Comments from 50x30 Building Electrification Team

on NJ BPU Rate Payer Study Presentation 3-25-22

Thank you for the opportunity to provide comments on the proposed NJ BPU rate payer study:

1. **New Jersey has no mandate objectives nor laws nor roadmap that require any degree of Building Electrification or use of heat pumps by any given year.**

This gap exists despite an NJ executive order that calls for 50% reduction in greenhouse gas emissions by 2030, and a 2+ year old EMP whose models presumably rely to some degree on building electrification. Per 2019 NJ statistics, the residential (heating) and commercial buildings generate 25.4 MMT (million metric tons) of greenhouse gas pollution per year – about 29% of New Jersey’s total. Without any Building Electrification mandate objectives, laws or roadmap, little to nothing regarding either Building Electrification or heat pump deployment is likely to occur, and thus the 50x30 goal is effectively already jeopardized. Furthermore, measurements of carbon emission reduction performance cannot be compared to objectives and roadmaps that do not exist[[1]](#endnote-1). How can the NJ BPU rate payer study properly address the impact of Building Electrification and thus ratepayer impacts without objectives and a roadmap? When will the NJ BPU fill these gaps? At a minimum, the study must note these gaps, and then model proposed solutions that contain mixtures of Building Electrification including “cold climate” heat pumps, Electric Vehicles & Clean Electricity such that the executive order of 50% reduction by 2030 is met, making it clear exactly what the proposed mixtures are by when for every year.

1. **The proposed NJ BPU rate payer study omits appropriate treatment of Natural Gas, Oil, Propane & Electric Resistance heating.**

Slide 19 of the 3/25/22 NJ BPU presentation fails to address Natural Gas as an electric energy source. Yet, natural gas needs to be drastically reduced by 2030 in order to meet Governor Murphy’s greenhouse gas reduction goals and provide meaningful progress towards stopping global warming. It also fails to address Oil & Propane heating reduction in the Building Decarbonization section of slide 19, and also on subsequent slides such as 30 & 31 which mention gas furnaces. Electric Resistance heating is apparently not mentioned, yet conversion of electric resistance heating to heat pumps is also a significant energy efficiency measure, as well as cost savings for customers. Slide 19 refers to an Energy category, which apparently should instead be called Electricity.

1. **The study needs to model the impact of various fossil pollution free equipment incentives, e.g. for “cold climate” heat pumps.**

Today’s New Jersey electrification incentives are clearly just a small fraction of the upfront cost of electrification including the cost of installation of “cold climate” heat pumps. New Jersey must do much better. The incentives vary by utility, are administered by the utilities, and thus seem subject to the whims of the utilities without any obvious state control, consistency, or incentive to actually drive the necessary electrification. The study needs to model the impact of various “cold climate” heat pump incentives, up to and including the scale of states such as Massachusetts, New York and Maine. It needs to deal with the complete picture, e.g. incentives for water heating heat pumps, induction cooktops, heat pump dryers, and electric panel upgrades, as well as any corresponding equipment for the commercial sector, while also considering Electric Vehicle growth. The study must also model eliminating NJ gas equipment incentive subsidies which shockingly still exist in the face of rapid global warming.

1. **The study must include Societal Costs of Greenhouse Gas Emissions, i.e. cost of carbon, including emission health impacts, impact of rising seas especially on coastal NJ and the NY area, impact of increased frequency and far more intense storms, impact on disadvantaged communities, and agricultural/biodiversity failures[[2]](#endnote-2) [[3]](#endnote-3)**

Without considering societal costs of carbon pollution, the study will present a biased or incomplete picture. And depending on outcomes, it may then be seized upon by vested interests, lobbies and captive organizations to stall further and promote dangerous transition strategies with extremely biased or incomplete information, replete with attempts to preserve stranded assets and profits, and last but not least, perpetrate biased media, such as expensive TV commercials recently running in New Jersey loaded with misinformation and innuendo, when in fact the long run costs of doing nothing are astounding in the danger to our planet, children and grand children, to our health, and to our economy.

