

House Majority Policy Hearing on Pennsylvania's Next Economic Opportunity: Hydrogen, Carbon Capture and Jobs of the Future

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Chairman Causer, and members of the Committee:

Thank you for this opportunity to testify today on the topic of decarbonization in Pennsylvania, and how we can grow economic development while protecting the environment through Carbon Capture and Storage (CCS) and a Hydrogen Hub. There is an immense opportunity for industry, government, nongovernmental organizations, and the broader public to work together to build a new era of manufacturing in Pennsylvania while safeguarding its natural resources.

Shell has a deep global commitment to decarbonization, it is woven into our strategy, and we are working to become net-zero by 2050, in step with society. Shell has end-to-end decarbonization capabilities and is leveraging its global capabilities to proactively mature the potential for decarbonization hubs with local and global partners. Shell has demonstrated success with several similar decarbonization projects globally, which means we have the knowledge and expertise to deliver a successful project in this region.

Shell has strong capabilities in both transport and storage, with local presence/relationships and midstream experience and subsurface capability. This of course includes the plant we built in Monaca, Beaver County, that will create 600 permanent jobs once operational; the construction phase of the project supported 9,500 jobs during peak construction and has created an estimated 34,000 jobs total over the past nine years based on an economic impact study conducted by Robert Morris University. The study also found that, for each direct job created, 18 indirect jobs also resulted. You can reference more details of the study in your packets. In addition to jobs, within Pennsylvania, Shell has invested \$1.2M in social investments, \$400,000 in education, and \$123,000 in conservation. Having experience in building a large-scale infrastructure project in Pennsylvania, we understand the path ahead for a new decarbonization project in the region, and investment needed to deliver.

Regionally, Shell envisions the area as an end-to-end decarbonization hub, featuring CCUS, Renewables, H₂, low CI feedstocks and products, circular plastics, advanced energy management, and nature-based solutions, with CO₂ capture and blue H₂ within this decade if investments and actions are taken at the right pace in step with the market and development of the right legislative framework. The tri-state region, and particularly Pennsylvania, are well-positioned to become a leader in decarbonization and "future-proof" the region due to its access to natural gas as an input to Blue H₂, advantaged regional geology, and incumbent industry with incentive and capabilities to decarbonize.

Appalachia's 110Mtpa of CO₂ emissions requires multiple levers to decarbonize, making it an excellent candidate for a decarbonization hub. End-to-end decarbonization hubs have not been fully developed in any region – the tri-state region has an opportunity to lead in business and technology expertise and policy definition by being first. The region's difficult to abate heavy industries make it critical to act now, and those same businesses have the commitment and workforce to lead in the transition.

The Marcellus Shale footprint in this region produces natural gas that has the lowest carbon intensity of any gas produced in the USA. Further decarbonizing its processing and use in developing low CI products will further and deepen this advantage. Pennsylvania has a diverse set of incumbent industries (e.g.,

Refining, Iron and Steel), which are vital to the economy, but have a higher carbon footprint. CCUS is an applicable decarbonization lever. The region's geology is naturally suited to carbon capture and provides ample storage opportunity; aquifer or oil storage in region could absorb ~250 years of current industry emissions.

Shell plans to utilize the tri-state region's unique geology and the Monaca asset as a catalyst to build and develop a hub for carbon capture. Ideally our storage solution would be available to other emitters in the region – and can become a lighthouse project for emissions from Western Ohio and Michigan. Industry would be able to utilize a combination of CCUS and H2 as primary decarbonization levers, with CO2 pipelines delivering emissions to a CCS Storage hub that begins in the tri state area.

Hydrogen can help jump-start the decarbonization in the steel industry, power generation, and in mobility applications. Blue Hydrogen is particularly promising given the proximity of local natural gas supply and ability to store CO2 underground. Pennsylvania has the right fundamentals to become a large hydrogen production location that will develop in step with market demand.

