



September 15, 2020

California Energy Commission
Docket No. 19-SB-100
Docket Office
1516 Ninth Street
Sacramento CA 95814

Submitted Electronically via CEC website to Docket 19-SB-100

Re: Comments on SB 100 September 2, 2020, Draft Results Workshop

The Business Network for Offshore Wind,¹ California Wind Energy Association² and Offshore Wind California³ (“Joint Wind Parties”) are pleased to provide these comments on the September 2, 2020, Draft Results Workshop leading up to the January 1, 2021, report of the Joint Agencies that is required by SB 100.

Governor Newsom recently stated, in view of the cost of the wildfires currently raging, “We’re gonna have to fast-track our efforts in terms of meeting our [clean energy] goals much sooner ... accelerat[ing] them across the board.”⁴ The Joint Wind Parties agree. Critical to that fast-tracking, however, will be identifying strategic, least-regrets planning decisions that can be pursued immediately to advance the infrastructure necessary to achieve SB 100 goals, while carefully planning to achieve a diverse, reliable, renewable energy portfolio that reduces risks and delivers air-quality benefits to disadvantaged communities. These comments are focused on those goals.

¹ The Business Network for Offshore Wind is a 501(c)(3) organization with over 300 members dedicated to establishing an offshore wind supply chain in the United States. The Network prioritizes delivering education, creating partnerships and advancing the industry.

² The California Wind Energy Association (CalWEA) is a 20-year-old trade association representing wind energy and related companies focused on the California market, primarily consisting of project owners, operators and developers of wind energy projects located in California.

³ Offshore Wind California (OWC) is a California-based coalition of industry partners promoting policies and public support for responsible development of offshore wind power in California.

⁴ “Frustrated California Governor Gavin Newsom Surveys Fire Zone, Rips “Ideological BS” Around Climate Change & “Absence of National Leadership.” *Deadline* (Sept. 11, 2020).

I. SUMMARY

These comments focus primarily on the areas where we find that, based on the September 2, 2020, Draft Results Workshop, the SB 100 Report appears to be falling short of the legislative requirements for the Report to address customer rate impacts, affordability, estimated costs and benefits of alternative scenarios, impacts on system and local reliability and barriers to achieving SB 100 goals.⁵ Specifically, we urge the agencies to address the following issues in the draft SB 100 Report to be released later this fall:

- A high level (nearly 40 GW) of customer-side solar is presumed, with costs hidden, while similarly high levels of wind energy are not even evaluated;
- The costs and benefits, risks, and reliability issues associated with each scenario must be presented and promising combinations of scenarios should be evaluated – including accelerating near-term goals while deploying new technologies. The Draft Results obscure the cost, reliability and other benefits associated with a more-diverse resource pathway to SB 100 goals; and
- The agencies are required to address impacts on system reliability, which is almost entirely missing from the Draft Results. At a minimum, the Joint Agencies should highlight the fact that substantial upgrades to our transmission and distribution systems will be required to achieve SB 100 goals, and should identify least-regrets, strategic planning opportunities that should be pursued immediately. Specifically, the SB 100 Report should highlight strategic investments in our transmission system that will be necessary to maintain reliability while enabling the staged retirement of at least 14 GW of gas-fired power plants and the development and delivery of clean replacement resources.

The Joint Wind Parties also urge the Joint Agencies to update the current analysis with new cost data for offshore wind that will soon be available from the National Renewable Energy Laboratory (NREL). These data show substantially lower costs for offshore wind resources than are reflected in the Draft Results, and are likely to alter the report's findings.

⁵ As recounted in the Joint Agencies' September 5, 2019, Kickoff Presentation for the SB 100 Report (at PDF-page 67), SB 100 requires the agencies to include the following in their report:

- A review of the policy focusing on: technologies, forecasts, then-existing transmission, and maintain safety, environmental and public safety protection, affordability, and system/local reliability;
- An evaluation identifying potential benefits and impacts on system/local reliability;
- An evaluation identifying the nature of any anticipated financial cost and benefits to electric, gas, and water utilities, including customer rate impacts and benefits;
- Barriers and benefits of achieving the policy; and
- Alternative scenarios to achieve the policy with estimated cost and benefits.

