February 28, 2025

SB909/HB1037 Pavlak FWA

Energy Resource Adequacy and Planning Act

- SB909/HB1037 a sound bill that would benefit from system engineering development discipline
- The development of any unprecedented system begins with CONCEPT DEFINITION to create a vision
    - EXAMPLE - For the Wilson Bridge replacement this involved quantifying the options - low bridge, high bridge, drawbridge and tunnel.
    - NET-ZERO – Given Maryland's renewable and environmental resources, what is the relationship between wind, PV, nuclear, storage, and biofuel for net zero electric power
- My proposed amendment is to add upfront a new up front CONCEPT ANALYSIS task, renumbering succeeding tasks.

AMENDMENT

7-1203.(c)(2) A conceptual analysis of the generation cost of reliable net-zero emission electric power systems for Maryland. The purpose is to provide a high-level cost comparison of different combinations of generation technologies. The product informs goals and targets parameter ranges and more detailed analysis and planning. The art of concept analysis is to keep-it-simple, to ignore details (like transmission) that obscures and does not directly impact relationships, to accurately represent details (like intermittency) which does distinguish between generator types. Concept modeling would be based on the following assumptions:

(I) Generation technologies include different combinations and types of wind, pv, nuclear, storage and green combustion turbines.

(II) Performance metric is the system cost (fixed + variable) of generation combinations that satisfy historical load.

(III) Legacy free, ignores existing infrastructure, policy, and markets design.

(IV) All new construction.

(V) Unit costs and financial assumptions using the latest NREL/ATB database, R&D case (no subsidies, financial assumptions), tech life capital recovery period.

(VI) Perfect (no loss, no cost) transmission and distribution (the copperplate assumption).

(VII) Closed system, no imports/exports across state boundaries. {of course, Maryland has interstate transmission, but this unnecessarily complicates a relative comparison of generator types}

(VIII) High fidelity renewables representation. 10 years historical hourly renewable resource data from reanalyzed wind and insolation data sets. Empirical models convert wind and isolation to hourly electricity generation profiles.

(IX) Simple hourly dispatch modeling. The generation configuration technologies must satisfy load for every historical hour.

Dr. Alex Pavlak; Future of Energy Initiative; www.FutureOfEnergyInitiative.org
315 Dunham Ct., Severna Park, MD 21146; (410) 647-7334; (443) 603-3279(c); alex@pavlak.net