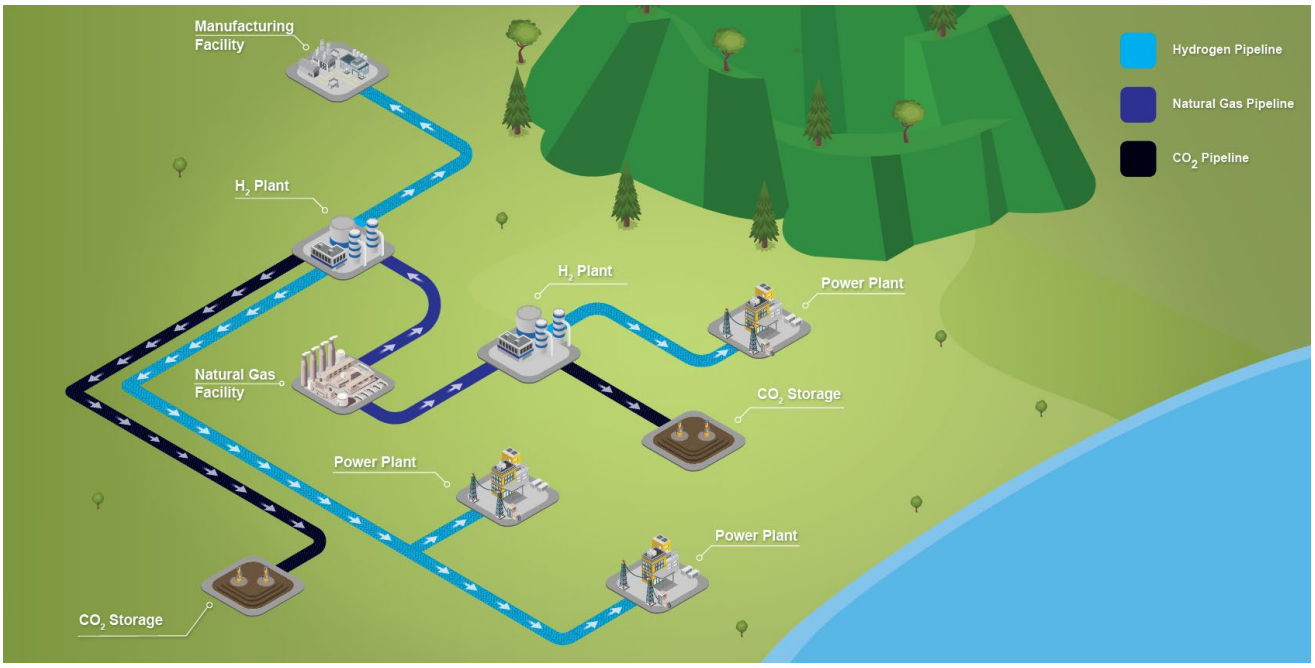
North Central Appalachia proudly powers the United States' industrial and energy industries and has done so for generations. This region has shepherded the nation through revolution upon revolution in energy production, from the first commercial oil wells and the most productive coal mines to the birth of commercial nuclear power and the discovery of the lowest-carbon natural gas in North America. The nation has enjoyed the benefits of Appalachia's natural resources and driven workforce, but the communities of North Central Appalachia are among the least wealthy and most disadvantaged in the country. The Department of Energy's (DOE) Regional Clean Hydrogen Hub program presents us with a monumental opportunity to harness the clean energy transition to drive transformative socioeconomic investment and to take a national lead in low-carbon manufacturing.

To seize this opportunity, Team Pennsylvania (Team PA) joined industry partners and established the Decarbonization Network of Appalachia Hydrogen Hub (DNA H2Hub). The DNA H2Hub represents a collective vision for emissions reduction and economic revitalization driven by increased GDP, the creation of new family-sustaining jobs, and new business opportunities for local supply chains.

Leveraging innovative, proven, and industrial-scale technologies, DNA H2Hub leans into the strengths of Appalachia's people and natural environment – a capable workforce and competitive edge in natural gas and power production, nimble universities and research institutions, and favorable geography – to deploy hydrogen (H_2) production across Ohio, Pennsylvania, and West Virginia. Thanks to these assets, DNA H2Hub will unlock affordable, clean H_2 and decarbonize the supply chains, manufacturing, and power production in America's industrial heartland.

At the core of DNA H2Hub are the multiple H_2 production facilities and supporting infrastructure that will together supply the clean H_2 to end-users in polymer manufacturing and power generation. With these initial end users, DNA H2Hub promises to serve hundreds of millions by decarbonizing the largest American plastics supply chain and the PJM Interconnection grid, which supplies electricity to over 65 million people. As it expands, it will decarbonize industries (such as steel) that lie at the heart of regional manufacturing, growing the economy while reducing pollution.



