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STEFANIE A. BRAND
Director

November 15, 2019

Via Hand Delivery and Electronic Mail
Honorable Aida Camacho-Welch, Secretary
Board of Public Utilities
44 South Clinton Ave., 9th Floor
Post Office Box 350
Trenton, New Jersey 08625-0350

Re: Energy Master Plan -Integrated Energy Plan
BPU Docket No. Undocketed Matter

Dear Secretary Camacho-Welch:

Enclosed for filing please find an original and ten (10) copies of the Division of Rate Counsel's comments on the findings of the New Jersey Integrated Energy Plan ("IEP") Draft Modeling Results which is part of the Energy Master Plan ("EMP") process. These comments are being submitted pursuant to the Board of Public Utilities Notice informing the public of a November 1, 2019 webinar summarizing the IEP findings. Pursuant to the said notice, an electronic copy of these comments will be electronically mailed to emp.comments@bpu.nj.gov.

We have also enclosed one additional copy of the materials transmitted. **Please stamp and date the copy as "filed" and return to our courier.**

Thank you for your consideration and attention to this matter.

Respectfully submitted,

STEFANIE A. BRAND
DIRECTOR, DIVISION OF RATE COUNSEL

By: 
Felicia Thomas-Friel, Esq.
Deputy Rate Counsel

FTF/dl
Enclosure

c: emp.comments@bpu.nj.gov
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New Jersey Energy Master Plan
Stakeholder Process
Integrated Energy Plan ("IEP") November 1 Webinar

BPU Docket No.: Undocketed Matter

Comments of the Division of Rate Counsel

November 15, 2019

Introduction

The Division of Rate Counsel ("Rate Counsel") would like to thank the Board of Public Utilities ("Board" or "BPU") and its Staff ("Board Staff") for the opportunity to provide comments on the findings of the New Jersey Integrated Energy Plan ("IEP") Draft Modeling Results prepared by Rocky Mountain Institute ("RMI") and Evolved Energy Research ("EER") (collectively, "Staff Consultants") as part of the Energy Master Plan ("EMP") process.[1]

Rate Counsel participated in a workshop hosted by RMI and EER on October 16, 2019, during which a summary of findings of the IEP were presented. Another public webinar workshop presenting the summary of findings was held on November 1, 2019, during which the Staff Consultants presented their draft IEP results.

In response to the invitation found in the Notice circulated by Board Staff on October 23, 2019, Rate Counsel offers the following comments, both general and specific, on the draft IEP model results presented by the Staff Consultants.

[1] https://nj.gov/emp/pdf/NJ%20IEP%20Public%20Webinar%20Nov1%20Final.pdf

I. Data Transparency

In its earlier comments, Rate Counsel requested that the Staff Consultants provide supporting documentation for the assumptions (capital costs of new fossil and renewable resources, load growth projections, adoption rates, etc.) used in the IEP modeling scenarios.[2] Rate Counsel also stated that it would like to review the details and assumptions made regarding electric vehicles ("EV") and electrification adoption trajectories. While the Staff Consultants did provide some source documentation, detailed information regarding actual input data and assumptions was not provided.

For instance, in response to requests for assumptions used for renewable costs, the Staff Consultants provided a link to the National Renewable Energy Laboratory's ("NREL"), 2019 Annual Technology Baseline ("ATB").[3] The NREL ATB provides assessments of current and projected technology cost and performance for a variety of renewable and conventional electric generation technologies. However, within each set of forecasts for each technology type in the ATB there are multiple options concerning specific technology characteristics. For example, for offshore wind there are 15 different "techno-resource groups" from which to choose and these differ by fixed-bottom or floating platforms, water depth and distance to shore. As such, the capacity factor, energy production, capital expenditures and resulting price forecasts for each techno-resource group vary. Similarly, for solar installations, there are options for utility, commercial or residential installations, with varying capacity factors and installation type (e.g., fixed-tilt roof mounted). Thus, simply providing a link to an extensive and highly detailed data source that can have varied interpretations is less than transparent and provides very little insight

[2] See Rate Counsel's comments on the IEP filed August 7, 2019, and Rate Counsel's comments on the Draft 2019 Energy Master Plan, filed on September 16, 2019.
[3] National Renewable Energy Laboratory. 2019. Annual technology baseline. Available at: https://atb.nrel.gov/electricity/2019/about.html.

into the actual data used and New Jersey-specific assumptions made. More granular information regarding input data and assumptions is needed.

