

Written Testimony from the Mid-Atlantic Clean Hydrogen Hub (MACH2) to the Pennsylvania  
House Environmental Resources & Energy Committee

**Monday, June 17, 2024**

Chairman Vitali, Chairman Causer, and Members of the Committee:

MACH2 is grateful for the opportunity to submit testimony on the future of the clean energy economy, particularly clean hydrogen, in Southeastern Pennsylvania.

From the conception of MACH2, our overarching goal has been to do hydrogen right so that we can use it as a critical tool in a broader kit to achieve deep decarbonization and meaningful progress on climate change and public health.

The Department of Energy selected MACH2 as one of seven hydrogen hubs nationally. As a testament to our vision, the Department of Energy, during the evaluation and selection process, ranked MACH2 as both the greenest and most labor-supportive hub in the nation.

MACH2 is now in the process of finalizing negotiations with the Office of Clean Energy Demonstrations (OCED), which is a part of the U.S. Department of Energy, to enter phase 1 of a four phase project management program where MACH2 and its project partners will need to meet a series of requirements called go/no-gos. During Phase 1, MACH2 and project partners will begin to engage in more detailed planning of proposed projects. Community engagement is an integral part of phase 1 and will help inform project and community benefits planning.

Overall, the MACH2 hub is proposed to include 77-82% green hydrogen projects, with the balance being pink (nuclear; 15-20%) and one proposed orange hydrogen project (biomethane currently being flared from the City of Philadelphia wastewater treatment facility; 3%). To be clear, MACH2 will not include any extracted fossil fuels. It is a non-extraction hub, meaning no natural gas or fossil fuels will be extracted or used to create hydrogen.

Green hydrogen projects will produce hydrogen using electrolyzers, which separate hydrogen from oxygen in water molecules. These projects will use energy from renewable sources, including solar and wind (land-based and offshore). Further, our green project partners are planning to develop additional renewable energy capacity behind the meter to ensure that we're not impeding the decarbonization of the grid and electrification of the broader economy (light vehicles, buildings, etc.).

Similarly, our pink hydrogen projects will use nuclear power to run electrolyzers. The proposed orange hydrogen project in our hub will use excess methane from a Philadelphia wastewater treatment plant. Currently, about half of the bio-methane generated by the plant is flared, which releases additional greenhouse gas emissions.

In all, MACH2 aims to achieve a reduction of at least one million metric tons of carbon a year, which is the equivalent of taking 220,000 cars off of the roads, by displacing fossil fuels (oil, diesel, natural gas) that are currently used in the difficult to decarbonize sectors of heavy industry, manufacturing, public transportation, agriculture, marine shipping, long distance trucking and aviation.

## **Community Benefits**

In putting together the MACH2 proposal, we sought to ensure that we developed one of the most robust community benefits plans in the nation as a part of our application.

This starts with reducing exposure to particulate matter and other criteria pollutants in the frontline and fenceline communities up and down the I-95 corridor that have shouldered a disproportionate burden of pollution from heavy industrial activity and the transportation sector for generations, while not fully realizing the economic benefits of such activity. Repowering industrial facilities and heavy-duty vehicles with green and pink hydrogen represents the greatest opportunity to reduce pollution in communities since the Clean Air Act Amendments of 1990 passed. Building support within communities and gaining the social license to construct electrolyzers and repower polluting facilities will only progress at the speed of trust that's built through authentic partnerships and ongoing dialogue. Phase I of the plan (months 1-15) focuses largely on working with communities to receive early input and create opportunities for dialogue and changes based upon feedback.

To address the historic economic inequities and create pathways into careers in the clean energy economy, MACH2 will provide nearly \$14 million in funding to regional workforce development boards that will serve as partners for community college training and pre-apprenticeships. MACH2 was developed in partnership with labor and minority-serving institutions, including the Philadelphia Building Trades and Cheyney University, and intends to support apprenticeship and pre-apprenticeship programs, certificated and stackable credentials, and wraparound services that enable training and employment. MACH2 anticipates creating 20,800 direct jobs—14,400 in construction jobs and 6,400 permanent jobs. Hub partners have agreed to project labor agreements on all projects.

To overcome barriers for underrepresented groups, MACH2 plans to provide an additional \$10 million for technical and professional development initiatives, such as an on-site, hands-on hydrogen education program at Cheyney University, the oldest HBCU in the country. Additional benefits include air pollutant reduction and brownfield remediation. To ensure accountability, the Mid-Atlantic Hydrogen Hub plans to create a Workforce and Community Advisory Board and establish external verification systems.

## **Safety**

As noted by the Natural Resources Defence Council<sup>1</sup>, hydrogen is a non-toxic alternative to many of today's fossil fuels. In the event of a leak or spill it will not cause contamination to the environment and unlike gasoline or propane vapor, it will not stay at ground level, lowering the chance of fires or other hazards if released. It is important to keep in mind that US companies have decades of experience with the production, storage, and use of hydrogen, with established benchmarks for industry safety, such as the National Fire Protection Agency's Hydrogen Technologies<sup>2</sup> Code. MACH2 projects are committed to meeting these established standards. Additionally, MACH2 is working with our workforce development, higher education, and industry partners to develop best-in-class local safety training coursework and facilities. As part of our overall strategy, MACH2 will also engage with first responders to provide training and solicit feedback on safety measures. Thorough and ongoing evaluation of technologies and materials will take place starting in phase 1.

## **Conclusion**

The Biden Administration's selection of MACH2 was only the first step in a rigorous process designed to deliver on the promise of a greener, healthier, and more equitable future for our region. That said, it is important to acknowledge that while taking bold, decisive action to address the climate crisis is good for all of us, the ongoing environmental injustice of many communities being sacrifice zones, as they shoulder a disproportionate share of the burden of pollution due to their proximity to heavy industry facilities and major highways, cannot continue. We need climate solutions that are just and equitable. Fortunately, our climate goals and environmental justice goals can align, if we work together to simultaneously repower tough to decarbonize sectors, while also maximizing the opportunities to reduce criteria pollution and measurably improve air quality. While the vast majority of our climate goals will be achieved through the decarbonization of the grid and the electrification of many sectors, hydrogen, when it is produced from electrolysis powered by renewables and nuclear, offers an essential tool to reduce the 15-20% of emissions that are most difficult to decarbonize. We are committed to taking every step necessary to implement these solutions the right way and we look forward to working with the committee.

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<https://www.nrdc.org/bio/christian-tae/hydrogen-safety-lets-clear-air#:~:text=A%20hydrogen%20leak%20or%20spill,times%20lighter%20than%20gasoline%20vapor>

<sup>2</sup> <https://www.nfpa.org/codes-and-standards/nfpa-2-standard-development/2>