DOCKETED	
Docket Number:	24-BSTD-03
Project Title:	2025 Energy Code Compliance Software, Manuals and Forms
TN #:	267728
Document Title:	Luke Morton Comments - Comments on 2025 Peak Cooling Test for Single-family
Description:	N/A
Filer:	System
Organization:	Luke Morton
Submitter Role:	Public
Submission Date:	11/24/2025 2:39:21 PM
Docketed Date:	11/24/2025

Comment Received From: Luke Morton
Submitted On: 11/24/2025
Docket Number: 24-BSTD-03

Comments on 2025 Peak Cooling Test for Single-family

Additional submitted attachment is included below.

California Energy Commission
Efficiency Division – Residential Building Standards
715 P Street
Sacramento, CA 95814

To whom it may concern:

This letter is coming as prompted from conversations recently with colleagues who are just now beginning to run compliance simulations for new single-family homes for permit applications in the 2025 code and observing results that are confounding and frustrating for their projects. Specifically, I wish to raise a concern that the additional Peak Cooling compliance test applied to newly constructed single-family residences in certain climate zones in the 2025 energy *is preventing efficient projects from achieving compliance and resulting in higher energy bills*.

I will elaborate on how I draw these conclusions later on in this letter, but for now simply leave them as posited.

Remedy #1: Remove the Peak Cooling Test

Restating my findings: I believe that the Peak Cooling Test is not only not necessary to meet its stated goals. Furthermore, I find it counterproductive. Given this finding, the first and most appropriate remedy is to remove the Test.

That said, I understand that this remedy is not actionable—this is 'done and dusted' as they say, at least in the broad strokes. I had opportunity to comment register my concerns and questions early on and had great engagement with the Commission for which I am thankful. I'm reiterating this remedy first since it still follows from my findings.

Remedy #2: Include PV and Battery in Peak Cooling Test calculation

The claims made by the CEC in support of the prudence of the Peak Cooling test consisted of concerns for 'grid impacts' and for energy costs. If we assume that there are actually grid impacts that might otherwise manifest, then PV and Batteries are well positioned to mitigate them and therefore should be included in the evaluation. The Peak Cooling period overlaps significantly when PV is still producing and when battery self-consumption would take over to mitigate the marginal additional load from space cooling.

Writ large, this is one of many reasons why the Peak Cooling is at best a 'short-term' solution, as the deployment of both utility and BTM PV and batteries will continue to change the landscape of when and how-much grid 'peaks' will manifest. Notions of 'grid-citizenship' promoted by California agencies have been teaching the virtue of 'self-consumption' in exactly this way to minimize grid impacts. And this is why the LSC metrics include some focus on future peaks—

those in the early morning of wintertime. The Peak Cooling test frustrates many of the measures that we would use in high-performance homes to properly allocate measures and resources for the long-term.

One parting observation—this allowance would not be able to address the highest growth area of single-family building stock which are units that are exempt from PV requirements due to size and shading—e.g. ADUs.

Remedy #3: Expand the threshold to more than 120% of the Standard Design Peak Cooling energy budget

Currently, the Peak Cooling test threshold is set at the Standard Design home plus 20%. This added margin was the result of a negotiation and is a bit of a 'line in the sand'. If this remedy is considered, then the question becomes 'What is the new threshold? What is the new line in the sand?' As I've indicated in Remedy #1, I believe the threshold should be infinite. Anything less than that will constrain efficient outcomes. So how about instead of 20%, it's 200%? That's less bad, and while less bad isn't good enough, it's at least better.

Commentary on Peak Cooling Memo

The memo's executive summary includes the following reasoning:

However, projects meeting the budgets for these two Energy Code metrics can still experience unintended peak period cooling energy between 4 pm and 9 pm that is higher than the standard design. This can result in exacerbating peak loads on California's electric grid during summer heat waves and higher utility bills for consumers.

Peak Cooling memo issue #1: Choice of metrics

First I will comment on the metrics used for this analysis. In just about every energy accounting workshop I've attended, it has been recapitulated in the accounting of efficiency that it not only matters the quantity of energy is saved, but when it was saved. Site energy generally elides this temporal aspect of when the energy is saved, including during peak hour pricing schedules. TOU pricing are a purposefully blunt pricing instrument to acclimate customers to a notion that the grid has a sort of 'rush hour' on occasion. But it is but a notion—the only thing cruder than a 4-9pm TOU peak pricing schedule is a flat schedule. Rates are set via a political process that is interested in cost-recovery which may or may not have any fealty to the electricity markets supplying our grid on a daily basis. In reality, the hours of actual terror in the ISO command center shake down to a set of CPP event days.

But as it turns out, the CEC created a better way… In the aftermath of the 2001 Energy Crisis with its artificially driven supply shocks, the Commission has used a bespoke hourly multiplier to emphasize times when efficiency resources connected to the grid have greater or lesser value in

terms of when energy is saved. It goes by many names—call it a "time-dependent" valuation (TDV) for energy which captures a 30-year net-present value of energy supply built up from all its components (and without all the weirding of the general rate case scrum) on an hourly basis, incorporating and interleaving other integrated resource planning efforts afoot at the Commission to keep the lights on, bills low, and skies ever more clear.

Now we call this metric Long-term systemwide cost (LSC), and it is purpose driven to capture grid impacts of the sort that are of concern in the Peak Cooling memo. And it is a much sharper policy instrument than site energy. It includes all those CPP events in a much more specific way that mimics real-world scenarios. Indeed, to date LSC/TDV has been the primary tool to leverage cooling measures beyond what site-energy alone would enable in past codes. It worked before, why not now?

