



**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA**

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Electric Integrated Resource Planning and
related Procurement Processes.

Rulemaking 20-05-003

**OPENING COMMENTS OF OFFSHORE WIND CALIFORNIA ON
ADMINISTRATIVE LAW JUDGE'S RULING SEEKING COMMENT ON
PROPOSED 2023 PREFERRED SYSTEM PLAN AND TRANSMISSION
PLANNING PROCESS PORTFOLIOS**

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In accordance with the October 5, 2023 *Administrative Law Judge’s Ruling Seeking Comment on Proposed 2023 Preferred System Plan and Transmission Planning Process Portfolios* (“ALJ Ruling”), Offshore Wind California respectfully submits the following opening comments regarding the proposed 2023 Preferred System Plan (the “PSP”) and Transmission Planning Process (the “TPP”) portfolios. Offshore Wind California is a trade group of more than 30 companies, including offshore wind developers, technology providers, and consultancies committed to the responsible development of offshore wind power in California.

I. INTRODUCTION

The California Public Utilities Commission (“Commission”) should select the 25 MMT Core Portfolio as the PSP and the portfolio for transmission to the California Independent System Operator (“CAISO”) as the basis for its transmission planning but incorporate offshore wind forecast assumptions necessary to meet California’s ambitious climate and clean-energy goals including those for offshore wind. To that end, the Commission must address the significant disconnect between the proposed PSP’s minimal selection of offshore wind and the State’s offshore wind planning goals for up to 5 gigawatts (“GW”) by 2030 and 25 GW by 2045.

California is home to one of the world’s best offshore wind resources in the world. The California Legislature has identified offshore wind as “a critical resource for California achieving its ambitious clean energy goals, while also adding to a diverse portfolio of energy resources to ensure

system reliability.”¹ Southern California Edison has called for 19 GW of offshore wind to meet California’s carbon neutrality mandate by 2045.² The Governor earlier called for at least 20 GW of offshore wind by 2045, which the California Air Resources Board (“CARB”) adopted in its 2022 Scoping Plan.³ The California Energy Commission (“CEC”) in August 2022 adopted Assembly Bill (“AB”) 525 planning goals⁴ of up to 5 GW by 2030 and 25 GW by 2045.⁵ At a national level, the Biden-Harris Administration announced an inter-agency goal of deploying 30 GW of offshore wind energy by 2030, unlocking a pathway to 110 GW by 2050.⁶

However, the 25 MMT Core Portfolio falls far short of California and the federal government’s offshore wind planning goals. In selecting for only 4.5 GW of offshore wind from 2035 through 2045,⁷ the Commission will hamper the development of transmission necessary to support development of offshore wind off the North and Central Coasts. The RESOLVE modeling also does not account for a variety of benefits and policy objectives achievable if offshore wind is developed at scale.

To align with the CEC’s planning goals and unlock offshore wind’s broad climate, clean-energy, and grid-reliability benefits, the Commission should adopt a 25 MMT PSP portfolio that includes 25 GW of offshore wind by 2045.

¹ 09/09/21- Assembly Floor Analysis at 2 (AB 525) (Chiu, 2021), https://leginfo.legislature.ca.gov/faces/billAnalysisClient.xhtml?bill_id=202120220AB525.

² See *Countdown to 2045 Realizing California’s Pathway to Net Zero*, Edison International at 5 & 9 (Sept. 2023) (“SCE Countdown to 2045”), https://download.newsroom.edison.com/create_memory_file/?f_id=6508e6633d63325f2e763f1b&content_verified=True.

³ CARB, *2022 Scoping Plan for Achieving Carbon Neutrality* (Dec. 2022) (“2022 Scoping Plan”) at 75, <https://ww2.arb.ca.gov/sites/default/files/2023-04/2022-sp.pdf>.

⁴ See *Offshore Wind Energy Development off the California Coast*, CEC (Aug. 2022) (“CEC AB 525 Report”), <https://www.energy.ca.gov/filebrowser/download/4361>.

