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NRDC, RMI, Sierra Club Comments on Energy Accounting Workshop

Additional submitted attachment is included below.

November 23, 2022

Via online submission

California Energy Commission
Docket Office, MS-4
1516 9th Street
Sacramento, CA 95814-5512

Re: Comments on the Energy Accounting Workshop held November 10, 2022 (Docket No. 22-BSTD-01)

Dear Commissioner McAllister and Staff,

We submit the following comments on behalf of the Natural Resources Defense Council, Sierra Club, and Rocky Mountain Institute in response to the presentations in the November 10, 2022 Energy Accounting Workshop for the 2025 Title 24 Building Energy Standards. Collectively, our organizations represent hundreds of thousands of concerned Californians who are advocating for affordable and equitable building decarbonization and clean air policies to help mitigate the climate crisis.

The development of systemwide cost and source energy metrics is foundational to the development of the 2025 standards. These metrics will affect which prescriptive measures and baseline system types will be cost-effective and therefore how much the 2025 code will be able to promote decarbonized building designs that are aligned with the state's requirement to reduce greenhouse gas emissions 40 percent below 1990 levels by 2030, as well as its objective to achieve carbon neutrality by 2045.

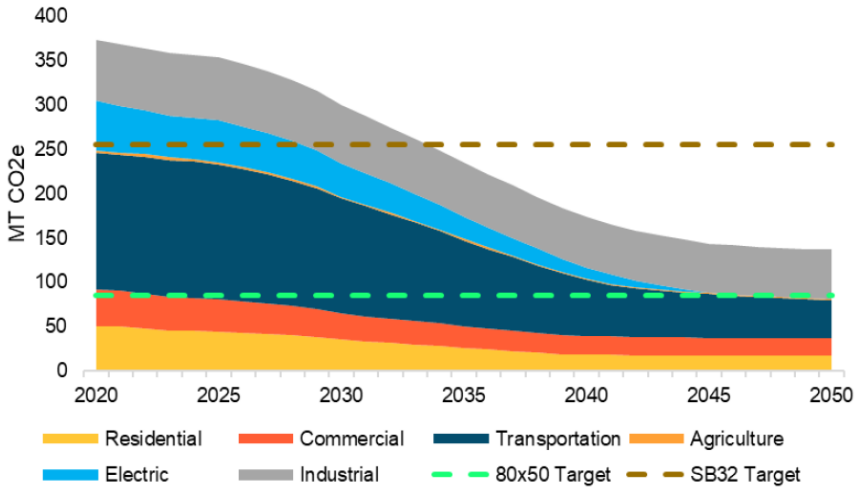
Overall, the metrics and underlying assumptions proposed in the November 10 workshop are a significant improvement from the July 18 proposal. In particular, we support the update to the underlying demand scenario to better align with California's emission reduction policies and the increased variable percentage of the nonresidential retail adder. We recommend that the CEC continue to evaluate an increased variable percentage for the residential retail adder. We support the CEC's proposal to change the name of the time dependent valuation (TDV) metric, with specific changes recommended below. Finally, we recommend that the CEC continue to work to develop updated weather files given the importance of these files, not just for Title 24, but

planning efforts across the state. We offer the following specific comments on the information presented:

1. **We support using the High Electrification Policy Compliance scenario as the underlying basis for the energy metrics, but recommend the CEC remove the arbitrary 8 percent annual growth cap on gas prices.**

