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Comments of Peninsula Clean Energy on SB 100 Study

Additional submitted attachment is included below.

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December 18, 2020

Joint Agencies: California Energy Commission (CEC), California Public Utilities Commission (CPUC), and California Air Resources Board (CARB)

RE: Peninsula Clean Energy Authority Comments on Draft Final Report Workshop December 4, 2020; Docket No. 19-SB-100

Dear Commissioners and Board Members:

Peninsula Clean Energy Authority (Peninsula Clean Energy hereinafter), a joint powers authority operating decarbonization programs in San Mateo County, strongly supports the SB100 study of California's decarbonization strategy but offer these comments for consideration as the Joint Agencies continue to refine the modeling of California's energy future. While Peninsula Clean Energy calls itself a community choice aggregator (CCA) because that is the moniker most stakeholders have come to associate with our activities, our joint powers authority is offering many more decarbonization programs than merely energy supply.

In this regard, California's Community Choice Aggregators (CCAs) are playing a critical role in California's progress toward carbon neutrality. The state's 23 CCAs serve over 10 million customers, representing nearly 20% of California's load. Through their various programs, CCAs are laboratories of decarbonization. For example, CCAs are offering innovative programs well beyond efforts to accelerate decarbonization of energy supply including transportation electrification programs, building electrification programs, and energy efficiency programs targeted at the needs of the communities they serve.[1] Many CCAs are also

[1] See CCA programs, CalCCA, https://cal-cca.org/cca-programs/. See also attachment.

pursuing faster and deeper decarbonization than statewide standards, achieving levels of decarbonization comparable to the SB100 emissions levels more than a decade and a half early. For example, Peninsula Clean Energy is planning to offer 100% renewable energy on a time coincident basis to customer load by 2025.[2] Other CCAs Integrated Resource Plans show similar aggressive efforts to decarbonize energy supply at rates much faster than state mandates, with 9 CCAs beating the CPUC's 38 MMT target for 2030 and three reducing emissions below a 26 MMT benchmarks by 2030.[3] These efforts highlight the wisdom of the ARB's recognition in the 2017 Scoping Plan Update that actions of local government will be essential to meeting the state's climate change goals.[4] Simply put, CCAs are the vanguard of efforts to protect California from increasingly devasting impacts of climate change. Peninsula Clean Energy urges the Joint Agencies to work closely with the CCAs of those communities that have volunteered to move faster and carry a greater share of the effort to address climate change.

Here, Peninsula Clean Energy highlights a series of recommendations and actions of CCAs that represent key strategies for accelerating California's decarbonization.

Peninsula Clean Energy recommends that the Joint Agencies:

- Explore approaches to deeper decarbonization that comport with the latest scientific consensus. The SB 100 Study lays out a range of possible approaches, but only some of these are consistent with avoiding catastrophic climate destabilization impacts.
- Employ rigorous modeling of system reliability using geographic and temporally specific production cost modeling and loss of load studies, including specific modeling of the availability of imports from the entire Western Energy Coordination Council (WECC) region.
- Evaluate customer affordability by explicitly calculating the impact on total customer utility bills in comparison to other recently approved costs. The Joint

[2] Peninsula Clean Energy Integrated Resources Plan (Public Version), at 5, https://www.peninsulacleanenergy.com/wp-content/uploads/2020/09/Peninsula-Clean-Energy-2020-IRP-Narrative_Public.pdf

[3] Comments of Peninsula Clean Energy Authority, October 23, 2020 in CPUC Proceeding R.20-05-003, at 5. In addition to the list in Table 1, Sonoma Clean Energy's Preferred portfolio achieves benchmarks equivalent to 29 MMT. See https://sonomacleanpower.org/search/results?q=INtegrated+Resources+Plan

[4] California Air Resources Board, 2017 Scoping Plan Update, at 97.

Agencies should use the tools that California Public Utilities Commission has recently developed to evaluate affordability.

- Explicitly evaluate marginal generation costs against the costs of climate destabilization impacts resulting from inadequately decarbonized energy, including by using a realistic cost of carbon that includes all social costs of carbon.

The Joint Agencies should consider additional strategies to reach acceptable carbon targets.

