.

We have considered the appropriate quantities of OSW in a somewhat different manner. First, as explained in D.24-02-047, the quantities of OSW in the PSP portfolio were selected to be consistent with the amount of OSW included in the portfolio sent to the CAISO for the prior year's (2023-2024) TPP base case. At the other end of the spectrum, the full buildout of the current leaseholders from the U.S. Bureau of Ocean Energy Management (BOEM) auction for California call areas estimated by OSW developers is approximately 10,000 MW. And as cited by several parties in comments, the AB 525 Strategic Report includes 25,000 MW of OSW by 2045 as a goal. As with LDES and geothermal, we want to leave room for LSEs to conduct individual procurement separate from DWR's initial tranche of investment. The CPE investment is likely to be at a scale that is too difficult for an individual LSE or group of LSEs to integrate into their plans because of size, timing, or development risk factors. We also do not want to create unnecessary potential for market power by requesting that a CPE purchase the entirety of the capacity represented by the current leaseholders.

Looking at the cost-benefit analysis conducted by Commission staff, which considers the likelihood that benefits will exceed costs at particular levels of capacity procurement, the 7.6 GW scenario analyzed appears to be the level beyond which, based on current assumptions, it becomes more likely that the costs of procuring the OSW will exceed benefits in cost savings to electricity ratepayers. Beyond that level, net benefits currently appear to be lower, largely due to more expensive transmission upgrade costs and declining marginal benefits.

Our desire in the OSW category is to signal our strong interest in developing the resource and investing up front in order to achieve the economies of scale that will be necessary eventually to realize the full benefits of the resource potential by around 2045. In addition, 7.6 GW represents the full physical cap for Morro Bay and Humboldt OSW resource buildout from a transmission perspective.

Finally, the 7.6 GW level of procurement achieves a good balance between the 4.5 GW in the most recent PSP portfolio and the maximum lease amounts available currently. For all the above reasons, we will adopt 7.6 GW as the maximum OSW need determination for DWR to seek to procure.

As already stated above, we emphasize that we will regularly evaluate the need for additional centralized procurement of these resources with each IRP cycle.

In summary, Table 1 below shows our total need determination quantities and categories.

Table 1. Need Determination Quantities

Resource Type	**Quantity (Nameplate)**
Geothermal	1 GW

Resource Type	Quantity (Nameplate)
LDES: 12-hour + duration	1 GW
LDES: Multi-day	1 GW
OSW	7.6 GW

4.3. Relationship to Load-Serving Entity Procurement

The ALJ Ruling proposed that an initial tranche of OSW be procured by DWR as a public good, with the purpose of investment in GHG reductions for California as a whole, specifically to attain the goal set forth in Section 454.53 (from SB 100). The same logic included in the ALJ Ruling for OSW is also applicable to procurement of geothermal resources and the LDES identified in Section 4.1 above.

We note that we have targeted resources for procurement in Section 4.1 above that are intentionally different from resources already being procured by LSEs directly and at sufficient volumes to result in market transformation, with the explicit intent not to interfere with LSE procurement and, in fact, to offer advantages to LSEs who may want to procure these types of resources in the future at more competitive prices.

The ALJ Ruling also proposed that any CPE procurement of resources would not count toward current procurement requirements of D.21-06-035, D.23-02-040, or D.24-02-047. Any CPE procurement would be kept separate from any LSE-specific requirements.

Here we note that all three of the above-referenced decisions relating to MTR procurement contain requirements for our IRP LSEs collectively to procure at least 2,000 MW of LLT resources with certain characteristics by no later than June 1, 2031. We agree that the resource procurement we are seeking from DWR

through this decision should be treated separately from the MTR LLT procurement by LSEs. In addition, the timing will be different, as described further below in Section 4.5. We will ask DWR to solicit for LDES and geothermal resources with online dates after June 1, 2031; therefore, CPE procurement should not interfere with any LSE procurement to meet the MTR requirements.

The purposes of the LSE LLT procurement for MTR and CPE LLT procurement are distinct and complementary and therefore CPE procurement of LLTs will not count toward any current requirements of D.21-06-035, D.23-02-040, or D.24-02-047.

The ALJ Ruling also proposed that any CPE procurement be kept separate from any LSE-specific requirements that may be included in the RCPPP, which has not yet been adopted, but is intended to replace the order-by-order procurement requirements used in IRP to date. The RCPPP is intended to cover both reliability- and GHG-driven procurement needs.[22]

We agree that it is logical to keep any CPE procurement as a result of this order separate and apart from any individual LSE requirements driven by the RCPPP, once adopted. Since LSEs will not have control over the timing or the amount of CPE procurement, it will be simpler for all actors if the CPE procurement is treated as a separate category, and not co-mingled with the LSEs' own procurement. In addition, we expect the RCPPP and its ultimate design not to have any bearing on CPE procurement requested in this decision, but it may influence future need determinations. Coordination of CPE procurement with

[22] For more information about consideration to date, *see* the September 8, 2022 ALJ ruling available at the following link: https://docs.cpuc.ca.gov/SearchRes.aspx?DocFormat-ALL&DocID=496688637.

the RCPPP and integration within the IRP planning and procurement processes will be addressed in the future in this proceeding or its successor.

The ALJ Ruling also proposed that LSEs not be allowed to opt out of CPE procurement once the Commission makes its need determination, as we are doing in this decision. Thus, all LSE customers would pay for the centralized procurement. Here we agree strongly with the ALJ Ruling's proposal for no individual LSEs being allowed to opt out. As noted several times already, we are selecting resources that are not being procured by LSEs currently in significant enough amounts to create market transformation and reach our long-term GHG reduction goals. Thus, we are targeting resources, by definition, that are not competing in a significant way with LSE procurement currently. LSEs had the opportunity, in their November 1, 2022 individual IRP filings, and the subsequent semi-annual procurement data filings, to show their progress toward procurement of LLT resources and did not show that they are currently being procured by individual LSEs in significant enough amounts to achieve cost reductions or meet long-term GHG targets.

Therefore, we are electing to ask DWR to attempt to procure resources as essentially a "downpayment" toward further future procurement by LSEs directly. Therefore, all LSEs will share equally in the risks (including timing, costs, and general development risks) and rewards (increment new clean energy resources that provide reliability, GHG benefits, and energy benefits) associated with collective action. Basic fairness dictates that the customers of all LSEs under our IRP purview should pay equitably for this procurement. Once the Commission has sought DWR procurement after its review of procurement plans of LSEs under the Commission's IRP purview, as we are doing in this decision,

AB 1373 does not provide for LSEs to opt out of costs for any centralized procurement once it is authorized to be undertaken.

Further, the Water Code additions[23] in AB 1373 require that the costs of DWR procurement of diverse LLT resources be paid for using a nonbypassable charge. This is consistent with the principle that all LSE customers should pay for the centralized procurement. Allowing LSEs to opt out after DWR has been asked by the Commission to undertake procurement on behalf of the LSEs would create an unworkable situation and thwart the statutory framework.

