

## DOCKETED

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## **2019 ZNE Standards**

\*\*\* THIS DOCUMENT SUPERSEDES TN 217459 \*\*\*

*Additional submitted attachment is included below.*



# California Building Industry Association

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**TO: California Energy Commission - Docket No. 17-BSTD-01**

**RE: 2019 ZNE Standards**

## **Background:**

The 2016 prescriptive requirements for High Performance Attics (HPA) and High Performance Walls (HPW) represented a substantial departure from common residential construction practice. Recognizing this, the CEC agreed to establish a compliance credit for rooftop solar photovoltaic energy system installations which could provide a maximum compliance credit equivalent to the combined compliance benefit attributed to the new HPA+HPW measures. Industry strongly supported this PV compliance credit for two reasons.

First, industry needed to learn how to merge rooftop solar installations into their production-style product in advance of the 2019 Building Energy Efficiency Standards (BEES) and the PV compliance credit provided a valuable incentive to accomplish that goal. Secondly, it also offered a compliance alternative to either (or both) of the HPA and HPW prescriptive measures in the event these new design features proved too challenging to existing design strategies when the new standards took effect on January 1, 2017. Ultimately, the goal was to provide industry with enough useful compliance options as a way of smoothing the transition from the 2013 BEES to the 2016 BEES while at the same time focusing on the goal of having a solar component in the 2019 BEES.

## **Current Status:**

While it is too soon to have a complete understanding of statewide field implementation of the 2016 Residential BEES, industry is receiving initial observations from builder members that both the design complexity and the cost of compliance associated with the 2016 HPA and HPW measures may have been underestimated by significant margins. Given “diminishing returns” associated with the continual tightening of the stringency of envelope insulation levels over the past 30+ years, this was to be expected. However, as previously indicated, the cost of compliance and the design difficulty of these two features may have been significantly underestimated.

CBIA is presently working to provide CEC staff with initial cost-impact data we are gathering from our membership. Preliminary data shows that builders are currently seeing an incremental cost of approximately \$2,100 to \$2,800 for HPA Option B and an incremental cost of approximately \$4,200 to \$5,500 for the boxed netting solution. These figures range from 1.7 to 4.5 times the original CASE estimate.<sup>1</sup> Builders have also reported that the actual cost of HPW is between \$1,550 and \$1,800, which is 3.3 to 3.9 times the original CASE estimate.<sup>2</sup> In addition, these costs may not

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<sup>1</sup>See [http://www.energy.ca.gov/title24/2016standards/prerulemaking/documents/2014-07-21\\_workshop/case\\_reports/2016\\_Title\\_24\\_Draft\\_CASE\\_Report-Residential\\_Ducts\\_in\\_Conditioned\\_Space-High\\_Performance\\_Attics.pdf](http://www.energy.ca.gov/title24/2016standards/prerulemaking/documents/2014-07-21_workshop/case_reports/2016_Title_24_Draft_CASE_Report-Residential_Ducts_in_Conditioned_Space-High_Performance_Attics.pdf)

<sup>2</sup>See [http://www.energy.ca.gov/title24/2016standards/prerulemaking/documents/2014-07-21\\_workshop/case\\_reports/2016\\_Title\\_24\\_Draft\\_CASE\\_Report-High\\_Performance\\_Walls\\_and\\_QII.pdf](http://www.energy.ca.gov/title24/2016standards/prerulemaking/documents/2014-07-21_workshop/case_reports/2016_Title_24_Draft_CASE_Report-High_Performance_Walls_and_QII.pdf)

consider recent federal and state worker safety requirements related to confined spaces and fall protection, which our data shows may add up to 10% each to the incremental cost.

An additional variable that will increase the cost of these measures even further includes the imposition of a 20% tariff on Canadian softwood lumber announced April 25<sup>th</sup> by the Trump Administration. Most framing lumber used in California is Canadian softwood so this will significantly affect the cost of both HPA and HPW.

As with any new building standard, it could take another 12-18 months to gain a very clear understanding of these costs and we understand that this timeframe is not in line with the CEC's need to prepare and release 45-Day Language by December of 2017. Unfortunately, this means the additional increases in stringency currently being considered for the attic and wall insulation levels as part of the 2019 standards could be based on flawed cost data assumptions.