Peninsula Clean Energy applauds the Joint Agencies' recognition that "[d]ecarbonizing the electric grid is imperative to achieve economy-wide carbon neutrality."[5] This statement is supported by the basic findings of numerous studies that have guided California's climate strategy and it goes without saying that this goal cannot be accomplished while the electricity sector has continuing high emissions. Consequently, it is very troubling that the study concludes that the SB 100 core scenario results in 24 MMT by 2045.[6] Peninsula Clean Energy believes this emissions rate does not go far enough or fast enough, because this rate target is unlikely to result in economy-wide carbon neutrality by 2050.

The Joint Agencies should evaluate these results in the context of the scientific consensus about what is required to avoid the most catastrophic impacts of climate destabilization. In 2018, the Intergovernmental Panel on Climate Change found that to limit warming to 1.5°C, global $CO_{2\text{-equivalent}}$ emissions should decline by about 45% from 2010 levels by 2030 and reach net zero around 2050.[7] For the California energy sector merely to meet these emissions targets, electricity sector emissions should decline from 90.3 MMT (2010[8]) to approximately 49 MMT $CO_{2\text{-eq}}$ by 2030 and to zero by 2050. These findings should guide our understanding of meaningful climate goals.

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[5] DRAFT 2021 SB 100 Joint Agency Report: Charting a path to a 100% Clean Energy Future, Docket 19-SB-100, TN# 235848 (SB 100 study), at 11.
[6] SB 100 Study, Figure 34.
[7] See Intergovernmental Panel on Climate Change (2018) Global Warming of 1.5C Report, Chapter 2, at 95, https://www.ipcc.ch/site/assets/uploads/sites/2/2019/05/SR15_Chapter2_Low_Res.pdf.
[8] See, California Air Resources Board, GHG inventory data, https://ww2.arb.ca.gov/ghg-inventory-data

If California is to adequately address the threat of climate destabilization, additional approaches will be required. Fortunately, deeper reductions should be achievable. The California Energy Commission's own Deep Decarbonization study suggested that the optimal electric sector emissions would be 8MMT by 2050 as part of a strategy that could save Californians $400 billion a year in present value.[9] This level would be a third of the SB100 scenario and on par with the "no combustion" scenario.[10] The Joint Agencies should continue this work to develop more effective approaches to deeper decarbonization than is currently reflected in the SB 100 study scenario.

Ultimately, the main strategy for achieving carbon neutrality will be planning to do so. The Joint Agencies will need to develop plans within the scope of their authority to not only achieve SB100 goals but to drive electricity generation emissions to near zero through more aggressive deployment of carbon-free generation, storage, and demand-side strategies. The no-combustion scenario of the SB100 Study, for example, results in emissions of 10 MMT $_{CO2\text{-}eq\ yr^{-1}}$ by 2045[11] while the Framing Study scenarios developed by the CPUC in the Integrated Resources Proceeding result in emissions between 10.3 and 15.5 10 MMT $_{CO2\text{-}eq\ yr^{-1}}$ by 2045[12], and the Deep Decarbonization Study suggests 8MMT may be optimal.[13] These studies should be taken as the road map for realistically approaching the zero emissions standard that the scientific consensus calls for (see above.)

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[9] Amber Mahone et al., *Deep Decarbonization in a High Renewables Future: Updated Results from the California PATHWAYS Model.* California Energy Commission. Publication Number: CEC-500-2018-012, at 40, available at https://www.ethree.com/wp-content/uploads/2018/06/Deep_Decarbonization_in_a_High_Renewables_Future_CEC-500-2018-012-1.pdf (June 2018)

[10] SB100 Study, Figure 45.

[11] SB 100 Study, Figure 45.

[12] CPUC Presentation in Integrated Resources Proceeding R.16-02-007, 2019-20 IRP: Proposed Reference System Plan, November 6, 2019, Slide 158, https://www.cpuc.ca.gov/uploadedFiles/CPUCWebsite/Content/UtilitiesIndustries/Energy/EnergyPrograms/ElectPowerProcurementGeneration/irp/2018/2019%20IRP%20Proposed%20Reference%20System%20Plan_20191106.pdf

[13] Amber Mahone et al., *Deep Decarbonization in a High Renewables Future: Updated Results from the California PATHWAYS Model.* California Energy Commission. Publication Number: CEC-500-2018-012, at 40, available at https://www.ethree.com/wp-content/uploads/2018/06/Deep_Decarbonization_in_a_High_Renewables_Future_CEC-500-2018-012-1.pdf (June 2018)

Feasibility

Peninsula Clean Energy appreciates the Joint Agencies' position that the goals of SB100 are feasible, even if the SB 100 study itself is directional only.[14] Identifying general approaches and shortfalls (e.g., high overall emissions) without attempting to create a binding plan is appropriate since the main procurement planning for the state is being conducted by the CPUC in the Integrated Resources Proceeding and by the California Energy Commission for LSEs under its jurisdiction.

