

MANAGING TECHNOLOGIES UNPROVEN AT SCALE

Peter Anderson // Appalachian Voices // peter@appvoices.org
Will Cleveland // Southern Environmental Law Center // wcleveland@selcva.org
Connor Kish // Sierra Club Virginia Chapter // connor.kish@sierraclub.org
Blair St. Ledger-Olson // Climate Cabinet Education // blair@climatecabinet.org

EXECUTIVE SUMMARY

As Virginia's industries and utilities work to power our communities with carbon-free energy, it is critical that our environment and consumers are protected as we consider technologies not yet proven at scale. There are serious environmental and consumer protection concerns associated with modular nuclear energy, hydrogen, and carbon capture and sequestration. These technologies are not commercially viable and the costs of development are almost orders of magnitude greater than already proven technologies such as wind, solar, and battery storage.¹ Virginia should maintain focus on bringing these proven technologies to scale and not invest taxpayer or ratepayer resources into unproven technologies.

CHALLENGE

While the costs of wind and solar have plummeted in recent years, the costs of nuclear – particularly modular reactors – are trending in the opposite direction, leaving it unproven at scale.² There are no modular nuclear reactors currently in commercial operation in the US.³ The current leading proposal – set to be completed in 2029 – recently announced that its estimated costs have risen from \$5.3 billion to \$9.3 billion, for a total of only 462 MW capacity.⁴

Hydrogen is also extremely costly and energy-intensive to produce. It takes a significant amount of energy to produce hydrogen. Green hydrogen, using clean energy to generate hydrogen to then burn for electricity generation is duplicative and wasteful – not to mention the fact that there is currently not a surplus of clean energy on the grid. Research suggests green hydrogen can require 2 to 14 times more energy than available alternatives that use direct electrification, meaning it doesn't make sense to divert clean energy from the electrical grid to make hydrogen for uses where clean electricity can serve these energy needs directly.¹ While green hydrogen may have a future role in replacing natural gas as a manufacturing feedstock or in aviation, hydrogen should not be used for electricity generation or in homes.

Despite these facts, Virginia's 2023 legislative saw numerous bills to prematurely codify and embed these technologies into the state's energy policy. Existing law in Virginia, thanks to the Virginia Clean Economy Act of 2020

(see ACHIEVING 100% CLEAN ENERGY), already permits existing nuclear and emerging technologies if and when they become safe and commercially viable. Currently, modular nuclear reactors and hydrogen are still unproven with significant unanswered cost and safety concerns, and therefore additional policy leverage should not be given at this time.²

SOLUTION

As technologies evolve that might eventually play a role in the clean energy transition, the environment and ratepayers should not bear the brunt of the risks of these unproven solutions. By prematurely propping up these technologies, Virginia could risk facing the financial and environmental crises that have plagued other states whose deliberations were inadequate.³

As new technologies appear, lawmakers in partnership with state agencies should 1) engage in deep research and education about the topics, 2) compare and contrast the proposals and their results in other states, 3) prioritize environmental protections and environmental justice, 4) protect captive ratepayers from the economic risks associated with speculative development of unproven technologies, and 5) avoid prematurely codifying terms and processes that could advance unproven tech.

The solution to uplifting new technologies is ultimately to allow private markets, private industries, and private investors to take on the risk of assessing the viability of such technologies – including their environmental risk – with strong regulatory and government oversight. The ratepayers and taxpayers of Virginia don't need to pay for the research and development of unproven technologies – this is the role of private investors.

In closing, no modular nuclear reactors are currently powering the electric grid in the US and there is not enough green hydrogen to power anything cleanly. Clean, cheaper wind and solar are available now, operating, and working to power our communities while providing drastic emissions reductions and delivering powerful economic benefits to the communities they operate in and around.

POLICY RECOMMENDATIONS

Prioritize existing affordable, clean, renewable energy resources instead of unproven resources that have extremely high – and rising – costs.

Shield ratepayers and taxpayers from the cost of researching and/or constructing unproven technologies like modular nuclear and hydrogen.

Prevent non-renewable technologies from inclusion in Virginia's renewable portfolio standard as that will disrupt Virginia's thriving solar and wind industry.

Differentiate between green, brown, pink, and other forms of hydrogen in any hydrogen-related policies.

Do not consider hydrogen for electricity generation or the powering of homes.