Hobbs, Rebecca

From: Ken Dolsky
Sent: Friday, September 4, 2020 12:43 PM
To: DEP NJairrulesstationary
Subject: [EXTERNAL] NJ PACT: EGUs
Attachments: Brattle hybrid microgrids_decarbonized_resilience_white_paper_-_final.pdf; Catepillar - Hybrid microgrids.pdf; Microgrid_201_TA-1.pdf; Review and Refutation of NJ Transit Combined Final EIS 7-15-2020.docx

Importance: High

The BPU PACT presentation on 9/3 described a single approach to reducing GHGs from EGUs. While this may be effective for many EGUs, our study of the NJ TRANSIT proposed gas power plant for its TRANSITGRID TRACTION POWER SYSTEM has shown that there is another approach that would be virtually 100% better from a GHG standpoint as it would eliminate almost all emissions.

The alternative to the NJT proposed gas-fired microgrid is a renewable-based hybrid microgrid that could meet the demand while eliminating the air pollution and GHG emissions from a gas fired plant. I am attaching some articles and a document we created that outlines a specific proposal for such a system for NJT. Below is a summary how this works in very plain English. I apologize for the primer type language but i have been on a real learning curve and this is how i describe this to people.

Microgrids can use single or multiple technologies. A single technology microgrid could be just a set of solar panels or a wind turbine providing power to a home or building. As such it would only provide power when the sun is shining or the wind is blowing. No matter how much renewable capacity is built it can't provide power when the source is not available. This can be augmented with storage to create a two-technology microgrid in which excess energy from the renewable source is stored and released when there is not enough sun or wind. This provides more coverage for times of low renewable power but may still not be totally resilient as it would take a lot of batteries (and excess renewable energy) to handle demands 24x7. This may be technically feasible but the costs would be excessive as a great deal of capacity would need to be built just for peak periods of low renewable energy (e.g, several cloudy days in a row), especially compared to commercial power. A better solution is to add a third technology component in the form of some sort of totally reliable firm energy producing capability like a gas turbine or tidal power or even a diesel generator. This would only be used when the batteries in the microgrid need to be recharged and would not be needed during any other period. This is a good solution for providing power in areas or situations in which commercial power is not available or not reliable. The availability of the firm power production portion eliminates the need to overbuild the renewable energy and storage to be completely resilient 24x7.

This so-called hybrid microgrid has become the state of the art and companies are building backup gas generators and control systems to specifically fit into this type of solution. (See the references in the attached document: Review and Refutation of NJ Transit Combined Final EIS 7-15-2020.)

As obvious as this sounds it is not clear if our BPU friends fully understand this. We asked them about the feasibility of a microgrid related to the NJT project they said the lithium battery technology was not yet ready for full resiliency and when we asked if they ever considered adding a small firm backup supply they said they had never thought of it. The 2018 Rutgers study on Energy Storage Analysis they sent us never included this third element to provide totally resilient microgrids. They seem to be stuck in a mode of evaluating each technology independently and are not considering synergistic combinations of technologies as described above.

Bottom line: In the case of NJT this alternative could replace the need for a new gas plant. For other private or public buildings this could be used to make solar/storage much more attractive as solutions (when combined with a gas backup

generator) that provide 100% resilience and having many of these developed around the state would greatly reduce commercial grid energy demand. In fact, this sounds like a great element of a strategy to increase energy production as demand grows while not increasing emissions.

Another major advantage of such microgrids is that they will produce competitively priced energy and ancillary services that can be resold back to the grid if they are being used as backup for commercial power. Given the rapidly changing economics of solar/storage vs gas, for example, this energy will be lower priced than that produced by a gas-fired microgrid.

Attached are some articles on microgrids. The one from Caterpillar is the closest to the model i described above.
I am also attaching a document we developed to refute NJT's assertions that renewable energy technology and battery storage are not feasible for their project. Our description of our proposed hybrid model starts on page 19 although you may be interested in skimming some of the other material in earlier sections and reading the conclusions.

Thanks for listening.

Ken Dolsky
Organizer, **Don't Gas the Meadowlands Coalition**, http://nomeadowlandspowerplant.com
"Never, ever be afraid to make some noise and get in good trouble, necessary trouble." - John Lewis