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SCE Comments for Draft AB3232 Assessment

Additional submitted attachment is included below.

June 11, 2021

California Energy Commission
Docket Office, MS-4
Re: Docket No. 19-DECARB-01
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Re: Southern California Edison Company's Comments on the California Energy Commission
Docket No. 19-DECARB-01: Draft Building Decarbonization Assessment required by
Assembly Bill 3232

Dear Commissioners:

On May 21, 2021, the California Energy Commission (CEC) hosted a workshop to present the draft Building Decarbonization Assessment required by Assembly Bill 3232 (Friedman, Chapter 373, Statutes of 2018) (AB 3232 Assessment). In the workshop, the CEC Staff presented an overview of the draft building decarbonization assessment and the scenarios developed to assess the feasibility and costs of various building decarbonization strategies to reduce greenhouse gas (GHG) emissions by at least 40 percent by 2030.

Southern California Edison (SCE) thanks the CEC Staff for the time and effort required to develop this crucial report. In addition, SCE appreciates the collaboration among the CEC, the California Public Utilities Commission (CPUC), the California Independent System Operator (CAISO), and California Air Resources Board (CARB) to create a path toward decarbonization that is safe, reliable, affordable, and equitable. SCE agrees with the Commissioners' workshop opening remarks, which acknowledged that buildings are a major part of the decarbonization solution, and that there is a need for a phased plan to create a long-term strategy. Therefore, we urge the CEC to include in the AB 3232 Assessment a proposed target adoption scenario with quantifiable electric heat pump targets and a technology adoption trajectory, so that state agencies can develop a clear and coordinated transition plan to shift buildings towards electric end uses. In addition, utilities, local governments, manufacturers, builders, and developers need an electric heat pump target for planning. SCE explains the importance of this request in detail below.

I. The CEC Should Propose the Least-Cost-Best-Fit Decarbonization Strategy in the AB 3232 Assessment; California Needs Quantifiable Electric Heat Pump Targets to Most Effectively Develop Building Decarbonization Policies.

During the workshop, the CEC characterized the AB 3232 Assessment as an informational document for the Legislature and stated that the CEC would not make a policy recommendation

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at this point. SCE recognizes that the AB 3232 Assessment is a technical analysis to inform the Legislature, but the study still can, and SCE recommends that it should, include a proposed least-cost-best-fit scenario for building decarbonization technology adoption and provide measurable electric heat pump targets. The addition of such a comprehensive scenario can enable the state to further develop short-term and long-term strategies to increase technology adoption. In addition, during the workshop, Commissioner McAllister commented that there needs to be a much greater scale in building decarbonization to meet state decarbonization goals. SCE agrees. In fact, the AB 3232 Assessment can play a key role to enable more prompt adoption of policy recommendations and building decarbonization goals by including recommended targets for electric heat pump adoption that would achieve the GHG reductions required to be studied in the Assessment in the most cost-effective way. For example, the CPUC can leverage measurable targets to develop a policy framework for its building decarbonization proceeding,¹ and the same is true for CARB in its 2022 Scoping Plan Update to Achieve Carbon Neutrality by 2045.² Aggressive decarbonization action is required now to meet the state's 2045 climate goals. In order to avoid any further delay on that path, SCE urges the CEC to make its strongest recommendation for a quantifiable target and the least-cost-best-fit strategy in the final report.

The draft AB 3232 Assessment states, “accelerating efficient electrification of building end uses in both new and existing buildings represents the most predictable pathway to achieve deep reductions in building emissions.”³ This is an important conclusion of the report to be highlighted and emphasized. While the listed set of seven strategies to decarbonize buildings is helpful, it does not create a clear path to inform the Legislature and other state agencies on how best to move forward.⁴ The seven strategies are evaluated in a siloed approach, which does not support a comprehensive least-cost-best-fit strategy. Choosing one of the seven strategies, such as gas energy efficiency, would cannibalize replace-on-burnout opportunities for building end-use electrification. Because there are a finite number of least-cost replace-on-burnout retrofit opportunities in any given year, electrification is likely to occur only in significantly higher cost early retirement electrification under this scenario. This situation, which raises GHG mitigation costs for all Californians, can be avoided if the AB 3232 Assessment factors in the replace-on-burnout overlap in a comprehensive scenario.