The ALJ Ruling also notes that POUs are permitted, by provisions in Water Code Sections 80820, 80822, and 80826, to voluntarily opt in to CPE procurement. This is a meaningful opportunity for POUs to help drive market transformation of emerging technologies and support California's clean energy and climate goals. The ALJ Ruling proposed that any provisions for these resources be handled directly between DWR and the POUs, without involvement of the Commission.

Here, we note that AB 1373 provides for a six-month period between the Commission making a need determination for centralized procurement and the Commission making a request to DWR to initiate procurement activities based on that need determination. It would be logical for any POUs wishing to join in the centralized procurement to make the election during this six-month period, so that DWR is able to plan for the total procurement requested and solicit for all of it at the same time, without advantaging or disadvantaging any group of LSEs or POUs in any individual solicitation.

[23] *See*, for example, Water Code Section 80821.

We also note here our policy concern that POUs are not also required to invest in the resources that will be centrally procured under AB 1373. This investment should not be voluntary for the approximately 25 percent of customers in California who are served by POUs, because the investments are for the benefit of all Californians.

For at least the last 25 years, the lion's share of investments in resources that will help achieve the SB 100 goals, including investment in research, development and demonstration; renewables; energy storage; energy efficiency and demand response; and electric vehicle infrastructure; just to name a few, have been made by electricity customers who are under Commission jurisdiction and customers of IOUs and CCAs. It is inherently discriminatory and unfair not to require all electricity ratepayers in California to share equally in the investment for the good of all. In addition, it creates unnecessary and undesirable pressure on electricity rates for IOU distribution customers who are already struggling with electricity affordability. We are hopeful that POUs will welcome the opportunity to contribute to the efforts to develop new clean energy resources with accompanying benefits.

4.4. Allocation of Costs and Benefits

The ALJ Ruling proposed that the costs and benefits of any centralized procurement be based on the IOU statewide allocation approach used by the Commission for the costs of retaining Diablo Canyon.[24] Namely, the costs of centrally procured resources would be allocated first to each IOU service area based on the IOU transmission access charge (TAC) area share of a 12-month coincident peak load, minus any non-benefitting POU load in that TAC area, and

[24] *See* D.23-12-036, Sections 6-7.

based on the share that occurred in the most recent full year that ended before the costs are allocated. Then, the ALJ Ruling proposed that the allocation to individual LSE customers within each IOU's territory could mirror the approach used in the CAM.[25] This would result in the application of nonbypassable charges to all LSE customers.

The ALJ Ruling proposed that the benefits of CPE procurement be allocated in the same manner as costs, basically mirroring CAM allocation of resource adequacy and GHG emissions reduction benefits. The benefits could also be used to inform the Power Source Disclosure Program that is overseen by the CEC.

For cost and benefit allocation methodology, the proposal in the ALJ Ruling is logical for the LDES resources, which are chiefly capacity resources. Thus, allocating on the basis of the 12-month forecast coincident peak demand is consistent with the benefits delivered by the LDES resources, and is intended to be consistent with past CAM practice for consideration of CAM credit allocation. The difference in this instance is that the forecast will be a statewide forecast, and not by TAC area which is typically used for CAM credit allocations. Commission staff should use the most recent vintage of the CEC's adopted IEPR demand forecast for each year's allocation, including any future year forecasts of future allocations. We will adopt this approach for any of the LDES resources that DWR may procure. Consistent with past CAM practice, we expect the capacity costs to be charged to all customers, after netting any associated energy rents that might be associated with particular contract types.

[25] CAM was originally adopted in D.06-07-029.

The Commission also will not dictate the type of contract that DWR might enter into for LDES resources. It may be Resource Adequacy only or combined with energy deliveries. Historically, some CAM contracts have included energy dispatch rights and thereby provided energy revenues associated with the dispatch of the resources through the energy markets; the energy revenues were netted from the capacity cost prior to costs being charged to all customers.

We note that one reason the Commission required IOU procurement of LLT resources starting in 2004 was that large IOU-controlled resources were subject to cost-based bidding rules by the IOU procurement plans. The IOU CAM procurement contributed to a hybrid wholesale market where IOU-controlled resources bid into the market at cost to help mitigate the potential exercise of market power by wholesale generators. In today's market context, we observe that LSEs have entered into large volumes of capacity-only contracts to meet IRP requirements, and we have entered a new era where LSEs could be subject to high wholesale energy bidding behavior. We encourage DWR to consider this history while considering the type of contracts to execute with resources that provide both capacity and energy benefits.

For geothermal and OSW, we agree with the proposal by SCE in its comments that the resources that are energy-heavy would be more logically allocated on the basis of energy load share served among LSEs, rather than coincident peak demand. Thus, we will require that the costs and benefits of geothermal and OSW be allocated annually based on a pro rata share derived from annual forecast loads as contained in the most recently-adopted CEC IEPR. Commission staff should use the most recently available vintage of load forecast for each year's allocation, including any future year forecasts of future

allocations, if necessary allocating first by TAC area and then further to LSE customers within each TAC area.

In comments on the proposed decision, both GPI and CalWEA emphasized the need to coordinate with the slice-of-day reliability framework being implemented in the context of the Resource Adequacy program. We will explore this further in the future.

On the benefits side, the Commission will allocate energy, capacity, RECs, and GHG-reduction benefits to all LSEs. However, we do not make a determination in this decision as to whether these benefits will be subsequently tradeable, sellable, or otherwise transactable by LSEs.

The above determinations represent cost and benefit allocation principles adopted in this decision. Further implementation details to operationalize this policy guidance may need to be addressed by the Commission in this proceeding (or its successor) prior to or during consideration of actual projects to be contracted by DWR.

4.5. Procurement Process and Timeline

The ALJ Ruling proposed a few key aspects of the procurement process to be undertaken by DWR:

1. All procurement should be conducted via a competitive solicitation process;
2. All proposed contracts should be submitted by DWR to the Commission for approval via an application, leading to a Commission decision on the contracts and their cost recovery; and
3. All contract volumes and pricing data can be submitted by DWR as confidential for a period of three years after approval (or rejection) by the Commission in a decision.

All parties support competitive solicitations for the purpose of procuring eligible LLT resources. This is also contemplated in the direction to DWR in the Water Code included in AB 1373. Thus, we will require competitive solicitations.

A number of parties recommended an advice letter process for Commission approval of any DWR contracts, rather than an application process. We are concerned that the advice letter process is too informal and will not allow for a full enough vetting of any proposed contracts. At the same time, we are undertaking this process with DWR as a partner, conducting procurement on behalf of the Commission and all LSEs under our IRP purview. It therefore seems inappropriate to ask DWR to submit an application as a supplicant before the Commission, since DWR is not a Commission-regulated entity.

