



**Comments before the PA Department of Environmental Protection
Citizens Advisory Council
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Delaware Riverkeeper Network is very concerned about the proposed MACH2 Hydrogen Hub. Billed as a “green” hub by its promoters, we caution that no hydrogen can be classified as truly “green” or “clean”, no matter what energy source is used to make it.

First, we call into question whether the MACH2 will use natural gas - fracked gas - as an energy source despite claims to the contrary. And they say they will be using nuclear energy which is neither clean nor green when you consider the radioactive waste and the cradle to grave extraction and processing impacts. And many of MACH2’s claimed sources of green energy such as solar or wind that were planned have been cancelled or postponed.

In their recently released updated application to DOE they say they will use a steam methane reforming process to produce hydrogen powered by so-called “Renewable Natural Gas” (RNG) with carbon capture in the Philadelphia Gas Works MACH2 project.¹ RNG is not what it sounds like – it is not renewable like solar or wind that is replenished from natural sources – RNG describes engineered systems that rely on waste or other human-made processes and all have myriad intrinsic environmental impacts and costs.² And it’s not clean – it releases carbon and pollutants.

They say they will fix that by employing “Carbon Capture” but this is unproven technology. Inadequate regulations and safety standards, evidence that the carbon will eventually leak out from storage³ and that carbon pipelines are not safe, make this technology clearly unreliable. Additionally, the production process at the the “PGW Richmond Plant and Passyunk Plant” will emit nitrogen oxides⁴, adding to an already polluted air shed that will have direct negative impacts on community health and the environment. RNG is classic greenwashing.

PGW in Philadelphia plans to use this so-called RNG but capturing energy from wastewater has not been accomplished on a large scale and how it will be done – for instance, whether caustic chemicals will be used to speed the slow power-to-hydrogen conversion rate - is not revealed in

¹ <https://drive.google.com/file/d/1vvuTr-JL2qrjSjKkZGsudyJt-jDdnth/view?usp=sharing> and the MACH2 industry website: <https://mach-2.com/>

² <https://www.sightline.org/2021/03/09/the-four-fatal-flaws-of-renewable-natural-gas/>

³ <https://environmentalintegrity.org/carboncaptureuseandstorage/>

⁴ <https://drive.google.com/file/d/1vvuTr-JL2qrjSjKkZGsudyJt-jDdnth/view?usp=sharing> PDF p. 35.

the documents that are available. In fact, the public has little information about just what MACH2 entails and what the ~17 projects in the MACH2 footprint means for communities.

For instance, the MACH2 application reveals they will have to build and reuse pipelines within the densely populated city of Philadelphia and beyond.⁵ Hydrogen leaks easily, is a hazardous material, highly flammable, potentially explosive, and extremely difficult to manage safely. It embrittles metal, making it more likely to leak, crack and release. There are unacceptable risks associated with the production of hydrogen in the city and the distribution of hydrogen through hazardous pipelines snaking through the neighborhoods and under the roads and infrastructure of Philadelphia. Unfortunately, the public has not been informed of the public safety and health dangers that hydrogen poses.

And we must point out that MACH2's boasting that they will "reuse and revitalize significant existing pipeline infrastructure"⁶ and terminals – means that they will be placing these dangerous projects in historically impacted areas, where environmentally overburdened communities live now; new public health and hazardous threats would be layered on. This includes all of southeastern PA, Delaware, and the NJ locations they want to construct this web of projects they call MACH2. Additionally, they are even moving ahead today with parts of what will be MACH2 without adhering to any of the promises of robust community involvement and environmental considerations that the DOE is saying these hydrogen hubs will provide.

For example, SEPTA has already moved ahead and purchased hydrogen powered buses and is installing storage and fueling systems in one of their bus terminals. Workers and the public will be right up against these hydrogen storage offloading, storage, and bus fueling operations; they will be in proximity to the impact zone of a hydrogen release that can result in an extremely cold vapor cloud, an inextinguishable fire or an explosion. Any of these consequences of a release could result in catastrophe, yet everyday people will be exposed to this jeopardy and they don't even know about it. This is an example of how the hydrogen hub is galloping ahead without any community engagement or any involvement of the public in the decisions that are already being carved in stone by MACH2 – in a vacuum. And just because they are not using MACH2 funding now doesn't excuse this insult to the public – SEPTA is a named partner in MACH2 and is included in all of their planning.

In addition to these components, MACH2 plans for industrial, transportation, electric power generation, and residential & commercial end-uses.⁷ It's essential we recognize that in addition to the NOx pollution from steam methane reforming, burning hydrogen, no matter how it is produced (green or not), emits nitrogen oxides, which severely harm human health with pollution and cause smog, worsening the climate crisis. Electric power generation requires burning hydrogen.

And the reason for the gigantic amount of taxpayer money being offered for the 7 hydrogen hubs across the nation and the federal tax credit programs is built on a fallacy as well. Hydrogen hubs and their infrastructure will actually **increase** greenhouse gas emissions; hydrogen, as an indirect

⁵ <https://drive.google.com/file/d/1vvuTr-JL2qrjSjKkZGsudyJt-jDdnth/view?usp=sharing>
and the MACH2 industry website: <https://mach-2.com/>

⁶ <https://mach-2.com/about-mach2>

⁷ OCED, https://drive.google.com/file/d/1_i88-HrCK348Z_VXfhxW4uwcSku3L--9/view

greenhouse gas, amplifies and extends methane in the atmosphere.⁸ It is not a climate solution, it will undermine attempts to achieve greenhouse gas emissions reduction goals such as President Biden's 50-52% reduction by 2030.⁹ It is obviously not a climate solution, which is the rationale it is built on. Hydrogen energy is a house of cards.

Thank you for the opportunity to comment before the Citizens Advisory Council today.

Delaware Riverkeeper Network: <https://www.delawareriverkeeper.org/ongoing-issues/mid-atlantic-hydrogen-hub>

⁸<https://www.rechargenews.com/energy-transition/-hydrogen-unlikely-to-play-major-role-in-road-transport-even-for-heavy-trucks-fraunhofer/2-1-1162055>

⁹ <https://www.whitehouse.gov/climate/>