

*Comment Received From: Home Ventilating Institute
Submitted On: 8/1/2022
Docket Number: 22-BSTD-01*

HVI Comment - Energy Code Accounting

Additional submitted attachment is included below.



01 August 2022

California Energy Commission
Docket Unit, MS-4
Docket No. 22-BSTD-01
715 P Street
Sacramento, California 95814

Re: Docket No. 22-BSTD-01, 2025 Energy Code Accounting

Dear CEC Staff:

HVI is an ISO 17065 compliant certification body and a trade association representing over 100 manufacturers located in North America, South America, Asia, and Europe. Our manufacturer members provide the residential and light commercial ventilating products that deliver essential indoor air quality to California's homes and businesses. HVI's Certified Product Database contains listings for heat and energy recovery ventilators (H/ERVs), bath/utility room exhaust fans, kitchen exhaust fans, dryer exhaust duct power ventilators, in-line supply and exhaust fans, whole-house fans, duct termination fittings, and soffit vents, among other products.

HVI appreciates the opportunity to present comments on CEC's proposed modifications to energy accounting for the 2025 energy code. In its workshop on July 18, 2022, CEC outlined several modifications that are expected to improve the estimates for energy savings associated with energy efficiency measures. **One additional item that should be considered is modification of dwelling unit thermostat setpoints to better align with values observed in California residences and with assumptions used in other codes and standards. Modifying dwelling unit thermostat setpoints will improve accounting while incentivizing energy efficiency measures.**

CBECC currently uses a thermostat heating setpoint of 60°F for 8 hours per day and 68°F for 16 hours per day. CBECC's thermostat cooling setpoint is a constant 78°F in cooling. These setpoints are far more conservative than setpoints assumed by ASHRAE 90.1, IECC, or those documented by a recent study of thermostat setpoints in California homes (see Table 1). As such, CBECC's setpoints are discounting the energy savings associated with various energy efficiency measures, when compared to the accounting used by other codes and standards. A 2016 study conducted by Nest¹ across 150,000 California residential thermostats and 13 million days of data identified a thermostat "comfort set point" in heating and cooling, which was the "typical setting when people are home and want to be comfortable." Arguably, occupancy and comfort-driven behavior are reasonable bases for establishing thermostat

¹ Blasnik et al. 2016. Supplemental Data for California Smart Thermostat Work Paper: Large scale analysis of the efficiency of Nest customer thermostat set point schedules with projected heating and cooling savings compared to baseline behavior using pooled Fixed Regression Model and Comfort Temperature Analysis.
<https://static1.squarespace.com/static/53c96e16e4b003bdba4f4fee/t/57978c141b631b286ea3dae8/1469549595079/Supplemental+Data+for+California+Smart+Thermostat+Workpaper++June+2016.pdf>

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setpoints for a building energy efficiency standard. Because it is an occupied comfort setting, the comfort setpoint identified by Nest for each climate zone is higher than the average setpoint for each climate zone and is determined as “the 90th percentile of the customer’s heating set points and the 10th percentile of their cooling set points.”

Source	Heating Setpoint (°F)	Cooling Setpoint (°F)
Title 24/CBECC	60-68	78
ASHRAE 90.1	70	75
IECC	72	75
Nest study, state average comfort setpoints	70	74

Table 1. Heating and cooling thermostat setpoints for various codes, standards, and studies. The state-wide Nest study heating and cooling setpoints were derived by post-processing the Nest study through application of a multifamily-starts weighting factor for each climate zone (derived from CEC data) to the Nest study’s comfort setpoint for each climate zone.

Figure 1 and Table 2 show both the average setpoints and comfort setpoints for heating and cooling in each climate zone (Nest data) as well as the state average heating and cooling setpoints.² While HVI recommends the use of occupied comfort setpoints for CEC accounting within CBECC, it is clear even from the average thermostat setpoints in the Nest data that CBECC’s thermostat heating setpoint should be revised upward and CBECC’s cooling thermostat setpoint should be revised downward. By revising CBECC’s setpoints, CEC can spur the specification of new energy efficiency measures in the 2025 cycle.

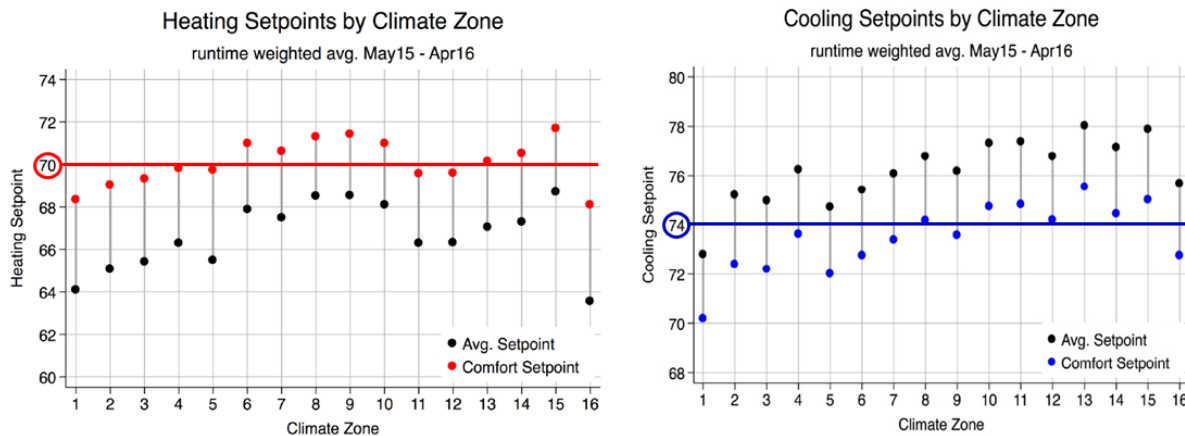


Figure 1. Nest data on California average and comfort heating and cooling setpoints. Horizontal lines represent post-processed, estimated state average comfort setpoints calculated by applying a multifamily-starts weighting factor for each climate zone (derived from CEC data) to the Nest study’s comfort setpoint for each climate zone.

² Note that the straight average across all climate zones is also equal to the weighted state average when the set points in each climate zone are weighted according to the number of existing dwelling units in each climate zone.

Climate Zone	Cooling Setpoints (°F)		Heating Setpoints (°F)	
	Average	Comfort	Average	Comfort
1	73	70	64	68
2	75	72	65	69
3	75	72	65	69
4	76	74	66	70
5	75	72	66	70
6	75	73	68	71
7	76	73	68	71
8	77	74	69	71
9	76	74	69	71
10	77	75	68	71
11	77	75	66	70
12	77	74	66	70
13	78	76	67	70
14	77	74	67	71
15	78	75	69	72
16	76	73	64	68
State average (°F)		74		70

Table 2. Heating and cooling thermostat setpoints from Nest study data.

Thank you for your consideration of this comment.

Sincerely,



Jacki Donner, CEO