The technical feasibility of decarbonization is supported by the range of studies demonstrating how to achieve even deeper decarbonization than is envisioned in the SB100 study. For example, SB100 study itself identifies strategies, such as increased load flexibility and no combustion approaches which result in considerably lower emissions at marginally higher cost. Similarly, the Deep Decarbonization study described above found 8 MMT to be the cost optimal emissions level for the electricity sector within the context of the entire economy.[15] Additionally, the 2035 Report from the Goldman School finds that generating 90% of energy from renewable sources is feasible by 2035, and would cost less than a grid based on current energy policies, with ancillary health and economic benefits reaching into the trillions of dollars nationwide.[16] The National Renewable Energy Laboratory also reports that a 90% renewable grid is feasible.[17] Thus, the conclusion that the goals of SB100 are feasible comports with existing research.

Build rates:

The deep decarbonization needed to avoid the worst impacts of climate disruption will require sustained and serious effort, as noted in the SB 100 Study. However, with the support of

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[14] SB100 Study, at 25-26.

[15] Mahone, Amber, Zachary Subin, Jenya Kahn-Lang, Douglas Allen, Vivian Li, Gerrit De Moor, Nancy Ryan, Snuller Price. 2018. Deep Decarbonization in a High Renewables Future: Updated Results from the California PATHWAYS Model. California Energy Commission. Publication Number: CEC-500-2018-012

[16] Goldman School of Public Policy, 2035 Report, available at https://www.2035report.com/

[17] *Renewable Electricity Futures Study (Entire Report)*
National Renewable Energy Laboratory. (2012). Renewable Electricity Futures Study. Hand, M.M.; Baldwin, S.; DeMeo, E.; Reilly, J.M.; Mai, T.; Arent, D.; Porro, G.; Meshek, M.; Sandor, D. eds. 4 vols. NREL/TP-6A20-52409. Golden, CO: National Renewable Energy Laboratory. ("Renewable Electricity Futures Study") http://www.nrel.gov/analysis/re_futures/.

the Joint Agencies, that effort should also be feasible. To ensure success, the Joint Agencies should coordinate more closely with all of the states' Load Serving Entities to evaluate feasible build rates and identify barriers to deployment of the necessary resources, including demand-side resources. The California Public Utilities Commission-jurisdictional LSEs have recently submitted Integrated Resources Plans that should provide an indication of the build rates planned by these LSEs to compare to the rates anticipated in the SB100 Study. The SB100 study indicates that historical rates have averaged 1 GW of utility scale solar and 300 MW of wind per year.[18] By comparison, the California Public Utilities Commission reports near term projections of new contracted resources include nearly 900 MW of solar, nearly 1 GW of solar plus storage, 700 MW of wind generation, and nearly 1.5GW of standalone storage contracted to be online by August 2021.[19] CCAs are planning to procure 20GW of renewable generation and storage through 2030.[20]

Peninsula Clean Energy recommends assessing the aggregated planned procurement identified in the Integrated Resources Planning proceeding at the CPUC.[21] Progress on necessary build rates to decarbonize can be evaluated based on both actual and aggregate planned procurement. These Integrated Resource Plans are grounded in each LSE's real-world deployment plans as informed by business judgment on cost effectiveness of particular resources. This should provide an important picture of what additional needs may remain to achieve California's climate goals and how much the Joint Agencies will need to act to facilitate faster build rates.

