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Guttmann & Blaevoet Consulting Engineers Electrification Comments

Additional submitted attachment is included below.

Guttmann & Blaevoet
CONSULTING ENGINEERS

To: California Energy Commissioners & Staff
October 20, 2020

Guttmann & Blaevoet Consulting Engineers Comments for 2022 Energy Code

Dear Commissioners and Staff-

Please allow me to thank and congratulate you all on all the very hard work you have put in on updating the software and quickly enabling the electrification technology. The improvements are welcomed and hope to see more of that as we progress. The Electrification workshop revealed a few elements that I think need further development and I hope you consider these detailed elements in the work plan.

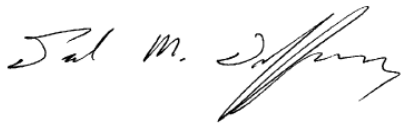
1. Heat pump central plant modeling, especially on the heating water loop functions need to be expanded. We know there are EnergyPlus limitations on these functions but all efforts should be made to update the engine, enable the full COP for heat pump central plants to be modeled. The results noted in NORESCO's presentation for the heat pump boiler results are likely reflecting a COP of around 1.0 similar to an electric boiler. No detail was provided for the modeled efficiency but knowing the limitations for modeling this system the results are likely skewed and would be improved drastically with the efficiency of the actual heat pump plant.
2. Heating and chilled water storage needs to be enabled and allowed to be scheduled for TDV savings. Currently DHW load modeling and other thermal storage cannot be scheduled to take advantage of low TDV and high TDV values. The functions of the CBECC-RES battery storage credits (Basic, TOU, Advanced DR) should be minimally enabled for thermal storage systems in CBECC-Com including DHW systems.
3. Enable Photovoltaic and battery storage in the non-residential software. With the latest software release the minimum prescriptive PV system is allowed for central heat pump water heating. There is still a discrepancy from the current solar thermal credit above the 20% or 35% SSF for thermal that PV systems do not get currently. PV generation should be treated as the equivalent "efficiency" measure as the solar thermal system currently is. The ability to pair the solar generation from PV and run the heat pumps to store the energy in the thermal tanks should be a credit enabled by the software and roundly credited by the TDV and TDS metrics. Currently there is no way to take advantage of that TDV or TDS credit enabled in the software. Battery Storage systems should be enabled for this same reason.
4. The presentations on battery and thermal storage options for decarbonization and grid harmonization needs to be enabled for all load shifting technologies equally and given the TDV credit when designed for. Most of the workshop "cost effectiveness" and results for modeling in TDV still don't reflect that cost savings potential or the TDV savings for thermal storage technology. We encourage enabling these whenever possible to show the full value of thermal response whether its battery storage, thermal storage, or building mass enabled by the architectural design.
5. For all of the PV, Battery storage, electrification measures, etc. please include the GHG impacts for the analysis. Since CBECC-Com is enabled with the CO2e/GHG calculations the results for cost savings should be presented with the emission results so the decision-making process is clear for choosing strategies both based on cost effectiveness and global

warming potential savings. We know that the utility rates and carbon impacts are not aligned at the moment and strategies for decarbonization should be clearly informed by both cost and carbon.

6. In future workshops on electrification we need to have further understanding of how the two EDR approach is going to be utilized with the TDV metric and the Time Dependent Source (or Carbon) metrics. The cost effectiveness and TDV only results presented in this workshop are going to be incredibly more complicated with the two EDR approach noted in earlier workshops. We need to have this analysis publicly available to inform decision making. I know Mazi said it would not be considered for this workshop but it's critical to the overall decarbonization discussion to have this detailed analysis completed and clarified from earlier workshops.

Again, thank you for all your hard work on decarbonization. We look forward to talking with you more about these issues and working with the Commissioners and Staff to get a really robust update to the 2022 Standards.

Sincerely,



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