⁵ *Id.*

⁶ White House, *Fact Sheet: Biden Administration Jumpstarts Offshore Wind Energy Projects to Create Jobs* (Mar. 29, 2021), <https://www.whitehouse.gov/briefing-room/statements-releases/2021/03/29/fact-sheet-biden-administration-jumpstarts-offshore-wind-energy-projects-to-create-jobs/>.

⁷ ALJ Ruling at 21.

II. THE PROPOSED PSP WILL PREVENT CALIFORNIA FROM MEETING ITS 2045 OFFSHORE WIND AND CLIMATE GOALS

A. California's Resource Mix and Energy Grid Must Evolve Rapidly to Achieve Zero-Carbon Energy Goals While Keeping Up With Electrification

Senate Bill (“SB”) 100 (De León, 2018) requires that renewable and zero-carbon energy resources supply 100% of electric retail sales to customers by 2045. Assembly Bill 1279 goes beyond SB 100 by requiring a direct greenhouse gas (“GHG”) emissions reduction of 85% by 2045. Such a large direct GHG emission reduction limits the overall use of carbon removal technologies (e.g., direct air capture, nature-based carbon removal) to achieve SB 100’s net-zero emissions requirement.

Even as California pushes towards 100% zero-carbon electricity, a number of electrification policies will dramatically increase electricity demand.⁸ For example, Governor Newsom has ordered 100% zero-emission vehicle sales by 2035,⁹ while the CARB has instituted transformative requirements in Advanced Clean Cars II and Advanced Clean Fleets.¹⁰ Meanwhile, the Legislature has authorized \$1.1 billion of funding for the CEC’s Equitable Building Decarbonization Program,¹¹ which seeks to reduce GHG emissions from buildings often through electrification.¹²

To reliably achieve net-zero emissions, reduce direct GHG emissions by 85%, and meet rapidly rising electricity demand, California’s energy resource mix must evolve significantly. While solar and battery energy storage are experiencing strong growth in California’s power grid, the day-to-day variability and seasonal production characteristics of solar means it alone cannot meet future demand increases.¹³ As recognized by the Legislature, “[o]ffshore wind can add resource and technology diversity to the state’s energy portfolio.”¹⁴ Diversity of both resource type and location will be

⁸ Southern California Edison projects that, by 2045, electricity demand will rise by 82% from today, primarily due to electrification. See SCE Countdown to 2045, *supra* n. 2 at 4.

⁹ Gavin Newsom, Executive Order N-70-20 (Sept. 2020), <https://www.gov.ca.gov/wp-content/uploads/2020/09/9.23.20-EO-N-79-20-Climate.pdf>.

¹⁰ *Advanced Clean Cars II*, CARB (Nov. 2022), <https://ww2.arb.ca.gov/our-work/programs/advanced-clean-cars-program/advanced-clean-cars-ii>; *Advanced Clean Fleets*, CARB (Apr. 2023), <https://ww2.arb.ca.gov/our-work/programs/advanced-clean-fleets>

¹¹ AB 179 (Ting, 2022).

¹² *Equitable Building Decarbonization Program*, CEC (2022), <https://www.energy.ca.gov/programs-and-topics/programs/equitable-building-decarbonization-program>.

¹³ SCE Countdown to 2045, *supra* n. 2 at 9.

¹⁴ AB 525, Chapter 231 (2021), Sec. 1 (e).

essential to ensure the system remains both flexible and reliable. To create such diversity, “California cannot afford to delay investing in the development of emerging technologies.”¹⁵

B. Significant Offshore Wind Development is Needed to Meet California’s Energy Needs and Climate Mandates

The 2021 SB 100 Joint Agency Report, published in September 2021, found that California will need significant development of clean energy generation over the next 25 years to meet California’s climate mandates.¹⁶ The Report’s modeling of scenarios to achieve the SB 100 policy used an assumption that a maximum of 10 GW of offshore wind is available and all 10 GW were selected by the model in the 2045 Core Scenario as well as in almost all other scenarios.¹⁷

More recently, Southern California Edison Company (“SCE”) published a *Countdown to 2045* – a report that analyzes California’s pathway to net-zero retail electricity while also meeting AB 1279’s direct GHG emissions reductions requirements and California’s electrification mandates. SCE calls for 19 GW of floating offshore wind, emphasizing that California must act quickly to “grow a robust offshore wind industry to develop novel technology for floating turbine platforms and sea floor anchors, undersea transmission, specialized ports and vessels for installation and maintenance and a customized supply chain consisting of facilities that today take half a decade or more to construct.”¹⁸

