DOCKETED	
Docket Number:	24-BSTD-02
Project Title:	2025 CALGreen Rulemaking
TN #:	257554
Document Title:	Natural Resources Defense Council Comments - NRDC et al Comments on CALGreen 45-Day Language
Description:	N/A
Filer:	System
Organization:	Natural Resources Defense Council
Submitter Role:	Public
Submission Date:	7/1/2024 1:46:00 PM
Docketed Date:	7/1/2024

Comment Received From: Natural Resources Defense Council
Submitted On: 7/1/2024
Docket Number: 24-BSTD-02

NRDC et al Comments on CALGreen 45-Day Language

Additional submitted attachment is included below.

July 1, 2024

California Energy Commission
Re: Docket No. 24-BSTD-02
715 P Street
Sacramento, CA 95814
docket@energy.ca.gov

Re: Comments on 2025 California Green Building Standards Code (CALGreen) 45-Day Language

Dear Commissioners and CEC Staff,

The Natural Resources Defense Council (NRDC), Earthjustice, and RMI submit the following comments on the California Energy Commission's (CEC) 45-Day Language Express Terms for the 2025 Green Building Standards Code, Title 24, Part 11 ("CALGreen") published May 16, 2024.[1] CALGreen provides an important supplement to the Title 24 Building Energy Efficiency Standards in Part 6 ("Building Code") as it provides a framework for local jurisdictions that are interested in adopting additional energy efficiency and decarbonization measures.

The proposed CALGreen language contains two important provisions that we have advocated for inclusion in the 2025 Building Code. These include the requirements that encourage residential air conditioners to be replaced with heat pumps at the time of equipment failure[2] and that require heating systems for nonresidential and multifamily pool and spa alterations to use renewable energy sources or be met through heat pump heaters.[3] While we remain disappointed that these provisions were not included in the 2025 Building Code 15-Day Language, we strongly support their inclusion in CALGreen as a minimum step forward to promote these measures.

Strongly support encouraging replacement air conditioners to be heat pumps.

Section A4.204.1.1 would encourage the replacement of air conditioners with heat pumps at the time of equipment change out for jurisdictions that choose to adopt it. Replacing air conditioners with heat pumps at the time of burnout is a common sense policy that provides a cost-effective, low cost opportunity to lock in emissions reductions. The opportunity is huge: approximately 1.9 million central air conditioners are due for replacement in California today that could be affected

[1] CEC, 2025 Green Building Standards Code, Title 24, Part 11 ("CALGreen") (May 16, 2024), https://efiling.energy.ca.gov/GetDocument.aspx?tn=256431-4&DocumentContentId=92248.
[2] Section A4.204.1.1
[3] Section A4.204.1.2

by this requirement in the near term.[4] The magnitude of this opportunity also highlights the magnitude of a missed opportunity: air conditioners that are not replaced with heat pumps in 2026 will likely remain in place well into the 2040s, locking in the associated emissions for decades or burdening the homeowner with the cost of retiring the equipment early to meet future appliance emissions requirements. The requirement to install a heat pump would still allow for a gas furnace that operates in tandem with the heat pump, but would align with future appliance emissions standards by ensuring that heat pump heating is in place. We therefore strongly support the inclusion of this policy in the CALGreen 45-Day Language.

These air conditioner to heat pump retrofits are already happening in California and across the country today. The cities of Aspen, CO, Portola Valley, and San Mateo all currently have requirements that air conditioners be replaced with heat pumps at the time of equipment change out. They are also happening throughout California under the TECH program: as of May 2024, there had been 9,724 central AC and furnace to heat pump retrofits through the program.[5] Including the provision in CALGreen will provide a framework for other localities throughout the state to adopt the provision and continue to build on this progress throughout the state.

In addition to the fact that these systems are available and feasible, there is a large risk in continuing to allow the installation of air-conditioners only, due to the likelihood of existing and future appliance emissions standards. The Bay Area Air Quality Management District (BAAQMD) will require zero-emissions space heating equipment starting in 2029. Encouraging air conditioners to be heat pumps in Bay Area jurisdictions would protect residents against the potentially costly scenario, when their furnace dies in the future, of having a newly installed AC that they must replace with a heat pump due to the BAAQMD policy, when they could have made this change for minimal incremental cost at the time of their AC installation. In the case of a homeowner who replaces an air conditioner in 2026 and then needs a furnace replacement in 2029, they would likely need to remove the relatively new air conditioner and replace it with a new heat pump. The cost of having to effectively pay to replace the equipment twice would swamp the incremental cost of installing a heat pump. It is likely that similar policies will be enacted throughout the state, emphasizing the need to safeguard against this potential high-cost outcome.

