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Rolling blackouts and higher electricity rates

The Department of Energy recognizes Washington, D.C., as having the most reliable electric power in the nation. However, this distinction is at risk. Nationwide, climate policies are systematically shutting down fossil fuel-based baseload generators without providing functional replacements. The loss of firm generation capacity is particularly acute in Maryland because Maryland has been the national leader in shutting down baseload fossil fuel plants.

The inevitable consequences? Rolling blackouts coupled with skyrocketing electricity costs.

In 2024, Maryland's Regional Greenhouse Gas Initiative (RGGI) and the Renewable Portfolio Standard (RPS) alternative compliance payments, extracted $274 million (carbon taxes) from its few remaining in-state fossil fuel plants. RGGI revenues are up 67% year on year and are used to fund Maryland's many climate mitigation programs.

Remarkably, during 2023 Maryland's entire fossil fuel industry generated 16.7 TWh (trillion watt-hours) of electric power for gross revenues of just $586 million (based on average wholesale prices). This begs the question: how does a $600 million/yr industry survive a $300 million/yr financial burden when competitive plants across state lines do not have this burden? The answer is that they do not survive, it just takes time to die.

When a fossil fuel plant owner can no longer compete, they dial back on expenses to wring as much profit as they can out of a degrading capital equipment base before closing. Over the past decade this is what happened to Maryland coal plants. The last and biggest coal plant, Brandon Shores, filed to close in 2025. But PJM (the regional system operator) concluded they could not let the Brandon Shores plant close and maintain system reliability. PJM keeps the zombie plant operational through a costly Reliability Must Run (RMR) contract, billing BGE ratepayers $250 million/yr for as long as necessary to replace firm capacity. How many years?

Who is next? Today, Maryland's natural gas and oil fired peaker units are lining up to close. Nine generation units are currently on the PJM deactivation list, mostly old oil fired peaker units. Maryland still has 9 active natural gas plants, many of which have multiple generation units.

Maryland is confronted with unprecedented challenges and no good solutions. Options appear to be as follows:

DO NOTHING – Today, Maryland policy is trying to shut down all in-state fossil fuel generators. PJM is trying to keep them viable to maintain system reliability. BGE ratepayers will be big losers.

CANCEL RGGI AND RPS – Mayland's RGGI/RPS programs have done their job, coal is gone, natural gas is a cleaner interim fuel. Canceling RGGI/RPS would allow PJM markets to work. After Maryland builds nuclear power, then the natural gas plants can be shut down without harming system reliability.

100% RENEWABLES OPTION – CEJA2019 tasked Department of Natural Resources (DNR) to conduct a 100% Study and report by January 1, 2024. The study has been completed but DNR did not release

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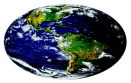

results. Our own engineering analysis shows that for a closed system, with no import/exports, the cost to maintain reliability with intermittent generation escalates exponentially beyond 25-30% penetration (by energy). 100% renewables, even with battery storage, is not an affordable clean energy option if citizens want to maintain old reliability standards.

IMPORT MORE ELECTRIC POWER – Building more transmission to import electricity from out of state generators is not climate friendly, leaves Maryland more vulnerable to the whims of others, and would be resisted by residents affected by the transmission. Transmission is a band aid. The core problem is the lack of in-state dependable baseload generators.

BUILD MORE NATURAL GAS PLANTS TO STOP THE RMRs – This is a practical near-term solution provided Maryland stops closing existing natural gas plants. It needs to be coupled with closing RGGI/RPS programs so that the PJM markets can work.

THE NUCLEAR OPTION – Some combination of nuclear and hydro powers the world's 8 big clean grids. There is ample evidence that nuclear fission is safe, affordable, and GHG emission free. With a closed fuel cycle, and fast spectrum reactors, nuclear can be sustainable. According to DoE It will take 6 years to build a reactor, and there is a first mover cost and risk.

EXTERNALLY IMPOSED SOLUTIONS – Deep rolling blackouts in the Baltimore/DC region are likely to be regarded by the federal government as a national security emergency. The federal government could step in, suspend rules and impose solutions that Maryland does not like. Maryland could lose the authority to choose electric power generation technology.

Maryland policy has created a slow-moving train wreck. The priority should be to stop making things worse. Our recommendation is that Maryland's 2025 legislative session either cancel or dial back the RGGI/RPS programs, build some new natural gas plants, and commit to building nuclear plants.

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The writer is a PhD Professional Engineer, Severna Park resident, and the chair of the Future of Energy Initiative, whose mission is to facilitate the development of sustainable, affordable clean energy systems.