Reliability

Peninsula Clean Energy strongly recommend that future iterations of the SB100 Study incorporate far more robust assessments of system reliability. These assessments should use loss of load studies using zonal or nodal production cost models. Reliability cannot be meaningfully assessed solely with a capacity expansion tool, like RESOLVE, which fails to capture important

[18] SB 100 Study, at 20.
[19] M. Sterkel and N. Raffan, CPUC, Status of New Resources Expected, November 2020, https://www.cpuc.ca.gov/WorkArea/DownloadAsset.aspx?id=6442466860
[20] https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/calif-aggregators-to-seek-up-to-20-gw-of-renewable-energy-storage-by-2030-61247574
[21] California Public Utilities Commission Proceeding R.20-05-003, Order Instituting Rulemaking to Continue Electric Integrated Resource Planning and Related Procurement Processes.

spatial and temporal aspects of the grid. With time-dependent generation and storage becoming the backbone of the decarbonized grid, reliability measures must evaluate the probability of outage in all hours with Monte Carlo simulations over a wide range of conditions. In addition, these studies should capture critical dynamics throughout the Western Electricity Coordinating Council region, because the levels of available imports, especially during stressed periods, is proving to be a key variable driving reliability. Thus, the Joint Agencies should seriously consider detailed modeling of conditions across the WECC regions.

Assessments of reliability must move past using simply System RA constraints in capacity expansion. As was demonstrated in the stage 3 emergencies of August 14th and 15th of 2020, existing peak-based System RA constructs do not entirely capture the hourly dynamics that increasingly determine reliability and can fail to accurately capture the contributions of renewable technologies.[22] As time-dependent generation and storage become the bulk of resources, reliability measures will need to capture variation across all hours. Since reliability is a function of the entire system portfolio, numerous diversity benefits arise from the interaction of the mix of technology types on the grid. As a result, metrics which attempt to assign reliability values to individual resources and technologies will miss important dynamics. For example, neither the value of storage nor of solar can be accurately assessed without knowledge of the amount of solar to charge storage or storage to use excess solar generation to meet evening or overnight load. Thus, existing System RA methodologies are not appropriate measures in system levels studies such as the SB100 Study.

Beyond the Monte Carlo simulations, Peninsula Clean Energy also recommends additional studies of extreme event periods. First, future studies should examine grid performance during both high heat emergencies, with thermal derating of fossil gas resources and high loads, as well as during monsoon conditions of low solar and wind. Secondly, future work should examine the distribution of weather events to determine just how likely such high heat or monsoon conditions are, and just how much capacity is unavailable during such events. Currently, there is much quantitative discussion of theoretical "dunkelflaute" (German for "still and dark" days) conditions, but almost no qualitative evaluation of how common such days actually are and how

[22] See CAISO Preliminary Root Cause Analysis Mid-August 2020 Heat Storm, October 6, 2020, at 6, http://www.caiso.com/Documents/Preliminary-Root-Cause-Analysis-Rotating-Outages-August-2020.pdf. See also, Integrated Resources Plan of Southern California Edison, submitted to CPUC Integrated Resources Proceeding R.20-05-003, September 1, 2020, at 32.

much generation actually declines during such conditions. Without a solid quantitative evaluation of the scope and scale of real-world generation shortfalls, plans to address these issues are unlikely to result in optimal solutions.

Cost evaluations

Affordability is a fundamentally important consideration, even if it is not the only consideration in energy policy. Therefore, Peninsula Clean Energy recommends several additional analyses of the rate impacts of increasing penetration of greenhouse-gas free resources on customer bills, especially compared to the impacts of other approved costs.

First, future studies should translate the increases in portfolio costs to changes in total customer utility costs, as developed in the California Public Utilities Commission affordability proceeding R.18-07-006.[23] For example, the SB 100 Core scenario results in approximately $5 billion in additional annual total resource cost (TRC) in 2045, or a 6 percent increase over the 60% RPS reference in 2045.[24] Similarly, the no combustion scenario would cost an additional $7.8 billion annually or a 11.8% increase in portfolio costs. However, portfolio costs do not directly translate into increases in customer bills, because generation costs represent only a fraction of total customer bills. Thus, these portfolio costs should be converted into potential increases in customer bills, which should represent a smaller percent increase than the increase in generation costs, since these represent only a portion of total utility bills.[25] In addition, these costs would occur over the next 25 years, so the annual increase implied by these increases would be a small fraction of the total change over 25 years.

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[23] CPUC Decision 20-07-032

[24] SB 100 study, at 19

[25] For example, today generation costs are approximately 44% of total system average rates. (See California Public Utility Commission, California Electric and Gas Utility Cost Report (2019 AB 67 Report) April 2019, Table 1-9. Thus, a 6% increase in generation costs that make up 44% of the system average rate would increase the overall system average rate by 2.64%. Furthermore, a 2.64% increase over 25 years would occur if costs were to increase by 0.2% each year, compounded annually. Similarly, a 11.8% marginal cost of the no combustion scenario would represent an approximately 5.2% increase, or a slightly less than a 0.4% marginal compound annual growth rate.