But to move forward, Pennsylvania needs the basic legislative and regulatory building blocks. These blocks include comprehensive carbon capture and hydrogen legislation that addresses issues such as subsurface ownership rights and liability while creating the framework for CCS developers to pull together the footprint required to build out a hub. This legislation would align the concerns of various groups and provide a holistic regulatory path to development. Without this complete framework it will be challenging for any group to develop a hub in this region and could also complicate efforts to attract DOE funding for these opportunities. In addition to this legislation, the State of Pennsylvania may apply for Class VI permitting primacy; allowing the state to manage the process and competing interests for drilling and injection in the Commonwealth. Pennsylvania primacy would also streamline the process for development of a hub.

Shell sees itself as a leader in the energy transition. We are working with a core group that is leading these conversations and we are interested in discussing the roles of additional groups in the region so that we may all come together to drive meaningful change and progress toward decarbonization goals here in Pennsylvania. With the right combination of hard to abate industry, the right combination of industry leadership, exemplary private-public partnership, and the appropriate legal framework we are poised to build a hub that could serve as an example for the rest of the country. I'm optimistic we can work together to build upon the manufacturing legacy that this region upon which this region was founded and continue to support people and families in our region through job creation.

Thank you, Chairman Causer, Representative Nelson and members of the committee. I look forward to addressing any questions you may have.



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MAKING THE EXPERIENCE MATTER



Economic Impact Study

Completed April 2021

By the time construction is completed in 2022, the project will have generated:

Jurisdiction	Tax Revenue	Economic Activity
Commonwealth of PA	\$73M	\$1.7B
SW PA 10-County Region	\$57M	\$2.7B
Beaver County	\$15.7M	\$693M



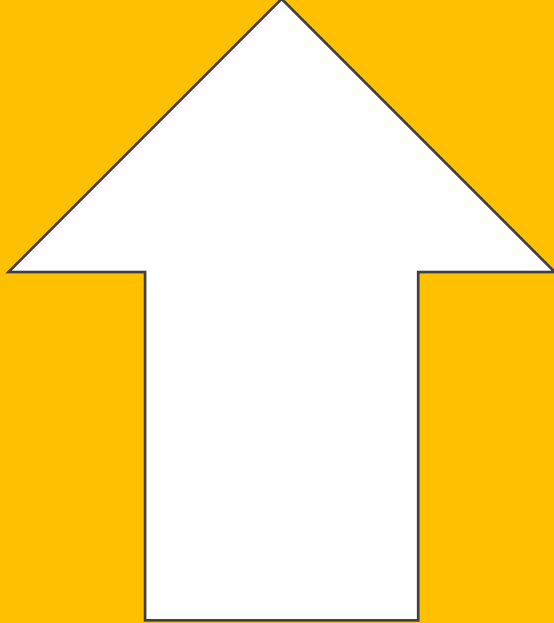
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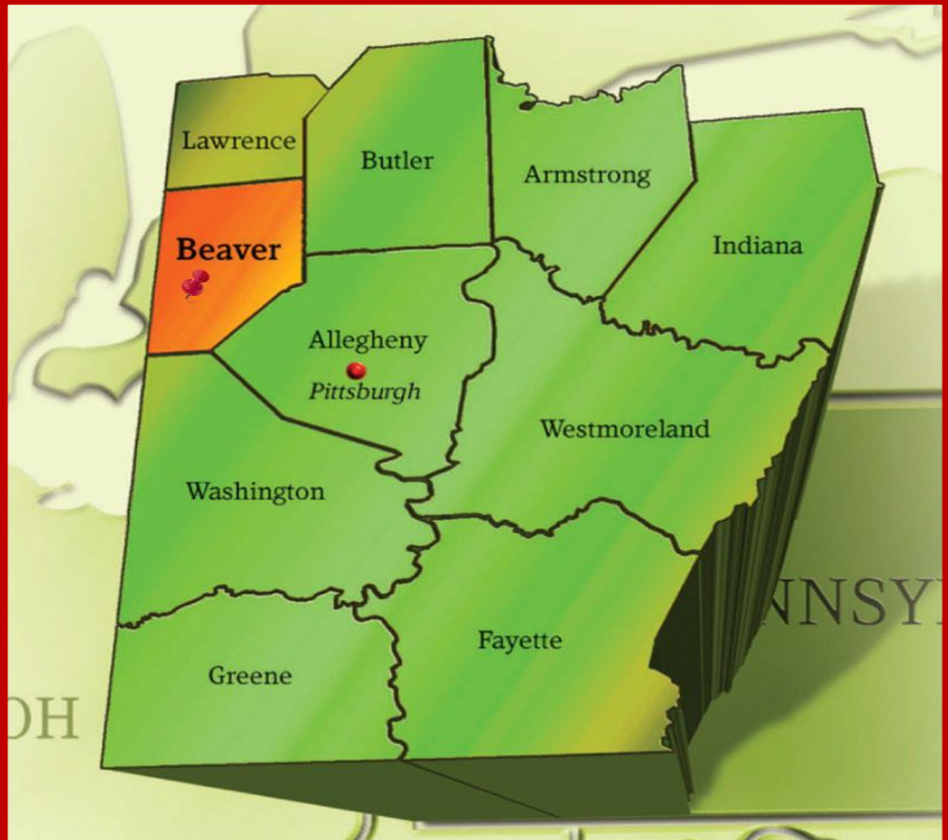
Economic Impact Study