II. COMMENTS

A. A High Level of Customer-Side Solar Is Presumed, With Costs Hidden, While Similarly High Levels of Wind Energy Are Not Evaluated

1. More aggressive wind scenarios should be evaluated

The Joint Wind Parties appreciate the fact that the SB 100 modeling effort now includes offshore wind resources as “candidate” resources in the menu of options from which RESOLVE builds an optimal portfolio. However, no explanation has been provided for why offshore wind resources were limited to 10 GW, or why no offshore wind resources were made available in the model prior to 2030. We strongly encourage the Joint Agencies to make adjustments to these assumptions prior to generating the final version of the SB 100 report.

The Inputs and Assumptions document listed 10 GW as the “limited” potential for offshore wind and 14.5 GW as the “full” offshore wind resource potential.⁶ The source that was cited for these figures was a UC Berkeley study; however, that study identified “approximately 20 GW of viable offshore wind resources in California.”⁷ While neither a forecast nor a maximum figure, an NREL report chose 16 GW as a reasonable figure to study for California in its 2016 study of potential jobs and economic impacts.⁸ Another study evaluated 18 GW of installed capacity by 2045.⁹ The Joint Wind Parties believe that the 10 GW figure is too low and we request that the use of this figure be re-evaluated and replaced with a significantly higher figure.

In addition, the model should enable offshore wind to be selected prior to 2030; even if offshore wind is not selected by the model prior to 2030, a more diverse resource portfolio (discussed further in section II.C below) should include a scale-up of offshore wind that includes 3,000 MW by 2030.

The Energy Commission’s 2018 *Deep Decarbonization* report evaluated on the order of 75 GW of out-of-state wind, finding that over 50 GW of wind could, by greatly reducing the need for solar and storage, save \$19 billion per year by the time SB 100’s goals are achieved.¹⁰ And yet the SB 100 report considers just 26 GW total wind, including 10 GW of offshore wind, 12 GW of out-of-state wind and approximately 4 GW of in-state wind. As a result, the benefits that could be achieved with higher levels of wind energy – levels commensurate with assumed levels of BTM solar – were not considered. It appears that all of the in-state and offshore wind

⁶ “Inputs and Assumptions: CEC SB 100 Joint Agency Report” (8-28-20) at Table 29.

⁷ See <https://laborcenter.berkeley.edu/offshore-wind-workforce-grid/> at p. 7 of the PDF document.

⁸ Speer, Bethany, David Keyser and Suzanne Tegen. “Floating Offshore Wind in California: Gross Potential for Jobs and Economic Impacts from Two Future Scenarios,” National Renewable Energy Laboratory, April 2016, <https://www.boem.gov/2016-029>.

⁹ American Jobs Project, *The California Offshore Wind Project: A Vision for Industry Growth* (2019).

¹⁰ California Energy Commission, *Deep Decarbonization in a High Renewables Future* (June 2018) at p. 41 and Figure 16. <https://ww2.energy.ca.gov/2018publications/CEC-500-2018-012/CEC-500-2018-012.pdf>

was selected in the 2045 Core Scenario – meaning that the model may have selected additional such resources if they had been made available to the model. As it was, diversifying the portfolio with wind resources reduced the need for solar and storage capacity by roughly 17 GW each.¹¹ However, the associated cost savings were not reported.

In summary, we urge the agencies to include higher levels of offshore wind, and wind energy generally, as well as a scale-up of offshore wind that includes 3,000-MW by 2030 as part of a more diverse resource portfolio. The updated cost figures discussed below should be used with associated cost savings reported.