In AB 525 (Chiu, 2021), the Legislature directed the CEC, in conjunction with other state agencies, to “evaluate and quantify the maximum feasible capacity of offshore wind to achieve reliability, ratepayer, employment, and decarbonization benefits and shall establish megawatt offshore wind planning goals for 2030 and 2045.”¹⁹ On July 22, 2022, Governor Newsom called for the CEC to establish an offshore wind planning goal of at least 20 GW by 2045.²⁰ The CARB adopted

¹⁵ SCE Countdown to 2045, *supra* n. 2 at 9.

¹⁶ CEC, 2021 SB 100 Joint Agency Report, *Achieving 100 Percent Clean Electricity in California: An Initial Assessment* (Sept. 3, 2021) (“SB 100 Joint Agency Report”) at 9, <https://www.energy.ca.gov/publications/2021/2021-sb-100-joint-agency-report-achieving-100-percent-clean-electricity>.

¹⁷ *Id.* at 75.

¹⁸ SCE Countdown to 2045 *supra* n. 2 at 9.

¹⁹ Pub. Res. Code § 25991.1(a).

²⁰ Governor Newsom Letter to CARB Chair Randolph (Jul. 22, 2022), <https://www.gov.ca.gov/wp-content/uploads/2022/07/07.22.2022-Governors-Letter-to-CARB.pdf>.

the Governor’s 20 MW goal in its 2022 Scoping Plan.²¹ In light of the Governor’s call to adopt a more ambitious target, and on the basis of additional studies and comment received, the CEC established a planning goal for the state of 25 GW of offshore wind by 2045.²²

C. The Proposed PSP Falls Far Short of California’s Offshore Wind Needs

The ALJ Ruling would adopt the 25 MMT Core Portfolio as the PSP, which plans and selects for only 4.5 GW of offshore wind capacity in Morro Bay by 2045.²³ This overly conservative selection falls far short of other modeling determinations and represents less than one-fifth of the CEC’s offshore wind planning goal.

As SCE concluded in its *Countdown 2045* report, “California cannot afford to delay investing in the development of emerging technologies.”²⁴ An Energy Innovation report finds, “because changes to transmission planning take at least 10 years to result in new transmission, we must reform transmission planning and cost allocation practices in the 2020s to pave the way for rapid and competitive offshore wind growth from 2035 to 2045. Delaying the process just five years could cut the benefits in half.”²⁵ If the CAISO only plans transmission for 4.5 GW of offshore wind, California will have insufficient transmission infrastructure to support California’s SB 100 mandate. The selection of only 4.5 GW of offshore within Morro Bay does not represent the potential for Morro Bay alone (which is estimated to have an installed capacity of up to 6 MW), much less the entire Central Coast (estimated to have an installed capacity of 6.5 GW to 12 GW).²⁶ Moreover, the 25 MMT Core Portfolio fails to prepare a path for North Coast offshore wind resources altogether. “The

²¹ 2022 Scoping Plan, *supra* n. 3 at 75.

²² See CEC AB 525 Report, *supra* n. 4.

²³ ALJ Ruling at 21; *2023 Proposed PSP & 2024-2025 TPP, Resolve Modeling Results*, CPUC (Oct. 5, 2023) at 52, https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/integrated-resource-plan-and-long-term-procurement-plan-irp-ltpp/2023-irp-cycle-events-and-materials/2023-proposed-psp-and-2024-2025-tpp-resolve-analysis-slide-deck_20231004.pdf.

²⁴ SCE Countdown to 2045, *supra* n. 2 at 9.

²⁵ Michael O’Boyle et. al., *Policy Priorities to Ensure Offshore Wind Plays a Central Role in Our Net-Zero Future*, Energy Innovation (Aug. 2023) (“Energy Innovation Report”) at 36, https://2035report.com/offshorewind/wp-content/uploads/2023/07/Energy-Innovation_2035-3.0-OffshoreWind-Policy-Report.pdf.

