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Response to Peak Cooling Update Memo

Additional submitted attachment is included below.

June 9, 2026

California Energy Commission
Efficiency Division – Residential Building Standards
1516 Ninth Street
Sacramento, CA 95814-5512

RE: Docket 24-BSTD-03 – Updated Peak Cooling Performance Modeling Approach
Response to Peak Cooling Update Memo (May 14, 2026)

We appreciate the California Energy Commission's continued efforts to refine the Peak Cooling performance modeling approach within the 2025 Energy Code. The updated memorandum dated May 14, 2026 reflects a thoughtful response to stakeholder feedback and acknowledges the need to balance grid reliability objectives with practical compliance pathways for builders.

In particular, we recognize and support the Commission's decision to revise the allowable peak cooling threshold from 20% to a range of 25%–30% depending on climate zone. This adjustment addresses observed discrepancies in compliance modeling and improves flexibility for an increased range of building designs.

While this update represents meaningful progress, we believe there remains an opportunity to further refine the Peak Cooling metric to better align with actual building-grid interaction, long-term Energy Code objectives, and real-world building practices.

Continued Limitation of Cooling-Only Metric
The updated approach continues to evaluate mechanical cooling energy during peak hours (4 PM–9 PM) as a distinct compliance metric relative to a standard design baseline. Although the increased threshold improves feasibility, the metric still:

- Focuses on mechanical cooling energy only, rather than total building energy use during peak periods
- Does not fully capture net grid demand, which is the underlying concern the metric is intended to address
- Relies on a percentage-based comparison to a baseline, rather than absolute or net system performance

As a result, even with the revised thresholds, compliance may not consistently reflect actual impacts on grid demand.

Role of Solar Photovoltaic (PV) Systems
The updated memo notes that modeled compliance packages include minimally code-compliant solar photovoltaic systems, yet these systems are not incorporated into the peak cooling metric itself. This represents a significant missed opportunity as Rooftop PV systems:

- Generate energy during daylight and late afternoon periods, which overlap with peak cooling hours
- Reduce grid-supplied energy through self-utilization
- Support battery charging, allowing stored energy to offset peak demand

While we acknowledge that exported energy to the grid is not always an effective reduction in localized peak demand, both direct self-utilization, and storage for later discharge are highly effective at reducing net grid demand during peak periods. Despite this, the current metric does not recognize on-site generation, and does not reflect the resulting reduction in peak-period grid reliance.

Role of Battery Storage

Battery systems further enhance peak demand reduction by shifting energy use away from peak periods.
The updated memo includes scenarios with PV systems but generally excludes batteries in prototype analysis, even though batteries are increasingly common in real-world installations. This omission is notable because:

- Battery storage directly addresses the Commission's peak demand concern
- Time-of-Use (TOU) rates incentivize discharge during peak hours
- Existing JA12 requirements ensure consistent cycling behavior tied to compliance

Together, these factors ensure that batteries are already operating in a way that supports peak load reduction.
However, the Peak Cooling metric does not incorporate battery discharge during peak hours, and does not reflect self-utilization of stored energy.

Measure Persistence and Consistency in Code Treatment

We understand and acknowledge longstanding concerns regarding long-term degradation of solar PV systems, and the potential for battery systems to be modified or operate differently over time. However, these concerns are not unique and are comparable to those associated with other measures that currently contribute to the metric, including:

- Window screens, shading devices and overhangs
- Continuous operation of IAQ ventilation systems
- Insulation performance over time
- Envelope air sealing

These measures are subject to aging, degradation, and occupant behavior, and are nonetheless credited within the compliance framework of the metric. In many cases, solar and battery systems are less dependent on occupant behavior than other measures. For example:

- Occupants can easily disable IAQ fans or modify operational settings
- PV systems operate passively
- Battery operation is increasingly automated and aligned with rate structures and compliance requirements

From a consistency standpoint, it is difficult to justify excluding PV and battery contributions while crediting other measures with similar persistence challenges.

Practical Design Constraints and Affordability

The updated memo emphasizes the goal of maintaining flexibility for builders, which we strongly support. However, even with increased thresholds, compliance pathways remain heavily dependent on envelope optimization. In practice:

- California residential development trends toward higher density, with homes often separated by 6'–10'
- This limits sidewall glazing and concentrates fenestration on primary elevations
- In many designs, 40%–60% of glazing occurs on a single façade

Under these conditions, envelope-based compliance strategies can become costly and restrictive, with opportunities to optimize design often limited by site and planning constraints decided well before energy analysis can be completed. Recognizing PV and battery contributions would provide a more balanced approach that reflects real-world construction conditions.

Recommended Refinement

We recommend evolving the Peak Cooling metric beyond a cooling-only framework to reflect total net energy use during peak hours. Specifically:

- Utilize the existing 8,760-hour modeling framework
- Evaluate net energy use (load minus generation) during peak periods
- Incorporate reasonable assumptions for PV self-utilization and Battery charge/discharge behavior consistent with JA12 and TOU rates

This would align the metric with actual grid impacts, recognize technologies already required or incentivized, improve compliance flexibility without undermining performance goals, and reduce over-reliance on envelope-only solutions.

Importantly, this refinement can be achieved through updates to compliance software (CBECC) without requiring fundamental changes to the Energy Code structure.

Conclusion

We commend the Commission for responding to stakeholder feedback and improving the Peak Cooling framework through the updated allowable thresholds. At the same time, we believe the next logical step is to align the metric more closely with total building energy interaction with the grid, including the contributions of solar photovoltaic systems and battery storage. This better reflects true grid impacts, supports cost-effective compliance pathways, and maintains flexibility for builders and designers, while leveraging existing Energy Code requirements and technologies.

We appreciate the opportunity to provide input and welcome continued collaboration on this important topic.

Respectfully,

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