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Venaera Comments on California's Building Action Plan

Thank you for the opportunity to provide input on California's Draft Building Action Plan. I strongly support the State's ambitious goals for building decarbonization, electrification, and load flexibility. Achieving these targets will require not only strong policy direction, but also pragmatic implementation pathways that address real-world compliance gaps, workforce constraints, and technology performance challenges.

I offer the following comments and recommendations to strengthen the specificity, effectiveness, and scalability of the Plan.

1. Strengthen Recommendations with Empirical Performance and Compliance Data

Many of the Plan's recommendations depend on assumptions about field performance, compliance, and installation quality, yet these remain difficult to quantify today.

The rate of noncompliance in building retrofits and HVAC installations is still not well characterized, and I appreciate that the CEC is conducting ongoing research into compliance rates and influencing factors.

Multiple studies and practitioner discussions suggest that a significant fraction of HVAC and heat pump installations are performed incorrectly, resulting in meaningful efficiency degradation (on the order of ~30% losses in some post-installation measurement and verification efforts).

Recommendation: Incorporate empirical field data on installation quality, maintenance shortfalls, and real-world efficiency losses into the Plan's cost and performance modeling (particularly around pages 112–113). This will ensure projections reflect actual delivered outcomes, not just rated equipment performance.

2. Make Workforce and Training Programs More Outcome-Oriented

The Plan appropriately emphasizes workforce development, but training and certification programs should more directly incorporate lessons from observed installation and maintenance failures.

Improper installation and lack of proactive maintenance remain major sources of lifecycle performance degradation, and most systems are not actively monitored after commissioning.

Recommendation: Expand training and certification programs to include:

Common failure modes identified in field studies

Installation verification best practices

Ongoing maintenance requirements

Emerging tools for automated diagnostics and performance monitoring

Systems capable of conducting their own measurement and verification could provide a cost-effective way to ensure persistent savings and compliance with benchmarking goals.

3. Prioritize Built-In Measurement & Verification (M&V) and Continuous Performance Standards

California's building decarbonization goals increasingly require not just equipment adoption, but verified operational performance over time.

Recommendation: The Plan should more explicitly support performance-based standards enabled through continuous data generation and embedded monitoring in HVAC and electrification technologies.

While onsite verification will remain necessary to prevent tampering and confirm proper operation, built-in M&V capabilities can dramatically reduce long-term enforcement costs and improve persistence of savings.

4. Streamline Permitting and Code Compliance Pathways

The Plan acknowledges that permitting and compliance processes are often more time-consuming and costly than they should be.

Rather than forcing more contractors and residents into burdensome processes that slow electrification progress, California should prioritize reducing unnecessary procedural friction.

Common drivers of noncompliance include:

Speed and cost pressures

Administrative complexity

Lack of awareness

Misaligned incentives

Recommendation: Continue revising permitting rules for heat pump installations and prioritize “compliance-by-design” approaches that reduce paperwork while maintaining safety and quality.

(Page 105: the second bullet point appears to contain a wording error “to maximize the cost” may need correction.)

5. Expand Access to Financing Through Standardized Contractor Participation

Financing is critical to scaling adoption. Programs such as the California Hub for Energy Efficiency Financing (CHEEF), including GoGreen Financing, represent an important tool.

Survey data suggests approximately one-third of respondents use financing to purchase heat pumps. However, contractor participation appears limited.

Recommendation: If contractor financing offerings are constrained by awareness and administrative barriers (rather than funding availability), the State should develop more “plug-and-play” financing pathways, such as:

Standardized contractor onboarding

Common forms and contact points

Outreach through unions and contractor networks

Automatic inclusion of financing education in statewide training programs

Contractors trained in retrofit electrification should also be supported in business development, project coordination, and access to state-supported work pipelines.

6. Improve Utility Signal Accessibility for Load Flexibility Innovation

The Plan’s emphasis on load flexibility is essential. However, technology developers often face challenges accessing clear utility signal requirements and the right points of contact.

Recommendation: Utilities and state agencies should improve the availability and standardization of demand response signal modalities to enable manufacturers to design native load flexibility into devices from the outset.

Better coordination here would accelerate deployment of grid-interactive efficient building technologies.

7. Balance Refrigerant Policy Practicality with Stronger Reclamation and Alternatives Development

The Plan appropriately recognizes the complexity of refrigerant transitions. Updated ASHRAE safety standards for low-GWP refrigerants may reduce implementation costs and remove previous design barriers.

Recommendation: California should continue strengthening refrigerant reclamation and reuse policies while supporting practical pathways for adoption and encouraging development of next-generation alternatives.

8. Invest in Innovation and Local Manufacturing Capacity to Meet Policy Goals

Finally, achieving California's electrification and decarbonization targets will require not only deployment of existing solutions, but active support for new technologies that close the gap between market readiness and policy ambition.

The State should ensure that innovative companies developing next-generation HVAC, modular electrification systems, embedded diagnostics, and grid-interactive technologies are not stymied by incumbent inertia or slow adoption pathways.

Recommendation: The Building Action Plan should more explicitly emphasize:

Investment in innovation and demonstration programs

Support for local manufacturing capacity

Accelerated pathways for novel technologies aligned with state goals

Continued expansion of programs like the EBD direct install initiative (\$567M) that trial emerging approaches

California's leadership depends on pairing pragmatic near-term deployment with sustained disruption and innovation.

And one potential typo: Page 105, second bullet point "to maximize the cost" seems incorrect?

Thank you again for the opportunity to comment. I strongly support the Draft Building Action Plan and encourage the CEC to further strengthen it through empirical performance grounding, streamlined compliance pathways, expanded financing access, and deeper investment in innovation and technology development to meet California's ambitious building decarbonization goals.