February 29, 2024

SB805; HB820 Nuclear Task Force (NTF)
Favorable

Traditional nuclear technology was originally optimized for submarines and later adapted for commercial power plants. This resulted in compromises. New-nuclear technology is purpose-built for commercial power, featuring smaller, safer modular cores, simpler designs, and innovative cooling systems, allowing for deployment in industrial areas without the need for containment domes or exclusion zones.

Main Talking Points:

- The tide is changing with the increased political influence of Gen Z who have not been traumatized by Three Mile Island, Chernobyl, and Fukushima. This is evidenced by COP28 (UN's climate change conference in December 2023) which acknowledged the crucial role of nuclear baseload and pledged to triple nuclear capacity by 2050.
- Todays' main barriers are cost and fear. Today, nothing competes with natural gas without subsidy. But that will change as the marketplace values clean.
- Public fear of nuclear power stems from outdated perceptions, highlighting the need for improved education, engagement, and familiarity.
- Today America lacks a viable nuclear industry, making it difficult to predictably build new nuclear plants. How we build nuclear plants (Bulk sequential construction, standard design, centralized program management …) has a substantial impact on cost. The old paradigm needs to change but to what is unclear.
- There are many new-nuclear technology options at various stages of development. Developing a strategic plan will be challenging. Transitioning to sustainable fast neutron fuel cycles is technically proven in Russia, but not in America.
- Maryland requires better analytical tools and modeling to make informed long-term decisions, especially regarding integrating nuclear and offshore wind power.

SUGGESTED AMENDMENTS

1) Tweak the title from "Nuclear Task Force" to New-Nuclear Task Force." The purpose here is to suppress the negative image of legacy nuclear power.
2) While SB805/HB820 is acceptable as is, more specific tasking would strengthen it. Consider adding the following tasks to Section 1 (g) (5) (iii) that begins with the phrase: *that nuclear development in the State:*

   3. strives towards a vision of cost-optimal proportions of base-load and intermittent generation for electric power systems that are both reliable and 100% clean; and

   4. is compatible with the long-term vision of a closed, sustainable fuel cycles with minimal waste; and

   5. manages risk and cost through consideration of mult-istate collaboration and novel procurement and construction management structures and

   6. highlights entrepreneurial development opportunities enabled by new nuclear technologies; and

   7. employs state-of-the-art emergency preparedness plans.

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Amendment elaborations:

#3 Creating the vision - quantifying the proportions of renewables and base-load generators for reliable PJM electric power system up front is very important. This analysis requires system modeling skills that frankly nobody has. There is no federal center of excellence and Maryland is unskilled. Maryland's "Pathways" report and the federal "national grid" concept are based on unvalidated and flawed modeling. The NTF with its engineers will have unique skills to provide oversight. The NTF needs to decide the extent to which we build these skills ourselves, or in collaboration with other States, and/or encourage DoE to set up a model certification center and standard databases.

#4 Since the 1950's physicists have had the vision of fast neutron reactors that create their own fuel. Russia has 400 reactor years' experience with this technology, France has dabbled, and the US has lagged. If the whole world goes nuclear fuel will quickly become expensive, and this transition will happen sooner rather than later. Maryland should anticipate different evolutionary paths, the timing, and be prepared.

#5 The American procurement method is to custom compete every power plant. S Korea and France have shown the substantial benefits of bulk procurement and vertical integration. Vendors love the idea of a sophisticated customer. Regulatory interfaces become simpler. The NTF should explore the range of potential benefits that may result from interstate collaborations and standard modular designs.

#6 New nuclear unleashes a whole raft of new business opportunities such as cellulosic biofuels, municipal waste disposal, engineered geothermal storage... Identifying the big ones early gives Maryland a head start providing growth and jobs.

#7 Nuclear is hazardous and attention needs to be directed to emergency management structures. A bill that was introduced this session, The Radiation and Emergency Preparedness and Protection Act, SP536/HB680 is not well thought out and does not focus on information flows and decision management protocols. The NTF is in a better position to recommend a management structure and influence change.

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