The report concludes, “[a] systemwide GHG emission approach is useful when assessing building decarbonization.”⁵ However, the next section of the conclusion states, “Existing policies and activities put California on track to achieve a near-40 percent reduction in overall buildings-related emissions by 2030, but this systemwide framing understates the need and opportunity for reductions of direct emissions. A higher target for 2030 would put buildings on a trajectory to approach the state's 2045 climate goals.”⁶ SCE recommends that the CEC go further in its recommendation regarding systemwide vs. direct emissions, and identify, based on its analysis, a

¹ CPUC Building Decarbonization Proceeding, R.19-01-011, Docket Card
<https://apps.cpuc.ca.gov/apex/f?p=401:5:0::NO:RP,5,RIR,57,RIR::>

² <https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan>

³ Draft AB3232 Assessment, p.16

⁴ The seven strategies are listed in page 4 to page 7 of the report. The strategies include: 1) building end-use electrification, 2) decarbonizing the electrification generation system, 3) energy efficiency, 4) refrigerant leakage reduction, 5) distributed energy resources, 6) decarbonizing the gas system, and 7) demand flexibility

⁵ Draft AB3232 Assessment, p.15 and p. 135

⁶ Id., p. 135

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recommended 2030 target for electric heat pump adoption to reduce direct emissions from buildings in order to be on a cost-effective path to achieving 2045 climate goals.

Lastly, SCE recommends that the AB 3232 Assessment provide metrics, such as economy-wide costs, GHG reduction, peak impact, etc. for all scenarios in the main body of the report. This would provide information for the most effective least-cost-best-fit scenario towards meeting the state's clean energy goals.

II. The CEC Should Adjust the Conclusions of this Report to Highlight that Direct Emissions Reductions are Necessary to Reach California's 2030 and 2045 Decarbonization Targets.

Even if the CEC determines it cannot include specific heat pump targets in the AB 3232 Assessment as described in Section I above, SCE strongly recommends that the Assessment at minimum emphasize the need for direct buildings emissions reductions by 2030. The inclusion of electric sector historical and planned GHG reduction as a building emissions reduction component in the systemwide emissions scenarios obscures the lack of substantial progress in reducing direct emissions in buildings or a clear plan for achieving the needed direct emissions reductions to meet California's 2030 or longer goals. The report correctly concludes that "this systemwide framing understates the need and opportunity for reductions of onsite emissions," however including the progress the electric sector has and will continue to make in reducing GHG leads to the potentially misleading conclusion that "existing policies and activities put California on a track to achieve a near 40 percent reduction in overall buildings-related emissions by 2030."⁷ The report leads with this conclusion, which is driven solely by electric sector improvements, which seems to imply that direct building sector emissions reductions are not needed to reach California's 2030 target. This creates a risk that policymakers take these conclusions as an indication there should be no focus on reducing direct building emissions, which is far from true.

SCE's Pathway 2045 and other studies, including E3's Deep Decarbonization in a High Renewables Future, sponsored by the CEC, find that significant reductions in direct emissions in buildings – primarily through efficient electrification – are critical for meeting California's 2030 and longer term decarbonization targets.⁸ The primary focus of the AB3232 Assessment should be the results of the direct emissions scenarios that demonstrate the need for clear policy interventions that lead to reductions in direct building emissions. SCE recommends that the AB3232 Assessment acknowledge this need for direct emissions reduction more clearly and highlight the urgency for developing near term support policies, market transformation programs, customer incentives, and building standards that significantly reduce direct building GHG emissions.

⁷ Draft AB3232 Assessment, p. 15

⁸ https://www.ethree.com/wp-content/uploads/2018/06/Deep_Decarbonization_in_a_High_Renewables_Future_CEC-500-2018-012-1.pdf

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III. The AB 3232 Assessment Should Use an “S-Curve” Technology Adoption Trajectory for Electric Heat Pumps that Better Reflects Consumer Adoption Patterns.

Similar to other technologies, electric heat pumps are likely to follow the popular economic growth theory of a technology adoption lifecycle curve, in which the acceptance of a new product or innovation starts slowly with innovators, and then increases rapidly with early adopters and early majority.

