

DOCKETED	
Docket Number:	19-SB-100
Project Title:	SB 100 Joint Agency Report: Charting a path to a 100% Clean Energy Future
TN #:	240590
Document Title:	PG&E Comments on SB 100 Workshop on NEBs, Social Costs, and Reliability
Description:	N/A
Filer:	System
Organization:	PG&E
Submitter Role:	Public
Submission Date:	11/12/2021 4:56:16 PM
Docketed Date:	11/12/2021

*Comment Received From: PG&E
Submitted On: 11/12/2021
Docket Number: 19-SB-100*

PG&E Comments on SB 100 Workshop on NEBs, Social Costs, and Reliability

Additional submitted attachment is included below.



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November 12, 2021

California Energy Commission
Commissioner Karen Douglas and Vice Chair Siva Gunda
Docket Number 19-SB-100
1516 9th Street
Sacramento, CA 95814

Re: Pacific Gas and Electric Company Comments on the Workshop on Planning for Senate Bill 100 Analysis of Non-Energy Benefits, Social Costs and Reliability (Docket Number 19-SB-100)

Dear Commissioner Douglas, and Vice Chair Gunda,

Pacific Gas and Electric Company (PG&E) appreciates the California Energy Commission (CEC) and the California Public Utilities Commission (CPUC) for hosting this workshop on planning for Senate Bill (SB) 100 analysis of non-energy benefits (NEBs), social costs, and reliability on November 1. PG&E supports California’s clean energy goals and is committed to partnering with the CEC, CPUC, and other state energy agencies to discuss approaches to include NEBs and social costs in future SB 100 analysis and developing an approach for analyzing the reliability of potential resource portfolios to meet SB 100 targets.

PG&E offers the following comments on reliability analysis, NEBs analysis, other modeling activities, and stakeholder engagement. During the workshop, the CEC posed specific questions to stakeholders where the CEC is seeking feedback. PG&E offers the following responses to some of the questions:

1. What questions do you have on reliability?

PG&E appreciates the Commission’s efforts to incorporate reliability analysis into its iterative and ongoing effort to assess barriers and opportunities to implement the 100 percent clean electricity policy by year 2045.

PG&E believes that a comprehensive reliability analysis should include a loss of load expectation (LOLE) study to ensure that at the system level the resources provide an acceptable level of reliability; an operational reliability analysis to determine whether changes in the resource mix (resource types and locations) create operational reliability challenges¹ for the different SB 100 scenarios; and a local and zonal reliability assessment to ensure that the locational aspect of the resource need is adequately reflected in the reliability and the cost-effectiveness analysis.

¹ For example, with the increase in inverter-based technologies, does the system have sufficient inertia and frequency response capability to maintain system frequency within acceptable limits?

PG&E believes that to adequately address the feasibility and the costs of the different decarbonization pathways, the cost estimates must include adequate reliability analysis even if the analysis is intended to provide directionality. Since a comprehensive reliability assessment will require inputs from the entities responsible for transmission planning and operations, the CEC should continue to coordinate with the CAISO and other non-CAISO jurisdictional transmission planning entities to incorporate reliability findings and costs in the SB100 analysis.

Based on these suggestions, PG&E asks the CEC to include a plan to address the following reliability assessment related questions:

- *Do the SB 100 scenarios meet an expected level of LOLE?*
PG&E supports the CEC's expanded scope of the SB 100 to include production simulation LOLE analysis for the different scenarios. PG&E believes that the use of a production simulation model and an assessment of LOLE over a range of system conditions will provide useful information to support the development of reliable and cost-effective portfolios.

Since the selection of energy resources is highly dependent on the reliability target (i.e., what is an acceptable level of LOLE), and given the fact that the CPUC's Integrated Resource Planning (IRP) Proceeding has not established a new planning metric to replace the existing 15% planning reserve margin (PRM) for long-term planning,² PG&E asks the CEC to use a 0.1 LOLE³ for assessing system reliability. Further, considering the lack of certainty around a new planning metric, the CEC should ensure that modeling scenarios and least cost findings adopt to any changes to reliability planning metrics and the report findings. For example, if a reliability metric were adopted targeting a higher level of electric system reliability, clean firm technologies may be found to be more cost-effective. In this instance, the modeling scenarios should be representative of the new reliability planning metric, and report findings should capture the potential cost-effectiveness of clean firm technologies.

- *Are the SB 100 scenarios operationally reliable?*
In assessing reliability, the joint agencies should confirm that California can maintain operational reliability under different operating conditions given the forecasted increase in the levels of intermittent and inverter-based energy resources. For the California Independent System Operator (CAISO), the operational reliability assessment is a part of the CAISO's transmission planning process (TPP). In addition to the annual TPP, which covers a 10-year horizon, the CAISO has recently started a new process focused on 20-year transmission outlook⁴ to support the statewide policy goals. This process will be conducted in parallel with the CAISO TPP. PG&E appreciates CAISO's continued focus on refining its operational reliability assessment.

