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SB460 Favorable with Amendment

SB460 is a sound bill with a serious deficiency.
The bill should be amended to list nuclear power as the #1 Advanced Clean Energy Technology.

SB460 provides stable financial support for the Maryland Clean Energy Center (MCEC), an Instrumentality of the State of Maryland with an independent board. MCEC has the capability and flexibility to do what the public sector cannot, and the private sector will not. MCEC facilitates partnerships and relationships to create business and employment opportunities.

#18 ON SB460'S definition of "ADVANCED CLEAN ENERGY" is: §10-1801 (C) (18) NEW CONCEPTS TO IMPROVE SAFETY AND REDUCE THE COST OF NUCLEAR POWER. SB460 fails to recognize that existing nuclear fission technology is safe and cheap and Maryland's only proven option for **reliable** electric power with no greenhouse gas (GHG) emissions.

Regarding safety, the World Nuclear Association quantifies safety as deaths per kWh of electricity generation. On this basis nuclear power is the safest form of electric power generation. Nobody died at Three Mile Island, 60 deaths can be attributed to Chernobyl, and no reactor related deaths at Fukushima.

Nuclear's low system cost is evidenced by the fact that the 8 largest grids in the world with very low carbon emissions (France, Quebec, Ontario, Sweden, Norway, British Columbia, Paraguay, and Switzerland) employ some combination of nuclear and hydro for 80% or more of the power. While hydro may be cheaper than nuclear, hydro is a geographic blessing and has many environmental constraints. New construction in the West is 3x the cost in Asia because Asia has a mature industry, the West does not.

The public loves the idea of wind and solar as a "pure" solution. The technology is renewable clean, and cheap and the public understands how it works Intermittent generators can reduce emissions on today's dirty grid. Whenever the wind blows or the sun shines, throttle down a fossil fuel plant. *But intermittent generators are not reliable and contribute little value to a reliable clean grid.* The out-of-market cost (backup capacity, storage, transmission, regulation) for maintaining the reliability of systems with large amounts of intermittent generation can far exceed the cost of generation. Wincharger demonstrates that the cost of maintaining system reliability is the concept challenge for intermittent generation.

While nuclear fission is cheap, clean, and safe, the technology will require investment to make it more user friendly. We need R&D to enable Small Modular Reactors (SMRs) to be installed locally in industrial parks. We will need breeder reactors with spent fuel recycling to be sustainable. And we will need to overcome first mover cost while reconstructing the industry. Using advanced fuel cycles, the planet has enough fuel to power all of civilization's energy needs almost indefinitely.

I favor SB460 after amending the list of Advanced Clean Energy Technology by moving nuclear power to the top of the list, deleting the safety and cost qualifications.

*Dr. Alex Pavlak, from Severna Park, holds a PhD in mechanical engineering, a Professional Engineering license in the State of Pennsylvania, is a member of the Board of Directors of the Maryland Clean Energy Center, the Chairman of the Future of Energy Initiative, and a member of an informal group: Zero Carbon Nuclear Advocates.