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Guttman & Blaevoet Consulting Engineers Metrics Workshop Comments

Additional submitted attachment is included below.



To: California Energy Commission Staff
December 2, 2019

Guttman & Blaevoet Consulting Engineers Comments 2022 Metrics Workshop
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Dear Commissioners-

We really appreciate all of the thoughtful updates and discussion on the 2022 updates to the metrics used in the performance approach and are encouraged by the progress towards balancing the fuel “playing field” as we transition to a fossil fuel free building design. The metrics workshop revealed a lot of hard work completed by the Energy Commission Staff and its consultants. I would also like to notably thank E3 for all their work on these updates. As an engineering firm with design, modeling, and commissioning expertise we have to navigate both compliance and performance within the CEC Standards. The past TDV metrics and for the 2019 code still remain a significant challenge to designers and especially for electrified building design under the current metric. The advancement to the 2022 “Dual Metric” proposed for Residential is promising but we have a few comments on the overall proceeding that hopefully the CEC will take into consideration before finalizing the metrics for 2022.

- 1. Provide the backup data:** First comment is to post the 2022 TDV data, TDS data, and hopefully the latest research version of CBECC-Com with these metrics included for testing 2022 data scenarios. Without the data we cannot accurately review the impacts of the 2022 metrics for real world buildings and determine if the dual metric proposed for residential buildings (and hopefully for non-residential buildings) is feasible, compliant, or hopefully corrects the imbalance for electrified buildings in the current standards. The data should be made available for public review with 60 day review period before the CEC finalizes the metrics.
- 2. The retail adder:** The 2022 TDV multipliers continue to keep a flat retail adder that does not align with most utility rates throughout the state. Since the retail adder is such a large portion of the TDV metric the “dampening” of the retail adder at the solar peak seems to prevent extremely beneficial technology like thermal energy storage from getting credit it would normally deserve to operate at the solar peak. In future rate structures and as we evolve to decarbonization of the grid time of use, especially the solar peak, will need to be enabled in the metrics chosen. The TDS metric will benefit this technology but the TDV metric will lag behind without an effective fix to the retail adder to reflect consumer costs with time of use rates. The retail adder should also reflect the higher cost of electricity in the ramping period and align with most retail rates shifting demand peak to the 4-8pm or 3-9pm peak periods.
- 3. Interim Baseline:** The workshop clearly laid out the desire to go to a single baseline approach in the coming standards but as we have in the 2019 Standards for residential the “fuel neutral” baseline for residential needs to be adopted for non-residential as well. It wasn’t clear that this was the intention of the Commission to do so in the workshop. We understand we need to get to an effective single fuel baseline, which will be high performance electric, but we need a fuel neutral baseline for the 2022 Non-Residential buildings. Some refer to this as a “fuel dependent” baseline but the concept is the same, if a designer wants to design an all-electric building, the baseline is an all-electric building. If they choose gas, they can have a gas baseline and the associated TDV/TDS metrics for the fuel chosen. ASHRAE 90.1 had a fuel independent baseline up to the 2013 Appendix G changes and we can likely adopt the similar system mapping from the ASHRAE 90.1-2010 Appendix G standards that many are already familiar with. This is not a large upheaval of industry; it was industry standard for the rest of the country and for many LEED Certified buildings throughout the state.

4. **Trade-offs between EDR1 & EDR2:** The proposed “no-tradeoff” rule between the EDR1 (TDV Metric) and EDR2 (TDS Metric) that was laid out clearly for residential buildings seems to be a good approach to maintain both efficiency and carbon. This approach, if adopted for non-residential buildings will be challenging IF we do not have a fuel neutral baseline in non-residential ACM approach. Without the active data for 2022 we cannot test this condition but we suspect that if we have a single gas baseline even with the updated 2022 TDV multipliers we will still see a penalty for all-electric buildings under the TDV metric versus the gas TDV multipliers. If there are no trade-offs, like a current prototype we are working on has seen, we pass the TDS metric by 28% but fail the 2019 TDV metric by -52% overall. In this comparison under current code metrics we save nearly 30% on carbon reduction versus the gas baseline building but CAN'T show compliance with TDV metric. I'm suspecting this is the case for 2022 as the TDV multipliers, with the dampening of the retail adder, haven't shifted that far. I'm happy to update this case study with the metrics once they are publicly available. For now I'm driving a highly educated guess that it's going to be a problem with a single fuel gas baseline, hence my earlier argument for a dual fuel baseline interim approach. IF not, we must allow for compliance either on TDV or TDS metric as an interim approach.
5. **Leakage Rates for Natural Gas:** As many commented on at the workshop the 0.7% leakage rate for natural gas in the system doesn't actively account for the total leakage of the system or the near term global warming impact on the 20 year period for methane. The CEC should not use the “conservative” leakage rate but rely on the more widely accepted 2.3%¹ leakage rate that in reality is much higher if you consider the disastrous leakage at Aliso Canyon and the methane flaring in production at the well heads at other states delivering to California. The 2.3% leakage rate is still likely conservative if you take into account total delivery leakage from well to tap in the homes. Even if we are using an aggressive assumption in methane leakage we will then be “conservative” when calculating climate impacts from GWP estimates. Using the “conservative” 0.7% leakage rate currently puts us squarely in the “underestimated impacts to the environment” that can severely undermine our view of the GWP potential.

Lastly, I want to thank the Commission and their staff again for taking on these enormous tasks. The pivot towards decarbonization in the time frame we are demanding for climate impacts is an incredible challenge! Challenge.... not impossible. We are here to support you in any way we can and hope that these comments are considered as constructive and helpful. Thanks.

Sincerely,



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¹ E3 Future of Natural Gas 7 Alvarez, Ramón A., et al. “Assessment of Methane Emissions from the U.S. Oil and Gas Supply Chain.” Science, American Association for the Advancement of Science, 13 July 2018, science.sciencemag.org/content/361/6398/186.full.

