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Additional submitted attachment is included below.

February 7, 2020

California Energy Commission
1516 9th Street
Sacramento, CA 95814

Docket number: 19-BSTD-08

Subject: SMUD's SolarShares program will decrease housing affordability, decrease resiliency, impair progress toward decarbonization and slow California's transition to a totally clean energy economy

Dear Commissioners,

Natron Resources Inc. submit these comments on Sacramento Municipal Utility District's (SMUD) proposal docketed on January 17, 2020, for SMUD's SolarShares program to meet the requirements of the new home solar mandate in its service territory. As discussed in this letter, the many harms and costs from this exception will be borne entirely by the citizens of Sacramento and the State of California, whereas the benefits will accrue primarily or entirely to SMUD and the International Brotherhood of Electric Workers (IBEW). The Commission should reject the application because the SolarShares program will:

1. Exacerbate California's housing affordability crisis.
2. Decrease local resiliency and increase dependency on highly vulnerable central generation and transmission resources.
3. Impair California's progress towards decarbonization
4. Slow transformation to a clean energy economy by materially decreasing individual freedom and choice, the lifeblood of a vibrant market economy.
5. Curtail future ingenuity and investment by entrepreneurs into the clean energy industry.
6. Demonstrate alignment between utilities, large unions and regulators to manipulate and limit free market competition in favor of monopoly rent collection.

SolarShares will exacerbate California's housing affordability crisis:

There is a direct, adverse impact between SolarShares and housing affordability in Sacramento and California. Unfortunately, SMUD's application repeatedly claims SolarShares will improve housing affordability. For example:

- "Neighborhood SolarShares… makes purchasing a home in the Sacramento region more affordable."[i]
- "SMUD's Neighborhood SolarShares option facilitates the construction of affordable housing, which is a critical community need."[ii]
- "The State of California and the Sacramento region are facing an affordable housing crisis, and our SolarShares program provides homebuilders and developers the opportunity to utilize the alternate compliance option thoughtfully included in the 2019 Building Standards in a manner that ensures the development of carbon free resources in the Sacramento region at a lower cost."[iii]

These statements are deliberately misleading, false or both. In reality, SolarShares will make housing less affordable compared with on-site solar.

On-site solar+storage increases housing affordability in new (and existing) construction in the following ways:

- Housing affordability is more than the cost of buying a home. Housing affordability, especially for renters, is also the cost of living there, which includes paying utility bills. The SolarShares program will save customers roughly $30 annually via energy bill reductions.[iv] On the other hand, on-site solar on new homes statewide will save customers roughly $35 monthly (net benefit from decreasing energy bills and increasing mortgage payments).[v]

- A one-time election by a homeowner into the SolarShares program has the effect of locking that house out of the comparatively larger benefits of on-site solar+storage for at least 20 years.
- The most cost-effective way to finance solar is through a home mortgage. SolarShares prevents customers from access to this low-cost financing.
- The highly cost-effective time to install solar is during home construction because of economies of scale and the streamlining of design, supply, and permitting. SolarShares would prevent customers from reaping the financial benefits of lower installation costs.
- For customers who cannot afford the increase in the initial down payment associated with on-site solar, the PV system can be leased from a third party for no upfront cost that still offers benefits that exceed those from SolarShares.

Furthermore, under SolarShares SMUD requires that customer-owned solar not exceed annual load and that SolarShares would be accounted for first, solar could only be added on site for whatever load remains after SolarShares is accounted for, effectively denying the customer the opportunity to "go solar" or add solar+storage.

SMUD's argument ignores the most basic aspects of real estate finance by arguing that housing will become more affordable solely on a "first-cost" basis, rather than Net Present Value or a lifetime "total cost of ownership" analysis. In reality, economic analyses demonstrate that solar+storage lowers the cost of ownership on a lifecycle financial analysis or Net Present Value basis. SMUD's staff are smart enough to know the fundamentals of decision making based on lifecycle financial analysis, since they are in the business of financing very long term power assets. Thus, SMUD's argument causes concern in that SMUD staff could be deliberately misleading the CEC with their simplistic analysis.

Furthermore, since SMUD does not allow virtual net-energy metering (VNEM), which creates an easy pathway for multifamily homes to go solar, developers for many multifamily homes will enroll the buildings in SolarShares. This will deprive the residents of multifamily homes, who often have comparatively low incomes, the financial benefits of on-site solar, and the resiliency benefits of solar+storage. Since multifamily renters cannot install their own solar systems, foreclosing access to the energy savings available from solar+storage further increases income inequality in California.
While the immediate impact of SMUD's SolarShares program on housing affordability would be limited to SMUD's service territory, SolarShares would set a statewide precedent if approved.

SolarShares will decrease local resiliency while simultaneously increasing dependency on highly vulnerable central generation and transmission resources

The Sacramento region is susceptible to flood, fire, earthquake and cyber risks. Is there any question as to the importance of increasing local and neighborhood resiliency, especially in low income areas? In addition with the electrification of transportation, the need for onsite solar to charge vehicles becomes more critical. EVs are more cost-efficient and emissions free.