2. Customer-side solar must be treated as a candidate resource

All of the scenarios presented in the Draft Results include almost 40 GW of customer-side solar capacity additions as a fixed input for 2045¹² (with approximately 20 GW added in 2030), based on the demand forecast included in the Energy Commission’s 2019 Integrated Energy Policy Report (IEPR).¹³ This fixed-input assumption is at odds with the Legislature’s expressed interest in customer rate impacts and affordability, and particularly given the cost of customer-side solar – currently at least \$150/MWh¹⁴ – relative to utility-scale technologies, which range from approximately \$25/MWh to \$80/MWh in 2027.¹⁵

Moreover, the payments required to achieve the assumed level of behind-the-meter (BTM) solar should be disclosed. Current net energy metering (NEM) customer-payment rates are much higher than installation costs, and NEM rates are currently under review at the CPUC.¹⁶ These rates have produced an enormous shifting of costs between NEM customers and non-NEM customers: the investor-owned utilities have estimated the cost-shift at well over \$1 billion annually at current NEM-penetration levels.¹⁷ If current NEM rates are being assumed to continue, the cost-shift associated with the assumed BTM-solar levels would presumably grow commensurately.

¹¹ “SB 100 Draft Results” Presentation (9-2-20) at slides 16 and 22. Figures are approximate based on our interpretation of the graphics.

¹² *Id.* at slide 8.

¹³ *Supra* note 6 at pp. 9 and 15.

¹⁴ Lazard, “Levelized Cost of Energy and Levelized Cost of Storage 2019” (Nov. 7 2019). <https://www.lazard.com/perspective/lcoe2019/>. Solar residential rooftop costs are reported at \$151-\$242/MWh.

¹⁵ *Supra* note 11 at slide 9.

¹⁶ See CPUC R.20-08-020.

¹⁷ PG&E and SDG&E have each estimated the current cost shift at nearly \$500 million annually (\$490 million and \$481 million, respectively). (CalWEA was unable to find a cost-shift figure for SCE.) See: CPUC A.19-11-019, Pacific Gas and Electric Company 2020 General Rate Case Phase II, Prepared Testimony Overview And Guiding Policy Framework at p.1-22 - 1-23 (February 22, 2019); and CPUC Rulemaking 19-09-009 (OIR Regarding Microgrids Pursuant to Senate Bill 1339 and Resiliency Strategies), SDG&E’s Track 1 Reply Comments (February 6, 2020) at p.7.

Fixing this demand-side input, particularly at such high levels, is also contrary to the principles of the CPUC's Integrated Resource Planning (IRP) Process, where that Commission seeks to support consistent treatment in the evaluation of supply- and demand-side resources in electric sector planning.¹⁸ Further, the RESOLVE model used in the SB 100 study already represents BTM PV resources as supply-side resources in both hourly dispatch and resource adequacy retirements,¹⁹ so clearly it is possible to evaluate these resources as "candidate" resources from which RESOLVE can select to create an optimal portfolio.

Given the SB 100 legislative requirement to consider the costs and benefits of alternative scenarios, as well as customer rate impacts and affordability, BTM solar should be treated as a candidate resource; any alternative scenarios with fixed-levels of BTM solar should be presented with associated costs reported. At a minimum, a sensitivity analysis should be conducted with BTM solar "in" and "out" to demonstrate the additional cost that may be imposed by the assumption in the SB 100 Core Scenario.

B. The Costs, Benefits, Risks and Reliability Issues Associated with Each Scenario, and Promising Scenario Combinations, Should Be Presented

1. SB 100 requires estimated costs to be included for each scenario

It is important, as well as required by statute,²⁰ that the SB 100 Joint Agency Report clearly inform the Legislature and agency decision-makers of the costs associated with each alternative strategy so that they may make informed, effective trade-offs between costs and other considerations – including impacts on disadvantaged communities, jobs and economic development, land-use impacts, etc. – as California forges the path towards carbon-free electricity. These other considerations also warrant exploration and discussion in the report.

The Draft Results presented on September 2, however, reported associated costs only for the "no-combustion" scenario and not for other scenarios. Staff's response to a question posed online during the workshop regarding whether the costs associated with each scenario will be provided was non-committal. We strongly urge the Joint Agencies to report the costs associated with each scenario that was analyzed. As noted above, a scenario that diversifies the portfolio otherwise dominated by solar and batteries with wind energy can substantially reduce costs; such information must be presented in the report. We would anticipate similar cost savings to be shown under the "zero-carbon firm" scenario, which also substantially reduces reliance on solar and batteries.