To ensure that the statewide SB 100 plan includes an adequate level of reliability assessment and associated transmission cost, the CEC should continue to coordinate with the CAISO and

² The MTR procurement decision's Finding of Fact 1 provides that "[m]ore analysis is needed before revising the planning reserve margin for long-term planning in the IRP proceeding on a permanent basis." D.21-06-035, p. 86.

³ 0.1 LOLE is a widely accepted industry standard for reliability planning. PG&E is supportive of working with the CPUC and stakeholders to assess if this standard should be updated given climate change impacts and changes in California's energy supply portfolio,

⁴ <https://stakeholdercenter.caiso.com/RecurringStakeholderProcesses/20-Year-transmission-outlook>

other non-CAISO jurisdictional transmission planning entities to incorporate any operational reliability and incremental costs findings. PG&E asks the CEC to co-ordinate with the CAISO on the assessment of the impact of the interaction between behind the meter (BTM) distributed generation installations and grid reliability. Specifically, the CAISO has raised the issue that large net energy metering (NEM) installations interconnected to the grid are exempt from telemetry requirements—which indicates that the CAISO has no visibility on installations, which could have a significant impact on the grid operations. Additionally, high penetration levels of rooftop solar could interfere with distribution operation, leading to increased interconnection costs or the potential for reverse flow of energy through substations to the transmission grid.

- *Where will resources be needed locationally and is there an incremental transmission and distribution upgrade cost to address higher level of electrification?*

Previous analyses by the joint agencies have not fully addressed location-specific resource requirements and/or transmission and distribution infrastructure upgrades needed to inform the cost estimates for the different SB 100 scenarios. Given the expected increase in electrification load and its impact on local resource and/or infrastructure upgrade needs, it is extremely important that the SB 100 analysis is expanded to include location specific requirements. Recognizing that the first step to accomplish location-specific requirements is a location-specific electrification demand forecast, PG&E encourages the CEC to expand the scope of the Integrated Energy Policy Report (IEPR) forecast to include a more granular electrification demand forecast.

Maintaining reliability and achieving a 100-percent clean electricity policy depends on appropriately located resources throughout the state to meet the local and zonal needs of the electric grid and ensuring the right mix of resources to address operational and reliability metric requirements. Analysis on these topics must be completed to ensure that more certainty and valuable insights are part of the SB 100 Joint Agency Report.

2. What other questions do you have? Can modeling help?

As the CEC has indicated, a core question the modeling will help answer is what SB 100 pathways are most affordable. PG&E believes energy affordability is a key component of an equitable transition for all Californians and agrees it should be a core question addressed by the SB 100 modeling. Addressing affordability requires comprehensively capturing the cost of various pathways to achieve a clean electric system, adding as much certainty to the modeling as possible. To ensure more certainty on the question of scenario costs, PG&E recommends the following modeling improvements:

- *Distribution and transmission costs should vary by scenario and should accurately capture the required infrastructure upgrades for specific scenarios.* Without accurate transmission or distribution costs, studied pathways may not be considered least cost and may inadvertently trigger additional, unplanned transmission or distribution expansion. Varying distribution and transmission costs by scenario is a modeling improvement which could be made compared to the last Joint Agency SB 100 Report.
- *All potential technologies—especially clean firm technologies—should be included in the modeling.* Given the long time horizon associated with implementation of policies arising from SB 100, there are more opportunities for technology commercialization. Previous pathway

studies have indicated that increasing energy resource diversity assists in lowering overall costs⁵. Clean firm technologies which had not been previously incorporated in the last Joint Agency SB 100 Report such as drop-in renewable fuels (i.e., renewable natural gas, hydrogen) and natural gas paired with carbon capture and sequestration should also be included in this iteration of the Joint Agency SB 100 Report. These technologies should be studied for their potential impact on further resource diversity and potential cost reductions.

3. What are the most important non-energy benefits (NEBs) to consider, and how should they be incorporated into electricity supply models?

PG&E appreciates the joint agencies' focus and attention on analyzing the full suite of potential costs and benefits of decarbonizing California's electric supply. While there is little controversy about the existence of NEBs, regulators should establish guiding principles to help narrow the scope of the analysis to interventions that are measurable and produce quantifiable net benefits for Californians. This can also help prioritize the research that will be necessary to monetize any NEBs being considered. To comply with the Public Utilities Code Section 454.53(b)(2) requiring that the agencies will take actions to *"prevent unreasonable impacts to electricity, gas, and water customer rates and bills[...], taking into full consideration the economic and environmental costs and benefits of renewable energy and zero-carbon resources,"* emphasis should be placed on benefits that provide value to all ratepayers. Ratepayers' funds, if at all used, should be used efficiently.

