

## DOCKETED

<b>Docket Number:</b>	17-BSTD-02
<b>Project Title:</b>	2019 Title 24, Part 6, Building Energy Efficiency Standards Rulemaking
<b>TN #:</b>	222858
<b>Document Title:</b>	ConSol - Janet Ferrari Comments on 2019 Energy Code HERS Verification of PV Systems
<b>Description:</b>	N/A
<b>Filer:</b>	System
<b>Organization:</b>	ConSol/Janet Ferrari
<b>Submitter Role:</b>	Public
<b>Submission Date:</b>	3/5/2018 1:32:27 PM
<b>Docketed Date:</b>	3/5/2018

*Comment Received From: Janet Ferrari*

*Submitted On: 3/5/2018*

*Docket Number: 17-BSTD-02*

**Comments on 2019 Energy Code HERS Verification of PV Systems**

*Additional submitted attachment is included below.*

Janet Ferrari  
5757 Pacific Ave Suite 220  
Stockton, CA 95207  
Main (209) 473-5032

March 5, 2018

To: California Energy Commission  
Docket Number 17-BSTD-02  
Re: Comments on 2019 Energy Code HERS Verification of PV Systems

Dear Lead Commissioner for Efficiency and Energy Commission Staff,

I appreciate the opportunity to participate in the process of commenting on the proposed 2019 Building Energy Efficiency Standards. I am writing to voice concerns over the exclusion of Solar PV systems from the HERS verification list. Having spent 7+ years in the solar industry, designing and installing rooftop PV systems for both residential and commercial buildings, I can say that there are many challenges to maximizing solar generation and correctly installing PV on new residential construction. In addition, in my current work at ConSol, we have recently performed a PV analysis for a very large new residential development. Every system should be inspected and verified after it has been installed, not just approved at the permit stage.

There are many different aspects of roof design that can significantly affect solar generation, and it is not always readily apparent from looking at plans how this may affect the performance of the PV system. Shading issues can occur from the placement of chimneys or vents, shading from other adjacent buildings or roof planes, as well as possible shading from trees. Verifying that solar panels were installed at the correct azimuth and roof pitch will also go a long way in ensuring maximum production for rooftop PV systems, as these two items significantly affect PV generation in all climate zones. It is of great benefit to the state's homeowners to have PV system installation verified. To exclude HERS verification of PV systems would undoubtedly lead to the installation of underperforming and over-shaded systems thereby undercutting the state's ZNE aspirations.

In the current CASE report for Rooftop Solar PV Systems, HERS Verification of these systems is advocated. The CASE report also states, in section 4.1 Key Assumptions for Energy Savings Analysis, that the estimated energy savings is based on 180° azimuth, 5/12 pitch roof, 96% inverter efficiency, Standard module type and no shading, which are all inputs for builder compliance in CBECC-Res software. Each of these variables is essential for determining estimated PV system production and energy savings, and each of these components should be verified after actual installation. Building inspectors may not have the time or expertise to perform this level of inspection for installed PV systems, therefore it makes sense to include this on the list of HERS verifications.

I request that the CEC staff please consider including HERS Verification of PV systems in the required list for new homes.

Janet Ferrari  
Operations Manager Consulting Department  
ConSol