2. The report should characterize benefits and reliability issues associated with each scenario

In addition to costs, SB 100 requires an evaluation of benefits and impacts on system and local reliability. The issue of system reliability has become more pronounced recently

¹⁸ See, e.g., CPUC Decision 20-04-010 (April 16, 2020) at p. 24, in R.14-10-003.

¹⁹ *Supra* note 6 at p. 15.

²⁰ *Supra* note 5.

with the rolling blackouts that occurred in August. Thus, it is necessary for the report to include at least a qualitative discussion of three related issues:

- the distribution and transmission build-out requirements associated with each scenario (and distinct elements of each scenario), along with their lead-time requirements;²¹
- the reduction of various risks associated with a diverse resource portfolio; and
- the air-quality benefits to disadvantaged communities that could be obtained with careful planning for gas-plant retirements.²²

Regarding distribution and transmission build-out requirements that will be necessary both to achieve SB 100 goals and to maintain system reliability, the report should highlight the fact that substantial investments in both distribution and transmission systems will be required, although – especially if BTM solar is treated as a candidate resource and larger quantities of wind energy are modeled – there may be a different balance of required investments at the distribution and transmission levels, and different geographic areas where transmission will be needed. The report should also highlight that the build-outs of the distribution and transmission systems associated with different pathways will take years and requires immediate action by the CPUC and the CAISO.

The report should also discuss the fact that a more diverse resource portfolio will inherently reduce system reliability risks and other obstacles associated with achieving SB 100 goals, including:

- **diverse production profiles** – in earlier comments in the Joint Agency SB 100 process, the CAISO raised significant concerns about a portfolio dominated by solar and batteries, including charging during multiple-day periods of cloud coverage and dramatically increasing ramping requirements;²³
- **diversity of technologies** – a diversity of technologies will reduce operational risks,²⁴ risks associated with supply chains and raw materials, as well as the model’s assumed cost trajectories; and

²¹ Currently, the Draft Results and related discussion at the workshop indicate that treatment of transmission and reliability issues is limited to high-level RESOLVE capacity-expansion modeling, including transmission adders, without any discussion of the major challenges associated with maintaining reliability or transmission- and distribution-system build-out requirements.

²² SB 350 requires the Commission to develop an IRP process that minimizes air pollutants with an early priority for reductions in disadvantaged communities. Cal. Public Util. Code § 454.52(a)(1).

²³ Energy Commission Docket 19-SB-100, “Planning for reliability and resource adequacy under SB100 - California ISO Presentation.” (February 25, 2020.) (Available at: <https://www.energy.ca.gov/event/workshop/2020-02/senate-bill-100-modeling-inputs-and-assumptions-workshop>.)

²⁴ For example, as stated by the CPUC, “battery installations in California are not being utilized in the manner that they would need to be in 2030 with a system so heavily built out with solar capacity.” See CPUC Ruling on the 2019-2020 RSP (November 6, 2019) at p. 23.

- **reduced land-use impacts** and associated development conflicts; land-use requirements should be quantified for each scenario.²⁵

C. Promising Scenario Combinations Should Be Presented

The SB 100 Draft Results presentation includes several distinct scenarios; the Joint Agencies should consider combining some of these scenarios, or scenario elements, to present possible paths that may, by combining diverse resources, offer the greatest benefits. For example, we recommend evaluating a combined scenario that includes:

- High flexibility;
- Greater resource diversity than the Core scenario, including higher levels of offshore wind and zero-carbon firm resources, and significantly lower levels of customer-side solar; and
- An accelerated timeline, particularly to test and accelerate new technologies, including 3,000 MW of offshore wind in 2030. As the CAISO noted in earlier SB 100 comments, “It is critical for policy makers to act now to diversify the fleet based on energy and reliability needs, rather than wait for technologies to be cost effective.” The CAISO recommended that intentional steps be taken to “unlock value.”²⁶

The Joint Agencies should qualitatively describe the benefits of such a scenario, including associated economic and jobs benefits and the risk-reduction benefits described above.

Short of creating such a timeline, the Joint Agencies should make the model available so that parties may devise such scenarios and present the results.