Second, these increases should be compared to other cost increases proposed and approved over the last several years. For example, system average electricity rates have increased by 6% over the period from 2005 through 2018.[26] Recently, Pacific Gas & Electric Company (PG&E) has requested an 8% one-year increase in electricity generation rates (not including transmission and distribution revenue requirements) for 2020 from the CPUC in its most recent General Rate Case.[27] Similarly, Southern California Edison Company (SCE) implemented a rate increase which would increase average customer rates by 6.2% this year.[28] The CPUC approved rate increases for San Diego Gas & Electric Company that would translate into a 0.7% increase for an average inland customer[29]. (While 0.7% appears small, if that rate were compounded annually over 25 years, customer bills would be 19% higher than they are today). Similarly, overall transmission and distribution system costs have increased from approximately $24 billion in 2008 to over $50 billion ten years later in 2018, a growth rate far faster than the cost increases contemplated in the SB 100 study.[30] The context of other rate increases that have been typical over recent decades provides important context for discussions about affordability and the impacts on customers.

Third, the marginal annual cost increases implied by higher generation portfolio costs (if any) should be evaluated using the metrics developed in the California Public Utilities Commission's Affordability Docket.[31] In particular, once generation cost increases are translated into annual customer utility bill increases, the importance of these bill increases should be evaluated using the affordability ratio for the 20th income percentile, as developed in D.20-07-032. The affordability ratio evaluates the impact of utility costs relative to an approximation of disposable income. This calculation should allow the Joint Agencies to evaluate the actual cost

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[26] See California Public Utility Commission, California Electric and Gas Utility Cost Report (2019 AB 67 Report) April 2019.
[27] PG&E GRC Proceedings (Phase I), California Public Utilities Commission, https://www.cpuc.ca.gov/General.aspx?id=10432#:~:text=PG%26E%20had%20requested%20a%20rate,million%20for%202021%20and%202022.&text=PG%26E's%20revenue%20for%202019%20is%20%248.518%20million.
[28] Advice Letter 4172-E-B (April 6, 2020)
[29] CPUC Decision 19-09-051, at 2.
[30] See California Public Utility Commission, California Electric and Gas Utility Cost Report (2019 AB 67 Report) April 2019, Figure 2.1.
[31] CPUC Proceeding R.18-07-006, Order Instituting Rulemaking to Establish a Framework and Processes for Assessing the Affordability of Utility Service, see especially Decision 20-07-032.

impacts of generation portfolio costs on vulnerable customers under and assumption that marginal cost increases are distributed equally to all income percentiles.

Fourth, the Joint Agencies should recognize there are more effective approaches for addressing equity than decarbonizing too slowly, which creates costs of its own and represents a poor strategy for addressing equity concerns. Rate increases (if any, since some studies suggest decarbonizing the grid will lower costs at levels of up to 90-95% renewable energy[32]) need not be distributed equally across all customers. Instead, expansion of programs such as CARE/FERA and other equity programs can be used to address impacts on the most vulnerable. Addressing equity issues directly is preferable to trying to realize false economies that result in impacts of climate destabilization falling disproportionately on vulnerable frontline communities. Given the success of these programs to maintain affordability for the most vulnerable, the choice between decarbonization and affordability for the most vulnerable is a false one.

Social Costs of Carbon

All costs of decarbonization must be evaluated against the rapidly accelerating costs of damage from climate destabilization. California is extremely vulnerable to these impacts of climate destabilization and the costs of increasingly common climate disasters such as drought or fire quickly dwarf any marginal costs from increased electricity costs. For example, California's wildfire costs are expected to exceed $20 billion in 2020,[33] while fire-fighting costs have increased roughly 16-fold since the 1980s.[34] As these costs increase, marginal increases of a few billion dollars a year to avoid such impacts may prove a good bargain. If the estimates of these costs of climate destabilization are too low, models will deliver inaccurate results indicating higher than optimal carbon emissions.