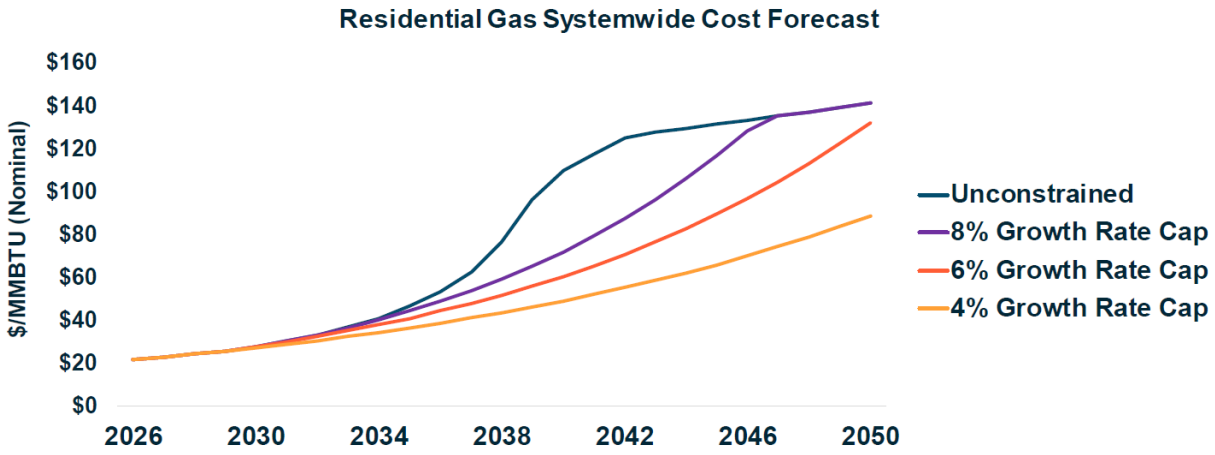
The demand scenario is foundational to the development of the cost and source energy metrics. The energy use and cost projections from the demand scenario directly affect the values of the energy metrics, which in turn underpin the prescriptive and performance baselines that can be set in the 2025 code. NRDC et al.'s comments on the July 18, 2022 workshop emphasized the importance of choosing a demand scenario that aligns with California's climate goals, such as those mandated by SB 32 and Executive Orders B-55-18, B-30-15, and S-3-05. The demand scenario should reflect the strategies needed to achieve economy-wide decarbonization and account for the expected penetration of heat pumps, electric vehicles, and renewable electricity to ensure that the code is aligned with these plans.

The CEC has proposed using the High Electrification policy compliance scenario from the IEPR as the demand scenario for the development of the Title 24 energy metrics. While this compliance scenario is an improvement from the scenario proposed in the July 18 workshop, it still falls short of achieving both the SB 32 target in 2030 and the 80% reduction in emissions by 2050 as shown in the figure below. While the High Electrification scenario appears to be the best available option in the IEPR, we strongly recommend that the CEC and other state agencies work to identify a demand scenario that achieves California's climate policies that can be used to align complementary state policies, such as the building code, with these goals.



The High Electrification scenario results in a reduction in gas throughput, which combined with a moderately increasing revenue requirement, results in increased cost per unit of gas as shown in the figure below. This increased cost of gas reflects the reality of the reductions

in gas use needed to meet the state's emissions reduction goals. However, the CEC has proposed an arbitrary 8% annual growth cap on gas costs. This unrealistically constrains gas price growth and will result in the installation of additional gas infrastructure, which will ultimately conflict with the financial interests of Californians, as early electrification is one of the key strategies identified to reduce the cost of achieving California's climate goals.[1] Especially given the fact that the underlying scenario does not even achieve California's climate goals, it is important to not arbitrarily limit gas price growth. We recommend removing this 8% cap and using the gas price forecasts predicted by the underlying scenario analysis.