Distributed Energy Resources are by definition, distributed and dispersed across an area rather than centralized. Increasing penetration of on-site storage+solar makes that neighborhood more resilient. This is especially true in low-income neighborhoods and transitional areas that are often the site of affordable housing. Low-income households are more severely impacted by power outages than other households. In particular, low income households can not afford to throw out a $500 freezer or refrigerator full of food. For example, PG&E after the October 9, 2019 public safety power shutdown, agreed to pay $100 per household[1] and $250 per small business impacted by the shutdown as well as replacement food stamps to ensure that families could purchase food that was lost during the outage.

[1] https://www.pgecurrents.com/2019/10/29/pge-statement-on-oct-9-public-safety-power-shutoff-customer-bill-credit/

If affordable housing can have a single, larger energy storage system that can island the building during an outage, multiple residents can receive the benefit which is less expensive than islanding systems for individual homes. The cost drops from approximately $1000/MWh for single family residential to $500/MWh for commercial scale multi-family residences. This allows more people to be supported and in a cheaper fashion.

Distributed networks or mesh network style grid systems are more resilient than traditional hub and spoke model generation and transmission. The power is generated and balanced in a smaller area within a substation geography. This allows for more generators to be available in that area and significantly lessen the need for large transmission line imported power. This makes the community less vulnerable to transmission line outages. Also, the increased number of generators creates a distributed and lessened risk that any one generator will be out at a given time. These distributed networks do not experience the significant line losses as seen in power imported through large transmission lines. Line losses can be as high as 15% or more. Onsite distributed solar+storage allows more kWh to be delivered to the end point of use.

SolarShares will impair California's progress towards decarbonization by removing a market mechanism that supports electrification.

In order for California to reach its 2045 decarbonization goal, high levels of electrification in buildings will be needed[2], as well as rapid EV adoption. The benefits of on-site solar+storage will drive faster adoption of electrified homes and vehicles.

Many Californians are skeptical of electric grid reliability in CA in these dynamic times. This can cause extra anxiety or friction when homeowners are deciding whether to electrify their essential home infrastructure and transportation. Having on-site solar+storage can provide comfort to a homeowner making that decision to go electric. If and when there is a grid outage they will feel safer if they have the ability stay warm and fed and charge their car up to flee in case of emergency or disaster.

Another benefit of on-site solar+storage is that on-site battery storage provides EV owners DC fast charging capability without upgrading the size of the main electrical service. The battery system can directly charge the EV at a higher power than the home's AC system rating. This translates to faster charging without the first cost of higher rated equipment. Of course on-site energy storage is a better financial investment when paired with solar, due to the ITC incentive.

SolarShares will slow the transformation to a clean energy economy by eliminating individual freedom and choice, the lifeblood of a vibrant market economy.

California proved the model with the California Solar Initiative: government can effectively stimulate widespread adoption of socially beneficial technology, and an entire industry will create itself and align behind the effort, with profoundly positive statewide economic impact. The CEC faces a similar opportunity with its New Solar Homes pathway to Zero Net Energy homes, with solar and now solar+storage being the pathway to achieve resilient, zero net energy homes and neighborhoods.

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[2] "to reach California's carbon neutrality goal by 2045, high levels of building electrification are likely to be required." -E3
https://www.ethree.com/wp-content/uploads/2019/04/E3_Residential_Building_Electrification_in_California_April_2019.pdf

SolarShares slows and ultimately endangers the state of California's Zero Net Energy building goal by entirely eliminating the market's ability to provide choices in Sacramento. Once a residential housing unit (single or part of a multi-family development) opted into SolarShares, that unit is locked into SolarShares for 20 years and forecloses any future choices. Other utilities will immediately argue for the same exceptions, likely leading to a statewide exception, and California's residential solar

The growth of residential solar+storage is impacted by a well-documented economic phenomenon known as the *Contagion Effect*[vi]. Simply put, solar+storage is highly visible on a home, which increases the likelihood of more homes adding solar+storage in a neighborhood, and so on in a virtuous circle. Given that SolarShares forecloses the installation of solar (and by extension, storage) on a home, the adoption rate of onsite solar+storage will slow dramatically.

While's SMUD's application misleads the CEC into thinking that lower first-cost translates to lower total cost of ownership, they are correct about the impact of lower first-cost options on developer decision making. The basic economic principal is that all else equal, a large portion of decision-makers will default to the simplest and lowest first-cost option. Thus the approval of SMUD's SolarShares program would lead to the pernicious decline of onsite solar+storage.

- SolarShares will offer large developers – be they market rate or affordable housing developers – a simpler and lower path to compliance, and it is reasonable to expect many developers will take this option because they are not involved in the economic life of the asset they are selling. This is very much akin to how a large portion of consumers or homebuilders will choose the lowest first-cost refrigerator no matter the externalities.
- Recognizing this false choice, the State of California has for decades demonstrated leadership in bringing the cost of the externalities forward into the initial decision making process - be it via regulations on refrigerator efficiency and coolants or regulations on how lighting controls should apply to commercial buildings etc. Allowing an exception for SolarShares is like allowing manufacturers to build a low-cost low-efficiency refrigerator.
- Regulatory leadership is required to guide the market – not to eliminate choice as SMUD advocates – but to make an array of choices available to consumers that are in the short and long-term interests of consumers and the State of California.