The term "non-energy benefit" itself has a tenuous connection to energy. For SB 100 benefit-cost analysis to be useful, it should focus on analyzing benefits that have the most direct relationship to procurement of renewable energy, such as the environmental benefits of reducing greenhouse gas (GHG) emissions and criteria air pollutants through reduced use of fossil fuel resources. These benefits can be relatively straightforward to calculate and can be useful in comparing different renewable energy candidate resources, which have different cost and production profiles, as is currently done in the CPUC's IRP analysis.

On the other hand, NEBs that are a byproduct of an individual customer installing a behind-the-meter (BTM) measure—for example, increased comfort due to a weatherization upgrade—are difficult to quantify. A secondary issue with participant NEBs is that typically the benefits accrue to the participating customer, as in the example above, but it is the nonparticipating ratepayers that bear the cost. That does not mean they are of little value when considering program design and execution. PG&E believes that in an all-other-things-equal situation, NEBs can play a vital role in program design. For example, where two or more programs can deliver the same ratepayer value for a similar investment, NEBs can provide critical guidance on the better course of action. However, when deciding on where to invest scarce resources, programmatic procurement to capture these types of participant-specific NEBs should not be sought from nonparticipating utility customers—rather funding to capture these benefits should be through taxes or other revenue sources.

Finally, with other economic NEBs such as market transformation or job creation, even if quantifiable, the value is seldom calculated as net value. For example, jobs gained through one program are rarely decreased by the jobs lost from the alternative not pursued.

⁵ <https://efiling.energy.ca.gov/EFiling/GetFile.aspx?tn=237167&DocumentContentId=70349>

PG&E also notes that as programs are implemented, it is critical that evaluation of related NEBs also be addressed. In addition to measurement of energy savings, reduced GHGs, customer bill savings, etc., the program design should also include measurement of the success from any anticipated or planned NEBs. If a measure or program is undertaken that will improve customer's comfort, how will that be ascertained? If it is believed that the bill savings will improve participant customer's health, how will that be measured? If the attempt is to capture reductions in asthma from local air pollution, how will it be known that the program was successful? Including measurement of NEBs will not only help in the overall evaluation of measure or program success, but it will also improve the quantification of those NEBs in the future.

4. What recent and ongoing modeling work should we be referencing and engaging with?

PG&E appreciates the Commission's willingness to engage with other ongoing modeling work. Given the various analyses currently being conducted by the joint agencies and at the CAISO, and the number of questions the joint agencies and stakeholders are seeking to address, it is critical that existing workstreams are leveraged. As noted in PG&E's response to question one, the CEC should leverage the CAISO analysis on operational reliability in the TPP and the 20-year transmission outlook. The CEC should also be engaged with the CPUC's reliability production cost modeling in the IRP proceeding. Additionally, the CEC should also leverage work where it has insights from other stakeholders. For example, inclusion of non-CPUC jurisdictional load serving entities (LSE) procurement or through an expanded IEPR forecast scope to include a more granular electric load forecast as also noted in PG&E's response to question one. As the CEC noted it in its workshop, an understanding and engagement with the changing conditions in the different planning time horizons will be critical.

5. How can we best foster engagement on the modeling and build trust?

PG&E appreciates the CEC's effort to incorporate NEBs, social cost, and reliability analysis in the Joint Agency SB 100 Report. PG&E, among other stakeholders, emphasized the need for analysis on equitable affordability and reliability as potential areas for improvement in the 2021 Joint Agency SB 100 Report. The CEC's responsiveness to stakeholder comments encourages positive engagement.

Building trust in modeling requires transparency. PG&E encourages the CEC to release any SB 100 models and underlying data for stakeholder review. At a minimum, PG&E asks that the CEC clearly document inputs and assumption differences from other relevant studies so any divergences in analyses due to input or assumption differences are transparent. In addition, to allow sufficient time for stakeholders to provide meaningful inputs, PG&E asks that the CEC include sufficient time for the stakeholders to review modeling results, provide comments, or put forward their own results.

As noted by PG&E and other stakeholders⁶, the joint agencies and stakeholders should work towards use of the same metrics, assumptions, and processes to provide meaningful comparative review of the analytics. Generally, key modeling assumptions should be aligned across planning venues for consistency. There may be circumstances in which differing study assumptions provide additional insights. However, for those insights to be identified, differences in inputs and assumptions need to be easily understood and comparable. Consensus on the assumption differences driving insight is also

⁶ Southern California Edison Reply Comments on ALJ Seeking Comments on Proposed PSP
<https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M413/K602/413602925.PDF>

necessary to ensure that various analyses can be utilized across proceedings without misinterpretation, minimizing the need for duplicative work.

PG&E appreciates the time and effort that the CEC took to organize the SB 100 workshop to include NEBs, social costs, and reliability, and the opportunity to provide PG&E's perspective on this work. Please do not hesitate to contact me if you have any questions.

Sincerely,

Licha Lopez