Instead of either of these processes, we will model our approach on the way that the Wildfire Nonbypassable Charge emanating from AB 1054 (Stats. 2019, Ch. 79) is handled by the Commission and DWR. This process was established in D.19-10-056, and requires DWR to submit a memorandum to the Commission detailing the costs to be recovered from the participating IOUs via a nonbypassable charge; the ALJ then issues a ruling asking parties to comment on DWR's memorandum, and takes the additional steps necessary to render a Commission decision authorizing the cost recovery. The circumstances here are similar, where DWR is acting on behalf of ratepayers of all LSEs under our IRP purview. Therefore, instead of an application, we will ask DWR to submit a detailed memorandum summarizing all aspects of the process used in its solicitation, as well as the results and costs. The ALJ in this or a successor IRP proceeding will then issue a ruling establishing a separate phase of the proceeding and seeking party comment on the proposed contracts. This process is intended to allow for sufficient opportunity for discovery by parties, as

governed by Article 10 of the Commission's Rules of Practice and Procedure and subject to any necessary non-disclosure agreements for non-market participants or authorized reviewing representatives for market participants. Parties will also have the opportunity to make requests for evidentiary hearings and the ALJ will set forth a reasonable schedule for entering evidence into the record, briefing, or any other appropriate procedural steps that may be necessary for a full review of the proposed contracts. Ultimately, this process will lead to a Commission decision approving or rejecting the contracts, along with applying the adopted cost recovery mechanism. Consistent with direction in AB 1373, we expect this will result in a nonbypassable charge on distribution customers that will begin no earlier than contract approval by the Commission and no later than energy/capacity deliveries from an approved contract, depending on contract particulars and the provisions in the Commission's decision approving any contracts.

On the confidentiality of DWR contracts and prices, we will generally follow existing and already-established rules for how confidentiality of procurement contracts is handled, as established in D.06-06-066 and its successor decisions. However, as proposed by numerous parties in comments, we will also recommend to DWR that they consider soliciting open-book bids for provision of some resources. Using open-book bidding, proposed contracts contain placeholder values, and the actual costs of the contract may be permitted to go up or down, depending on the actual costs incurred. We do not require this approach, partly because this option may necessitate a different approach to confidentiality, since the contracts would allow DWR to pay developers based on actual costs, which would be revealed to DWR and the Commission, but still remain otherwise confidential. Thus, those types of contracts may need to remain

confidential for much longer than other types. For these types of open-book contracts, we will refrain from making any detailed rules about confidentiality in this decision, and instead will address this in the context of individual contracts presented to us for consideration by DWR in the future.

Water Code Section 80820 also requires that the Commission and DWR establish a "procurement group" to advise DWR on any procurement undertaken. The ALJ Ruling suggested that this group be convened by and advisory to DWR and consist of non-market-participants, as well as agency staff. The ALJ Ruling also proposed that DWR be encouraged to retain an expert consultant to advise on the procurement as an independent evaluator and/or support for DWR staff procurement determinations.

No party objected to the idea that DWR retain an expert consultant; this approach has worked well for IOU procurement, and therefore we will recommend this approach to DWR. DWR may also want to task the consultant with pursuing other outside funding sources. It may provide assistance both in the preparation of the solicitation, as well as in evaluating bids.

As far as the composition of the procurement group, numerous parties suggested it be modeled on the PRG structure used by the IOUs. In comments on the proposed decision, SCE suggested we clarify that DWR's procurement group is separate/distinct from the PRGs. We agree that these are separate groups convened for similar, but distinguishable purposes. Several LSEs also argued in comments that LSE representatives should be allowed to serve on the procurement group, since they (and their customers) have a vested interest in the outcome of DWR's solicitations. LSE representatives who are directly involved in conducting solicitations for LSEs should not also serve on the procurement group as advisory to DWR. A firewall, non-disclosure agreement, and/or code of

conduct may be required, to be determined later in this process. We are persuaded that LSEs should have representation on the procurement group, both because they may have expertise to bring to the table and because their ratepayers will ultimately be paying the costs of DWR's contracts. Thus, we will ask that DWR include at least one representative of a community choice aggregator (CCA) organization, at least one representative of an electric service provider (ESP) organization, and at least one representative of an IOU who is not otherwise involved in assisting DWR with solicitation activities. Though we do not specify the inclusion of POUs, we observe that if a POU has requested procurement by DWR, it may also be logical to include a POU representative on the procurement group.

In addition, a number of parties recommend that DWR be encouraged to conduct outreach to and allow representation on the procurement group from community groups and Tribal Nations with vested interests in the procurement. We agree, and encourage DWR to use the input from these groups as much as possible.

In comments on the proposed decision, several parties asked that we clarify that non-government organizations, environmental groups, and ratepayer advocates are also candidates for membership on the procurement group. We agree that these groups will be valuable participants, though we leave the convening of the group and its exact makeup to DWR's judgment as they begin the procurement process.

When DWR submits its memo to the Commission detailing its solicitation activities and results, we will ask that DWR identify the individuals involved in the solicitation process, either in a direct advisory capacity and/or as procurement group participants during the solicitation, and we will require that

DWR not allow individuals to participate in the solicitation process if they have participated in the procurement group (and vice versa) during the course of a single solicitation.

The ALJ Ruling also included an outline of a proposed schedule for DWR to prepare and issue a solicitation. Generally, preparatory activities were suggested for 2025-2027, pre-bid activities in 2026-2027, with solicitations open for bid between 2026 and 2028, bid evaluation in 2027-2028, and contracts submitted to the Commission in 2027-2028.

A number of parties commented that this schedule outline was somewhat too slow to attract enough interest from developers. At the same time, we are cognizant of the fact that DWR will need time to put together its team to handle the solicitations and all of the tasks leading up to them. Thus, the schedule we put forward below provides a general framework, but we expect adjustments will need to be made as this effort progresses. We also expect that DWR itself will want to present at least some aspects of its plans to stakeholders to receive feedback prior to launching any solicitations. We will defer to DWR's judgment on the best way to do this, but note that because of the groundbreaking nature of this procurement, it will be preferable to err on the side of transparency and inclusiveness in terms of allowing ample stakeholder feedback on DWR's approach.

In terms of the schedule for solicitations, we also note that the volume of resources contained in the need determination in this decision is large. Therefore, it will likely be prudent for DWR not to conduct a single solicitation for the full amount. Instead, we recommend below a schedule of solicitations designed both to take advantage of learning by starting small, as well as the fact that some

projects may not yet be ready to participate in a first solicitation, but could be ready by a subsequent solicitation round.

We also expect that DWR will need all of 2025 for preparatory activities for solicitations, such that 2026 is the first realistic year that solicitations could begin. With that in mind, we adopt the following solicitation schedule as a framework to organize the process. Timing reality may deviate from these plans somewhat, but our staff will work closely with DWR to execute this plan.