Completed April 2021

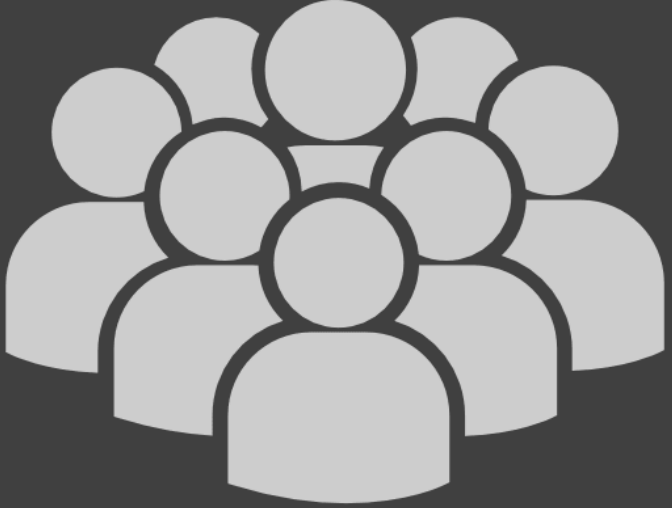
Once Operational, Shell Polymers Monaca will generate:

PA **\$3.7B** Annual state economic activity  **\$81.7B** added to the state economy over 40 years