²⁶ CEC, *Identifying Additional Suitable Sea Space and Assessing Impacts and Mitigations for Offshore Wind Energy Development* (June 1, 2023) at slide 59, <https://www.energy.ca.gov/event/workshop/2023-06/workshop-assembly-bill-525-identifying-additional-suitable-sea-space-and> (note that this slide deck refers to the Central Coast as the “South Coast.”)

North Coast wind resource is one of the best in the world with high renewable energy potential and wind speeds consistent and favorable for commercial development,” but, as recognized by the CEC, “the electric system in California’s North Coast region is relatively isolated from the California grid and serves primarily local community need. Additional transmission infrastructure will be needed to deliver offshore wind energy from this region to the grid.”²⁷ If the Commission and CAISO only consider Morro Bay in its transmission planning, the State risks delaying needed development of North Coast transmission infrastructure to bring power from the two Humboldt Bay offshore wind lease areas to load, especially given that the North Coast currently has limited transmission capacity.²⁸

III. THE RESOLVE MODEL DOES NOT ADEQUATELY ACCOUNT FOR OFFSHORE WIND’S FULL RANGE OF BENEFITS

As described by Philip Beiter et. al., energy models face “fundamental limitations in representing factors that are relevant for practical decision-making [...] As a result, the societal value from such generation types could be vastly misrepresented.”²⁹ While the RESOLVE modeling identifies resources that are least-cost, it does not serve as a good predictor of long-term costs or deployment. Nor does it account for or appropriately value other benefits or policy objectives that may be served by different technologies.³⁰ The Commission must also consider AB 1373 and related benefits of long lead-time procurement of offshore wind energy. The Commission should not allow the limitations of the RESOLVE modeling to hamstring California’s progress towards the robust development of its offshore wind resources.

A. RESOLVE Modeling Does Not Fully Account for Economies of Scale and Other Efficiencies from Proactive Offshore Wind Planning and Development

RESOLVE modeling does not fully capture the economies of scale³¹ and other efficiencies that

²⁷ CEC AB 525 Report, *supra* n. 4 at 3.

²⁸ See Schatz Energy Research Center, *Northern California and Southern Oregon Offshore Wind Transmission Study*, Vol.1 (Oct. 2023), <https://schatzcenter.org/pubs/2023-OSW-R2.pdf>.

²⁹ Philipp Beiter et. al., *Expanded Modeling Scenarios to Understand the Role of Offshore Wind in Decarbonizing the United States*, Nature Energy (Oct. 9, 2023), <https://www.nature.com/articles/s41560-023-01364-y#Sec13>.

³⁰ For example, a report by Energy Innovation finds that “the need for resource diversity, access to cost-effective generation, and grid resilience co-benefits are enough to justify long-term, large-scale offshore transmission planning.” Energy Innovation Report, *supra* n. 25 at 36.

³¹ The Commission has previously recognized the reductions in costs resulting from economies of scale in

would be achieved through the proactive deployment of offshore wind at scale. “Starting to plan *today* for the transmission infrastructure development pathway that can integrate this [significant] amount of offshore wind generation, and do so cost-effectively over time, will achieve significant economic, environmental, and social benefits.”³² This has been documented in multiple studies and planning efforts:

- Two studies by The Brattle Group for Anbaric (an independent transmission developer) found that proactive planning of offshore wind transmission solutions significantly reduces both costs (e.g., by \$0.5 billion for an additional 3.6 GW of offshore wind in New England) and environmental impacts (e.g., by halving the number of ocean cable miles installed).³³
- Recently completed joint interconnection³⁴ and long-term transmission planning³⁵ efforts for onshore renewables by system operators in the Midwestern U.S.—the Midcontinent ISO (MISO) and Southwest Power Pool (SPP)—similarly show that proactive transmission planning can reduce interconnection-related transmission costs by over 50% and provide significant reliability and other grid-wide benefits that reduce total costs.
- A study conducted for National Grid UK found significant cost benefits (18%) to a more proactive and coordinated approach to connecting offshore electricity infrastructure, as well as “significant environmental and social benefits with an integrated approach, as the number

other contexts. See D.16-06-055 at 28 (“in light of the fact that storage projects do benefit from economies of scale, this Decision adopts SoCalGas’s proposed incentive schedule for large storage”); D.05-05-013, Attachment to the Dissent of Commissioner Brown at 98 (With regards to advanced telecommunications technologies, the Commission found that “[w]ith wider deployment, companies can achieve economies of scale that result in reduced equipment costs.”).