Table 2.
Recommended Approach and Indicative Timing for LLT Solicitations

Activity	**Timing Target**
DWR preparatory activities, including formation of procurement group	Late 2024 and 2025
DWR development of solicitation plans and materials, in consultation with Commission staff and procurement group	2025
First LDES Solicitation – Up to 1 GW of multi-day storage and up to 1 GW of 12+-hour duration storage, for deliveries beginning June 1, 2031 through June 1, 2035	
Pre-bid activities	Early 2026
Solicitation open for proposals	Late 2026
Proposed contracts submitted to Commission for approval	Mid 2027
First Geothermal Solicitation – Up to 1 GW for deliveries beginning June 1, 2031 through June 1, 2035	
Pre-bid activities	Late 2026
Solicitation open for proposals	Early 2027
Proposed contracts submitted to Commission for approval	Late 2027

Activity	**Timing Target**
First OSW Solicitation – Up to 7.6 GW, for deliveries by June 1, 2037	
Pre-bid activities	Early 2027
Solicitation open for proposals	Late 2027
Proposed contracts submitted to Commission for approval	Mid 2028
Second LDES Solicitation – Residual amount not procured in first LDES solicitation, of up to 1 GW of multi-day storage and up to 1 GW of 12+-hour duration storage, for deliveries beginning June 1, 2033 through June 1, 2037	
Pre-bid activities	Early 2028
Solicitation open for proposals	Late 2028
Proposed contracts submitted to Commission for approval	Mid 2029
Second Geothermal Solicitation – Residual amount not procured in first EGS solicitation, of up to 1 GW, for deliveries beginning June 1, 2033 through June 1, 2037	
Pre-bid activities	Late 2028
Solicitation open for proposals	Early 2029
Proposed contracts submitted to Commission for approval	Late 2029
Second OSW Solicitation – Residual amount not procured in first OSW solicitation, of Up to 7.6 GW, for deliveries by June 1, 2037	
Pre-bid activities	Early 2029
Solicitation open for proposals	Late 2029
Proposed contracts submitted to Commission for approval	Mid 2030

Activity	**Timing Target**
Third OSW Solicitation – Residual amount not procured in first and second OSW solicitations, of Up to 7.6 GW, for deliveries by June 1, 2037	
Pre-bid activities	Late 2029
Solicitation open for proposals	Early 2030
Proposed contracts submitted to Commission for approval	Late 2030

We note that the quantities in each solicitation listed above may be adjusted downward in the second and third rounds, depending on the amount of contracting actually approved at the conclusion of the prior solicitation rounds.

We also recognize that the above table represents a plan that will likely change. Thus, we request that DWR send periodic or interim updates on progress and changes to solicitation schedules to the Executive Director of the Commission, with a copy to the relevant IRP service list and Energy Division (at EnergyDivisionCentralFiles@cpuc.ca.gov). DWR should update the Commission at least annually, or more frequently after major milestones or with schedule changes, in advance of submitting a formal Memorandum to the Commission detailing procurement results.

5. Next Steps

We note that AB 1373 gives the Commission six months after the initial September 1, 2024 need determination deadline to make a procurement request to DWR to initiate the necessary procurement. We will define a "procurement request" as follows: after a need determination is made by the Commission, the Commission will send a procurement request to the CPE triggering the initiation of the procurement process, consistent with the decision adopting the need determination.

We expect that procurement request to be informal, likely in the form of a letter from the President of the Commission asking that DWR formally initiate procurement activities. The Commission may, at this point, add additional clarification or details regarding recommendations to the solicitation process at that time, but the request will be consistent with the framework adopted in this decision. This decision represents the substantive determinations to be made by the Commission in order to enable DWR to begin to design its approach and plan its activities. Thus, an additional guidance decision by the Commission is not necessary and will not be forthcoming prior to the request to initiate procurement activities.

And as already stated above, we intend to work closely with DWR throughout the solicitation process, at the staff and leadership levels. We also expect that DWR will coordinate closely with the CEC and other state agencies, where relevant, in areas where they can bring expertise related to the centralized procurement activities. For example, DWR may also consult with the California Department of Fish and Wildlife and the Governor's Office of Planning and Research as well, as recommended by DOW in comments.

After each solicitation round is completed, the Commission may choose to revise or send a subsequent procurement request, reflecting the results of contracting from the prior round.

Finally, in response to several concerns raised in comments on the proposed decision, we confirm our intent to reflect the results of the need determination in this decision in our upcoming activities formulating recommendations to the CAISO for the next TPP. Several parties are concerned that the 7.6 GW of OSW, in particular, has not been included in the current PSP or TPP base case, and will need further analysis from a transmission perspective.

Though we do also note that this amount of OSW has been studied in prior TPP cycles in sensitivity portfolios, so the transmission implications of the OSW volumes determined to be needed in this decision are not completely unknown. Still, we intend to address the OSW amounts in our upcoming TPP recommendations, and parties will have an opportunity soon to comment on our proposed recommendations to CAISO for the 2025-2026 TPP.

6. Summary of Public Comment

Rule 1.18 allows any member of the public to submit written comment in any Commission proceeding using the "Public Comment" tab of the online Docket Card for that proceeding on the Commission's website. Rule 1.18(b) requires that relevant written comment submitted in a proceeding be summarized in the final decision issued in that proceeding.

One public comment was submitted by EPIC, an organization which also submitted formal reply comments in response to the ALJ Ruling. EPIC's public comment echoes its formal reply comments. No other public comments were submitted.

7. Comments on Proposed Decision

The proposed decision of ALJ Julie A. Fitch in this matter was mailed to the parties in accordance with Section 311 of the Public Utilities Code and comments were allowed under Rule 14.3 of the Commission's Rules of Practice and Procedure. Comments were filed on or before August 8, 2024 by the following parties: ACP-CA; AEU; AREM and UC Regents, jointly; BHE; Brightline; CAISO; Cal Advociates; CalCCA; CalWEA; CC Power; CEERT; CEJA and Sierra Club, jointly; CESA; DOW; EDF; EPIC; Equinor; Fervo; Form; GreenGen; GHC; GPI; Hydrostor; IEP; Invenergy California; MGRA; National Hydropower Association (NHA); NRDC; Oceantic; OWC; PCF; PG&E; RWE;

SCE; SDCWA and City of San Diego, jointly; SDG&E; Shell; SoCalGas; Solar Dynamics; Sonoma Clean Power Authority (SCPA); UCS; and Vineyard.

Reply comments were filed on August 13, 2024 by the following parties: ACP-CA, AREM and UC Regents, jointly; BHE; Brightline; CAISO; CalCCA; CalWEA; CEERT; CESA; CUE and CURE, jointly; DOW; EDF; Equinor; Form; GreenGen; GPI; Hydrostor; Invenergy California; MGRA; NRDC; OWC; PCF; PG&E; RWE; SCE; SDG&E; SEIA and LSA, jointly; SoCalGas; SCPA; and Vineyard.

Below we summarize the key comments of the parties thematically. Where we agree that a change to the decision is warranted, we have made the appropriate modifications to the text of the decision.

