INDEPENDENT INTERVENOR EXHIBIT 7

DE-CARBBONIZATION ALTERNATIVE OPTION ENVIRONMENTAL IMPACTS

PSL 66-P Establishment of a Renewable Energy Program mandates implementation of a program to require that 70% of electric generation be generated by renewable energy systems and that by 2040 the statewide electrical demand system will be zero emissions. However, it also includes safety valves that are not properly considered in PSC implementation programs. For example, while the CLCPA mandates consideration of all fossil fuel impacts there is no requirement to consider lifecycle emissions of the renewable energy systems. This exhibit uses a hypothetical alternative example to explain how the current approach misleads.

The Independent Intervenor Statement in Opposition to the Joint Proposal[1] in the NMPC rate case described an alternate approach for NMPC to provide electric power to a new large customer load near Syracuse with a peak demand of 1 GW and annual energy usage of 7,000 GWh, plus comfort and process heating loads. PSL 66-P mandates renewable generation which would consist of a combination of terrestrial wind power and large scale solar, coupled with DEFR (short- and long-

[1] https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7bE018D096-0000-CA68-8A63-B81728A7D76B%7d

duration energy storage) and also inertial stability components such as synchronous condensers and flywheels. The nameplate generation capacity must be oversized by a factor of 2.5 to account for the relatively low-capacity factors of the applied technologies and will generally have a 25-year lifespan with proper maintenance. The DEFR must be capable of supporting long periods of low energy production, up to 750 MW for a period of 100 hours between charging cycles - as well as short-term intermittency. Li-ion batteries have a 10 to 12-year lifespan and the other energy storage components have a 25-year lifespan. The inertial support components are sized to match the maximum coincident output of the renewable generation and also have a 25-year lifespan.

Although these renewable resources and associated components are commonly claimed to be "carbon free", they in fact have a considerable GHG footprint associated with their manufacture, installation, operation, and decommissioning. In this example, the PSL 66-P footprint exceeds 30 million metric tons. And based on available cost metrics, the LCOE will exceed $150/MWh[23].

By comparison, a current generation Combined Cycle Gas Turbine (CCGT) powerplant with a nameplate rating of 1.25 GW will provide equivalent output with

---

[2] https://www.nyserda.ny.gov/All-Programs/Offshore-Wind/Focus-Areas/Offshore-Wind-Solicitations/2023-Solicitation#:~:text=The%20weighted%20average%20all%2Din,with%20the%20latest%20market%20prices.

[3] https://www.eia.gov/outlooks/aeo/electricity_generation/pdf/AEO2023_LCOE_report.pdf

the same or better reliability, but without the need for energy storage or inertial support. Properly maintained, this generator will have a lifespan exceeding 40 years - adjusting to match the same equipment lifespan as the renewable assets described above, the GHG footprint associated with the manufacture, construction, routine O&M, and decommissioning is projected to be less than 5 million metric tons. Applying a similar adjustment for equivalent energy output over a 25-year lifespan, the GHG footprint of the natural gas extracted from Appalachian sources is roughly 130 million metric tons. The LCOE for the CCGT alternative is $50/MWh based on similar projects[4].

At first glance, the net sustainability benefit of the PSL 66-P approach is 105 million metric tons. But accounting for just the carbon footprint of the incremental difference in LCOE, the savings drops to 70 million metric tons[5]. If the CCGT facility is co-located with an agricultural park that uses the CO2 from the power plant to boost productivity[6], the net savings plunges to 10 million metric tons - which is barely 7% of the savings claimed by the CLCPA. Further, if the residual heat is recovered from the CCGT for use by the customer or the agricultural park, this

[4] https://www.instituteforenergyresearch.org/wp-content/uploads/2019/05/LCOEStudyOnePager.pdf
[5] https://ourworldindata.org/grapher/co2-intensity
[6] https://www.perishablenews.com/produce/houwelings-tomatoes-presented-utah-governors-energy-innovator-of-the-year-award/

natural gas alternative may even be more sustainable when properly considering all of the lifecycle effects.

There is yet another advantage to the natural gas powerplant option. If new nuclear baseload generation is developed during the operational life of the CCGT powerplant, it can be readily converted to operate on any fuel mixture up to 100% hydrogen, capturing excess renewable production through on-site electrolyzers and providing dual-fuel redundancy for additional grid reliability. While the round-trip efficiency of hydrogen electrolyzers is lower than other options, there is a net sustainability benefit associated with the reuse of an existing generation asset and transmission infrastructure compared to new-built battery energy storage or other DEFR technologies.

The lack of boundary conditions on PSL 66-P implementation plans precludes a pragmatic solution that provides similar benefits at a lower cost. This example is emerging as a preferred low carbon solution in other areas of the U.S. and abroad[7]. The significant tradeoffs of PSL 66-P should be reevaluated by the PSC as part of this proceeding to ensure protection of the ratepayers.

[7] https://www.eia.gov/todayinenergy/detail.php?id=54539