1. **Urgency is Missing at the NJ BPU & the State of NJ to Reduce Greenhouse Gas Emissions Immediately and Rapidly[[4]](#endnote-4) [[5]](#endnote-5)**

Also see prior comment regarding the missing Building Electrification objectives and roadmap; this lack is illustrative of the lack of urgency since the 2019 EMP. Action is needed after decades of global warming warnings, not studies that delay action.

1. **Why does NJ need yet another de-carbonization cost study?**

The analysis has already been done. Further delay wreaks of stalling. NJ and RMI have already completed a study that demonstrates “the least-cost” decarbonization path will save NJ between $4.2 and $6.3 billion PER YEAR[[6]](#endnote-6) [[7]](#endnote-7), i.e. “….namely RMI analysis suggested between $4.2 and $6.3 billion per year in savings associated with the least-cost decarbonization pathway compared to business as usual.” This is at least $400 savings PER RESIDENT per year, and clearly a far higher amount per actual PER RATE PAYER or family.

1. **Model actual clean electricity penetration and projections in NJ, not just NJ RPS**

Actual clean electricity percentages and projections are necessary to model what is actually consumed and imported in NJ now and in the future, not just NJ RPS[[8]](#endnote-8) based models. Emissions for energy consumed in NJ must actually be reduced, not just offset in some other place.

1. **The “illustrative primary study results” examples in the slides fail to break out Building Electrification.**

This is a substantial gap and needs to be rectified in future examples and the actual study results.

**Further Context for the above comments:**

The Middletown Energy Plan V2[[9]](#endnote-9) identified three main pillars of CO2 emissions reduction required to drastically reduce emissions towards zero by 2050 and thus help potentially avoid the worst effects of global warming, if not too late already. As shown in included Chart 1 at the end, the three pillars, consisting of combinations of scenarios shown in Chart 1, are:

(a) 100% Clean Electric

(b) 100% Electric Vehicles

(c) 100% Building Electrification, e.g., the replacement of fossil fuel-based space, water and dryer heating with “cold climate” or other heat pumps.

In order to achieve the intent of the three pillars previously mentioned, 100% clean electric is required as soon as possible. Middletown for Clean Energy has published a letter (5/25/21) to Congressman Frank Pallone, Jr., Chairman, House Committee on Energy and Commerce calling for similar specific objectives in Federal legislation[[10]](#endnote-10). Likewise, the Rocky Mountain Institute (RMI) indicates Carbon-Free Electricity, Carbon-Free Buildings, and Carbon-Free Mobility as among three essential global programs towards a carbon free future[[11]](#endnote-11). RMI outlines aspects of the New Jersey EMP in a summary: “New Jersey Charts a Practical, Affordable Course to a Decarbonized Economy”[[12]](#endnote-12). Furthermore, Middletown for Clean Energy has issued a letter (9/30/21) to Governor Murphy of NJ calling for 100% clean electric by 2035[[13]](#endnote-13). The recommendations provided herein are also partly informed by New Jersey’s 2019 Energy Master Plan (EMP)[[14]](#endnote-14), which provides a road map to meet the mandates of NJ’s Global Warming Response Act (GWRA)[[15]](#endnote-15). Both the EMP and this energy plan are informed by the scientific consensus in reports such as the International Panel on Climate Change’s 2018 report, “Global Warming of 1.5°C”.[[16]](#endnote-16) This report states that “Without … urgent [action] … leading to a sharp decline in greenhouse gas emissions by 2030, global warming will surpass 1.5°C in the following decades”, threatening a livable world for our children. We know that the Jersey Shore is on the front lines of this crisis and is, in fact, experiencing sea level rise more quickly than the global average.[[17]](#endnote-17) Furthermore, adaptation plans for the shore area may include large expensive sea wall projects, e.g., a $119 billion sea wall among other alternatives.[[18]](#endnote-18)

