16 September 2019

New Jersey Board of Public Utilities

Re: Draft Energy Master Plan

On September 3, 2019 I participated in the Public Meeting on the Draft New Jersey Energy Master Plan hearing in Hackensack, New Jersey. As presentation time was limited, I would like to submit the following additional comments. In particular, I would like to provide a response to questions 16, 17, and 18 that are posed in the Draft Plan and most specifically for natural gas.

In my oral comments, I requested that the Final Energy Master Plan provide a comprehensive plan to eventually discontinue the use of natural gas in New Jersey as an energy source and thereby enable a complete decommissioning of the natural gas infrastructure. Numerous other respondents have presented arguments based on climate science for the need for New Jersey to realize a zero fossil fuel energy solution. They have also articulated the transition from natural gas based electric generation to renewable sources of electric generation. As such I would like to focus the other primary use of natural gas, for energy at industrial, commercial, and residential premises.

Fully discontinuing the use of natural gas for premises heating, water heating, cooking and other uses is without a doubt a huge challenge. It may even prove to be even more difficult than replacing electric generation. It requires realtime coordination between many stakeholders and it means renovations and equipment replacement in perhaps 85% or more of the households in New Jersey.[1] This would be approximately 3 million households.[2] In contrast, bringing on new wind farms or community solar systems is relatively transparent to the end users. This means replacing at some point natural gas furnaces and electric water heaters with heat pump systems for instance for residential housing.

Question 16: What policy, legislative, or regulatory mechanisms can New Jersey develop to successfully transition the building industry to develop net zero carbon construction? Over what timeline should the building industry seek to make this transition? What incremental goals and milestones should it set?

Starting with a new construction is a laudable first step. The Board should also evaluate now and propose in the Final Energy Master Plan goals and timelines for comprehensive and complete transition from fossil fuel use in existing buildings.

Since the draft plan was posted at least one California municipality, Berkeley, has announced that they would ban new natural gas hookups in their jurisdiction and other cities in California

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[1] "Household Energy Use in New Jersey", US Energy Information Agency. Accessed as https://www.eia.gov/consumption/residential/reports/2009/state_briefs/pdf/nj.pdf, September 5, 2019.

[2] US Census Quick Facts, 3,628,302 New Jersey households estimate for July 1, 2018. Accessed as https://www.census.gov/quickfacts/fact/table/NJ,US/PST045218, September 5, 2019. 3.25 million is 90%.

are considering such ordinances.[3] Granted that it is easier there as the climate is much more mild. New Jersey should implement such legislation or regulations as well. I suggest that the Board evaluate whether six years or shorter is a suitable timeline for such a prohibition. The transition requires coordination with more than just the building industry as it will significantly impact electric and gas utility deployment and upgrade plans. To force this change and drive the planning and analyses there should be a target objective such as this temporal goal. The first incremental milestone needs to be reevaluation of the impact on these utility plans driven from the municipal development master plans. Processes for these planning efforts are well established but need to be refocused. I suggest one year as goal for completion of the review of the relevant utility plans. Based on these studies the required legislation and regulations should be prepared and approved. This takes the process to the end of 2020.

The next incremental milestone would be to implement such a moratorium on selected municipalities to phase in this change in building construction. These jurisdictions should be selected to insure that critical barriers such as those identified by Question 17 are addressed, understood and resolved. There needs to be sufficient scale to validate that the both technical approaches and societal issues are resolvable. The goal should be to implement a selective ban by the end of 2022 incorporating efforts in New Jersey as well as in other states.

I would suggest that this partial ban be in place for three years, through end of 2025. During 2025 there should be an evaluation of progress and issues during 2023 and 2024, concluding with an update to the Board regulations which would implement a statewide ban in 2026 for new construction. Of note, we are proposing a plan and process that is six years later than the Berkeley, CA ban.

Question 17: What barriers exist that could hinder successful implementation of new net zero carbon construction?

The barriers for successful implementation are numerous. The barriers for new construction as well as a comprehensive change are similar. Here are some, I believe are important.

- Separate Natural Gas and Electric Utilities is probably a major impediment: Perhaps the Board can figure out how to either encourage the natural gas utilities to merge with the overlapping electric utilities or impose on the utilities appropriate direction and incentives to align corporate goals with a state goal to end fossil fuel use in NJ. Merger provides for a good conclusion for Natural Gas Utility stakeholders.