Rate Counsel has also expressed concern about estimates of in-state renewable energy. A large amount of renewable energy, particularly from onshore wind resources, currently comes from outside the State. This out-of-state generation represents the lowest-cost Class I renewable resource available to New Jersey today. However, the summary of findings from the IEP present a least-cost scenario with installed capacity of in-state resources that is more than three times today's capacity. In fact, the least-cost scenario assumes a 2050 supply mix of 34 percent in-state solar and 23 percent offshore wind, with just 19 percent coming from out of state resources. Without a clear understanding of the renewable technology cost assumptions used in the modeling, Rate Counsel finds such conclusions very difficult to understand,

As also noted in our comments on the draft Energy Master Plan ("EMP") filed on September 16, 2019, Rate Counsel reiterates its request that the Staff Consultants provide the supporting documentation for the assumptions and modeling results (e.g., capital costs of new fossil and renewable resources, load growth projections, stock rollover rates, EV and electrification adoption rates) used in the IEP modeling scenarios.[4]

II. IEP Model

More detailed information is needed to help understand the modeling topology of the Evolve model that addresses zonal differences within New Jersey and within the modeling regions in terms of both energy and capacity. Rate Counsel requests that assumptions documentation and workbooks be provided as appendices to the final IEP report. Such

[4] See Rate Counsel's comments dated September 16, 2019, p. 6.

information would give stakeholders the opportunity to understand the modeling results and enable more substantive dialogue that will aid in the transparency of this process.

III. Reference Case

Rate Counsel recommends that the Staff Consultants present all results relative to the Reference 2 case. In the draft results presentation, the Staff Consultants presented results relative to the Reference 1 case, a "business -as-usual" case that excludes all clean energy policies and characterized as "no current or prospective energy policies." Rate Counsel believes that the Reference 1 case does not accurately portray New Jersey's energy policies. New Jersey has adopted a 50% RPS requirement by 2030.[5] Governor Murphy has also committed the state to the 330,000 electric vehicle target by 2025.[6] In 2018, the Clean Energy Act ("CEA") was enacted which increased energy efficiency targets for both electric and gas utilities.[7] The CEA also codified the State's goal to install 3,500 MW of offshore wind by 2030. All of these actions are excluded in the Reference 1 case, but included in the Reference 2 case. As such, Reference 2 is a more appropriate reference case for the IEP modeling process.

IV. Rate Impacts

During the webinar, the Staff Consultants and Board Staff indicated that Rutgers University ("Rutgers") is undertaking a concurrent rate impact study. Rate Counsel reiterates the importance of this rate impact analysis since the rate impacts of the various scenarios that are being modeled are of utmost importance. Rate impacts are a key consideration in developing policy and thus must be part of the output of the IEP process. While the modeling analysis will emphasize "least cost," the impact of these costs on New Jersey households, businesses, and

[5] https://programs.dsireusa.org/system/program/detail/564
[6] https://www.nj.gov/governor/news/news/562019/approved/20190603b.shtml
[7] https://nj.gov/governor/news/news/562018/approved/20180523a_cleanEnergy.shtml

industries has to be examined in a comprehensive fashion. Rate Counsel understands the Staff Consultants' concerns about potential future changes in billing methods and specific rate design components (i.e., changes in fixed versus volumetric rates, advanced metering, etc.). However, this concern should not serve as an artificial constraint on understanding the key impacts that the EMP may have on the economic fortunes of the state. As stated in previously filed comments, the Board should examine rate impacts, on an average rate basis, across the three primary customer classes: residential; commercial; and industrial. The Rutgers rate impact analysis will also need to incorporate the impact of Zero Emission Certificates ("ZEC") costs on ratepayers.[8]

Rate Counsel continues to recommend that rate impacts should be translated into bill impacts by examining, concurrently, the changes in the overall rate of energy costs and the changes in energy usage (and efficiencies) that may arise from various EMP scenarios. While rates are likely to increase from most of the EMP scenarios being examined, there could be reductions in energy use arising from efficiency or fuel switching activities that could lower overall energy bills. Rate Counsel recommends that the Rutgers' analysis incorporate these factors.