\$3.3B Annual economic impact in the ten-county region



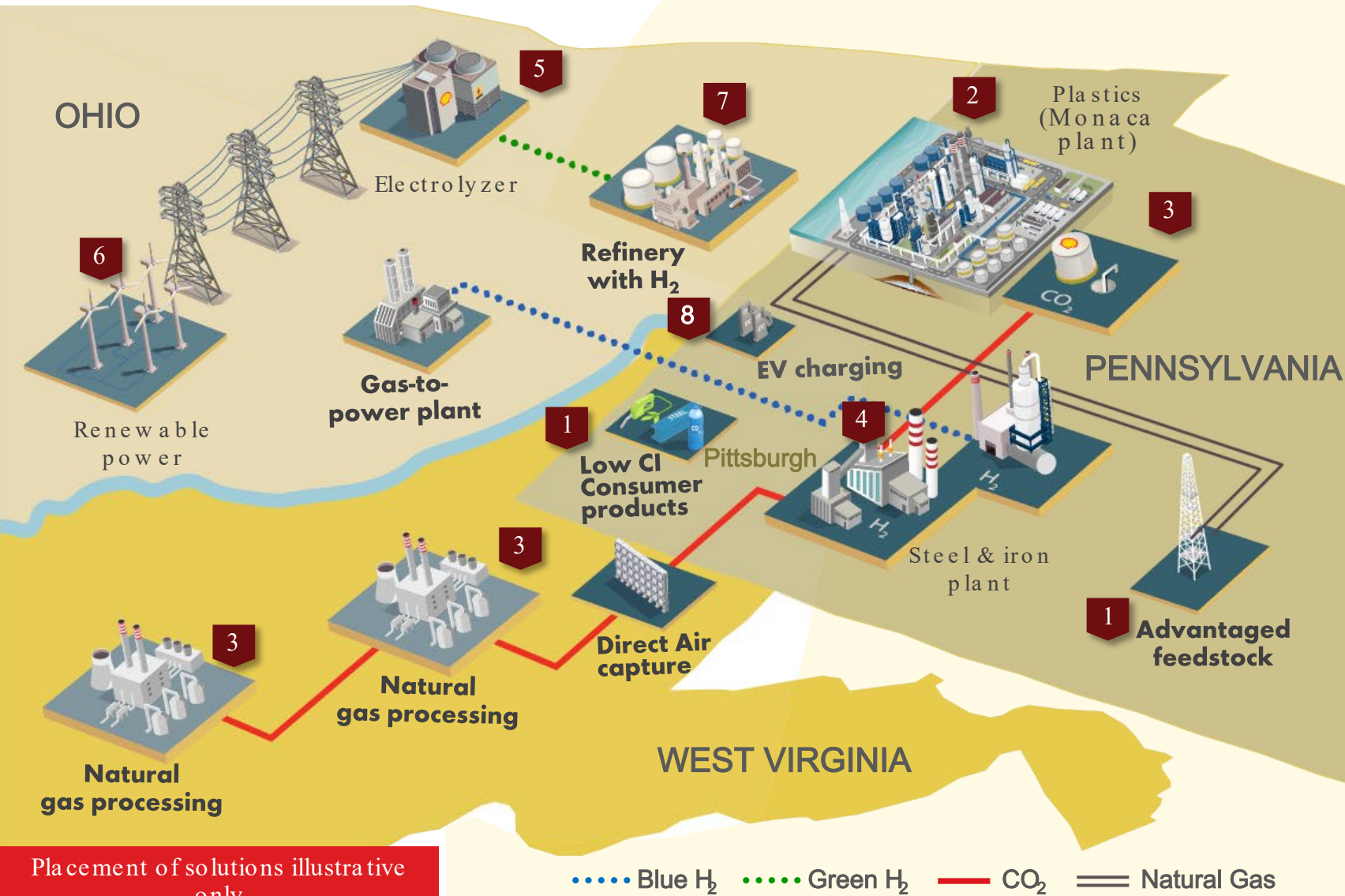
1 Shell Polymers Monaca Job
=
18 New indirect jobs



 **\$260M - \$846M** Annual economic impact in Beaver County

\$23M Annual state income tax  **\$515.4M** State income tax over 40 years

SHELL'S VISION FOR THE REGION AN END-TO-END DECARBONIZATION HUB



Placement of solutions illustrative only

1 Low CI products & feedstock

From the wellhead to storefront—the Mid-Atlantic can become a leader in low CI products that customers are increasingly demanding

2 Plastic recycling

Shell aims to process 1 million tons of plastic waste a year by 2025—learnings to be leveraged for other industries / regions

3 CCUS

CCUS core part of several regional industries' decarbonization pathway. Aquifer and O&G access make storage feasible.

4 Blue H₂

Plentiful natural gas makes Mid-Atlantic a prime candidate to become leader in developing a Blue H₂ eco-system and expertise

5 Green H₂

Although the region's Blue H₂ attractive, renewables + electrolyzers could produce green H₂ as feedstock for local industry

6 Renewables

Region underserved by wind and solar (~5% of generation)—plenty of space for regional growth

7 Energy management

Process modifications to use less energy can decarbonize region from a demand perspective

8 Mobility

EV charging and long-haul H₂ infrastructure can decarbonize the regions transport sector

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