The draft AB 3232 Assessment identifies various scenarios of electric heat pump adoption in 2030. Given that technology adoption typically follows S-curves as depicted in the CEC’s Low Carbon Future study,⁹ a straight line trajectory, such as the one shown in Figure ES-6 of page 14 of the draft AB3232 Assessment, is unrealistic. While electric heat pumps for space and water heating are the most impactful products to reduce climate and air pollution for buildings, negative perceptions, the lack of customer awareness, and the need for workforce training create major barriers in heat pump adoption. The use of a more suitable technology adoption trajectory will demonstrate a more feasible scenario of the path that the state needs to take in order to meet its decarbonization goals.

IV. SCE Recommends the CEC Publish its Study Data so Stakeholders can Analyze the Input Assumptions.

Due to the amount of input assumptions needed for the AB 3232 Assessment, SCE respectfully requests that the CEC make the backup data publicly available so parties can understand the evaluation process and the analysis that led to the study’s conclusions.

Specifically, one of the input assumptions where SCE seeks clarification is the incorporation of upstream gas leakage in front of the meter. During the workshop, when a participant asked about the inclusion of upstream GHG emissions, the CEC Staff explained that upstream gas leakage was not explicitly included in the analysis due to the way that system boundaries were considered. However, page 41 of the draft AB 3232 Assessment states that upstream methane emissions were not considered because they were not part of building emissions inventory at CARB. In either case, this creates an inconsistency in evaluation between gas and electric generation. The system boundary for electricity includes upstream power plants, but the system boundary for gas is only downstream. The AB 3232 Assessment therefore should identify the upstream gas leakage for the baseline, similar to the way that refrigerants were treated, in order to show a direct and fair comparison. Upstream methane leakage is substantial, so it is important to include in the study even though it may not be precisely and accurately measured. Page 41 of the draft AB 3232 Assessment states that current reports indicate a methane leakage rate of 2.3%. Other reports have indicated higher leakage rates, especially for out-of-state gas deliveries

⁹ <https://ww2.energy.ca.gov/2019publications/CEC-500-2019-055/index.html>

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mostly from south-central US (Texas, Oklahoma, Kansas).¹⁰ One report has concluded that a leakage rate of methane over 2% causes higher methane concentrations than coal.¹¹

Understanding the data and scenarios would allow stakeholders to gain insight into the input assumption in assigning equal adoption percentages across residential and commercial electric water and space heating (e.g., the “Moderate” scenario assumes by 2030, 50% of replace-on-burnout sales for all four end uses equally, and all scenarios have similar “same percentage of sales or early retirement” across all four end uses). SCE’s Pathway 2045 individually assessed different levels of adoption to optimize impact towards the least-cost-best-fit strategy, which resulted in differing levels of adoption per end use by 2030.¹² Broadly assuming that 50% of sales would be equal across the four end uses could result in suboptimal scenarios, such as the net peak load increase in the AB3232 “Aggressive” scenario.¹³ Findings of E3’s Residential Building Electrification study conclude that residential building electrification actually results in slightly lower summer peak loads due to greater cooling efficiency with heating ventilation and air conditioning (HVAC) heat pumps.¹⁴ The availability of the backup data for the AB3232 Assessment would help clarify the difference in modeling hypotheses.

V. Conclusion

SCE thanks the CEC for consideration of the above comments and looks forward to continuing its partnership with stakeholders to finalize the AB 3232 Assessment. I can be reached at (626) 302-8442 to discuss any questions further at your convenience.

Very truly yours,

/s/

Michael Backstrom

¹⁰ South Coast Air Quality Management District Net Emissions Analysis Tool, Lifecycle Natural Gas Leakage Quantification Recommendation, February 20, 2018

¹¹ <http://link.springer.com/article/10.1007/s10584-011-0217-3>

¹² <https://www.edison.com/home/our-perspective/pathway-2045.html>

¹³ Draft AB3232 Assessment, Figure 12, p. 74

¹⁴ https://www.ethree.com/wp-content/uploads/2019/04/E3_Residential_Building_Electrification_in_California_April_2019.pdf