The first set of comments we address are with respect to the resource eligibility determinations. Several parties, including ACP-CA, BHE, CEERT, IEP, and SDG&E, argue that conventional geothermal should not be excluded from eligibility, with several parties pointing out that a large project already announced with a contract to comply with the MTR decision (D.21-06-035) requirements is EGS and not conventional geothermal. Some note that transmission constraints may have led LSEs to seek out-of-state EGS projects over potentially-less expensive in-state conventional geothermal projects due to MTR compliance timing considerations. These are exactly the types of barriers that the CPE mechanism is designed to address. In order to stimulate the maximum amount of competition possible and keep costs to ratepayers reasonable, we are adding eligibility for any type of geothermal project to compete in the geothermal category outlined in this decision. After DWR has conducted at least one solicitation for geothermal and in subsequent IRP cycles, we will consider whether to create separate categories for geothermal, in order to

continue our pursuit of resource diversification. For the need determination in this decision, we have revised the decision to include up to 1 GW of geothermal of any type.

In a somewhat similar fashion, several parties including GreenGen, NHA, and SDCWA/City of San Diego, argue that PSH projects should be eligible to bid in the LDES categories of CPE procurement, if they otherwise meet the criteria laid out in AB 1373. These parties point out that significant market barriers still exist for the successful development of PSH projects, even if the technology is commercialized, and AB 1373 is designed to address those barriers as well. We note that the universe of qualifying projects is likely to be small, and that any projects that bid should be required to produce documentation that they meet the qualifications in Public Utilities Code Section 454.52(h)(2). We are persuaded that this is a reasonable modification to be made at this time to allow competition and potentially mitigate costs to ratepayers overall, if some PSH projects can successfully deliver the diversity benefits at a reasonable cost. As with all need determinations made herein, we will consider potentially raising the need determination amounts in subsequent cycles of IRP.

Several parties, including CESA, Hydrostor, and NHA, argue that the definition of the first category of LDES should be 8+ hours instead of 12+ hours, to comport with current definitions elsewhere, including in resource adequacy. While we understand that there are other definitions and revenue streams available that require an 8-hour duration, our purpose here is to develop additional longer-duration options. Therefore, we decline to change the duration requested, but acknowledge that it may take time for other mechanisms outside of this procurement category to be developed to support a permanent market for longer-duration storage in the long term.

CEERT and Solar Dynamics advocate for a separate need determination for concentrating solar power technologies paired with thermal energy storage. We agree that some of these projects could be beneficial to the grid and to resource diversity, however we decline to create a separate category at this time. We do note that some projects would be eligible to compete in the LDES categories herein, and that we will revisit the need for additional CPE procurement in future IRP cycles.

While a large number of parties (mostly, but not exclusively, representing the wind industry or environmental viewpoints) support the 7.6 GW need determination for OSW, many of the parties representing LSEs, including CalCCA and the IOUs, as well as Cal Advocates, continue to argue that 7.6 GW is too large, and a need determination of no more than 2-3 GW would be more appropriate. PG&E, GPI, and several other parties argue that 7.6 GW is beyond the amount included in the most recently-adopted PSP, which should form the basis for the need determinations herein. We disagree and maintain the need determination of 7.6 GW for OSW in this decision. While the PSP is a reasonable starting point for consideration of resources and volumes, the CPE need determination is not required to be bound by the PSP. The nature of IRP or any planning process is that new information is constantly becoming available, and we are continually reassessing the best portfolios to reach our goals. In this case, the OSW volumes in the PSP were the starting point, and Commission staff presented additional cost-benefit analysis drilling down into more detail on this particular resource. We are satisfied that the volumes herein are reasonable and foundational to our longer-term (beyond the PSP 10-15-year horizon) GHG goals.

More generally, a number of parties including IEP, SDCWA, and City of San Diego, take issue with the market transformation theme of this decision,

arguing that AB 1373 does not require or contemplate such a focus. The purpose of this decision is to select an initial set of resources to be procured consistent with the requirements of AB 1373. Nothing about a market transformation focus is inconsistent with the goals of AB 1373, nor are we bound to continue this theme into subsequent AB 1373 need determinations. We are simply making market transformation the primary objective for this initial need determination, while also being careful to minimize potential interference with individual LSE procurement already underway. Future rounds of CPE need determinations in subsequent IRP cycles will be informed by progress in procurement in conformance with this decision, as well as by individual LSE procurement progress.

Several parties, led by CalCCA and CC Power, continue to ask for the ability for LSEs to self-provide the required resources determined to be needed under this order. We decline to make this change for the reasons already stated in the decision, including that LSEs have already had an opportunity to show progress toward procurement of the types of resources we request that DWR procure, and that we have taken steps to avoid interference and overlap with LSE procurement as much as possible, while aiming to make procurement of the resources ordered herein less expensive for LSEs in the long run.

Several parties asked for clarification of the relationship between any successful procurement by DWR as a result of this order and the ultimate design of an RCPPP, including Cal Advocates, Hydrostor, SDG&E, and CalCCA). These parties are concerned that DWR procurement be reflected in the ultimate procurement requirements of LSEs. PG&E and CalCCA also support the development of "mitigation plans" by LSEs in the event that DWR fails to procure the full amounts authorized in this decision, and reliability is potentially

impacted. We agree that DWR procurement will have an impact on the ultimate requirements for LSEs developed through whatever form of an RCPPP is ultimately adopted by the Commission. There will need to be an interaction and periodic feedback from the DWR procurement process to the RCPPP or LSE responsibilities. These efforts will be carefully coordinated, accounting for DWR procurement progress on a periodic basis, just as we would all procurement by LSEs. We have added clarifying language in the body of the decision to emphasize these points and commit to continued coordination and careful planning. We will not require specific "mitigation plans" at this time, but will monitor the success of DWR's procurement activities closely and incorporate them into IRP's cyclical planning process.

Several parties also express concerns about the cost and benefit allocation principles articulated in this decision. PG&E asked that both energy and capacity resources first have benefits allocated by TAC area, prior to further division, in order to avoid limitations in billing systems taking into account LSE-specific charges within distribution rates. We agree this is an option that can be explored further when the details of the allocation methodology are finalized in this proceeding, and have made changes to allow for this outcome as implementation is finalized in the future, as necessary.

GPI, Shell, and CalCCA also seek clarification that RECs associated with any DWR procurement will be allocated to the LSEs for purposes of compliance with RPS requirements, as well as GHG-reduction benefits. We confirm that this is the intent, and have made clarifications in the decision to explain this. Shell, in particular, also seeks confirmation that the attributes will be transactable/sellable after allocation, and not just retired. On this latter issue, we do not have sufficient record or time prior to the September 1, 2024 statutory

deadline for us to develop and spell out a detailed set of attribute definitions and rules for trading/transacting. The purpose in this decision is to lay out a general set of principles. But we also emphasize that there will likely need to be additional work, within this proceeding or its successor, to specify the exact details of the cost and benefit allocations, beyond the basic structure articulated in this decision. We also agree with GPI that this work may need to be coordinated with the RPS proceeding. Thus, while we confirm here that attributes will be allocated, we do not go further to define their compliance or other value in this decision. Further details of these provisions will be discussed in the future in this or a successor proceeding, and coordinated with the relevant RPS proceeding, with the opportunity for stakeholder input prior to any decisions being made.

