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John Lowry Comment re 2022 Energy Code Pre-Rulemaking

I'm attaching a short paper on providing all-electric as an alternative to the solar mandate for housing. The solar mandate adds significantly to housing costs, and it will be a financial burden because systems will need maintenance and replacement of expensive components. It has become clear that large-scale renewable energy is more efficient and more reliable.

I'm attaching a short paper that I've written on this topic. I am a retired executive director of Burbank Housing in Santa Rosa, and I had a 30 year career in affordable housing development. I'm saddened to see the continuing increase of housing development costs in relation to incomes. An all-electric alternative would reduce development costs and provide an effective path to all-electric housing.

Thank you for considering my comments. - John Lowry

Additional submitted attachment is included below.

Housing and Our Clean Energy Future John Lowry – September 2020

California has taken the climate change issue seriously and has developed policies intended to limit the use of carbon fuels and reduce the State's contribution to climate change. As well, many Californians see California's policy directions as setting an example worldwide. But the State's current policy initiative mandating solar panels on all new housing should be reconsidered because, contrary to its billing, it will not result in zero net or carbon free home energy, and it will add new costs to housing development.

The solar mandate reflects a situation that existed a decade or more ago. At that time the potential of utility-scale wind and solar was not as obvious as it is today. And the technology that would allow us to move to all-electric building energy systems was not as advanced. The question now is not whether we should take climate change seriously, but is instead: What is the most efficient, effective and fair way to accomplish our objective?

Producing solar energy from rooftops costs more than twice what renewable energy costs from utility-scale solar or wind facilities. Another consideration is that solar systems require on-going maintenance, which will be more likely when homeowners choose solar and less so if they are forced to have a solar panel system. While some homeowners would continue to opt for rooftop solar without it, a mandate for less cost effective and less reliable solar power production is not the best path to a renewable energy future.

It's worth considering this policy direction in the context of what it costs to build a house or apartment. Between 2000 and 2019, for example, the cost of developing housing in Sonoma County increased by about 150% while incomes were up by about 60%. There are multiple causes for this disparity; no single factor explains it all, but green building requirements are a factor, and the solar mandate will push costs higher.

For housing, the cost of the new solar home mandate ranges from $10,000 to $40,000, and this will have to be added to mortgage financing. Each time we increase mortgage amounts we disqualify another group of potential homeowners. For rental housing, the solar mandate puts another upward pressure on rents. And for subsidized affordable housing more public subsidy will be needed. It is true that there would be energy cost savings over time, but the initial cost would need to be added to construction budgets and in most cases would need to be financed. Additionally there will be costs related to maintenance of the solar equipment.

At the present time though, large scale wind and solar have reached a production cost level below that of carbon fuel power generation, and a building boom in large-scale renewable energy production is underway. The current trend toward utility-scale renewable power generation is likely to continue. No doubt small systems will continue

to expand as well, and they both will contribute to our renewable future; however, the growth of renewable energy production is not dependent on the proliferation of rooftop systems.

The constraint for solar and wind is their variability. They do not produce electricity at a steady reliable rate because solar needs sunshine and wind needs wind. Technologies for energy storage and efficient long distance transmission do exist; however, these will need to be in place before solar and wind could actually become the mainstays of an entirely renewable energy system. This constraint affects solar and wind power regardless of the scale at which it is developed.

While roof top solar should not be discouraged, it is bad public policy to impose this responsibility and financial burden on those who choose not to operate their own systems, when large scale professionally managed systems can provide renewable power more efficiently and reliably. The misdirection of this policy becomes even greater with the understanding that solar power is not limited by the amount of collector space that could be built, but by the storage and transmission infrastructure it will require.

For housing, the most important thing we can do to address climate change is to move to all-electric energy systems. Since utility-scale renewable sources are capable of meeting household needs, there is no rationale for requiring higher housing costs. All-electric homes have become viable because technologies, such as heat pumps, have advanced to the point that electric heating cost is comparable to natural gas.

The solar mandate allows new homes to use gas or for space and water heating and for cooking. A house that has a rooftop solar system and still uses natural gas or propane continues to be a source of carbon dioxide. As well, the production and storage of gas is a terribly polluting activity. We hear about natural gas leaks when a giant leak occurs, but small leaks are constant and widespread. Worse yet may be the fracking chemicals that are pumped in the ground to squeeze out more natural gas without reliable understanding of their long-term effects.

In addition to our concern with the harmful effects of carbon fuel use is the irony that if we are serious about a carbon free future, all gas systems will need to be torn out and replaced with electric power in the future. Why not do the job right the first time?

There is a better way, both to reduce carbon emissions and to reduce housing costs. All-electric homes, combined with low-cost utility-scale renewable energy, will reduce carbon emissions more effectively than mandating solar panels on homes. All-electric design will reduce rather than increase home building costs because the entire gas supply system would be eliminated. And thanks to advances in heat pump technology, operating costs for all-electric homes are now comparable to natural gas for water and space heating.

All electric design would immediately eliminate direct carbon emissions from housing. Indirect emissions from power generations would remain; however, power generation is already 50% carbon free in California and is slated to be 100% carbon free by 2045. There is clear path here to 100% clean energy. Without electrification at the time of construction, new housing will face the same uncertainty as existing housing. The timeframe and costs of clean energy conversion would be unknown.

California's dual priorities of addressing climate change and the housing crisis can best be met by recognizing all-electric homes as a compliance alternative for meeting the solar mandate.

John Lowry is a retired executive director of Burbank Housing, a nonprofit housing development company in Santa Rosa. During the time he worked at Burbank, the company produced over 3500 low-income affordable homes. He is currently a member of the Sonoma County Planning Commission.

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