As such, industry is strongly urging the CEC to consider a wide array of new compliance credits to be offered as part of the 2019 residential energy efficiency standards. At a minimum, industry is suggesting the CEC consider providing a robust compliance credit for:

- A. Energy storage technology (by itself)
- B. Energy storage used in conjunction with rooftop solar PV
- C. Various technologies/strategies for reducing the “unregulated load/plug load”
- D. Energy management systems

Items A and B are being suggested in response to the significant need for grid harmonization as we move towards zero net energy design in 2020 and beyond. In addition, and just as important, both of these would serve as significant “peak load” reduction strategies, thus garnering significant benefit under the CEC's time-dependent variable (TDV) basis for developing efficiency standards. And to be clear, we are suggesting that energy storage (Item A) and energy storage + PV (Item B) should be modeled in a manner similar to energy efficient appliances having significant TDV value in the energy efficiency component of the EDR calculation.

Items C and D are being suggested in effort to provide enhanced compliance credits for use in reducing the unregulated load which now accounts for most of the energy used in residential dwellings. While federal preemption restricts the ability of CEC to address various home appliances via mandatory regulations, there is nothing stopping the CEC from providing robust compliance credit for enhanced appliance efficiency and plug-load reduction strategies. And in doing so, such efforts will also have the very beneficial effect of reducing the size of the renewable energy needed to offset total load, thus reducing the size **and cost** of the renewable energy component needed to reach ZNE goals.

An additional concern regarding the cost effectiveness of 2019 measures is the cost of photovoltaic systems. CEC staff has indicated that approximately \$3/Watt is the projected cost of solar for 2020. This figure presumably comes from an E3 study establishing current solar costs and projecting costs several years into the future. The data contained in that report differs significantly from NEM PV

data currently available on the gosolarcalifornia website.<sup>3</sup> NEM indicates a current PV cost of \$4.67/W-ac and following the trend-line through 2020 suggests that it will only go down to \$4.20/W-ac, which is significantly higher than the CEC's estimate of \$3/W. The difference between these numbers will drastically change any cost-effectiveness calculations for PV in the 2019 Standards.

### **Scoping Considerations:**

As indicated on numerous occasions, industry has an ongoing concern over the manner in which the 2019 BEES will deal with such real-world design and site considerations that either limit or preclude the installation of an adequate amount of rooftop solar needed to reach the minimum level of on-site renewable energy need for the EDR compliance score.

For example, over 80% of new homes are two- and three-stories tall and this significantly reduces the amount of space available for the installation of rooftop solar PV. Shade from neighboring objects, vent penetrations and other rooftop obstructions will also provide significant obstacles which limit available space for PV installations. In addition, non-optimal orientation of the rooftop towards the sun will significantly reduce the performance of a rooftop PV system.

In response, industry would strongly suggest the CEC consider adopting a set of application exemptions or low-cost, alternative methods of compliance which would be allowed under certain limited circumstances. This approach could also be used to deal with farm-worker housing, low-income housing, second-unit and "tiny home" projects.

The building industry also requests clarity on the size of a solar system that is allowed on residential construction. Rule 21 and NEM 2.0 are unclear on the limits to solar generation on residential rooftops. In addition, it is unclear if utilities are in favor of all-electric homes or mixed fuel homes. It seems to the building industry that there is some lack of clarity (and uniformity) between the CEC, ARB and IOU goals for state energy policy. Clarity on PV sizing and fuel usage is essential for builders who are planning developments twenty to thirty years into the future.

### **Offsite/Offset Compliance Option:**

Industry would strongly suggest the establishment of one or more alternative compliance options which would allow the installation of the solar PV component at a physical location other than the specific lot for which compliance documentation will be submitted. Put differently, industry needs the ability to take compliance credit for off-site solar installations. This would be similar to the SB 1 Solar Offset program the CEC implemented years ago that allowed a builder to install solar at one location as an alternative to being required to offer solar as a design option at another location. Specifically, the builder was allowed to install solar on a remote site such as the top of a commercial building, parking lot or land which was not suited for residential construction. For example, one of the many benefits from this compliance alternative is the reduced cost associated with the installation of one large array of 400kW of PV as opposed to installing a 4.0kW PV system on one hundred homes.

Industry has been working with local jurisdictions to develop community based solar options to reduce the cost of solar for individual homes. Not only will this be beneficial to builders and, ultimately, homeowners, but a single point of control would be beneficial for both utility

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<sup>3</sup> <http://californiadgstats.ca.gov/charts/nem>

infrastructure and grid reliability. Industry suggests that CEC staff look into these types of PV structures in order to capitalize on the significant gains already being made.

Lastly, California is currently experiencing a housing affordability crisis. In addition to the standard cost-effectiveness considerations the CEC has always made, industry is strongly urging the CEC to give great consideration to the potential impact of these building standards on housing affordability, especially throughout California's Central Valley.