Detailed New Jersey impacts are described in the “2020 NJ Scientific Report on Climate Change” [[19]](#endnote-19), published on June 30, 2020, by the NJ DEP. Documented impacts include higher air temperatures (including summer heat-related mortality) and associated increase in wildfires; intensity and frequency of precipitation, floods, droughts; increasing sea level rise, higher ocean temperature, and greater ocean acidification; worsening air quality; agriculture impacts; degraded and stressed water supplies; degraded terrestrial, freshwater, and marine environments; loss of plant and animal species; and increasing invasive species including pests. The degree of impact depends upon the level of future GHG emissions. The report also observes that NJ is warming faster than the rest of the US northeast region and the world.

Increasing global temperatures continue to be measured[[20]](#endnote-20): “The past decade was the hottest on record”, “2019 was the second warmest year ever”, and “...the National Aeronautics and Space Administration and the National Oceanic and Atmospheric Administration showed global average surface temperatures last year [2019] were 1.8 degrees Fahrenheit higher than the average from the middle of the last century, driven mostly by emissions of the dominant Greenhouse Gas (GHG) carbon dioxide (plus water vapor feedback) resulting from human burning of fossil fuels.

Modeling for the NJ EMP, completed by the expert Rocky Mountain Institute (RMI), has determined that the least-cost responsible solution for meeting the goals and mandates of the GWRA **would increase the state’s annual energy costs by only 0.2% of state GDP over the period 2020-2050**. (It follows that electric rate impacts should also be correspondingly small, and even smaller or with net economic gains if the societal cost of carbon dioxide and methane pollution is accounted for.) Also see Figure 8 of the NJ EMP. The RMI model conservatively assumes NO decrease in the price of renewable energy over time and NO technological advances. Taking any of these into account would *reduce* solution cost well below usual costs, thus saving considerable taxpayer money. The NJ EMP also states that “New Jersey can meet Global Warming Response Act and 100% clean energy targets by aggressively deploying existing technologies today and adopting new technologies as they become cost-competitive.”

Yet, as acknowledged by the NJ EMP Figure 1 Reference 2 curve (page 23) existing NJ mandates (existing policies – also see Figure 7) do not bring NJ anywhere near the NJ EMP target of 100% clean electric and 80% GHG reduction by 2050[[21]](#endnote-21), nor the 50% GHG reduction by 2030 specified in NJ Executive Order 274[[22]](#endnote-22). Rather, the NJ EMP Reference 2 curve indicates only about 40% GHG reduction by 2050 and only about a 30% reduction by 2030, thus demonstrating existing NJ mandates fall far short of NJ’s own targets, though executive order 274 may help reduce the 2030 gap. But the 2050 gap can also be plainly seen in the NJ electricity Renewable Portfolio Standard[[23]](#endnote-23), which tops out at only 50% renewable electricity in 2033. When this RPS standard is considered together with the lack of any NJ specific penetration objectives for building electrification, e.g., heating via heat pumps and in fact even continued incentives for gas equipment, this makes reaching these GHG reduction targets improbable or impossible with current NJ mandates. Though of course even the RPS increase to 50% by 2033 and the NJ S2252[[24]](#endnote-24) requirement for “at least 2 million of the total number of registered light duty vehicles in the State shall be plug-in electric vehicles by December 31, 2035” and “at least 85 percent of all new light duty vehicles sold or leased in the State shall be plug-in electric vehicles by December 31, 2040” are important steps towards the 2050 and 2030 targets. But yet far more needs to be done to meet the New Jersey GHG reduction targets. In short, though out of scope for these recommendations to the RGGI, New Jersey also needs to drastically increase its RPS standards from the current limit of 50% in 2033 to achieve 100% clean electric by 2035, needs to phase in far more clean electricity sourcing, provide a mandate, objectives and roadmap for a Building Electrification program where none currently exists in New Jersey, provide far more substantial rebates for “cold climate” heat pumps and stop subsidizing dirty natural gas equipment.