This means that the Joint Agencies should carefully examine the values used for the social cost of carbon in their modeling. In the context of capacity expansion models, the social cost of carbon attempts to capture the present value of all damage caused by climate disruption discounted to the current date. If the values used for the social cost of carbon used is too low,

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[32] Goldman School of Public Policy, 2035 Report, available at https://www.2035report.com/
[33] Jill Cowan, *How much with the Wildfires cost?*, *New York Times* (Sept. 16, 2020), https://www.nytimes.com/2020/09/16/us/california-fires-cost.html
[34] *See* Emergency Fund Fire Suppression Funds, https://www.fire.ca.gov/media/8641/suppressioncostsonepage1.pdf

planners will fail to avoid serious damage, resulting in destroyed homes, businesses, communities, and families.

It appears that the capacity expansion model, RESOLVE, uses a social cost of carbon that is too low and so undervalues the benefit of faster and greater decarbonization. In the Inputs and Assumptions document, the low-cost trajectory is indicated as the default value used in the capacity expansion.[35] However, the values implied are far lower than are reasonable in light of other estimates, especially those developed by the White House Office of Management and Budgets as reported in the SB 100 Study.[36] (See Table 1 below)

The implied discount rate of the low carbon values used in the RESOLVE appears to be between the medium (5% discount rate) and low (7.5% discount rate) carbon cost values (or the highest discount rates, which downplay the importance of future climate destabilization damages.) The low and medium sets of values both derive from discount rates recognized as too high to be used to discount intergenerational transfers of the kind implied by climate destabilization. For example, the California Public Utilities Commission has adopted two discount rates for use in further studies: A rate of 3% reflecting the numerous costs not included in the IWG measures, including wildfire, and the weighted cost of capital.[37] As a result of the choice of discount rate, the values the Commission adopted in Decision 19-05-016 for study in the Social Cost Test include both the average 3% discount rate values, but also the much higher "high impact" values which represent the high end of climate risk that may occur (See Table 1 below). Both sets of values adopted by the CPUC are sharply higher than the low valuations given in the RESOLVE model. At minimum, the Joint Agencies should recognize that there may be significant disagreement about the tolerance for climate destabilization damages, such as droughts and large-scale wildfires, as recognized in Decision 19-05-016. This suggests the Joint Agencies should conduct sensitivity analyses with higher costs of carbon to assess the implication of assigning greater importance to climate damage to vulnerable communities in future years.

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[35] Inputs & Assumptions – CEC SB 100 Joint Agency Report, California Docket 19-SB-100, TN# 234532, at 85

[36] SB 100 study, at C-3.

[37] D.19-05-016, at 42 and 46.

Table 1 – Representative Social Cost of Carbon Values Series under Different Discount Rates and Assumptions

	RESOLVE Default Values	Low (7.5% Discount Rate)	Medium (5.0% Discount Rate)	High (2.5% Discount Rate)	3% Discount Rate	High Impact Values (from
	Inputs & Assumptions	SB 100 from IWG			D.19-05-016	
2025		$16.44	$54.01	$79.85	$45	$138
2027	$21.66					
2030	$25.25	$18.79	$58.71	$85.72	$50	$152
2035	$32.55	$21.14	$64.58	$91.59	$55	$168
2040	$41.06	$24.66	$70.45	$98.63	$60	$183
2045	$54.09	$27.01	$75.15	$104.51	$64	$197

Evaluation of cost increases on decarbonization efforts.

The Joint Agencies are also in an excellent position to evaluate whether these cost increases would be sufficient to hamper decarbonization efforts. As noted above, the Joint Agencies have the data needed to translate these marginal generation cost increases into marginal customer bill increases. These bill impact estimates can be used to assess the impact on other decarbonization efforts. Recently, in the Integrated Energy Policy Report proceeding, California Energy Commission staff reported on data underlying projections of transportation decarbonization, based on information on how changes in customer bills alter rates of EV adoption.[38] One component of that evaluation was an evaluation of a 20% increase in electric rate costs on EV adoption. At the electricity rate elasticities of EV demand identified by Energy Commission staff, these impacts of a 20% increase were modest. Using a similar approach, it should be a relatively straightforward effort to evaluate what impact a 2% or 4% or even 6%

[38] California Energy Commission, IEPR Program Workshop, December 3,2020, Session 1: Transportation Energy Demand Forecast Update - Commissioner Workshop on Updates to the California Energy Demand 2019-2030 Forecast.

increase in electricity rates would have on EV adoption in order to evaluate concerns that electricity sector decarbonization may affect EV adoption rates.

