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BSTD-19-08 Are JA11.5 requirements impossible for SMUD?

The system shall provide energy saving benefits. Use of the energy saving benefits will result in energy savings.

In the loading order, SolarShares is generation and must come after efficiency. Remote monitoring will allow efficient use of solar power and help in avoiding use of fossil fueled power. You can't control what you are not allowed to measure.

Perhaps SMUD SolarShares is only a partial solution if remote monitoring energy saving benefit is not demonstrated?

SMUD has not demonstrated how they will supply remote monitoring such as current kW production of the entire PV system as required by 10-115(a)3.

SMUD says:

'Imposing an "equivalent benefits" standard on Section 10-115 applicants could effectively make the community solar alternate compliance option impossible to use.'

Perhaps SMUD can not supply such a system for a home that will use about 53 percent less energy than under the 2016 standards for 20 years for their part of $9500? Where did the $9500 come from, see "How much will the 2019 standards add to the cost of a new home?" in https://ww2.energy.ca.gov/title24/2019standards/documents/2018_Title_24_2019_Building_Standards_FAQ.pdf

Please consider the following:

10-115 says:

3. Dedicated Building Energy Savings Benefits.

The community shared solar electric generation system and/or community shared battery storage system shall provide energy saving benefits directly to the building that would otherwise have been required to have an onsite solar electric generation system and/or battery storage system. The energy savings benefits shall be allocated from the total resource of the community shared solar electric generation system and/or community shared battery storage system in a manner demonstrated to be equivalent to the reductions in energy consumption that would have resulted from the onsite solar electric generation system and/or battery storage system that is otherwise required by Section 150.1 of Title 24.

Section 150.1

14. Photovoltaic Requirements.

All low-rise residential buildings shall have a photovoltaic (PV) system meeting the minimum qualification requirements as specified in Joint Appendix JA11, ...

JA11.5 System Monitoring Requirements

JA11.5.1 Remote Monitoring Capability

The PV system shall have a web based portal and a mobile device application that at a minimum provide the dwelling occupants access to the following information:

(a) The nominal kW rating of the PV system.

(b) Number of PV modules and the nominal watt rating of each module.

(c) Hourly (or 15 minute interval), daily, monthly, and annual kWh production in numeric and graphic formats.

(d) Running total of daily kWh production.

(e) Daily kW peak power production.

(f) Current kW production of the entire PV system.

If the above remote monitoring requirements are not demonstrated, SMUD's SolarShares is only a partial solution and the algorithms must consider the system less than whole.

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Additional submitted attachment is included below.

THE CALIFORNIA ENERGY COMMISSION | EFFICIENCY DIVISION

2019 Building Energy Efficiency Standards

The effective date of the 2019 Building Energy Efficiency Standards is January 1, 2020

What are Building Energy Efficiency Standards?

Building energy efficiency standards are designed to reduce wasteful, uneconomic, inefficient or unnecessary consumption of energy, and enhance outdoor and indoor environmental quality. The standards are adopted into the California Code of Regulations (Title 24, Part 6). They apply to newly constructed buildings and additions and alterations to existing buildings.

"The buildings that Californians buy and live in will operate very efficiently while generating their own clean energy. They will cost less to operate, have healthy indoor air and provide a platform for 'smart' technologies that will propel the state even further down the road to a low emissions future."

- Commissioner Andrew McAllister

Standards ensure that builders use the most energy efficient and energy conserving technologies and construction practices, while being cost effective for homeowners over the 30-year lifespan of a building.

The California Energy Commission is responsible for adopting, implementing and updating the standards every three years. Local city and county enforcement agencies have the authority to verify compliance with all applicable building codes including these standards.

How much energy will the 2019 standards save?

Single-family homes built with the 2019 standards will use about 7 percent less energy due to energy efficiency measures versus those built under the 2016 standards. Once rooftop solar electricity generation is factored in, homes built under the 2019 standards will use about 53 percent less energy than those under the 2016 standards. This will reduce greenhouse gas emissions by 700,000 metric tons over three years, equivalent to taking 115,000 fossil fuel cars off the road. Nonresidential buildings will use about 30 percent less energy due mainly to lighting upgrades.

How much will the 2019 standards add to the cost of a new home?

On average, the 2019 standards will increase the cost of constructing a new home by about $9,500 but will save $19,000 in energy and maintenance costs over 30 years. Based on a 30-year mortgage, the Energy Commission estimates that the standards will add about $40 per month for the average home, but save consumers $80 per month on heating, cooling and lighting bills.

What is new to the 2019 standards?

The standards require solar photovoltaic systems for new homes.

For the first time, the standards establish requirements for newly constructed healthcare facilities.

On the residential side, the standards also encourage demand responsive technologies including battery storage and heat pump water heaters and improve the building's thermal envelope through high performance attics, walls and windows to improve comfort and energy savings. In nonresidential buildings, the standards update indoor and outdoor lighting making maximum use of LED technology.

For residential and nonresidential buildings, the standards enable the use of highly efficient air filters to trap hazardous particulates from both outdoor air and cooking and improve kitchen ventilation systems.

Do the 2019 residential standards get us to zero net energy?

Homes built in 2020 and beyond will be highly efficient and include photovoltaic generation to meet the home's expected annual electric needs. Because smarter buildings perform better and affect the grid less, the standards also include voluntary options to install technology that can shift the energy use of the house from peak periods to off-peak periods.

In 2008, California set energy-use reduction goals targeting zero-net-energy use in all new homes by 2020 and commercial buildings by 2030. The goal meant that new buildings would use a combination of energy efficiency and distributed renewable energy generation to meet all annual energy needs.

However, California's energy landscape has changed since then. Two important policies – the Renewables Portfolio Standard (RPS) and net energy metering rules (NEM) – affect the value of rooftop solar generation.

The RPS requires utilities to have 50 percent of their electrical resources come from renewables by 2030. As a result, electricity produced for the grid is already much cleaner than 10 years ago.

NEM rules limit residential rooftop solar generation to produce no more electricity than the home is expected to consume on an annual basis. If the home generates more, the surplus is compensated at much lower than the retail rate (which can be a difference of $.10 a kilowatt-hour or more).

The Energy Commission's standards must be cost effective and bring value to the grid and environment.

Because the grid is cleaner and residential rooftop solar customer compensation for over-generation is very limited, it is critical that rooftop solar generation does not substantially exceed the home's electricity use. It is ideal to generate the electricity and have it used onsite versus exporting it to the grid at a time it may not be needed. When the rooftop solar generation is entirely used to offset on-site electricity consumption, then the home has virtually no impact on the grid, reducing the home's climate change emissions.

Looking beyond the 2019 standards, the most important energy characteristic for a building will be that it produces and consumes energy at times that are appropriate and responds to the needs of the grid, which reduces the building's emissions.