Rate Counsel also recommends calculating rate impacts for the various modeling scenarios. However, it was made clear by the Staff Consultants at the October 16 workshop this would not be done until the EMP is finalized. Rate impacts are a key consideration and should have been a key output from the Staff Consultants' modeling efforts. Rate Counsel understands that the modeling analysis determines "least cost," or the "bottom line" impact of these costs. However, the rate impacts on New Jersey households, businesses, and industries needs to be

[8] P.L. 2018, c. 16 (C.48:3-87.3 to -87.7).

examined in a comprehensive fashion. Most importantly, rate impact and cost-benefit analyses should be instrumental to informing any policy decisions moving forward.

V. Specific Comments on the Draft IEP Results Slide Presentation

Rate Counsel has the following comments on specific slides in the IEP Draft Modeling Results presented in the webinar on November 1, 2019.

Slide 14: Summary of Modeling Variations

Rate Counsel notes that the draft results presented on November 1, 2019 differ slightly from the Staff Consultants' modeling scenarios presented in early August and need to be reconciled. Rate Counsel notes that the changes include:

- New Variation 6: Reduced Transportation Electrification;
- The new buildings assumptions (including rates of energy efficiency and electrification) are not presented in draft. It is not clear what building electrification assumptions for new buildings were incorporated in the modeling; and
- An earlier draft of the modeling scenarios assumed no discount for emissions of in-state generation serving out of state load. Slide 14 removes all reference to this assumption. Staff Consultants should verify what assumption is being used for in-state generation that serves out-of-state load.

Slide 17 Summary of Least Cost Scenario

Rate Counsel has the following comments and questions:

- Is aviation fuel included in Other Petroleum products? The values appear to be flat over the time period. Rate Counsel notes that passenger growth at Newark's Liberty International Airport has grown at a compound annual growth rate of 1.74 percent from 2007 through 2017.[9]

[9] https://www.baruch.cuny.edu/nycdata/travel/ewr-stats.htm

- During the webinar, the Staff Consultants referenced a Biogas study, however, the supporting documentation was not provided.

Slide 18 Summary of Least Cost Scenario

Rate Counsel has the following comments and questions:

- Offshore wind increases in 2040, and then plateaus in 2045. Does the Evolve model limit offshore wind capacity?
- By 2035 it appears that New Jersey is a net exporter of energy. Is that the case?

Slide 19: Average Energy Costs

Rate Counsel has the following comments:

- The Staff Consultants should show the calculations of energy system spending;
- The Staff Consultants should show the calculations of benefits; and
- The Staff Consultants should provide an explanation of how GDP is calculated for New Jersey.

Slide 23 Fuel Usage Trajectory

Rate Counsel has the following comments and questions:

- Is the vehicle usage of gasoline and diesel reflective of zero internal combustion engine ("ICE") vehicle sales after 2035?
- On the issue of Biogas, do the Staff Consultants include collection and distribution capital costs?
- Is the biogas available for New Jersey strictly in-state biogas?
- During the webinar, the Staff Consultants indicated that transmission limited itself to 9 GW even though 14 GW are available. This suggests that additional storage/ firm capacity in 2040 is still cheaper than new transmission. Is that the case?

Slide 25 In-state Electricity Capacity and Fossil Gas

Rate Counsel has the following comment and questions:

- The slide suggests that biogas and hydrogen combustion for gas-fired dispatchable electricity generation will be approximately 15 TWh in 2045. Firm capacity in 2045 appears to be approximately 12 GW. This suggests that the gas-fired dispatchable generation will have a capacity factor of approximately 14%. Is this the case? If so, please supply the source of these figures.

Slide 29: Out of state Renewables and Transmission

Rate Counsel has the following comment and questions:

- Is the Transmission limited to only renewables and solar?
- The slide suggests that in 2050, the 9 GW transmission line has a capacity factor of approximately 44 percent. Is this the case? If so, please supply the source of this figure.
- The Staff Consultants should provide the documentation for the transmission addition assumptions.

Slide 30: Gas Consumption and Supply

Rate Counsel has the following questions:

- Are the Staff Consultants limiting the biogas resources to in-state source?
- Does New Jersey import any out of state biogas in the modeling analysis?
- Does New Jersey have sufficient bio-gas resources to supply its resource requirements?