Several parties also seek clarification on the review and approval process for any contracts DWR recommends as a result of the solicitation process. ACP-CA, CEJA/Sierra Club, DOW, EDF, PCF, and PG&E all offered comments along these lines. We have clarified that the review of the DWR memorandum to be submitted in the open IRP rulemaking will be subject to normal Commission processes, including discovery, potential for evidentiary hearings, and other stakeholder input. Confidential information will be available to eligible parties through non-disclosure agreements and any other normal methods for protecting confidentiality while ensuring substantive input to the Commission.

In addition, a number of parties including NRDC, Cal Advocates, and the IOUs express concerns about the composition of the procurement group to be convened by DWR to advise on its solicitation and contracting process. In general, we intend to leave the details of the process to DWR to determine. This decision was meant to offer a Commission recommendation only on particular

aspects of the group, including LSE participation, and does not include an exhaustive set of recommendations. We continue to believe allowing LSEs to participate can be valuable. We also agree with SCE that the procurement group for DWR will serve a purpose that is distinct and different from a PRG that advises a utility's procurement activities. In keeping with request from NRDC and Cal Advocates in comments, we do also expect that non-market participants, such as non-governmental organizations, environmental organizations, and ratepayer advocates will likely be members of the group. PG&E's comments also offer useful suggestions on types of LSE representatives that are appropriate, the need for firewalls, and a code of conduct to ensure no conflict of interest. These are reasonable and may also be implementation details that can be worked out by DWR and/or by the Commission later in this proceeding, as necessary. We do not specify all of those details in this initial decision. Finally, BHE and others request a specific and separate Tribal Group; we leave these specifics and what will work best up to DWR. BHE also requests that the Commission identify a funding source to support Tribal and potentially other participation. We do not have a ready funding source or the record to develop such a strategy for this decision, but recognize that it is difficult for some groups to participate without the opportunity for financial support. We will work with DWR to consider this issue as procurement activities progress.

Form and Hydrostor offer comments suggesting that geothermal and LDES projects with online dates prior to 2031 should be allowed to compete in the DWR solicitations, since the Commission will have knowledge about MTR procurement progress much earlier than 2031. While this is true, we prefer to keep a bright line of online date eligibility, in order to minimize potential

disincentives to LSEs to procure resources on their own where their procurement activities may already be underway.

SCE also comments in favor of the Commission adopting an expectation of the development of a confidential cost cap, potentially based on a comparison of DWR solicitation bids with other existing contracts. Though there was brief discussion of this option in the ALJ ruling, we decline to endorse this approach at this time and will continue to work with DWR on the best ways to benchmark bids and determine reasonableness. At a minimum, similar to the CEJA and Sierra Club suggestions, we expect that cost reasonableness will be evaluated against all available cost benchmarks for similar projects worldwide, using publicly-available data such as the most recent NREL ATB data, as well as comparison against relevant similar California projects providing similar benefits. We will not, however, require the development of a confidential cost cap.

We also decline to adopt the suggestions of several parties, including CEJA/Sierra Club, to include non-energy benefits in the consideration of the bids received in DWR's solicitations. All resources ordered by the Commission and currently being procured by LSEs provide some non-energy benefits. The resources requested in this decision are not unique in that regard. The task in evaluating the resources procured by DWR will be to determine whether the benefits they provide to the electric system are reasonable and whether the costs are reasonable to be paid by ratepayers.

UCS, in its comments, advocates for the Commission to require procurement of the specified resources included in this decision's need determination in local capacity areas, in order to encourage the maximum possible amount of retirement of fossil-fueled resources. We agree with UCS that

procurement in local capacity-constrained areas should be encouraged, and may be weighed positively when considering bids received, but we will not require that DWR only solicit or purchase resources that are sited in those constrained areas.

CalCCA also recommends that DWR retain a consultant or staff member to advise on all alternative sources of funding that may be brought to bear on procurement of the resources found needed in this decision. We agree that pursuing non-ratepayer sources of funding is a priority, but will leave it to DWR to determine the best way to approach this issue, including potentially making it a task for the expert consultant that they retain to advise on the procurement process in general.

Vineyard comments on the solicitation schedule and requests a regular and predictable approach to solicitations, suggesting soliciting capacity in segments rather than all at once, and opening up eligibility for all projects in all solicitations. Vineyard suggests that these changes will give industry representatives necessary clarity to secure investor support. We have maintained the total need determination quantity for each solicitation round, though note that DWR may modify this in the future. We have also expanded the eligibility of project online dates for OSW for each solicitation round to promote competition and remove a potential barrier for project participation.

In response to comments, several other corrections have been made in the body of this decision to clarify positions of parties or correct other unintentional errors or overgeneralizations.

8. Assignment of Proceeding

Alice Reynolds is the assigned Commissioner and Julie A. Fitch is the assigned Administrative Law Judge in this proceeding.

Findings of Fact

1. An optimal electricity portfolio, as adopted by the Commission as part of each PSP, is a product of a series of changing factors, including cost assumptions, available technologies, and GHG emissions reduction goals.

2. The resource types considered for a need determination for centralized procurement are geothermal, LDES, OOS wind, and OSW.

3. Geothermal electricity, OOS wind, lithium-ion battery LDES, and PSH are commercialized technologies, though some still face significant market barriers and may benefit from centralized procurement.

4. DOE has several initiatives to develop and reduce the costs of next-generation geothermal power, including both EGS and closed-loop technologies.

5. EGS is an emerging technology distinct from conventional geothermal, and is the subject of an initiative at DOE called "Enhanced Geothermal Shot" designed to reduce the costs of EGS.

6. Closed loop geothermal is defined as geothermal that circulates fluids entirely within boreholes closed to the environment.

7. 12+-hour LDES and multi-day LDES include some emerging technologies that are not yet sufficiently available with known costs to be modeled in previous PSP portfolios adopted by the Commission. Therefore, proxies have been used.

8. OSW is an emerging technology with very few deployments worldwide in deep-water locations such as the California coast.

9. As of this decision, numerous LSEs have OOS wind projects under contract. Some also have conventional geothermal, EGS, and 8+hour LDES projects under contract, but not in significant enough volumes to meet long-term GHG goals or increase resource diversity sufficiently.

10. As of this decision, almost no LSEs have EGS, 12+-hour or multi-day LDES from technologies other than lithium-ion batteries or PSH, or OSW projects under contract. Those LSEs that do have these types of projects do not have any significant volumes under contract relative to the size of the resource potential or in enough quantities to spur market transformation or increase resource diversity.

