

Expanding Zero-Carbon Fuels



For much of the last 100 years, the progress brought about by energy and industrialization has left an indelible impact on our communities. From coal to steel to natural gas, Pennsylvania has been at the forefront of America's industrial might. Now, it's time for a NEW energy future – a zero-carbon energy future where our Commonwealth can thrive and be globally competitive.

Zero-carbon fuels bring innovative new energy solutions that help power our economy and strengthen our communities. The role of zero-carbon fuels like hydrogen and ammonia is expanding to help power both the industrial and transportation sectors.

| ENERGY END-USE | ZERO-CARBON FUELS |
|----------------------------|-------------------------------------|
| Heavy-duty Trucking | <input checked="" type="checkbox"/> |
| Marine Shipping | <input checked="" type="checkbox"/> |
| Aviation Fuels | <input checked="" type="checkbox"/> |
| Iron and Steelmaking | <input checked="" type="checkbox"/> |
| Industrial Process Heating | <input checked="" type="checkbox"/> |
| Power System Balancing | <input checked="" type="checkbox"/> |
| Building Heating | <input checked="" type="checkbox"/> |

What are Hydrogen and Ammonia?

Hydrogen: Hydrogen – or H₂ – is an element that can be used as a clean fuel for producing energy and heat for electricity and industrial processes without emitting any carbon into the atmosphere. Hydrogen could play an essential role in a stronger, more competitive energy future for Pennsylvania, helping preserve our manufacturing and industrial jobs while protecting our communities for future generations.

Ammonia: Ammonia – or NH₃ – is a fuel that is produced from hydrogen and, similar to hydrogen, can be used or burned without emitting any carbon into the atmosphere. Ammonia is typically used in the fertilizer industry, but it could play an important role in providing clean fuel for marine shipping or other heavy transportation. It could also provide a solution to transport hydrogen more easily around the country.

Hydrogen (and ammonia produced from hydrogen) can be used as an alternative to traditional fossil fuels in a wide variety of transportation and industrial uses. In addition, both of these zero-carbon fuels could be used as cleaner-burning alternatives for industrial processes and power grid balancing. **These fuels will help our commonwealth rebuild its industrial competitiveness and maintain its status as a domestic energy leader.**

Regional Hydrogen Hub

A regional hydrogen hub is a network of hydrogen producers and consumers that share transportation and storage infrastructure. Hydrogen hubs will produce clean hydrogen from a variety of sources – including natural gas with carbon capture, as well as electricity. Western Pennsylvania could become the site of a greater Appalachian hub, which would serve a multi-state region with hydrogen produced from Pennsylvania natural gas. This hub would provide a competitive edge to businesses and consumers in the emerging hydrogen economy.