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NRDC et al Comments on July 18 2022 Energy Code Accounting Workshop

Additional submitted attachment is included below.

August 1, 2022

Dear Commissioner McAllister,

We submit the following comments on behalf of the Natural Resources Defense Council, Beyond Efficiency, Rocky Mountain Institute, and Healthy Building Research in response to the presentations in the July 18, 2022 Energy Code 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 topics covered in the workshop, in particular the lifecycle cost and source energy metrics, are foundational to the development of the 2025 standards. These metrics affect which baseline systems 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.

We appreciate the work of the CEC staff and their consultants to develop the information presented. However, we are concerned that the demand scenario considered for the 2025 standards are non-compliant with state decarbonization requirements. The proposed demand scenario fails to meet key state climate goals, including those set by Governor Newsom on 7/22/2022, and those mandated by SB 32 and Executive Orders B-55-18, B-30-15, and S-3-05, as shown in Figure 1 below.

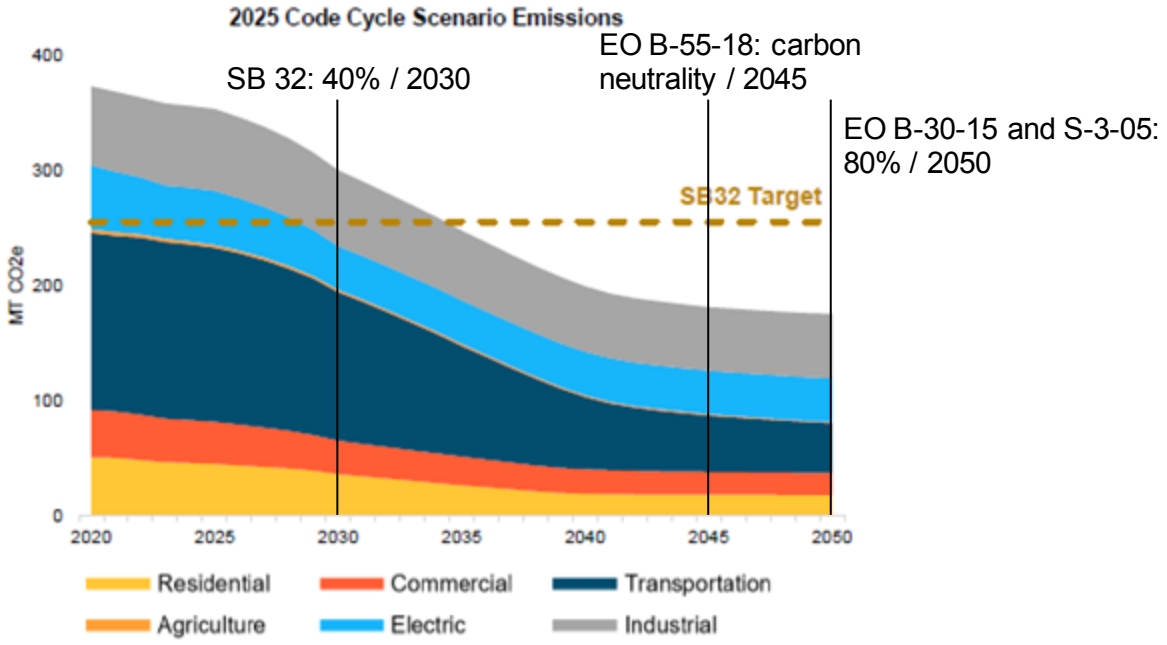

Figure 1: CEC's Proposed Demand Scenario for the 2025 Building Energy Code

We offer the following specific comments on the proposals presented at the workshop:

1. We Support the Following Proposals:

a) 30-Year Analysis Period for Non-Residential Buildings

We support the CEC's proposal to use a 30-year analysis period for all non-residential measures. Using a 30-year analysis period for all non-residential measures, not just envelope measures, is justified as described in the workshop because it better accounts for the long-term transformation of California's energy system, including long-term price forecasts, climate policies, and projected market trends. In addition to being better aligned with state policy, it also makes sense to use a longer analysis period from the building owner's perspective. This is because heating, cooling, and water heating equipment replacements are strongly influenced by the type of system the building was initially designed for. Converting a building from one system type, such as a gas boiler and variable air volume system, to another typically requires an expensive retrofit. So 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 on that timeframe.

