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Mr. Joseph Fiordaliso
New Jersey Board of Public Utilities
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Reference is made to: Draft 2019 Energy Master Plan for New Jersey

I have reviewed the above referenced document and find the goals and objectives to be laudable and hopefully reachable.

I am concerned that there is no specific mention of the use of solar thermal technology within this plan. Solar thermal energy systems have the ability to deliver four to five times the amount of energy per square foot of roof space as compared to typical roof top Photovoltaic (PV) systems. Over the past forty years these systems have demonstrated their performance and reliability throughout New Jersey and nationwide as a cost effective means of heating water while reducing carbon emissions.

A considerable portion of our energy use within the state is for the heating of domestic hot water in the approximately 2,000,000 private homes in New Jersey. In a typical private residence, about 30% of the annual energy consumption is for the heating of hot water. Presently well over 95% of that energy is derived from the consumption of fossil fuels. In New Jersey, I would estimate that about 70% of residential domestic water heating is accomplished by the burning of natural gas and the remainder is through the use of heating equipment powered by electric, oil or propane. The amount of energy consumed to heat domestic water for private residences within New Jersey is estimated to be on the order of 11,000 GWhr per year or 400 million therms of natural gas. This would be a considerable new load on the electric grid if the total energy used for water heating were transferred from the current sources.

Of these 2,000,000 private homes, I would estimate that 50% might be well suited for the installation of solar thermal water heating systems. Solar water heating is a proven technology that unfortunately has suffered a lack of awareness by the general public and policy makers due to the growing awareness of PV systems and the talk of “Electrifying America”. Not only is solar thermal a viable technology for assisting in achieving the 2050 goals it also is not grid dependant, and in fact enhances the electric grid due to its built in storage capabilities.

Solar thermal systems have the ability to reliably produce 70% of the annual water heating needs for private residences. If 50% of the state's residential homes were retrofitted with solar water heaters a savings of nearly 4,000 GWhr of energy (140 million therms) would result annually. This would equate to a reduction of 1.4 million tons of CO2 gasses annually. The installation costs to retrofit these one million homes would be about 10 billion dollars and would save about 12 billion dollars over the 30 year life of the systems while reducing load on the grid and gas pipeline infrastructure and create on the order of 3000 jobs if the retrofit took place over a ten year period.

California, Hawaii and Massachusetts have the most robust programs in the nation for solar thermal hot water. In nearby Massachusetts the state has a mix of rebates and thermal REC's that subsidize the installation cost of a solar thermal water heating system by about 60% of the total cost. An additional subsidy of 30% from a Federal tax credit is available to most purchasers. It is suggested that the board contact their counterparts in these states to learn the success that these states have had with these programs.

While I have only addressed the private residential opportunities for carbon reduction, a vast number of industrial, commercial and residential apartments could also benefit from this technology. In addition to domestic and industrial water heating, there exist a vast number of residential and commercial swimming pools that are presently heated, and if they utilized solar thermal heating technology could reduce their energy consumption by over 90% with economic paybacks of as short as three years. The opportunity for carbon emission reduction in this sector is enormous, as a residential gas pool heater produces as many pounds of carbon emissions in two months as a residential gas water heater does in twelve months.

As background information, I have been active in the solar thermal sector since 1977. For over thirty years I installed nearly 2000 solar thermal hot water and pool heating systems. For the past twelve years I have been active in the industry as a wholesale supplier of solar thermal equipment to dealers throughout New Jersey and the Northeast.

In closing, I want to commend the aggressive nature of this energy master plan and strongly encourage that solar thermal technology be added to the plan to assist in achieving the goals of the program while at the same time reducing stress on the energy grid and distribution network.

Richard Bonte
President, Sun Source Energy Products