As noted in the CEC's analysis this measure is cost-effective in all climate zones except for 15 (due to low heating use in that climate zone). The CEC's analysis shows a low 30-year incremental first cost for a heat pump compared to a standard AC replacement: $1,008 for a 3-ton unit, as shown in Figure 1.[6] This number is based on cost data collected from a small number of contractors in the summer of 2023. However, a more recent and robust data set collected by

[4] Earth Justice, NRDC, RMI, and Sierra Club Joint Comments on AC to HP Replacement Opportunity, https://efiling.energy.ca.gov/GetDocument.aspx?tn=249551&DocumentContentId=84193
[5] https://techcleanca.com/public-data/ Updated 5/31/2024
[6] California Energy Commission, *2025 CALGreen Technical Measure Report Single Family Heat Pump Replacements*, January 2024

Opinion Dynamics in February 2024 based on a survey of 64 TECH Program contractors shows even lower costs.[7] Based on the data collected by Opinion Dynamics, the 30-year lifetime incremental first cost of a 3-ton heat pump is only $138, as shown in Figure 2. We recommend that the CEC update these numbers for future analyses, which would improve the cost-effectiveness of this already cost-effective measure.

CEC Report - 3-ton unit						
Calendar Year	*Standard Design Replacement Schedule*	*Standard Design Future Cost (Real)*	*Standard Design Present Value*	*Proposed Design Replacement Schedule*	*Proposed Design Future Cost (Real)*	*Proposed Design Present Value*
2026	AC fails, install new AC, keep existing furnace	$9,528	$9,528	AC fails, install new HP, keep existing furnace	$11,877	$11,877
2036	Furnace fails, install new 95AFUE furnace	$8,763	$6,521	Furnace fails, replace fan motor	$1,200	$893
2041	AC fails, install new AC	$9,528	$6,116	HP fails, install new HP and air handler	$16,206	$10,402
Total	-	-	$22,164	-	-	$23,172
					Incremental Cost	$1,008

Figure 1: CEC analysis of 30-year first cost of AC replacement compared to AC to HP replacement.

TECH Data 3-ton unit						
Calendar Year	*Standard Design Replacement Schedule*	*Standard Design Future Cost (Real)*	*Standard Design Present Value*	*Proposed Design Replacement Schedule*	*Proposed Design Future Cost (Real)*	*Proposed Design Present Value*
2026	AC fails, install new AC, keep existing furnace	$9,777	$9,777	AC fails, install new HP, keep existing furnace	$11,201	$11,201
2036	Furnace fails, install new 95AFUE furnace	$5,951	$4,428	Furnace fails, replace fan motor	$1,200	$893
2041	AC fails, install new AC	$9,777	$6,275	HP fails, install new HP and air handler	$13,281	$8,525
Total			$20,481			$20,618
					Incremental Cost	$138

Figure 2: 30-year first cost analysis of AC replacement compared to AC to HP replacement using Opinion Dynamics data.

[7] Opinion Dynamics, *Tech Clean California: Incremental Cost Study,* February 12, 2024

Strongly support requiring altered pool and spa heaters to use renewable fuel sources or be heat pumps.

Sections A2.401.2 and A5.204.1 would require replacement pool and spa heaters in multifamily and nonresidential pools to be heated by solar energy, other renewable or site-recovered energy, or a heat pump water heater. This measure was originally proposed in Part 6 as part of a measure that represented the single measure with the largest gas savings identified by the CASE Team and would have saved an estimated 61,293 metric tons CO2e in the first year alone.[8] The existing pool and spa component of this provision represents significant savings. While we are disappointed that this measure was not included in Part 6, we support its inclusion in CALGreen which allows jurisdictions to adopt it, harnessing the cost-effective energy savings and emissions reductions available from pool and spa heaters.

We appreciate the opportunity to submit these comments and welcome further comments on any of the issues identified here.

Sincerely,

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[8] Gutierrez et al., *2025 CASE Report Swimming Pool and Spa Heating, p. 85*