



2024 Ohio Fuel Cell Symposium



ARCH2 Overview

RESOURCES

- Largest natural gas-producing formation in the United States (EIA, 2022)
- Natural gas spot prices consistently discounted to Henry Hub
- Renewable electricity sources for H₂ production
- Subsurface CO₂ and H₂ storage



COMMUNITIES

- Long history of energy production vital to US economic growth
- Disadvantaged by energy transition from coal
- Designated ENERGY COMMUNITY by IWG



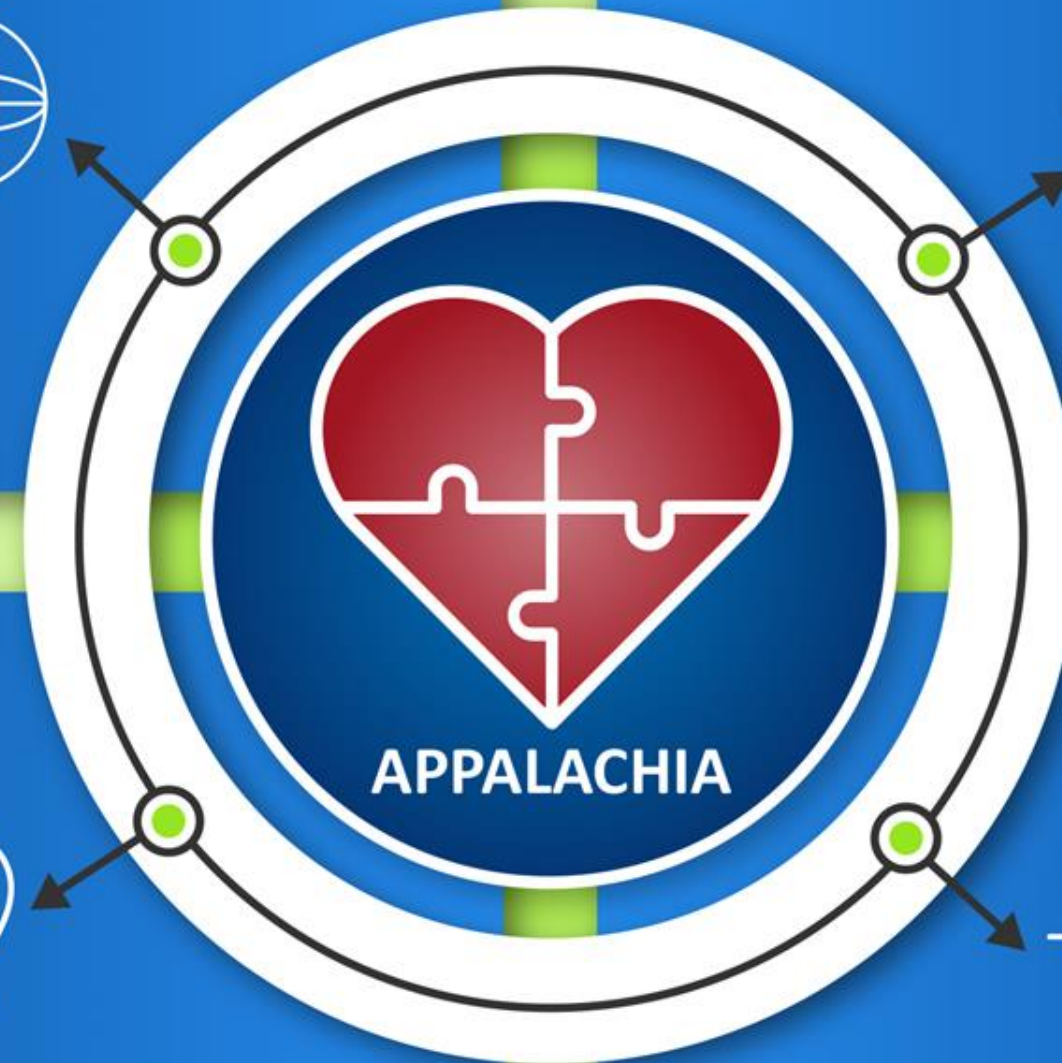
LOCATION

- Close to major demand centers in all directions key for interhub connectivity
- Includes eight of the top 25 priority communities as designated by the Interagency Working Group (IWG) on Coal and Power Plant Communities and Economic Revitalization



Project Development Partners

- Decades of expertise in the region
- Strong financial commitment to ARCH2
- Leadership in ESG and Climate initiatives



