

## HB220 Unfavorable

HB220 replaces the RPS with another market-based method. Electric power systems have expensive components and long product cycles making market-based development risky. Mistakes can be spectacular as evidenced by Texas rolling blackouts.

Maryland's goal is reliable electric power with zero GHG emissions. With a sound goal the low risk method is rational planning. This starts by quantifying options for what a reliable zero GHG emission electric power system looks like, renewables, vs nuclear vs mix. This analysis is analogous to architectural drawings, no unnecessary detail. Policy makers then choose an option after which planning and building commences.

The next step is for Maryland to task a trusted agent to quantify options.

The following OpEd presents this process in more detail. It was published in the Baltimore Sun in 2016 in support of Governor Hogan's veto of the Clean Energy Jobs Act.

### **A low-risk path to sustainable Maryland Electricity**

{Baltimore Sun OpEd, December 14, 2016}

Those of us who have successfully built unprecedented systems understand the importance of following a process: 1) clarify the ultimate goal, 2) explore alternative concepts, and then 3) choose one. Bitter experience teaches that migrating forwards from where we are, rather than starting with the ultimate goal, entails a high risk of expensive failed systems.

For example, a developer building a skyscraper starts by hiring an Architect/Engineering firm to develop concept designs: the cost, performance and risk of different concepts. Stakeholders choose one and then building begins. Starting to build the first 20 stories before choosing a concept would be a naïve mistake.

Public works projects follow this process every day with many stakeholders. When Maryland and Virginia decided to replace the Wilson Bridge, they first hired engineers to clarify alternatives: tunnels, high bridge, low bridge and drawbridge. While engineers recommended a tunnel, stakeholders chose a drawbridge. \$2.5 billion later we have a drawbridge and everyone seems content.

America's greatest achievements have followed this process. When President Kennedy said we will put a man on the moon in ten years, he thought we would build a big rocket, go from earth to moon and return. Our German rocket scientists wanted to build a rocket in earth orbit, go from earth orbit to moon and return. NASA's John Houbolt championed a lunar orbit rendezvous: go from earth to lunar orbit, drop a guy down, pick him up and return. Using the smartest people in the world, it took NASA one year to correctly choose the lunar orbit rendezvous. The other choices might have eventually reached the moon but not in ten years.

Both the International Panel on Climate Change and the National Academy of Sciences tell us that we will need very large overall emission reductions to mitigate climate change. This implies an ultimate goal of a zero-emission electric power system. Even climate change skeptics understand that fossil fuel resources are finite and an electric power system without fossil fuel is inevitable.



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Maryland's strategy is to mandate forward migration, currently 20% renewables by 2025. We know the results will be unfortunate because [Ontario Canada](#) has already been there. Over the past decade Ontario has reduced power system carbon emissions by 80% to 44 grams CO<sub>2</sub> per kWh! In contrast PJM, Maryland's transmission provider, has system emissions of 460 g(CO<sub>2</sub>)/kWh, unchanged over the past decade. But all is not well in Ontario. While their achievement is unprecedented, it was not well planned. Ontario learned that while wind and solar work well on high carbon systems, intermittency inhibits the ability to reach a zero-emission system; Ontario electricity prices increased by 70%; industry is leaving; and politicians are losing their jobs.

For rational planning, Maryland should task engineers (with a strong record of developing unprecedented systems) to clarify concepts for a zero-emission PJM power system. This concept definition study would explore all possibilities including renewables, nuclear power, carbon sequestration.... The product would be the cost, performance, risk and development needs for practical alternatives. Stakeholders can then rationally choose a path. It is particularly important to determine what is necessary for intermittent wind and solar to be compatible with a zero-emission power system. In contrast to rational planning, 20% renewables, however well intentioned, is a naïve plan. That is like building the first 20 stories of a skyscraper before choosing a concept design; or planning to get rid of Saddam Hussein (and then what?).

Last May Governor Hogan vetoed Maryland's Clean Energy Jobs Act which accelerates Maryland's Renewable Portfolio Standard from 20% by 2025 to 25% by 2020. This is a big bill; the total cost of installing enough wind and solar to provide 25% of Maryland's electric power approximates \$12 billion. The RPS mandates a \$12 billion investment without a competent plan to reach a zero-emission electric power system. A wise General Assembly would let that veto stand and then reevaluate clean energy choices after a thorough zero-emission concept design study.

[www.FutureOfEnergyInitiative.org](http://www.FutureOfEnergyInitiative.org)

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