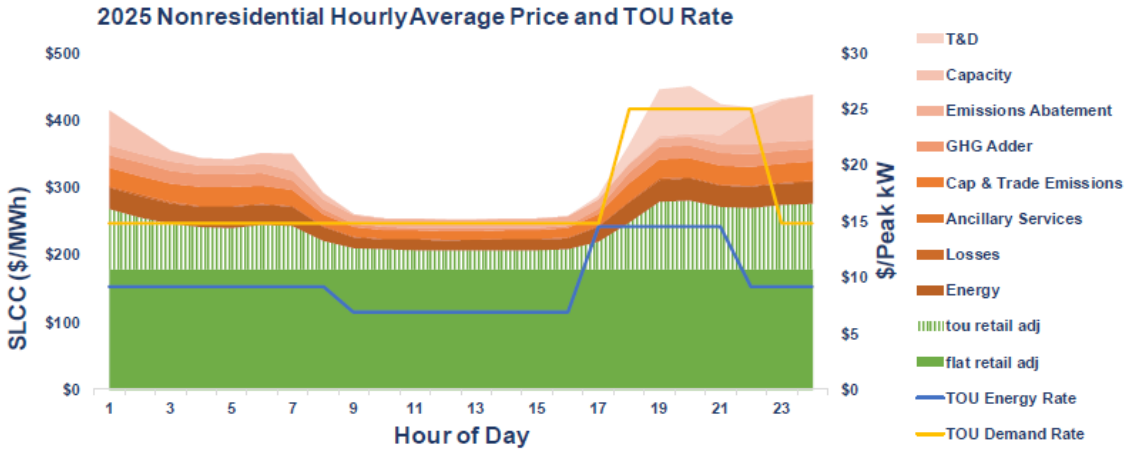


2. **We support increasing the variable percentage of the nonresidential retail adder to better account for time-dependence of electricity use and recommend that the CEC continue to evaluate the residential retail adder.**

The majority of the time dependent valuation (TDV)[2] value comes from the retail adder, which is used to adjust the TDV values to meet electricity rate projections. The retail adder is further divided into a fixed component, which is flat, and a variable component, which varies proportionally to the other components of TDV, as shown in the figure below.

[1] Aas, Dan et al., "The Challenge of Retail Gas in California's Low Carbon Future." CEC, April 2020. https://www.energy.ca.gov/sites/default/files/2021-06/CEC-500-2019-055-F.pdf

[2] In the workshop, the CEC proposed a new metric name "SLCC" which we address later in these comments. Since this metric name has not been finalized, we use the TDV terminology here for clarity.



In the 2022 code cycle, the CEC assumed that 15% of the retail adder varied based on time of use and the rest was fixed for both residential and nonresidential buildings. For 2025, the CEC has proposed increasing the variable percentage of the retail adder to 25% for nonresidential buildings and maintain the 15% retail adder for residential buildings. We are directionally supportive of the increased variable component of the nonresidential retail adder and recommend that the CEC evaluate a higher variable percentage for the residential retail adder. We are unable to assess whether the specific percentages proposed for the variable component of the retail adder are appropriate as the TDV values have not yet been published; we therefore cannot evaluate the impact of the variable retail adder on measure selection. However, we are concerned that the values proposed, particularly for residential, do not align with the time of use rates Californians are likely to see. Values aligned with historical time of use rates are not likely to reflect the time of use rates that Californians will pay over the lifetime of buildings built to the 2025 code. California's duck curve gets more pronounced every year and will continue to do so without complementary measures to shift load to low-demand hours. It is therefore critical that the TDV values adequately incentivize technologies that can shift load, store energy, and/or reduce load at peak times.

3. **We support changing the TDV terminology to be more descriptive and user-friendly, but recommend that the CEC make this transition carefully to avoid industry confusion.**

During the workshop, the CEC proposed changing the name of the TDV metric to systemwide life cycle cost (SLCC). In general, we support changing the name of TDV to something that is more descriptive and meaningful and changing the units of the metric to dollars. TDV is an abstract metric that is hard to understand and in units that are effectively meaningless. Changing the name to be more descriptive will make the code more accessible and understandable to new and infrequent users. Similarly, changing the unit of the metric to dollars will make it easier to understand and will have the added benefit of having results that can be translated outside of California.

However, changing the name and units of the metric comes with risks, in particular that the values may be misinterpreted as consumer costs, and we therefore urge the CEC to proceed carefully. Specifically, we recommend reconsidering the "life cycle" phrasing in proposed terminology. The term "life cycle cost" and acronym LCC imply life cycle cost effectiveness, including incremental first costs. This could be confusing to end users and be confusing in presentations from designers to owners, which may also look at life cycle cost-effectiveness from the owner's perspective. We instead recommend using the term "Long-Term System Cost" or something else that is as descriptive as possible of what the values formerly known as "TDV" actually are, without using the term "life cycle" or other terminology that is typically used to present information to owners.

Given the complexity of TDV and the potential confusion caused by this change, the CEC should decide on the new metric and be consistent in its messaging throughout the 2025 development cycle, beginning with the IOU stakeholder workshops. The change should be explained frequently and will also need to be added to trainings after the code is finalized. While it will take time for the industry to adjust to this new terminology, we overall support changing the name and units of TDV to be more descriptive and meaningful.