- As more and more energy consumers successfully move from natural gas to all electric, the fixed costs are spread across fewer and fewer consumers. This places a large burden on remaining natural gas customers. Combining the two utilities where they are separate simplifies the fair allocation of costs. The fixed cost of the infrastructure also emphasizes why it is important to take the gas infrastructure out of service as quickly as is economical to minimize the ongoing costs.

- Folding in the natural gas utilities with the electric utilities provides a natural employment migration model. Electric utilities will certainly require more employees

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[3] "Op-Ed: Berkeley banned natural gas. The rest of California should too", Los Angeles Times, July 31, 2019. Accessed as https://www.latimes.com/opinion/story/2019-07-30/berkeley-natural-gas-ban, September 5, 2019.

as they support all electric homes, electric vehicles, microgrids, etc. The idea of promising “retraining” for a new unknown career is seldom a satisfying answer and creates a natural barrier to change. Utility staff will likely be much more supportive if you provide them a direct pathway to the Utility of the future.

- End user commitment is also a major barrier. Few like change. The cost impact here is highly visible as it requires a major investment with a big sticker. Most residents have a hard time committing to an investment with a multiyear break even. It is even harder for those that are likely to move and not realize the net savings. There will need to be comprehensive studies to understand what is fair and equitable to all sides in terms of incentives or penalties to realize this transition. Then these costs and as well as the direct costs need to be optimized to complete the transition in a timely manner.

- The state should also understand whether these plans put it at an advantage or a disadvantage relative to the creation of new businesses, the sustainability of existing business as well as the impact on the residents. The policies need to be in concert with providing advantages to continued economic growth in New Jersey relative to other states.

Question 18: What policy, legislative, or regulatory mechanisms can New Jersey develop to incentivize and accelerate the transition from oil, propane, and natural gas heating systems to electrified heating systems? Please consider appropriate mechanisms for residential, commercial and industrial buildings. Over what timeline is this achievable? Please also consider incremental milestones for the different fuels and technologies.

New Jersey needs to adopt a policy and goal to decommission to the natural gas system as soon as feasible. I would propose 2050 as the target which provides alignment with other climate change targets. The right question is not perhaps “over what timeline is this achievable?”, but rather given the climate science constraints, “how can the state create a goal to implement what is needed?” A gradual approach with individual incentives to home and business owners is very problematic. As incrementally, end users leave the natural gas system, the costs to maintain and operate the system are left to a smaller and smaller customer base. This eventually leads to a significant financial burden on those that are left and are not able to transition as fast. So rather than an approach where the base of natural gas customers leave the system in a relatively geographically smooth distribution across the state, the Board should study, trial, develop plans and implement an approach whereby region by region all customers are transitioned off of the natural gas system with the right incentives and penalties. Individual segments of the system can then be turned off sequentially in an orderly manner. The required upgrades to the electrical distribution network can be upgraded neighborhood by neighborhood so these additions can be deployed in a just in time manner. This approach is certainly very challenging but I think warrants evaluation to determine if this actually is more cost effective, provides more societal benefits, and will reach the end goal sooner.

At a minimum, I propose four tranches, each of 25% of the customers or of natural gas use or capacity to be addressed in five year increments from 2031-2035, 2036-2040, 2041-2045 and 2046-2050. For each of these lustrum, geographic regions within New Jersey would be identified and during each period the customers in that region would be transitioned off of natural gas. The regions need not be contiguous. Ideally all of the natural gas and electric utilities would participate equitably in each lustrum. Further, I suggest that environmental

justice communities be considered for the earliest period since those probably would have a lot of short term benefits to be realized from energy use improvements and it is important that these customers are not left behind in the plan.

Development of the detailed plans for implementation would take place starting in 2020. Small pilots would have to be identified to be implemented in the 2021-2025 timeframe. Through these pilots the state would start to understand the technical challenges as well as the marketing and societal issues. The period of 2026-2030 would target evaluating the scalability of the transition. Based on these studies additional policies and regulations would be codified in 2025 and again in 2030.

Lastly, I would be interested in participating with the interagency task force suggest in Goal 4.2.2 to make further suggestions and contribute to the future development in this area.

Thank you for allowing me to participate in this Energy Master Plan Process.

Sincerely,

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