SolarShares will curtail future ingenuity and investment by entrepreneurs into the clean energy industry…for two primary reasons:

i. By radically eliminating consumer choice residential solar+storage in Sacramento and then across the state of California, fewer systems will be sold and installed on homes. This in turn means fewer vendors and manufacturers will be needed to provide solutions into the space, which means the rate of innovation will slow dramatically as well.

ii. Just as importantly, regulators provide signals to markets that it is safe to invest. By providing a long-term vision and rule-making, and then adhering to that guidance over time, regulators increase certainty and lower risk, encouraging entrepreneurs to pursue business opportunities and investors to deploy capital. The converse is also true and well documented.

Should the CEC allow an exception to the New Solar Homes pathway it will thus discourage innovation on the way to Zero Net Energy building future for the State of California and the world.

A CEC exception for SolarShares dramatically increases the perception of alignment between utilities, large unions and regulators to manipulate and limit free market competition in favor of monopoly rent collection.

Many decades of economic research have documented the ability of large organizations to advocate and lobby effectively to limit free enterprise and competition, for the purpose of securing their ability to extract rents from the marketplace.   Whether or not this phenomenon has actually occurred in California with respect to utility regulation is not the point of this letter. Rather, the point is that regulators have a duty to ensure fair and equitable application of rules in the public interest, and to strive to their utmost to do so in a process that is transparently free of influence. Given that the benefit of this exception will accrue solely to powerful utility and union lobbies while the costs are born entirely by citizens, it is difficult to understand how such a decision would be viewed with anything other than extreme prejudice.

Furthermore, SolarShares relies entirely on central "utility-scale" solar resources, which are built almost entirely by huge C-10 electrical contractors employing exclusively unionized (International Brotherhood of Electrical Workers) laborers, whereas distributed solar+storage projects are built by small Sacramento and regional companies using non-unionized labor. It is understandable that the IBEW would support SolarShares as it would lead to increased projects for the large C-10 employers and numerous jobs for their union members. While the need for unionized labor in the utility scale context can be argued for and against – and for the avoidance of doubt we are NOT arguing against union labor in utility scale construction - is clear that the relatively high cost of union labor is a deterrent to adoption of solar+storage at a distributed scale. Thus Solarshares concentrates the job benefits of solar+storage in the hands of a relative few, which is not in the economic interests of the State of California. Again, were the CEC to adopt such a decision, it is difficult to understand how such a decision would be viewed with anything other than extreme prejudice.

Summary and Conclusion

SMUD's self interest is to sell more kilowatt hours. SolarShares accomplishes this objective for SMUD, whereas distributed solar+storage decreases SMUD's revenue. As a central-generation monopoly reliant on selling kilowatt hours, you cannot fault SMUD's executives and Board of Directors for operating and advocating in their own self-interest.   As demonstrated in this letter, it is clear that SMUD's monopoly self-interest diverges from what is best for its customers in the short and long run, and actually works against the interest of the State and citizens of California. Much the same can be said for the alignment of the IBEW with SMUD in advocating for SolarShares.

We are disappointed in SMUD's efforts, even if unintentional, to mask its self-interest by appearing to advocate on behalf of affordable housing development while actually misleading the California Energy Commission with respect to the true intention of its actions and the effects of its actions.

We respectfully suggest that SMUD's efforts to prevent the development of distributed resources in their territory are myopic and misguided and focused on the past. Instead SMUD should be focusing its resources on the future of heating electrification and hot water electrification, the increase in load from which greatly outweighs any lost load and revenues from solar and storage.

To make housing more affordable and to achieve the State's zero energy, resiliency and decarbonization goals, both in Sacramento region and statewide, we ask the Energy Commission to disapprove SMUD's SolarShares application.

Sincerely,

Jeffrey H. Ansley P.E
Natron Resources Inc.

1480 Moraga Road Suite C #229 Moraga, CA 94556 | Phone: 510-868-0701

[i] SMUD, *Community Shared Solar Electric Generation System Application: Neighborhood SolarShares Program,* December 2019, page 3.

[ii] SMUD, *Community Shared Solar Electric Generation System Application: Neighborhood SolarShares Program,* December 2019, page 14.

[iii] SMUD, *Community Shared Solar Electric Generation System Application: Neighborhood SolarShares Program,* December 2019, page 15.

[iv] SolarShares gives customers a net benefit of $10/kW/year. $30 annually assume a 3kW system.

[v] California Energy Commission, *Frequently Asked Questions: 2019 Building Energy Efficiency Standards,* accessible at *https://ww2.energy.ca.gov/title24/2019standards/documents/Title24_2019_Standards_detailed_faq.pdf*

[vi] U*nder the Influence: Putting Peer Pressure to Work*. Copyright © 2020 by Robert H. Frank. Princeton University Press as excerpted in The Atlantic Monthly, *Thy Neighbor's Solar Panels, March, 2020 at https://www.theatlantic.com/magazine/archive/2020/03/climate-change-peer-pressure/605515/*