D. The Agencies Should Identify Least-Regrets Strategic Planning Opportunities that Should Be Pursued Immediately to Address Infrastructure Barriers to the Achievement of SB 100 Goals

As Governor Newsom recently suggested, the Joint Agencies should move more boldly to address climate change. To that end, for SB 100 Report to be meaningful, the Joint Agencies must identify strategic, least-regrets planning decisions that should be pursued immediately to advance the long-lead-time infrastructure that will be necessary to achieve SB 100 goals. Strategic investment in our transmission system will be necessary to maintain reliability while enabling the retirement of at least 14 GW of gas-fired power plants and facilitating the

²⁵ For example, the Energy Commission’s *Deep Decarbonization* report (see *supra* note 10) shows that the land-use impacts of a solar-dominated portfolio would be significant, with an additional 1,100 square miles of land required compared with only 600 square miles in a more-diverse and more-flexible portfolio.

²⁶ *Supra* note 23.

development and delivery of clean replacement resources.²⁷ Given the seven- to ten-year lead time required to bring new transmission infrastructure on line, this planning must begin now.

One of these least-regrets decisions should be to relieve transmission constraints in the Los Angeles Basin, which could offer a multitude of benefits, particularly if resolved through a subsea cable linking the LA Basin to the substations that will become available when Diablo Canyon is retired. These benefits include:

- facilitating the staged retirement of gas plants in the LA Basin, bringing air-quality benefits to disadvantaged communities while providing charging capacity to distributed batteries, including electric vehicles, in the LA basin;
- relieving north-south transmission congestion by creating a parallel path to congested Path 26, providing substantial economic benefits;
- providing Southern California with access to Central Coast offshore wind and Central Valley renewable and storage resources;
- mitigating service interruptions in Los Angeles due to land-based wildfire risks and reducing insurance costs relative to land-based transmission lines; and
- creating “high-road” jobs and economic development, supporting recovery from the Covid-19 recession.

Given the climate change crisis that California is currently facing, and the current economic slow-down, this kind of visionary thinking – and roadmap for near-term action – would be very much in order in this SB 100 Report.

E. Updated Offshore Wind Cost Figures Should Be Incorporated

The CPUC will be incorporating updated cost figures for floating offshore wind from NREL in its IRP process later this year.²⁸ The new figures will reflect updated technology and infrastructure assumptions, cost and resource data, and modeling capabilities. While the NREL results are preliminary, they indicate substantial (5-28 percent) reductions in costs (depending on location) compared to the IRP values used for the SB 100 study.²⁹ The NREL report is currently undergoing peer review and is scheduled to be published in late October, for integration into the IRP process beginning in Q4 2020. The final SB 100 report, if not the draft report due in November, should incorporate this new data, which has the potential to significantly change the study results.

²⁷ The Draft Results indicate that, even with the agencies’ interpretation of SB 100 that enables a significant level of GHG emissions from gas-fired plants, the state will still need to plan for the retirement of on the order of 14 GW of gas-fired capacity. (*Supra* note 11 at Slide 27.)

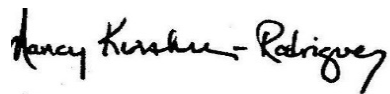
²⁸ NREL, Floating Offshore Wind Costs in CA: Initial Results (Presented to the CPUC IRP Modeling Advisory Group Webinar), August 27, 2020. Available at: <https://www.cpuc.ca.gov/General.aspx?id=6442459770>.

²⁹ *Supra* note 6 at p. 4.

III. CONCLUSION

The Joint Wind Parties urge the Joint Agencies to improve the SB 100 report to better address the costs and benefits, risks, and reliability issues associated with each scenario, and to present the benefits of a more-diverse resource pathway to SB 100 goals, including greater reliance on offshore wind energy. Moreover, while “directional” analyses can be useful – particularly with the recommended changes outlined above, the climate emergency requires the Joint Agencies to be more visionary and to identify actions that should be taken immediately to advance offshore wind power planning and to advance least-regrets transmission infrastructure that will be required to reliably achieve the state’s SB 100 goals.

Respectfully submitted,



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