Load Flexibility

Peninsula Clean Energy also recommends the Joint Agencies expand exploration of demand-side resources and the value that these resources can provide in reducing costs. The Load Flexibility scenario in the SB100 provides a valuable start, while other academic studies, such as the NREL Renewable Futures Study[39] and the California Energy Commission's Deep Decarbonization study both suggest that increase load flexibility through Demand Response, Load Shifting and other demand side resources can greatly facilitate deeper levels of decarbonization at lower costs. Peninsula Clean Energy recommends the Joint Agencies deepen its examination these strategies and the business models and regulatory changes that would enable such strategies

Conclusion

Peninsula Clean Energy appreciates the opportunity to engage with the Joint Agencies on modeling to evaluate the outlines of the steps needed to decarbonize California's energy sector to safe levels.

Respectfully submitted,

/s/_____

Doug Karpa
Senior Regulatory Analyst
Peninsula Clean Energy

[39] Renewable Energy Futures Study, at xviii.

Attachment 1 – Peninsula Clean Energy Programs Summary

PENINSULA CLEAN ENERGY

PROGRAMS SUMMARY

Reinvesting in the community

Peninsula Clean Energy provides clean electricity at lower rates for the San Mateo County community. As a not-for-profit agency, we invest earnings into programs that further reduce carbon emissions, support local jobs, and deliver further savings and benefits to the community.

Electric vehicle (EV) incentives

Peninsula Clean Energy offers incentives on new and used electric vehicles. Our programs include rebates of up to $1,000 for the purchase of new EVs, up to $4,000 for used EVs. and (soon) up to $800 for new electric bicycles for income-qualifying San Mateo County residents.

EV Ready charging incentives & technical assistance

Our EV Ready program provides $28 million in incentives, technical assistance, and workforce development for the installation of EV charging in San Mateo County. The program is designed for workplaces, multi-family dwellings, colleges, public parking garages/lots, and other public locations.

All-electric building technical design assistance and training

The Electrification Technical Assistance program offers project design assistance and training from leading technical experts to architects, builders, developers, design engineers, contractors, and energy consultants to meet existing and emerging all-electric building and electric vehicle requirements.

Home upgrades

San Mateo County homeowners can get a rebate of $1,000-$1,500 for new heat pump water heaters from Peninsula Clean Energy in addition to the support available from BayREN's Home+ program. Our low-income home upgrade and electrification program offers up to $8,000 for home repairs, energy efficiency, and electrification measures.

Local government support

We support local government initiatives to advance decarbonization in our community, such as: building "reach" code assistance and technical training for all-electric buildings; support for municipal climate action plans and energy management; preliminary assessments for potential solar + battery storage projects on community shelters; and (soon) fleet electrification assistance.

Power On Peninsula resiliency initiatives

These programs help residents maintain power during outages, and help us move to 100% renewable energy. Residents who use electric medical devices may qualify for free portable back-up batteries, and we have partnered with Sunrun to provide up to a $1,250 rebate for homeowners on a solar + battery backup system.

PILOT PROJECTS

Supporting Innovation

Peninsula Clean Energy is fostering new technologies and developing new partnerships to increase access to affordable and sustainable clean energy solutions.

Low-power EV charging

We are assessing solutions to help condo and apartment buildings more easily offer EV charging for residents. Our low power pilot focuses on increasing access to charging at multi-family buildings which meet driver needs while avoiding expensive service upgrades.

Managed charging

By aligning clean energy supply and demand, we can reduce carbon emissions and lower energy costs. We are evaluating technology that allows EV drivers to conveniently shift EV charging to off peak hours and put less strain on the grid during the evening.

Curbside charging

Curbside charging can help improve access to charging and reduce carbon emissions. Peninsula Clean Energy's pilot program concentrates on overcoming barriers to implementing curbside charging so that it can be scalable and effective in the future.

Ride-hailing EVs

Peninsula Clean Energy has partnered with Lyft to increase the use of all-electric vehicles for ride-hailing. This pilot provides a weekly incentive to drivers so that renting an EV is less costly or the same price as a gas-powered vehicle.

Advanced residential heating

Harvest Thermal's innovative technology combines space and water heating into a unified system. This may help align energy supply and demand, thereby reducing utility costs and carbon emissions. The project supports further development of this technology and assessment of its costs and benefits.

Long-duration storage

Peninsula Clean Energy has partnered with Form Energy on a full-scale, proof-of-concept, battery system that will provide 100 hours of energy storage at dramatically lower-than-current costs. The system will be assessed in a lab setting to validate the technology and facilitate market readiness.