4. **We continue to support the use of a 30-year analysis period for all measures.**

We continue to support the CEC's proposal to expand the use of the 30-year analysis period to all measures. In previous code cycles, the CEC has used a 30-year lifecycle for residential measures and nonresidential envelope measures. Expanding the 30-year analysis period for all measures is better aligned with both state policy and building owners' interests. In terms of policy alignment, the 30-year analysis period better accounts for the long-term transformation of California's energy system, including long-term price forecasts, climate policies, and projected market trends. From a building owner's perspective, the 30-year time frame makes sense because heating, cooling, and water heating equipment replacements are strongly influenced by the type of system for which the building was initially designed. Converting a building from one system type, such as a gas boiler and variable air volume system, to another typically requires an expensive retrofit. Therefore, even though the individual pieces of equipment may have a less than 30-year life, the system type choice is likely to persist for at least 30 years and therefore should be evaluated along that time frame.

5. **The CEC should prioritize developing weather files that account for impacts of climate change.**

TMY weather files that account for the impact of climate change are necessary to develop robust forecasts of future energy savings from weather dependent measures. The CEC already accounts for the impact of climate change-induced extreme temperatures in its demand

forecasts,[3] and it should also account for the same when evaluating the potential value of energy savings and demand flexibility measures for consistency and accuracy.

To the extent that California will, in aggregate, experience more frequent and more extreme heat waves, electricity demand during summer evenings will increase[4] and the value of those measures that reduce demand or save energy during net-peak times will also increase. This needs to be reflected in two ways in the CEC's analysis. First, the TDV metric should account for the high marginal value of saving or generating electricity during summer evening hours when the grid is expected to be most capacity constrained and when carbon intensive resources are on the margin. Second, the energy savings potential for measures should account for the effects of higher temperatures during these same capacity constrained hours; higher temperatures imply higher cooling demand, which in turn implies higher energy savings potential.

Moreover, weather files are integral to multiple energy system planning activities such as reliability planning, capacity expansion through the CPUC's Integrated Resource Planning proceeding (IRP), and the CPUC's ex-ante estimates of energy efficiency measure savings. Updated weather files will improve all statewide planning processes. Brockway and Dunn summarize how climate change impacts aspects of energy system planning and further explains why climate change-adjusted weather files are necessary.[5]

We generally agree with basing this weather file update on CalAdapt's analysis of existing global climate change models (GCM) and look forward to providing constructive feedback throughout this process. We understand that this is a complex issue that requires careful analysis which may not be completed in time for the 2025 code cycle; however, some adjustments for climate change are better than none. The Northwest Power and Conservation Council conducted simple linear analysis to modify TMY files to conduct reliability and energy savings assessments for its 2021 Power Plan.[6] The Council's simplified analysis is a template that the CEC could follow until it conducts more robust analysis to develop climate change adjusted weather files for building energy standards and other energy system planning analysis.

We appreciate the opportunity to submit these comments and would welcome further discussion on any of the issues raised.

Sincerely,

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[3] See, for example, slide 12 in this CEC presentation: Garcia, Cary. "CEC Hourly Forecast Overview." CEC, June 22, 2021. https://www.wecc.org/Administrative/CEC%20Hourly%20Load%20Model%20Overview.pdf

[4] Auffhammer, Maximilian et al., "Climate change is projected to have severe impacts on the frequency and intensity of peak electricity demand across the United States." Proceedings of the National Academy of Sciences, 114 (8): 1886-1891. February 6, 2017. https://www.pnas.org/doi/10.1073/pnas.1613193114

[5] Brockway, Anna M. and Laurel N. Dunn. "Weathering adaptation: Grid infrastructure planning in a changing climate." Climate Risk Management (30), 2020. https://www.sciencedirect.com/science/article/pii/S2212096320300462#f0020

[6] Winkel, Carol. "Accounting for Climate Change in the 2021 Power Plan." Northwest Power and Conservation Council, April 27, 2020. https://www.nwcouncil.org/news/accounting-climate-change-2021-power-plan/

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