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*Comment Received From: Benjamin Davis, CA Solar & Storage Association  
Submitted On: 3/9/2021  
Docket Number: 19-BSTD-03*

**Comments on the 2022 Building Energy Efficiency Standards draft  
released on Feb 22, 2021**

*Additional submitted attachment is included below.*



March 9, 2021

Subject: Docket 19-BSTD-03 – CALSSA’s comments on the 2022 Building Energy Efficiency Standards draft released on February 22, 2021.

Dear California Energy Commissioners and staff:

Thank you for the opportunity to submit comments on the 2022 Building Energy Efficiency Standards draft released on February 22, 2021. We applaud the Energy Commission’s leadership to require commercial buildings include solar and storage, ensure energy storage systems can be easily added to homes in the future, and encourage buildings to include solar hot water systems and other electrification technologies. We have reviewed the draft standards and believe some of the language could have unintended consequences or would benefit from clarification or revisions. Our suggestions for how the language can be improved and clarified are below.

**Section 10-115(a)(3):** From conversations with the Commission staff when the Commission was considering SMUD’s SolarShares proposal, we understand that the intention of the “equivalent” language in the 2019 standards was not that the economic benefit of the community solar program needed to be equivalent to the economic benefit that would have occurred from on-site solar, but rather that the energy production from the community solar needed to be equivalent to the energy production that would have occurred from on-site solar. The draft language of the 2022 standards clarifies this intent by striking the “equivalent” language. Now, this section reads that the energy bill savings from the community solar program must be greater than the cost of the program to the building. Theoretically, a community solar program with a 20-year net benefit to the building of one dollar would satisfy this requirement. We believe that customers enrolled in community solar programs should receive significant savings. We suggest the Commission amend the draft language to state that buildings must receive a significant net benefit, which would be determined on a case-by-case basis by the Commission per the “Commission’s satisfaction” language in section (a).

**Section 10-115(a)(4):** We support the Commission adding a requirement to the community solar compliance option that allows building owners to unenroll in the community solar program by installing on-site solar. The section states, “At the time of interconnection of that on-site solar electric generation system, all costs associated in the community shared solar and/or battery storage system shall cease.” We assume this provision prevents community solar program administrators from charging properties unenrollment fees, and we request the Commission provide clarification in the building standards. Without a provision that explicitly prohibits unenrollment fees, we are concerned that high fees could prevent properties from unenrolling and installing on-site solar.

**Section 10-115(a)(6):** We support the Commission adding a location requirement to the community solar compliance option. Community solar installations should be located in the communities they serve. The section states, “The community shared solar electric generation system and/or community shared battery storage system shall be located on a distribution

system of the load serving entity providing service to the-participating buildings.” Our reading of the draft language would allow a home in Eureka, in PG&E’s northern electric service territory, to be enrolled in a community solar farm 450 miles away in Santa Maria, in PG&E’s southern territory. To ensure that community solar installations are located in the community of the homes they serve, we ask the Commission to amend the language in this section to read, “The community shared solar electric generation system and/or community shared battery storage system shall be located on the distribution system of the participating buildings.” We also would be happy to work with the Commission to develop other language options that would bring the community solar installations closer to the properties they serve.

**Section 10-115(b)(3):** We support the Commission adding a requirement that “applications from public agencies shall be submitted to the Energy Commission only after public review through at least one public meeting.” We suggest that all utilities, whether public or private, that submit community solar applications should be required to allow for public review via public meetings, and ask the Commission to consider adding language accordingly.

**Section 140.10(b):** Exception 3 of Section 140.10(b) states, “No battery storage system is required in buildings with 5,000 square feet of floor area or less in either tenant spaces in multi-tenant buildings or in single-tenant buildings.” Our reading of the draft language removes the battery requirement from properties that have any tenant spaces of 5,000 square feet or less, even if some of the tenant spaces are larger than 5,000 square feet. We suggest the Commission amend the language to read, “For multi-tenant buildings, the energy capacity and power capacity of the battery storage system shall be based on the tenant spaces with more than 5,000 square feet of conditioned floor area. For single-tenant buildings with less than 5,000 square feet of conditioned floor area, no battery storage system is required.”

**Table 140.10-A:** Our reading of the draft table is that, for building types for which the PV capacity factors are determined by square footage, only one PV capacity factor is multiplied by the entire square footage, which would create inconsistencies in sizing. For example, the PV capacity for a 24,000 ft<sup>2</sup> office in climate zone 1 would be 97kW (24,000 times 4.04W). The PV capacity for a 26,000 ft<sup>2</sup> office in climate zone 1 would be 67kW (26,000 times 2.59W). We suggest that the language make clear that the total required PV capacity be calculated by summing the required capacity of the tiers. For example, the PV capacity for a 26,000 ft<sup>2</sup> office in climate zone 1 should be 104kW (25,000 times 4.04W plus 1,000 times 2.59W).

Additionally regarding Table 140.10-A, we are concerned that the W/ft<sup>2</sup> requirement for the last row (auditoriums, convention centers, hotels/motels, libraries, medical office buildings/clinics, restaurants, and theaters) may not result in solar energy systems that generate 60 percent of the buildings’ loads. The load profiles of buildings in the last row resemble the load profiles of high-rise multifamily buildings, offices, and retail stores, yet the W/ft<sup>2</sup> requirement for the last category of buildings is 0.39-0.85, whereas the W/ft<sup>2</sup> requirement for high-rise multifamily buildings, offices, and retail stores is 1.82-5.17. Also, 0.85 W/ft<sup>2</sup> for climate zone 15 of the last row may be a typo, intended to be 0.58 W/ft<sup>2</sup>, which would match the W/ft<sup>2</sup> requirement for warehouses in climate zone 15.



