

Written Testimony

Of

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Exploring the Impacts of Hydrogen in Pennsylvania

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My name is Nick Cohen and I am the President and CEO of Doral Renewables LLC, a Philadelphia based company that is a leading renewable energy developer with over 11 gigawatts under development. We are currently building the largest solar and agrivoltaic project in the United States as part of our \$1.5 billion Mammoth project in Indiana. We have 800MW of projects in PA but none are under construction for reasons out of our control. Renewable energy is being held back by forces, such as grid application backups. Eventually, renewables will get traction and will help fuel a hydrogen economy that is also slow to develop. Green hydrogen offers an opportunity for renewable energy to potentially skip the grid backlogs and other barriers that are otherwise slowing progress.

Federal and State governments can do a lot to accelerate the hydrogen economy. Winning a part in two federally funded hydrogen hubs is a big achievement for the Commonwealth. I am here today to voice my support for the hydrogen economy and green hydrogen specifically. I'll also acknowledge some of the challenges.

Pennsylvania is uniquely situated to be a key winner during the energy transition. It's geographically positioned to be near current and potential end use for low carbon intensity hydrogen. Since transporting hydrogen is challenging, proximity to customers is important. The Commonwealth also has a diverse mix of energy sources that can fuel the production of low carbon intensity hydrogen. My focus today, is on green hydrogen because the process is straight forward and undeniably clean.

Natural gas derived hydrogen with carbon capture, known as blue hydrogen, can play a role in the transformation, especially because of the abundance of natural gas. The challenge is how to assure that the gas is sourced without leakage into the atmosphere and, perhaps more so, if there is a plausible solution to sequester the carbon dioxide (CO₂) that results from blue hydrogen production. Sequestration science and practices need to be proven at scale before serious commitments to the process are widely accepted by the public.

Green hydrogen, made from renewable energy has an easily traceable, zero carbon intensity validation. Nothing is easier to attribute to the environmental benefit. The public is more likely to embrace this kind of hydrogen source.

For Doral and the Commonwealth, there is an economic opportunity. Renewable projects can accelerate development by interconnecting directly to hydrogen projects while waiting for the unknown grid application process to mature. This could shift billions of dollars of investment from the sidelines to construction. It could create thousands of jobs. Communities, especially in rural areas and industrial

centers where the land is suitable for large projects, would see significant economic uplift. All of this, is the future eventually.

One caveat would be that the economics hold up much better if the temporal pricing policy, yet to be announced from U.S. Department of Treasury, allows for virtual renewable energy contracts to supplement times that the localized renewable energy is not able to deliver to the hydrogen process. Also, the very slow rollout of renewables in Pennsylvania creates a near-term limitation in how much hydrogen could be produced unless the hydrogen projects were allowed to enter into virtual renewable energy power purchase agreements.

The Biden administration recently announced the winning hydrogen hub proposals. Pennsylvania is the only state that is participating in two separate hubs. Even so, it is expected that the hubs will not be built out for many years, and the infrastructure will not be ready until beyond 2030.

The announcement of the Mid-Atlantic Hydrogen Hub and Appalachian Hydrogen Hub as being selected by the Department of Energy for funding will ensure that the necessary infrastructure to lower the cost of hydrogen production and transportation will be available.

Regarding safety, I am not concerned. The Federal government and the Commonwealth have permitting and safety standards that protect us all. Utility scale projects come with a very high standard of financing that requires plenty of independent engineering assessments. No project of scale, including pipelines, would ever get financed if it was not safe. Regardless, the government authorities are reliable and can be trusted to adapt to the regulatory needs of new technologies or methods.

To boost the green hydrogen opportunity, renewables must be accelerated. We recommend that the Commonwealth create incentives for renewable energy projects to support hydrogen projects. A special class of Renewable Energy Credits (RECs) could be an effective way to provide an incentive for renewable projects to integrate directly with hydrogen projects.

To better unlock the potential of renewable energy for the benefit of the Commonwealth and the hydrogen economy, Pennsylvania should follow states like Wisconsin and Michigan. These states have enacted legislation that puts full permitting control under the state. Most renewable energy projects are not realized because local zoning and small-group, loud-voice opposition kills the project while it awaits a slow grid application process. By implementing state-controlled zoning and permitting, local officials will be relieved of the dramatic public meeting chaos and complicated decision analysis. State control would hand landowner rights back to the landowners who often are otherwise denied opportunity when projects on their land are blocked by local authorities.

Some economic analysis: Recent natural gas pricing is in the \$2.50 - \$3.00/MM BTU range. For comparison \$1.00/kg hydrogen (which is the current goal by the Biden administrations' Hydrogen Shot program) would have an equivalent price of about \$7.50 MM BTU. Current estimates for the manufacture of green hydrogen by electrolysis are \$5.00 – 5.50/kilogram. With production tax credit incentives, the costs of green hydrogen are marketable. Economies of scale, additional incentives, and improved technologies are expected to drive the costs down.

The transition to renewable energy and green hydrogen is one of the greatest job creation and economic opportunities. The Commonwealth can improve outcomes by accelerating renewables - - the engine behind green hydrogen. Thank you for your time, and for the opportunity to testify.