Slide 33: Least Cost Scenario: Decomposing Net Costs

Rate Counsel has the following comments:

- Rate Counsel notes that the comparison of the least cost scenario is with the Reference 1 case. However, the Reference 2 case includes policies already enacted by New Jersey that are separate from the Global Warning Response Act ("GWRA").
- The Reference 1 case reflects a business-as-usual scenario that backslides on New Jersey clean energy policies.
- As noted above, Rate Counsel recommends comparing scenarios to the Reference 2 case as it is more reflective of current policies.

Slide 36 Reference 2 Existing Energy Policies

Rate Counsel has the following comments

- The Staff Consultants should explain why the Reference 2 case is not the primary reference case compared to the least cost scenario.
- The Staff Consultants should compare the least cost scenario against the Reference 2 case.

Slide 37 Variation 1: Regional Deep Decarbonization

Rate Counsel has the following comment and questions:

- The Staff Consultants should explain why and how an Eastern Interconnect wide regional decarbonization mandate would increase the cost of renewable generation for New Jersey.
- Do the Staff Consultants limit the build out of renewables in the Eastern Interconnect that results in a scarcity of renewables?

Slide 38 Variation 2: Reduced Regional Cooperation

Rate Counsel has the following comment:

- Rate Counsel believes that it is unlikely that the transmission of renewable energy will be curtailed across state boundaries. New Jersey is part of PJM, and the transmission of electricity across state lines is under federal purview.

Slide 39 Retain Natural Gas in buildings

Rate Counsel has the following comment and questions:

- The Staff Consultants should detail their assumptions for building turnover during this period. The chart suggests that electrification does not occur in new buildings as well as existing buildings, since the pipeline gas usage appears to be constant.
- Increased transportation electrification appears to be the driver for overall increased electricity usage. Is that the case?

Slide 40 Variation 4 Technology Cost Reductions

Rate Counsel has the following comments:

- Rate Counsel notes that Offshore wind capacity decreases in this scenario (10,675 MW to 10,670 MW), yet technology costs should be reduced. Please explain the basis for this assumption.
- The slide references increased out-of-state solar, but does not show the annual amount imported.
- The slide does not provide any information on in-state solar capacity.

Slide 41 Nuclear retirement and No New Gas Plants

Rate Counsel has the following comments and questions:

- Rate Counsel notes that Offshore wind capacity increases from 10,675 MW to 26,152 MW in this scenario. Is that the case?

- Staff Consultants should provide the transmission constraint assumptions in this scenario. Are they different from the other scenarios?
- Rate Counsel notes that storage capacity increases from 8,732 MW to 19,594 MW in this scenario and that battery discharge requirements is increased from 8 hours to 36 hours. Please explain the basis for the figures used by the Staff Consultants.
- Staff Consultants should explain if transmission imports are fully utilized during periods when battery storage resources are discharged.
- Staff consultants should verify whether the nuclear units' retirement dates are 2036 for Salem 1, 2040 for Salem 2, and 2046 for Hope Creek.

Slide 44: Summary Scenario Net Cost over Time

Rate Counsel has the following comments and questions:

- The Staff Consultants should provide costs calculations on an annual basis.
- Rate Counsel notes that the Variation 5 costs do not appear to increase in 2036 or 2040 when two of the three nuclear units retire. The spike in net cost appears to occur in 2045, the date when the last unit retires. Do the Staff Consultants assume retirement of all three units in the same year?
- The Staff Consultants should include Variation 1 in their analysis.
- The Staff Consultants should provide the same analyses compared to the Reference 2 case.

Slide 45 Drivers of Variation Cost Results

Rate Counsel has the following comments:

- The Staff Consultants should provide the same analysis compared to Reference 2; and
- The Staff Consultants should include Variation 1 in the results.

Slide 46 Putting the Costs in Context

Rate Counsel has the following comment:

- The Staff Consultants should provide the same analysis compared to Reference 2.

Conclusion

In conclusion, Rate Counsel finds the IEP and the Staff Consultants' modeling efforts to be informative and instructive in providing potential least cost paths for moving forward with the State's efforts towards 100 percent clean energy. However, it is unclear how these modeling exercises will inform the public policy measures that will be used to attain these goals, particularly without associated analyses of rate impact. Most importantly, the rate impacts and cost-benefit of any proposed program needs to be analyzed and included in any findings in all EMP analyses. Further, the data transparency and other issues noted above need to be addressed by the Staff Consultants.