Additionally, Table 140.10-A does not include all types of commercial buildings as the Commission's intention is to require solar on select building types in the 2022 standards. However, many building types excluded from the table have load profiles similar to those included in the table, and we suggest the Commission consider adding those building types to the table. The commercial buildings types excluded from the table with load profiles similar to the building types included in the table are banks, bars, gyms, post offices, and more. Additionally, many commercial building types for which back-up battery power is especially important during power shutoffs, such as fire stations and police stations, are also excluded from the table.

**Table 140.10-B:** Similar to our suggestion for Table 140.10-A, for Table 140.10-B on battery storage capacity factors, we suggest the language make clear that the energy capacity and power capacity be calculated by summing the required capacities of the square footage tiers. Additionally, Table 140.10-B does not include some types of commercial buildings that have load profiles similar to types of commercial buildings included in the table.

**Section 150.0(s)(4):** We support the Commission adding requirements for single family homes to be energy storage-ready. We would appreciate the Commission clarifying and/or defining "isolation device." The National Electrical Code defines "system isolation equipment," which may be a more appropriate term.

**Section 150.1(c)(8)(C):** Our reading of the draft language ("An electric water heating system with a solar water heating system") is that the solar water heating system would need to be separate from the electric water heating system. In actuality, many systems combine water heating and electric heating via a solar water heating tank with a resistive heating element that is not able to be used as a separate standalone electric water heater. We suggest the language in section 150.1(c)(8)(C) be amended to read, "A solar water heating system with an electric back-up meeting the installation criteria specified in Reference Residential Appendix RA4 and with a minimum annual solar savings fraction of 0.7."

Additionally, a solar savings fraction of 0.7 may preclude solar water heaters that significantly lower energy consumption, reduce carbon emissions, and are efficacious. We would appreciate if the Commission could share how they derived the 0.7 figure and also would appreciate the opportunity to discuss whether 0.7 is the optimal solar fraction requirement.

**Table 160.6-B:** We would appreciate if the Commission could clarify the meaning of "loads associated with renewable power source" and provide an explanation of loads created by "renewable power source[s]." We recognize that this table is unchanged from the 2019 standards.

**JA11.2.1:** We support the Commission adding a CF12 option for arrays with azimuth ranges between 105 and 300 degrees from true north. We also suggest the performance approach allow for azimuth ranges between 90 and 105 via a CF13 option to match the range of azimuths available via the prescriptive approach.

**JA11.3.1:** We are concerned that a weighted average annual solar access requirement of 98 percent or greater will be burdensome to meet as small obstructions, that are difficult to compensate for, can reduce the solar access to below 98 percent. We suggest the language be amended to allow for a lower average annual solar access requirement (e.g., 95 percent).

**JA11.4:** The revision from the 2019 standards states that the shading condition of the PV module must be consistent with JA11.3.1 and the CF1R. We believe that adequate shading condition can be achieved and verified by complying with JA11.3.1 or (not “and”) the CF1R.

**JA11.5:** Section JA11.5 states that dwelling occupants should be able to access information such as the hourly kWh production, daily kW peak power production, etc. We would appreciate if the Commission could clarify whether this requirement could be met by providing property owners with access to this information if the building is enrolled in VNEM or another multi-tenant solar solution. Providing access to the global monitoring platform for every VNEM customer may be possible, but it could be problematic to companies and builders. We recognize that this section is unchanged from the 2019 standards.

**JA12.2.3.1:** Section JA12.2.3.1 (“Basic Control” compliance option for battery storage systems) states, “When combined with an on-site or community solar PV system, to qualify for the Basic Control, the battery storage system shall be installed in the default operation mode to allow charging only from an on-site photovoltaic system when the photovoltaic system production is greater than the on-site electrical load.” However, if a battery storage system is combined with a community solar PV system, the property will not have an on-site PV system from which the battery could charge. We would appreciate if the Commission could clarify the requirements for applying “basic control” programming to batteries combined with a community solar PV system.

**JA12.2.3.2:** Section JA12.2.3.2 (“Time-of-Use Control (TOU)” compliance option for battery storage systems) states “The battery storage system shall begin discharging during the highest priced TOU hours of the day.” We assume – but would appreciate if the Commission could clarify – that this control option would not require the batteries to discharge every day. Discharging during non-summer months often is not cost-effective due to operating losses of energy and the marginal difference between peak and off-peak rates. We understand this language is unchanged from the 2019 standards, but would appreciate if the Commission could clarify. Additionally, similar to the issue we raised regarding JA12.2.3.1, if a battery system is combined with a community solar PV system, the property will not have an on-site PV system from which the battery could charge. We would appreciate if the Commission could provide clarification for this issue as well.

**JA12.2.3.4.** Section JA12.2.3.4 (“Controls for Separate Battery Storage Systems”) states that one control option for batteries installed without an on-site or community solar PV system is to, according to subsection 1, “start charging from the grid at the onset of the lowest priced TOU hours of the day and start discharging at the onset of the highest priced TOU hours of the day.” Requiring batteries to begin charging and discharging at the same specific time is suboptimal for managing the generation and the flow of energy on the grid. For this reason,



we suggest the language for subsection 1 be revised to read “Charge from the grid during the lowest price TOU hours of the day and discharge at the highest priced TOU hours of the day.”

Thank you for consideration of our comments.

Sincerely,

*Benjamin Davis*

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