b) The Addition of a 500 Square Feet Prototype

Accessory Dwelling Units (ADUs) are an increasingly common and important type of new construction, helping reduce housing costs, increase housing density, and decrease energy

costs and emissions. The unique needs of this type of housing should be better supported by its own prototype, which will allow the CEC to do cost-effectiveness analysis specific to these small ADUs.

2. We Urge the CEC to Make the Following Changes to its Proposals:

a) The Demand Scenario Should be Aligned with the State's Climate Goals

The demand scenario is foundational to setting cost and energy metrics that will align the 2025 code with the state's goals. The demand scenario represents the strategies implemented to achieve economy-wide decarbonization and reflects the expected penetration of heat pumps, electric vehicles, and renewable electricity. This demand scenario underpins the development of the cost and energy metrics used in Title 24. These cost and energy metrics subsequently determine the prescriptive and performance baselines that can be set in the next phase of the code development, impacting the CEC's ability to set a code that sends a strong decarbonization signal to the market, which is needed for California to reach its climate goals.

As described above, the proposed scenario does not meet California's requirement to "ensure that statewide greenhouse gas emissions are reduced to at least 40 percent below" 1990 levels by 2030 or its objective to achieve carbon neutrality by no later than 2045.[1] The CEC's presentation stated that the "selected scenario should represent a realistic load forecast based on on-the-books existing policies and expected future policies." California may not have all the policies necessary to meet those goals in place yet, but policies are never all in place at the beginning of an energy transition, they are developed and funded as the transition progresses. This was the case with solar, EVs, batteries, and will be the case with building decarbonization.

Selecting a scenario that isn't aligned with state climate goals would imply that the policies necessary to achieve these goals are not expected to be implemented and the state goals are not realistic. This contradicts the goal proposed by the CEC and confirmed by the Governor on 7/22/2022 of 6 million heat pumps by 2030, as well as the other goals set by the Governor of achieving 3 million climate-ready and climate-friendly homes by 2030 and 7 million by 2035.

California has proven with past efforts on energy efficiency and grid decarbonization, that it is capable of achieving ambitious goals. If the CEC believes economy-wide climate goals can be achieved, then selecting an overly conservative scenario not only undermines the transition by casting doubt on the state's commitment to decarbonization, it also exposes builders and designers to misaligned price signals and to the dilemma to either minimize compliance costs and face higher operational costs than forecast in the code, or face compliance cost penalties because the code is misaligned with future market conditions.

[1] Heath & Safety Code § 38566; Exec. Order B

Selecting a goal-aligned demand scenario doesn't preclude flexibility in the code development later, it just sets the right price and energy signals to develop the code and once the code is effective, for builders and developers to make the right economic and environmental decisions.

Selecting a goal-aligned demand scenario doesn't mean Title 24 Part 6 (mandatory energy code requirements) is the only policy to decarbonize new construction, it is one of many including market transformation programs, rate reform, emissions standards, state buildings, state housing policies, and more. But Title 24 Part 6 must do its fair share by aligning with climate goals so that the package of policy tools are all aligned and can collectively achieve the state's policy goals.

We urge the CEC to reconsider the proposed demand scenario and select a scenario that reflects the state's climate commitments.

b) The Retail Rate Adder Analysis Should Consider Time-of-Use (TOU) Rates that are More Differentiated than Current Residential Time-of-Use Rates

The retail rate adder makes up approximately half of the value of the lifecycle cost metric. As such it is important that it sends the right price signal so buildings are designed to minimize energy use on peak and shift load from peak to off-peak time periods. The primary decarbonization technologies can shift some or most of their load, this capability needs to be valued so that the grid benefits of these technologies are appropriately accounted for in the code. For example, EV charging and heat pump water heating can be almost entirely shifted off-peak. Space heating and cooling can be partially shifted through preheating and pre-cooling, and even more through energy storage.

