

**DOCKETED**

<b>Docket Number:</b>	20-DECARB-01
<b>Project Title:</b>	Building Initiative for Low-Emissions Development (BUILD) Program
<b>TN #:</b>	234266
<b>Document Title:</b>	Harvest Thermal, Inc. Comments - Comments by Harvest Thermal, Inc on the BUILD Implementation Plan
<b>Description:</b>	N/A
<b>Filer:</b>	System
<b>Organization:</b>	Harvest Thermal, Inc.
<b>Submitter Role:</b>	Public
<b>Submission Date:</b>	8/7/2020 2:47:04 PM
<b>Docketed Date:</b>	8/7/2020

*Comment Received From: Harvest Thermal, Inc.  
Submitted On: 8/7/2020  
Docket Number: 20-DECARB-01*

**Comments by Harvest Thermal, Inc on the BUILD Implementation Plan**

*Additional submitted attachment is included below.*

# Comments by Harvest Thermal on the Building Initiative for Low-Emissions Development (BUILD) Implementation Plan

## Docket 20-DECARB-01

*Submitted August 7, 2020*

### Executive Summary

Harvest Thermal (“Harvest”) is a California-based company developing innovative and affordable deep decarbonization solutions for heating, hot water, and cooling. Harvest appreciates the opportunity to provide comments on the Building Initiative for Low-Emissions Development (BUILD) program, which will be instrumental in transitioning the California building equipment to low emissions alternatives.

#### **Summary of Comments:**

1. Under the proposed BUILD program design, thermal storage for space heating would be ineligible for BUILD kicker incentives. This is a problem because this technology is being developed under EPIC grant GFO 19-301 and will be commercially available early during the BUILD program life. BUILD should be technology neutral and not exclude technologies that have the potential to decarbonize heating at a lower cost. Thermal storage and load shifting can reduce carbon emissions at a lower cost than electro-chemical storage for heating applications. California needs to enable all decarbonization technologies to develop and let the market pick those that will meet Californians’ needs at the lowest cost.
2. Under the proposed BUILD program design, kicker incentives are available for technologies using mid-GWP refrigerants (GWP < 100). While we agree with supporting these mid-GWP technologies, further incentives should be given for low-GWP solutions (<100 GWP) to incentivize manufacturers to introduce these capabilities into California and help accelerate this necessary transition.
3. Under the proposed BUILD program, it is not clear how systems combining multiple benefits will be incentivized, for example systems offering both heat pump water heating and heat pump HVAC in a single unit. Near-zero emission technologies that combine multiple benefits are being developed under EPIC grant GFO 19-301 and will be commercially available early during the BUILD program life. Solutions that combine multiple performance benefits can help California achieve its emissions goals more effectively from an affordability, footprint, and resource usage perspective. The BUILD program implementation should clarify that systems cumulating multiple performance benefits are eligible for each individual incentive and kicker incentive that they deliver.

## 1. Kicker for Thermal Storage

### **Under the proposed BUILD program design, thermal storage for space heating would be ineligible for BUILD kicker incentives**

The Building Initiative for Low-Emissions Development (BUILD) Implementation Plan incorporates Kicker Incentives available to offset the costs of additional or more advanced technology and costs borne by the developer to support electrification that are not captured in the base incentive calculation.

Table 4.2 lists eligible technologies for the kicker incentives to include Battery Storage Systems that are listed on the Solar Equipment Lists - this is limited to electro-chemical batteries and compliant with Joint Appendix 12-. Table 4.2 also refers to heat pump water heaters that provide load flexibility (and are compliant with Joint Appendix 13).

**Thermal storage can reduce space heating emissions just as well as electro-chemical storage, potentially at a lower cost.** The benefit of on-site storage can reduce grid dependence and GHG-emissions by load shifting while supporting the transition of the grid to renewable options. Electro-chemical batteries coupled with solar PV deliver low carbon energy to operate electric space conditioning and water heaters. However, the benefits of storage are not limited to electro-chemical batteries. Other forms of storage, particularly thermal storage, can yield similar and in some cases additional benefits, but are not included on the CEC Solar Equipment List, eliminating them from consideration for the kicker incentives in accordance with the current BUILD Implementation Plan.

Similarly load flexibility using thermal storage is not limited to heat pump water heaters. For example technologies incorporating thermal storage for space heating and hot water systems with built-in load shifting are included as part of the GFO 19-301 EPIC funding awarded to Franklin energy and their sub-contractor Harvest Thermal Inc. and will be deployed in over 30 homes as part of that project.

Thermal storage for space heating can shift most or all of the space heating load, which in many areas of the state is significantly higher than water heating loads in single family homes. In contrast, smart thermostats can only shift a fraction of the space conditioning load through pre-heating and pre-cooling.

Shifting space heating loads is particularly important to reduce GHG emissions on winter mornings, before sunrise, when space heating loads peak and renewable energy is limited on the grid. Load shifting can help electrify space heating with minimal increase in winter morning electricity demand.

### **Thermal storage and load shifting should be eligible for BUILD kicker incentive on a level-playing field with other storage technologies.**

Given the potential decarbonization and affordability benefits of thermal energy storage for both space conditioning and hot water, eligibility for kicker incentives for energy storage and batteries should not be limited to the electro-chemical batteries included in the CEC Solar Equipment List.

The level of the kicker incentives for this type of technology should scale with the load shifting benefits either in GHG emissions reduction or MWh/year load shifting capability.

## 2. Additional Kicker for Low-GWP Refrigerant Technologies

**Under the proposed BUILD program design, technologies using refrigerants with a mid-range GWP < 750 will be eligible for the kicker incentives, but there are no additional benefits for low-GWP (<100) technologies.** The Building Initiative for Low-Emissions Development (BUILD) Implementation Plan incorporates Kicker Incentives available to offset the costs of additional or more advanced technology and costs borne by the developer to support electrification that are not captured in the base incentive calculation. Table 4.2 lists eligible technologies for the kicker incentives to include refrigerants with a GWP < 750.

**One product using refrigerants with GWP < 100 is already available in the California market and many more exist in markets outside of California.** Achieving California's emissions reduction would benefit from incentivizing manufacturers to introduce such low GWP into the market, off-setting the costs that they would incur in doing so, and allowing this beneficial technology to more rapidly be integrated into deployed solutions.

**Refrigerants with a GWP < 100 provided additional emissions benefits.** They should therefore be eligible for a higher level of kicker incentives to help build this market. We recommend doubling the level of the incentive for heat pumps using refrigerant that meet this criterion.

## 3. Cumulative Kicker Incentives

**Under the proposed BUILD program design, Chapter 4 states that incentives will be provided for combinations of different technologies, however it is not clear how it will incentivize a single technology which combines several capabilities.** For example, a single heat pump can deliver both heating and hot water. It is not clear which incentives such technology would be eligible for.

**Combined systems can deliver benefits just as well as separate systems, potentially with lower cost and footprint.** For example, technologies combining space heating and hot water systems are included as part of the GFO 19-301 EPIC funding awarded to Franklin Energy and their sub-contractor Harvest Thermal Inc. and will be deployed in over 30 homes as part of that project. If such systems are not able to benefit from the incentives that correspond to the performance delivered, a barrier to market entry for such products would be created that would not be in the interest of California ratepayers.

**The BUILD program design should clarify that systems that deliver multiple performance benefits are eligible for each incentive and kicker incentive for those benefits.** The level of these benefits should be on a level playing field than those for with systems that deliver them separately.