³² See Johannes Pfeifenberger et al., *The Benefit and Urgency of Planned Offshore Transmission: Reducing the Costs of and Barriers to Achieving U.S. Clean Energy Goals*, Brattle Group (Jan. 24, 2023) at 4, https://www.brattle.com/wp-content/uploads/2023/01/Brattle-OSW-Transmission-Report_Jan-24-2023.pdf. (“Starting to plan today for the transmission infrastructure development pathway that can integrate [25 GW] of offshore wind generation, and do so cost-effectively over time, will achieve significant economic, environmental, and social benefits.”).

³³ Samuel Newell et. al. *Offshore Wind Transmission: An Analysis of New England and New York Offshore Wind Integration*, Brattle Group (Feb. 5, 2021) at 10 & 21, <https://www.brattle.com/insights-events/publications/offshore-wind-transmission-an-analysis-of-new-england-and-new-york-offshore-wind-integration/>.

³⁴ Bruce Tsuchida et. al, *Webinar: Proactive Planning for Generator Interconnection: A Case Study of SPP and MISO* (Aug. 17, 2022) at 9-10, <https://www.esig.energy/event/webinar-proactive-planning-for-generator-interconnection-a-case-study-of-spp-and-miso/>.

³⁵ MISO, *L RTP Tranch 1 Portfolio Detailed Business Case* (June 25, 2022) <https://cdn.misoenergy.org/L RTP%20Tranche%201%20Detailed%20Business%20Case625789.pdf>.

of new electricity infrastructure assets, including cables and onshore landing points, could be reduced by around 50 percent.”³⁶

By delaying transmission planning for offshore wind on the North Coast, the Commission will lose significant efficiencies that come from early planning at scale, including reductions in economic and environmental costs.

B. RESOLVE Modeling Does Not Adequately Value Offshore Wind Reliability Benefits

AB 1373 has tasked the Commission with identifying “a diverse and balanced portfolio of resources needed to ensure a reliable electricity supply.”³⁷ Diversity of both resource type and location will be essential to ensure the system remains both flexible and reliable. As recognized by the Legislature, “[o]ffshore wind can add resource and technology diversity to the state’s energy portfolio.”³⁸ With its around-the-clock power profile and high capacity factors,³⁹ offshore wind will be an ideal complement to the State’s solar and other renewable resources, helping to ensure grid reliability. The RESOLVE model does not adequately account for offshore wind’s benefits in enhancing California’s grid reliability and resource diversity in its clean-power portfolio.

C. RESOLVE Modeling Does Not Capture Offshore Wind Domestic Workforce and Supply Chain Benefits

The RESOLVE model also does not capture additional domestic workforce and supply chain benefits that would come from developing offshore wind at scale. The Legislature has found that “[o]ffshore wind energy development presents an opportunity to attract investment capital and to realize community economic development and workforce development benefits in California, including the development and preservation of a skilled and trained construction workforce to carry out projects, long-term job creation, and development of an offshore wind energy supply chain.”⁴⁰

³⁶ nationalgridESO, *Offshore Coordination Phase 1 Final Report* (Dec. 16, 2020) at 4, <https://www.nationalgrideso.com/document/183031/download>.

³⁷ Pub. Util. Code § 454.51(a).

³⁸ AB 525, Chapter 231 (2021), Sec. 1 (e).

³⁹ For example, Humboldt and Morro Bay offshore wind is expected to have a gross capacity factor of around 55% or more. See NREL, *Update on NREL’s 2020 Offshore Wind Resource Assessment for the California Pacific Outer Continental Shelf* (Nov. 2022) at Table ES-1, <https://www.boem.gov/sites/default/files/documents/regions/pacific-ocs-region/environmental-analysis/BOEM-2022-072.pdf>.