11. The PSP portfolio adopted in D.24-02-047 included the need for nameplate capacities of 2,000 MW of geothermal; 3,800 MW of LDES; and 4,500 MW of OSW, by 2035.

12. The geothermal, LDES, and OSW technologies for which there is a need determination found in this decision meet all of the criteria contained in Public Utilities Code Sections 454.52(h)(1)(A)-(E).

13. The November 1, 2022 individual LSE IRP filings represented the CCAs' opportunity to offer proposals under Section 454.51(d) requirements.

14. The November 1, 2022 individual LSE IRP filings, along with their August 1, 2023 and December 1, 2023 procurement data filings, do not show LLT resources under contract to LSEs in sufficient quantities to achieve scale and cost reductions in the long run or to meet SB 100 goals.

15. POUs are permitted by AB 1373 Water Code Sections 80820, 80822, and 80826 to opt in voluntarily to DWR centralized procurement.

16. DWR is acting in the public interest and as a partner to the Commission and its LSEs in soliciting and contracting for LLT resources on behalf of all customers under the Commission's IRP purview.

17. D.06-06-066, and several decisions augmenting it, cover generally-applicable confidentiality rules for contracts submitted before the Commission.

Conclusions of Law

1. AB 1373 authorizes the Commission to request that DWR conduct centralized procurement of certain eligible LLT resources, on behalf of customers of all LSEs under the Commission's IRP purview.

2. By September 1, 2024, the Commission is required to make an initial need determination for centralized procurement by DWR.

3. A need determination, for purposes of AB 1373 should be defined as follows: the maximum value determined by the Commission to be procured by a CPE for a given resource type and/or resource attribute(s), on behalf of all LSEs under the Commission's IRP purview.

4. For purposes of AB 1373, a "procurement request" should be defined as follows: after a need determination is made by the Commission, the Commission will send a procurement request to the CPE triggering the initiation of the procurement process, consistent with the Commission's decision on a need determination.

5. If a need for LLT resources is found by the Commission, within six months after September 1, 2024, the Commission may make a request to DWR to exercise the centralized procurement mechanism outlined in AB 1373.

6. To make a need determination for the exercise of centralized procurement, AB 1373 codified as Section 454.52(a)(4), directs that the Commission "determine if there is a need for the procurement of eligible energy resources based on a review of the integrated resource plans submitted by load-serving entities in compliance with the requirements of this section and Section 454.53 and the progress towards meeting the portfolio of resources identified pursuant to subdivision (1) of Section 454.51."

7. The Commission should reevaluate the need for centralized procurement of LLT resources in each IRP cycle, in concert with evaluating the need for LSE procurement in the RCPPP, when considering the adoption of a PSP portfolio, but should not reduce previous LLT need determinations for CPE procurement.

8. The need determinations made by the Commission for centralized procurement should be maximum amounts; DWR should be authorized to procure any amount from zero up to the maximum need determination, depending on the costs, value, and other factors of the bids received.

9. Resource diversity should be an explicit and important criterion for the selection of resources to be centrally procured.

10. Resources that are important to reducing the overall emissions in the electricity sector, but which may not compete favorably in price against other resources, should be considered for centralized procurement.

11. Market transformation of emerging technologies important to achieving GHG emissions goals in Section 454.53 should be an important purpose for this initial need determination for selection of resources to be centrally procured.

12. Technologies that utilize fossil fuels to generate electricity are not eligible for centralized procurement by DWR according to Section 454.52(h)(1)(D).

13. The Commission should not, at this time, ask DWR to solicit for resource types that are already being widely procured in significant volumes by numerous individual LSEs.

14. Next-generation geothermal resources should be defined based on the U.S. DOE definition, including EGS and closed-loop technologies. EGS should be defined based on the U.S. DOE definition in its "Enhanced Geothermal Shot" initiative. Closed loop geothermal systems should be defined as geothermal that circulates fluids entirely within boreholes closed to the environment.

15. LDES requested for DWR to solicit for centralized procurement should include 12+-hour LDES and multi-day LDES, but not lithium-ion batteries.

16. PSH resources should be allowed to compete in the LDES categories if they show documentation of compliance with Public Utilities Code Section 454.52(h)(2) requirements.

17. It is reasonable to ask DWR to solicit approximately half of the resource need identified in the most recent adopted PSP portfolio in D.24-02-047 for LDES and geothermal, in order to facilitate a downpayment on technologies necessary to achieve SB 100 goals, while still leaving room for LSEs to procure the technologies individually, after costs are reduced and market transformation is underway.

18. It is reasonable to ask DWR to solicit for 7.6 GW nameplate of OSW, which signals a strong interest in developing the resource, represents the level beyond which our staff cost-benefit analysis shows the potential for higher risks to ratepayers, is sufficient to foster cost savings as the resource is developed at scale, and avoids the potential for market power issues.

19. Centralized procurement of LLT resources should be considered by the Commission in a separate category from individual LSE procurement, but should be coordinated with individual LSE requirements resulting from an RCPPP or other procurement orders.

20. Any CPE procurement should not count toward the requirements of D.21-06-035, D.23-02-040, or D.24-02-047.

21. The Commission should evaluate in subsequent AB 1373 need determinations the LSE progress toward the D.21-06-035 requirements for procurement of LLT resources and consider whether additional CPE procurement is necessary.

22. CPE procurement should be kept in a separate category for purposes of consideration of an RCPPP in the future in this proceeding. The RCPPP will incorporate into its framework how DWR procurement will be accounted for in future RCPPP need determinations.

23. AB 1373 does not provide an opportunity for LSEs to opt out of centralized procurement, once the Commission has made its need determination. LSEs subject to the Commission's IRP purview should not be allowed to opt out of paying for their share of centralized procurement.

24. All benefiting LSE customers, under the provisions of Water Code Section 80821, will be subject to a nonbypassable charge, as determined by the Commission at the time any contracts are approved.

25. The burden of the investment costs for LLTs should not fall solely on the customers of LSEs under the Commission's jurisdiction.

26. Costs and benefits of centralized procurement should be allocated annually by forecast energy load share based on the most-recently-adopted CEC IEPR, for any energy-producing resources, including geothermal and OSW.

27. Costs and benefits of centralized procurement should be allocated annually by forecast 12-month coincident peak demand based on the most-recently-adopted CEC IEPR, for any LDES capacity.

28. Further operational and implementation details of the allocation of costs and benefits of CPE procurement to LSEs will be handled in this proceeding or its successor before or during consideration of actual contracts to be signed by DWR. This should include coordination with the slice-of-day framework being implemented in the Resource Adequacy program.

29. It is not appropriate for DWR, as a partner agency, to file either an advice letter or an application before this Commission. It is appropriate for DWR, in

partnership with the Commission, to provide information in discovery, including confidential information with necessary non-disclosure agreement protections, to allow for a full vetting by stakeholders and a determination of just and reasonableness of costs for any proposed AB 1373 procurement.