DNA H2Hub layout

Major objectives

DNA H2Hub is committed to executing a long-term, end-to-end vision for H_2 market growth and environmental and standard of living improvements for the people and environs of Appalachia. Planned objectives and goals which align with the DOE vision include:

- **Establishing a commercially viable, clean H_2 hub** that optimizes the production of low-carbon H_2 from the region's abundant supply of natural gas to kick-start tri-state demand and prove the long-term economic viability of a clean energy ecosystem.
- **Creating a corridor in a national clean H_2 network,** providing a vital link between population and manufacturing centers in the Northeast, Midwest, and Southeast United States.
- **Strengthening domestic, hard-to-abate industries,** such as heavy industry manufacturing, while providing a transition to low-carbon, clean tech manufacturing by building H_2 infrastructure.
- **Reducing environmental burden** in impacted areas by first decarbonizing the plastics value chain and power sector, and subsequently decarbonizing heavy industry.
- **Operating H2Hub in a way that prioritizes safety and drives value for vulnerable residents** of OH, PA, and WV through prolonged and authentic community engagement and investment, engagement with labor, reduced pollution, and minimization of new land use.
- **Expanding the development of a skilled workforce** and improving regional employment and job access by creating a pipeline of new, high-quality, family sustaining, clean energy jobs in a marginalized, underserved, and fossil fuel-dependent region. DNA H2Hub will also mitigate regional job losses in industries vulnerable to the ongoing energy transition through its workforce retraining efforts.
- **Strengthening local small business enterprises and set the region up as an energy powerhouse** by building a clean energy ecosystem and partnering to cultivate local supply chains.

Project impacts

DNA H2Hub investment would be a historic turning point for communities in North Central Appalachia. It represents an unprecedented opportunity to drive socioeconomic benefits to the region and help reverse decades of underinvestment.

- **Environmental Justice:** The nearly 3 million residents living in the 30 counties directly surrounding the broader DNA H2Hub network are among the most vulnerable to energy transition-related job losses and live in some of the most polluted counties in the country. These communities stand to see billions in GDP growth, increased small business development, reduced environmental burden, and increased clean energy access.
- **Community and Labor Engagement:** The DNA Project Team will co-create programs and solutions *with* communities. This approach is informed by outreach to 110+ organizations across community and environmental organizations, labor, workforce and economic development boards, research and academia, and state and local government. The DNA Project Team will use a multi-pronged strategy to collaborate on solutions that address community concerns of economic and job growth opportunities, environmental responsibility, community disruptions and safety, and broader social challenges, such as addiction and access

to health care.

- **Investing in the American Workforce:** The DNA Project Team has a proven track record of creating new high-quality jobs, protecting workers' rights, and ensuring equal opportunities. DNA H2Hub will create and train a workforce for the future in communities in which unemployment continues to lag national averages. The above average compensation, required skillsets, and advancement opportunities offered by new jobs will attract and retain workers that are seeking family-sustaining wages, opportunities to develop in-demand skills in the clean energy sector, and long-term advancement opportunities.
- **Diversity, Equity, Inclusion, and Accessibility:** DNA H2Hub will leverage a portfolio of best practices to materially expand equitable access to training and employment opportunities, cultivate a diverse supply chain, and foster an inclusive culture. The DNA Project Team will work with communities to design programs such as those that support women and minorities in STEM; expand Black, Indigenous, and People of Color resources; and support local small-medium, and minority and women-owned business creation, while creating a culture of equity and inclusion.

In the long-term, DNA H2Hub will advance decarbonization goals and meet a growing regional H_2 demand by connecting hub elements to other regional hydrogen hubs. DNA H2Hub will support this increased demand and future market liftoff by creating a local ecosystem with H_2 infrastructure, a skilled workforce, local supply chain, and policy and regulatory environment that allows private sector investments to flourish.

Major Participants

DNA LLC was formed by Team PA (the Prime Applicant) to manage the DNA H2Hub application for DOE funding as well as its future implementation. The DNA Project Team includes Team PA and participants Shell and Mitsubishi Power Americas.

Team PA is a non-partisan, 501(c)(3) organization co-chaired by the Pennsylvania State Governor and a private sector CEO. Since 1997, the organization has championed complex issues focused on accelerating economic growth through public-private partnerships. The Board of Directors, staff, investors, and participants are committed to leading the region's energy transition.

Shell has a record of developing and executing multi-billion-dollar capital projects using well-established management systems to drive safe, cost-effective, high quality, and competitive project execution. Shell has decades of experience developing, deploying, and operating H_2 technology globally.

Mitsubishi Power, a power solutions brand of Mitsubishi Heavy Industries, is a world leader in power generation and energy storage solutions. It provides power generation solutions that include cleaner natural gas and clean hydrogen, renewable energy, hydrogen and battery energy storage, environmental controls, services, and digital solutions for plant operation and maintenance.