⁴⁰ AB 525, Sec. 1 (f).

Moreover, “[i]nvestment in offshore wind energy development can offer career pathways and workforce training in clean energy development. Offshore wind energy will provide additional blue-collar industrial work opportunities and support apprenticeship opportunities for a diverse labor pool, and provide those opportunities to local communities experiencing high unemployment through prioritization of local hiring first.”⁴¹

These statutory findings are supported by various studies. For example, when the National Renewable Energy Laboratory (“NREL”) conducted a supply chain and workforce analysis to meet President Biden’s national offshore wind energy target of 30 GW by 2030, their report found that deploying 30 GW by 2030 would require between 12,300 and 49,000 average full-time equivalent (“FTE”) jobs annually.⁴² In another study, the U.S. Department of the Interior’s Bureau of Ocean Energy Management (“BOEM”) forecast that between 23 GW and 40 GW of new offshore wind projects would “support between 73,000 and 128,000 jobs, while a further 28,000 to 48,000 jobs in operations and maintenance roles, in the supply chain, and in surrounding communities for the life of the projects could be permanently supported.”⁴³

IV. CONCLUSION

The NREL 2023 Annual Technology Baseline (“ATB”) estimates that the cost of offshore wind is significantly higher relative to its competing resources across the modeling horizon. Floating offshore wind is no doubt expensive initially because it is a nascent industry and the technology has not been fully commercialized. However, as David Hochschild, Chair of the CEC, explained in a recent public workshop:

[W]e are taking a long-term view on offshore wind ... [I]f you look at all clean-energy technologies, including offshore wind, the price trend over the long haul has been a downward trend. But there are periodic upward ticks in price. That’s what we’re seeing now, caused by some external factors. That does not change our commitment. Our commitment is a long-term commitment. Through innovation and through scale we’re going to drive the cost down [...] I think it’s really important

⁴¹ *Id.* at Sec. 1 (p).

⁴² NREL, *The Demand for a Domestic Offshore Wind Energy Supply Chain* (June 2022) at 6 and 73, <https://www.nrel.gov/docs/fy22osti/81602.pdf>.

⁴³ American Clean Power Association, *Federal Revenue and Economic Impacts from BOEM Offshore Wind Leasing* (Dec. 2021) at 1, https://cleanpower.org/wp-content/uploads/2021/12/ACP_Federal_Revenue_and_Economic_Impacts_from_BOEM_Offshore_Wind_Leasing.pdf.

framing for how we view this resource and why the Governor and the Legislature have directed us to have these planning goals and work to build this industry.⁴⁴

As with prior “emerging technologies” like solar and storage, financial and policy support for nascent floating offshore wind technology is especially important.⁴⁵ The offshore wind developments on the West Coast and further out on the Outer Continental Shelf on the East Coast and in the Gulf of Mexico depend on advancements in floating offshore wind technology. Meeting this goal will require research, development, and deployment investments to support new, specialized component supply chains for floating wind projects. Cost-effective and scalable deployment of floating technologies will be critical to maintain and accelerate the growth of offshore wind generation and represents an opportunity for U.S. manufacturing, and in California particularly, to lead globally given its relative nascency worldwide compared to fixed-bottom technology.

California is positioned to play a critical role in enabling the scalable deployment of offshore wind technology and unlocking these broad climate, clean-energy, and grid-reliability benefits. The Commission should seek to capture the full benefits of deploying offshore wind energy at a scale that will help lower prices for offshore wind in California. The Commission must serve as a catalyst for offshore wind development by selecting robust offshore wind capacity in Northern California for transmission planning purposes.

⁴⁴ CEC, *Staff Workshop on AB 209 Offshore Wind Waterfront Facilities Improvement Program* (Nov. 3, 2023) at 3:12:41 to 3:13:42, [OSW Waterfront Facility Improvement Program Workshop - Zoom](#).

⁴⁵ For example, in R.10-12-007 the Commission identified market barriers hindering broader adoption of emerging storage technologies and market transformation and set energy storage procurement targets for the three investor owned utilities. *See* D.13-10-040.

Respectfully submitted,

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