We generally agree with the methodology presented by E3, with the following caveats:

1. **The TOU rates used for the analysis should be more reflective of the time-of-use rates that the average utility customer is expected to experience between 2026 and 2055**. The analysis uses current default TOU rates. These are transition rates from block rates to more dynamic rates, designed to minimize customer impacts. There are already opt-in rates available to EV and heat pump customers that are much more differentiated, and we expect price differentiation will increase significantly over the next 35 years, as customers' ability to automatically shift load becomes more ubiquitous. The CEC's own efforts in the Load Management and Flexible Demand Appliance Standards proceedings are moving the market in that direction. The analysis should use rates that reflect this evolution so they are more representative of what residents of newly constructed buildings experience over the life of these buildings.

2. **Winter morning net peak should be factored in**. The CEC's projections show that generation capacity is expected to become winter peaking as soon as 2035 as electrification of space and water heating increases demand in winter mornings before sunrise. This is already reflected in SDG&E's residential TOU rate and we expect that

the other IOUs will follow suit within the next 10 years. The "peakiness" assumptions made in the analysis may not capture these effects sufficiently.

c) CEC Should Include Out-of-State Methane Leakage in the Life Cycle Cost and Energy Metrics

CEC should account for out-of-state methane leakage in the hourly source energy metric for methane gas. In 2018, the Legislature passed Assembly Bill 2195 (Chau) that directed the Air Resource Board to estimate out-of-state fugitive emissions associated with methane gas imported into California. The Board published its finding in an August 2021 report[2]. The report finds greenhouse gas emissions equivalent to between just under 10 MT CO2e (100-year global warming potential) to over 25 MT CO2e (20-year global warming potential). These emissions are significant and should be accounted for in decisions that influence the choice of space and water heating energy sources in new buildings.

d) CEC Should Use Weather Files that Reflect Future Weather Conditions

CEC presented a set of updates to the weather files that, while the inputs were logical, resulted in changes that do not reflect the reality of the weather shifts that have already occurred and are going to occur over the next 30 years. Namely, the CEC weather updates featured increased heating demand and decreased cooling demand, which is contrary to the reality of California's changing climate. We recommend that the CEC use weather files based on future weather projections[3] to better reflect the conditions that buildings built under the 2025 code are likely to experience. CEC has already used Cal-Adapt.org climate projections in other utility planning projects.

In particular, the current weather files would lead to undervaluing envelope and equipment energy efficiency measures related to cooling, which would impact residents and building owners who would face higher cooling costs than modeled. While there are uncertainties regarding future design days, reflecting some level of increase in cooling needs would be more realistic than the proposed slight decrease.

3. Modeling Capabilities for Non-Residential HVAC Systems Are Foundational to the 2025 Code Being Aligned with the State's Decarbonization Goals

In addition to the issues raised during the workshop, we would like to also flag for the commission the importance of the nonresidential modeling capabilities in achieving a strong decarbonization code for nonresidential buildings in 2025. As submitted in NRDC's 4/26/22 comments on the docket, the inability of the nonresidential software to model key electrification technologies remains a major barrier to decarbonization in this sector. With the non-residential

[2] AB 2195 Out-of-State Natural Gas Emissions, https://ww3.arb.ca.gov/cc/inventory/pubs/reports/2000_2019/ab_2195_out_of_state_natural_gas_emissions.pdf

[3] E.g. https://www.weathershift.com/ and https://passipedia.org/planning/summer_temperature_tool

code penalizing system oversizing, this will result in penalties for designers who attempt to future-proof their designs.

As the CEC works to build the foundation for the 2025 code through work on weather files and metrics, we urge them to also work to develop these key modeling capabilities in the CBECC software. Like lifecycle metrics, these are foundational to the code and need to be resolved within the next year if they are to be utilized in the development of the 2025 code.

We appreciate the opportunity to comment.

Sincerely,

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