From: geohay3
To: comments, EMP
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Subject: [EXTERNAL] Comments on Energy Master Plan
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I am a retired utility electric resource planner, technology forecaster and researcher with 40 years of experience in areas related to renewable energy, distributed power and gas turbine systems and integration in electric resource mix.

I'm typing this on my cell phone do please excuse spelling and other typing errors.

1) I support the technically challenging 100% of NJ electric demand be met with renewables (particularly solar/wind and energy efficiency, storage and demand side management) by 2050.

2) Achievement of such a goals will require significant technical and economic planning, research and evaluation need of overall electric supply, delivery and demand in the short with consideration given to laying geoubfeork medium and long-term

3) Current grid designed around central station (wholesale power) and long distance delivery to demand centers will not be an adequate design for 100% renewables, needing to address large quantities of intermittent and distributed power. Current market and regulatory structures and roles of instate local distribution utilities need to be rethought.

4) Planning scenario should be made around working out from microgrids didtributed resource mixes (similar to Vinelsnd Municipal Utility) around NJ 563+ municipalities, 21 counties and various university/hospitals/business park campuses and achievement of local objectives on reliability/resiliency, jobs, economies of scope with water/sewage and other local government functions.

5) Such scenarios would include balancing local renewables with purchase of regional renewable (e.g. 3000 MW+ off.shore wind) and demand side management and peaking resource needed to insure local reliability.

6) Current incentive model for subsizied solar had been hugely successful but only for a few percent of total NJ electric consumption. Achievement of 30-50% of locally generated solar in micro grids is.much more challenging.

7) The next level up is facilitating power exchange not only within a microgrid but between microgrids and wholesale power markets via NJ local distribution companies.

8) NJ local distribution companies only have incentives for wire and grid investment and have to be given a role and incentives in facilitating integrated microgrid serices at local community level. Utilities in particular need to be able to make economic tradeoffs between local capacity peaking investment for reliability with investments in new delivery assets.

9) Role of NJ local distribution companies should be facilitating the delivery most economically wholesale renewable energy and local microgrids having make or buy options.

10) Near term NJ electric resource investments by rate payers need to be evaluated in context

of moving towards 100% renewable future. For example, proposals for new rate payer investment in natural gas pipelines and creating new gas demand like new baseload gas fired plants in NJ inconsistent towards100% renewables and greenhouse gas reduction goals.

11) Although NJ is in the PJM system, the interface of local distributed resource community microgrids and local distributed needs to be carefully planned in context of future PJM resource mix and procuring renewable.

12) For many reasons, I strongly opposed new coastal large (500-2000 MW) baselosd gas fired and associated expansion of gas pipeline infrastructure with rate payer funding to bring more natural (fracked gas) in Pennsylvania owned by unregulated arms of NJ local distribution gas utilities. These plants will be around for 40-50 years and will is inhibit transition to 100% renewables. Fracked gas is not a clean fuel from a greenhouse gas perspective too.

13) BL England and Osyter Creek are coastal power plant sites where future gas fired baseload generation is in progress, planned or likely. The transmission substations are these sites are critical to the future development of offshore wind and utilizing the existing transmission infrastructure to bring wind to regional community load centers and microgrids in PJM.

The current NJ utility local distribution utilities have used rate payer money to built resiliency in meeting Jersey Shore huge summer tourism air conditioning peak without new gas power plants designed to serve the entire PJM system year round.

Building such baseload gas plants at BL England and Oyster Creek in near term, it will largely block transmission access offshore wind or make offshore wind economic bear the costs of new transmission lines thru the Pine Barons. Peaking gas turbines with high pressure gas storage at those two coastal sites, rather then baseload, would compliment intermittency of offshore wind with "capacity firming". Is there a way to incentives to these coastal site owners to work collaborative with offshore wind developers or have offshore wind developer or State of NJ acquire those coastal power plant sites for the public benefits?

14) Recommend creating a State NJ Clean Energy RD&D Program to examine technical issues and opportunities as part of future NJ energy master planning process and "seeder" for high tech business incubation.

15) A bit far out, but on the research side strategically, the hydrogen economy scenario might be revisited in 100% renewable context as form of storage of renewable energy that could build on existing gas delivery infrastructure and gas fired power plants. Perhaps there are some opportunities to utilize heat from decommissioned nuclear plants to generate hydrogen.

16) I recommend that NJ BPU put together a strategic advisory group of experts (business, regulatory, renewable, grid, community energy etc) to examine and recommend university/consutant research on these issues.

I'd be happy to help organize such a committee and participate as a volunteer. Inviting in outside experts to gather information.and hold could be part of efforts. Gerald Braun of IRESN.org in California is internationally recognized expert on these issues, and would be a great resource for NJ on current Califirnia experiences with local government community

energy programs, particularly county if Sonoma and City of Davis and intersection and possible collaborations with local distribution utility.

Thanks for your consideration of these thoughts. Hope they are helpful. Apoligize again for rough nature of this note

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