Chart 1 Extracted from [proposed] Middletown, NJ Energy Plan V2

Representative Scenarios for Middletown Greenhouse Gas (CO2) Emission Reduction

Chart 1 shows estimated tons of Greenhouse Gas emission reduction for each scenario in 2030 relative to 2018.

If implemented, reductions projected for 2030 total 266K tons or 38% of Middletown's 705K pro-rata tons of New Jersey tons in 2018.

1. Some states have aggressive rebates and plans (Massachusetts) and proposed plans legislation (New York). [↑](#endnote-ref-1)
2. Speaker verbal presentation at NJ PBU rate payer study meeting 3-25-22 [↑](#endnote-ref-2)
3. <https://www.nj.gov/dep/climatechange/docs/nj-scientific-report-2020.pdf> [↑](#endnote-ref-3)
4. Delaware River Keeper verbal presentation at NJ BPU rate payer study meeting 3-25-22 [↑](#endnote-ref-4)
5. 12:38 PM verbal presentation at NJ BPU rate payer study meeting 3-25-22 [↑](#endnote-ref-5)
6. https://rmi.org/new-jersey-charts-a-practical-affordable-course-to-a-decarbonized-economy/ [↑](#endnote-ref-6)
7. Also see Appendix A of 2019 EMP [↑](#endnote-ref-7)
8. Unfortunately, NJ electricity RPS is currently limited to 50% in the years 2030 to 2033, with no further increase specified. Also, computations we have generated show that NJ currently consumes 48% to 50% renewable electricity (if nuclear power is included). [↑](#endnote-ref-8)
9. <http://climate.smiller.org/energy-plan/Middletown-2020-Energy-Plan/MiddletownEnergyPlan-V2-2020-8-8.pdf> [↑](#endnote-ref-9)
10. <http://climate.smiller.org/letter/2021-5/2021-5-25CleanFutureAct-PalloneLetter-comments-FINAL-B.docx> [↑](#endnote-ref-10)
11. <https://rmi.org/our-work/> [↑](#endnote-ref-11)
12. <https://rmi.org/new-jersey-charts-a-practical-affordable-course-to-a-decarbonized-economy/> [↑](#endnote-ref-12)
13. <http://climate.smiller.org/50x30/50x30sept30gov.pdf> [↑](#endnote-ref-13)
14. <https://www.nj.gov/emp/> [↑](#endnote-ref-14)
15. <https://www.state.nj.us/dep/aqes/oce-publications.html> [↑](#endnote-ref-15)
16. <https://www.ipcc.ch/sr15/> [↑](#endnote-ref-16)
17. <https://www.app.com/story/news/local/land-environment/2019/12/13/new-jersey-ground-zero-sea-level-rise-says-scientist/4411122002/> [↑](#endnote-ref-17)
18. [“$119 Billion Sea Wall Could Save New York...”,](https://www.nytimes.com/2020/01/17/nyregion/sea-wall-nyc.html) New York Times, 1/17/20 [↑](#endnote-ref-18)
19. <https://www.nj.gov/dep/climatechange/docs/nj-scientific-report-2020.pdf> Executive Summary, pages v to xv [↑](#endnote-ref-19)
20. “2nd-Hottest Year Ever Closes Out Warmest Decade”, New York Times, 1/16/20 [↑](#endnote-ref-20)
21. <https://www.nj.gov/emp/energy/>: “The [NJ] Energy Master Plan defines 100 percent clean energy by 2050 as 100 percent carbon-neutral electricity generation and maximum electrification of the transportation and building sectors, which are the greatest carbon emission producing sectors in the state, to meet or exceed the GWRA mandates.” [↑](#endnote-ref-21)
22. <https://nj.gov/infobank/eo/056murphy/pdf/EO-274.pdf> [↑](#endnote-ref-22)
23. <https://www.njcleanenergy.com/renewable-energy/program-activity-and-background-information/rps-background-info> [↑](#endnote-ref-23)
24. <https://www.njleg.state.nj.us/2018/Bills/S2500/2252_U2.HTM> [↑](#endnote-ref-24)