30. The consideration of any contracts recommended by DWR for execution should be brought to the Commission via a memorandum submitted by DWR in this proceeding or its successor and served on the service list. The memorandum should provide sufficient information to enable determination if the costs of the proposed projects are just and reasonable.

31. Subsequent to DWR's memorandum, the assigned ALJ should initiate a separate phase of this proceeding or its successor to consider DWR's recommended contracts for Commission approval, as well as their cost recovery. The proceeding should allow for normal procedure steps in evaluation of contract reasonableness, including the potential for discovery under Article 10 of the Commission's Rules of Practice and Procedure and subject to any non-disclosure agreement for non-market participants or authorized reviewing representatives for market-participants, allowing parties to request evidentiary hearings, and providing a schedule for entering evidence into the record, briefing, or any other necessary procedural steps.

32. Confidentiality provisions for any DWR contracts or potential contracts should follow generally established confidentiality rules emanating from D.06-06-066.

33. The Commission should recommend that DWR allow an option for bidders in each solicitation to provide open-book contract proposals.

34. Water Code Section 80820 requires that the Commission and DWR establish a procurement group to advise DWR on the solicitation process and results.

35. The Commission should recommend that DWR retain an expert consultant to advise on all aspects of the solicitation process and its results, with appropriate provisions to guard against conflicts of interest. DWR should also consider whether this consultant may assist with pursuit of additional sources of funding.

36. Representatives of LSEs, including employees, contractors, or consultants of LSEs, should be allowed to participate as members of the procurement group as long as they are not directly involved in conducting solicitations for an LSE.

37. DWR should solicit procurement group members from affected community groups and Tribal Nations. Non-governmental organizations, environmental groups, other state agencies, and ratepayer advocates should also be eligible.

38. DWR should conduct a series of solicitations designed to contract for the resources determined to be needed in this decision, in a manner similar to the outline in Table 2 of this decision. DWR should keep the Commission and staff informed about the progress of solicitations and major milestones, via updates to the Executive Director, Energy Division, and the service list of this or a successor IRP rulemaking.

39. Commission staff should work closely with DWR on the preparation for and conduct of the resource solicitations recommended in this decision.

40. The Commission should not need to render a second formal decision during the six-month window after September 1, 2024, and after any subsequent need determination in future IRP cycles. The request for procurement after the

Commission's formal need determination in a decision may come in the form of a letter to DWR from the Commission president and/or the assigned Commissioner to the IRP rulemaking, consistent with the provisions of this decision.

41. The results of the need determination in this decision should be coordinated with the Commission's upcoming recommendations to the CAISO for its next TPP.

42. This proceeding should remain open.

O R D E R

IT IS ORDERED that:

1. The Commission has evaluated eligible resource types under Public Utilities Code Section 454.52(h)(1)-(2) categories and has determined that there is a need for centralized procurement through competitive solicitations by the Department of Water Resources (DWR) as a Central Procurement Entity for the following resources, in nameplate capacity, with energy deliveries and/or capacity from new resources online between June 1, 2031 and June 1, 2037. DWR is not required to procure all of the below resources and may procure as little as zero, depending on the reasonableness of prices offered by developers:

   (a) A maximum of 1,000 megawatts (MW) of any type of geothermal electricity generation;

   (b) A maximum of 1,000 MW of long-duration energy storage (LDES) that can discharge for 12 hours or more that does not employ lithium-ion batteries;

   (c) A maximum of 1,000 MW of multi-day LDES that does not employ lithium-ion batteries; and

   (d) A maximum of 7,600 MW of offshore wind.

2. To be eligible for a contract under Ordering Paragraph 1 (b) or (c), pumped storage hydroelectric projects must provide documentation to the Department of Water Resources that they comply with the provisions of Public Utilities Code Section 454.52(h)(2).

3. The Commission recommends that the Department of Water Resources (DWR) undertake a series of solicitations for the resources identified in Ordering Paragraph 1 above, in a manner similar to that outlined in Table 2 of this decision. The Commission requests that DWR keep the Commission's Executive Director, Energy Division, and the service list for this or a successor integrated resource planning rulemaking informed as to solicitation progress and major milestones.

4. All load-serving entities with obligations under the integrated resource planning process of the Commission related to Public Utilities Code Sections 454.51 and 454.52 shall be required to pay for their proportional share of any resources determined to be needed by the Commission and centrally procured by the Department of Water Resources for the life of the contracts, once approved by the Commission.

5. The costs and benefits of any procurement of offshore wind and geothermal resources shall be allocated annually on the basis of the forecast annual energy load share contained in the most-recently-adopted Integrated Energy Policy report of the California Energy Commission, for the life of each contract.

6. The costs and benefits of any procurement of long-duration energy storage shall be allocated annually based on the forecast 12-month coincident peak load contained in the most-recently-adopted Integrated Energy Policy Report of the California Energy Commission, for the life of each contract.

7. Further details of cost and benefit allocation associated with procurement contracts entered into by the Department of Water Resources will be handled, as necessary, within this proceeding or its successor, and will be coordinated with other relevant proceedings.

8. The Commission recommends that the Department of Water Resources seek commitments from any publicly-owned utilities that seek to opt in voluntarily to the centralized procurement of resources during the six-month period after the Commission makes its resource need determination.

9. The Commission recommends that the Department of Water Resources (DWR) retain an expert consultant to advise on all aspects of the design, conduct, and outcome of the competitive solicitations for long lead-time resources, with appropriate protections for non-disclosure and guarding against conflicts of interest. The Commission recommends that DWR pursue, through this consultant or another mechanism, any additional available sources of funding that may be applicable to the resources found needed for centralized procurement in this decision.

10. Representatives of load-serving entities (LSEs), including employees, contractors, or consultants of LSEs, shall be allowed to participate as members of the procurement group established in response to Water Code Section 80820 as long as they are not directly involved in conducting solicitations for an LSE. This may require the development of firewall provisions, non-disclosure agreements, and a Code of Conduct, which may be further developed in coordination with the Department of Water Resources subsequent to this decision.

11. The Commission recommends that the Department of Water Resources conduct outreach to and invite representatives from community groups and Tribal Nations affected by the resource developments contemplated in the

competitive solicitations to serve on the procurement group referred established according to Water Code Section 80820. The Commission also recommends that non-market participant groups including non-governmental organizations, environmental groups, other state agencies, and ratepayer groups be invited to participate.

12. The Department of Water Resources shall submit its recommended contracts to the Commission in the form of a memorandum (with confidential version as necessary) sent to the Commission and served on the service list for this proceeding or its successor. The memorandum shall contain sufficient information to determine whether the costs of the proposed projects are just and reasonable for inclusion in electricity rates.

13. Rulemaking 20-05-003 remains open.

This order is effective today.

Dated _____, at San Francisco, California