I'm reviewing this not to condescend with the assumption that the Commission does not understand this, but rather to respond to the inadvertent condescension in the Peak Cooling Memo that we as stakeholders didn't understand this too.

To the point—the Peak Cooling Memo itself did not address this context. And I cannot easily countenance this. I'll ask the question in a sharper fashion.

If LSC is the best and sharpest policy tool to capture cooling energy (as it has done historically), why isn't it sufficient to be used again for this purpose? I know the Commission understood appreciated the changes to LSC in this challenging pivot into the Energy Transition. We had meetings about this-- we were all in this together. This additional Peak Cooling test demonstrates the Commission as faithless in its own metrics and proceedings. In this time where there have been enough challenges with *telling the story* for why Energy Code is both statutorily and actually prudent, this undermines that storytelling in many ways.

Peak Cooling Memo issue #2: No wholistic evaluation of 'grid impacts'

The Peak Cooling Memo evaluated many prototype single-family homes (a variety of sizes and including one ADU) during the peak cooling periods. The peak cooling energy use was presented as a delta of kWh during the Peak Cooling period (roughly over 900 hours a year) as well as a percentage. I could not see any effort to evaluate the overall energy grid impact for both heating and cooling seasons—a wholistic picture of grid impacts.

Let me try to put this peak cooling number into some kind of context—one project shows peak cooling period energy consumption of an additional 635 kWh for a ~5600 sq.ft. home. Averaged over the Peak cooling period, this is roughly an additional 700 Watts. Is this a big number? My numeracy in the context of building electrification indicates no. A heat pump water heater is roughly 800 Watts when it's operating in heat pump mode, and its 5000 Watts when the strip heat comes on. Cooking appliances are in the range (heh) of 2-5kW in operation, which is

exactly during the peak cooling period. A level 2 EV charger is roughly 8 kW. An additional 700 Watts of AC load in the context of all these other electrification elements which are being promoted by code seems arbitrary and capricious.

In other words, the Memo gestures that the additional consumption during Peak Cooling hours is a problem, but doesn't actually make the argument. In the context of all the other electrification efforts and inclusion of PV and batteries in our grid, I am hard pressed to steel-man this case in reality.

Peak Cooling Memo issue #3: Energy Costs

The memo cites 'higher utility bills' as a reason for the Peak Cooling Test. The Memo makes no attempt at evaluating utility bills. If the Commission believes this is an important part of the prudential case for the Test, then it is incumbent on the Commission to connect the claim with evidence.

My experience locally is that even now in areas with especially high TOU pricing, the on-bill savings from measures which optimize for LSC also demonstrate lower on-bill annual energy costs. In short, my experience runs counter to the Memo's claim. And that's now, with some of the highest TOU rates in the country. As these rates are mitigated and shift in time, I expect this will ever more be the case over the next 30 years.

Peak Cooling Memo issue #4: Small single-family homes (e.g. ADUs)

As long as has been cited to the Commission, ADUs are a challenging category of project with respect to the energy code. The criteria upon which they are evaluated in code compliance do not have salience with their real-world application. Many ADUs are installed in the rear or side yards of the Main Residence and often have significant site-shading characteristics which are not currently evaluated in the asset rating. Their positioning on the site is also oriented towards a specific outdoor programs to maximize utility of patios and such. It common to see ADUs which have glazing on only one or two elevations since the other elevations would have views to a fence.

Furthermore, the sizing of the glazing applied to ADUs does not typically scale down per the square footage since glazing is also designed around adult-sized humans. A mimimally glazed ADU might have at least a French door and two 3'x5' windows. On a 200 sq.ft. ADU, this amounts 35% glazing ratio. That glazing might be focused on West facing facades, which get doubly penalized for peak cooling.

Is the additional Peak Cooling energy going to manifest in reality? In many cases, when existing site shading characteristics are taken into account, then the reality of the project bears even less resemblance to the compliance process. In other words… no. It's apples vs. eggplants.

To be generous, the challenges that codes present to ADUs are overdetermined, and this makes it difficult for there to succinct remedies or responses. It suffices to say that the addition of the Peak Cooling Test will significantly exacerbate the challenges for permitting ADUs in a time when ADUs are seen as an important housing solution. The Commission has occasionally been responsive to this housing type in the past, but the Peak Cooling test is going to be several steps backwards and I am wary of the unnecessary antagonism this creates with housing advocates.

Peak Cooling Memo issue #4: What about multifamily?

Another very prominent residential housing type with near identical requirements is multifamily. That is, a single-family home can have two units, but apparently if it's the identical structure but with 3 dwelling units, then Peak Cooling isn't a problem? Taking the Memo's arguments facially, multifamily projects plausibly have the same, if not even greater impact on 'the grid' as well as high utility costs, but somehow they are not in need of protection? It's not even a goose/gander comparison. It's like saying what's good for the goose isn't good for the geese. The lack of attention on this topic in the memo is confounding.

Thank you for the time and consideration for this effort. I have long disagreed on the prudence of this compliance test, and as time has passed and I've heard more and more the Commissions case for this test, I become ever more convinced of my position (which is contrary to what I would have expected). This letter is not in its core substance, any different than what I have posted in the past, though I have attempted to include some remedies for compromise, if there is there is some compromise to be had.

At the end of the day, my concern about this policy is that it is counter to the Commissions goals, and as such I will have a difficult time 'telling the story' of the energy code. And that story should be 'The energy code isn't just a necessary idea… it's a <u>good</u> idea'. While many of my questions presented in this letter had the presentation of being rhetorical, I do actually intend them as questions looking for answers and insights. I look forward to any feedback (with the abundant time that Staff has to engage with lil ol' me) that the Commission has to offer in my positions here.

Luke Morton

Certified Energy Analyst

11/24/2025