Selected Regional Clean Hydrogen Hubs



The ARCH2 Project Team

Project Management Team

BATTELLE

AST
Allegheny Science & Technology


GTI ENERGY

 **TRC**

NETL NATIONAL
ENERGY
TECHNOLOGY
LABORATORY

Project Development Partners

 **Air Liquide**

CNXTM

 **EMPIRE**
DIVERSIFIED ENERGY

 **ENBRIDGE**[®]

EQT

 **FIDELIS**
NEW ENERGY
CLIMATE POSITIVE  CARBON NEGATIVE

 **HOG LICK**
AGGREGATES

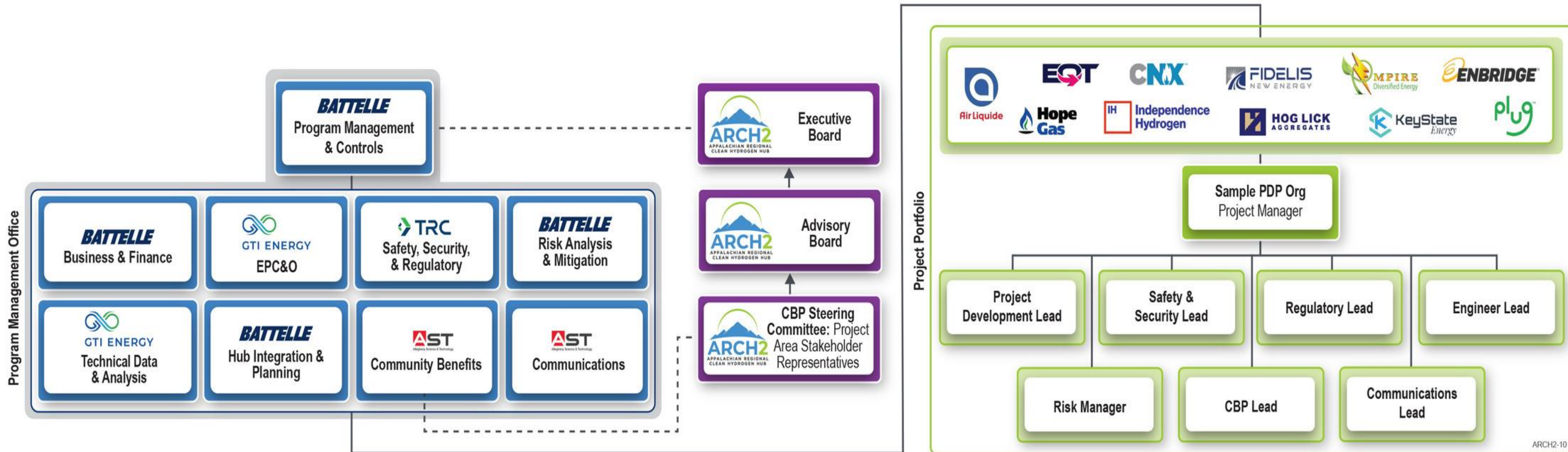
 **Hope**
Gas

 **Independence**
Hydrogen

 **KeyState**
Energy

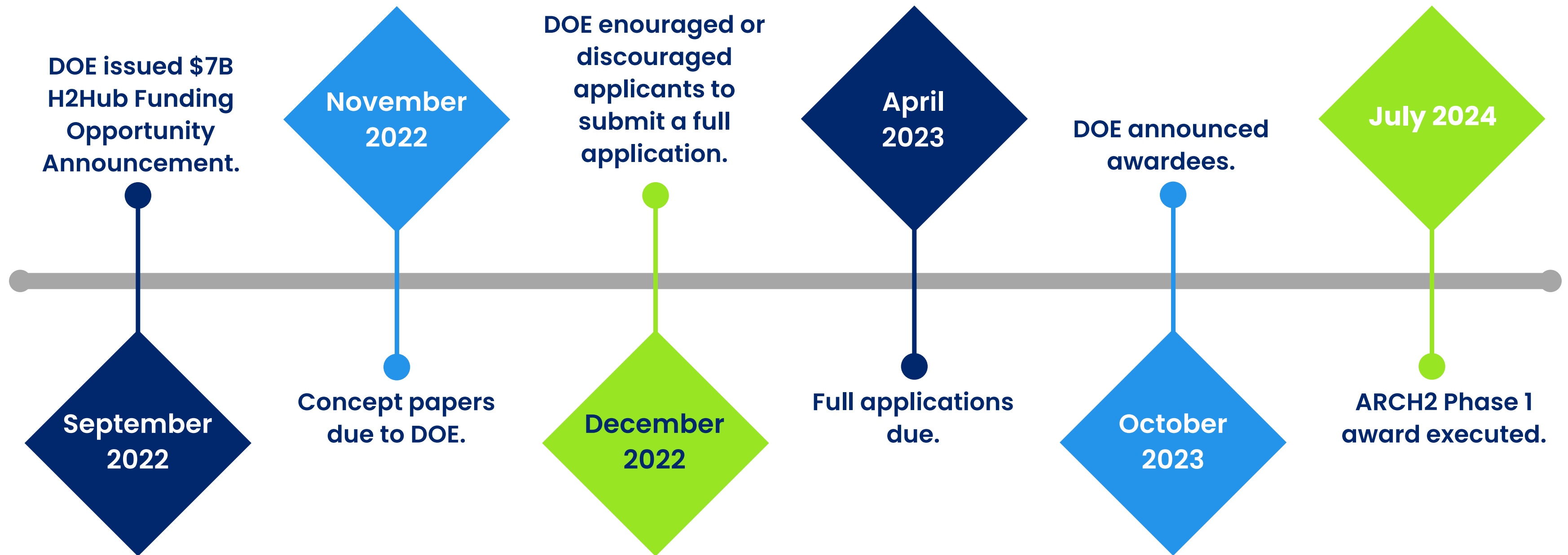
plugTM

ARCH2 Structure

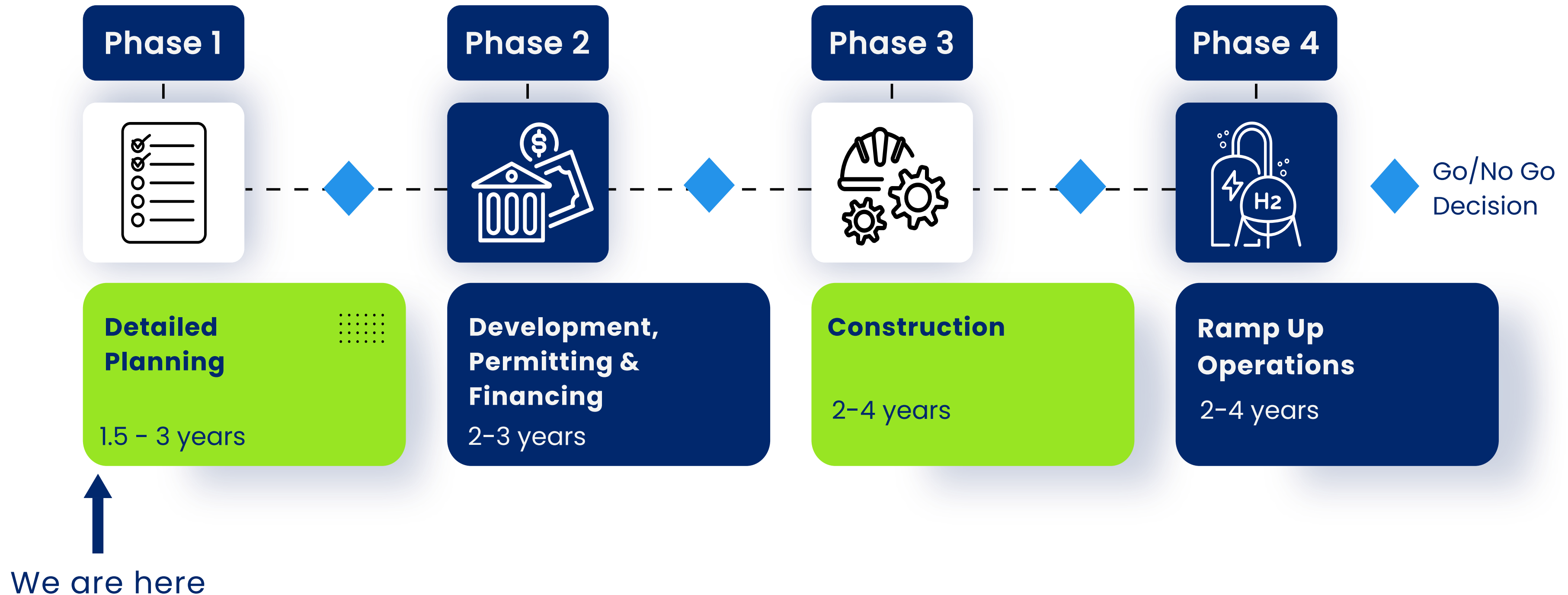


H2Hub Timeline

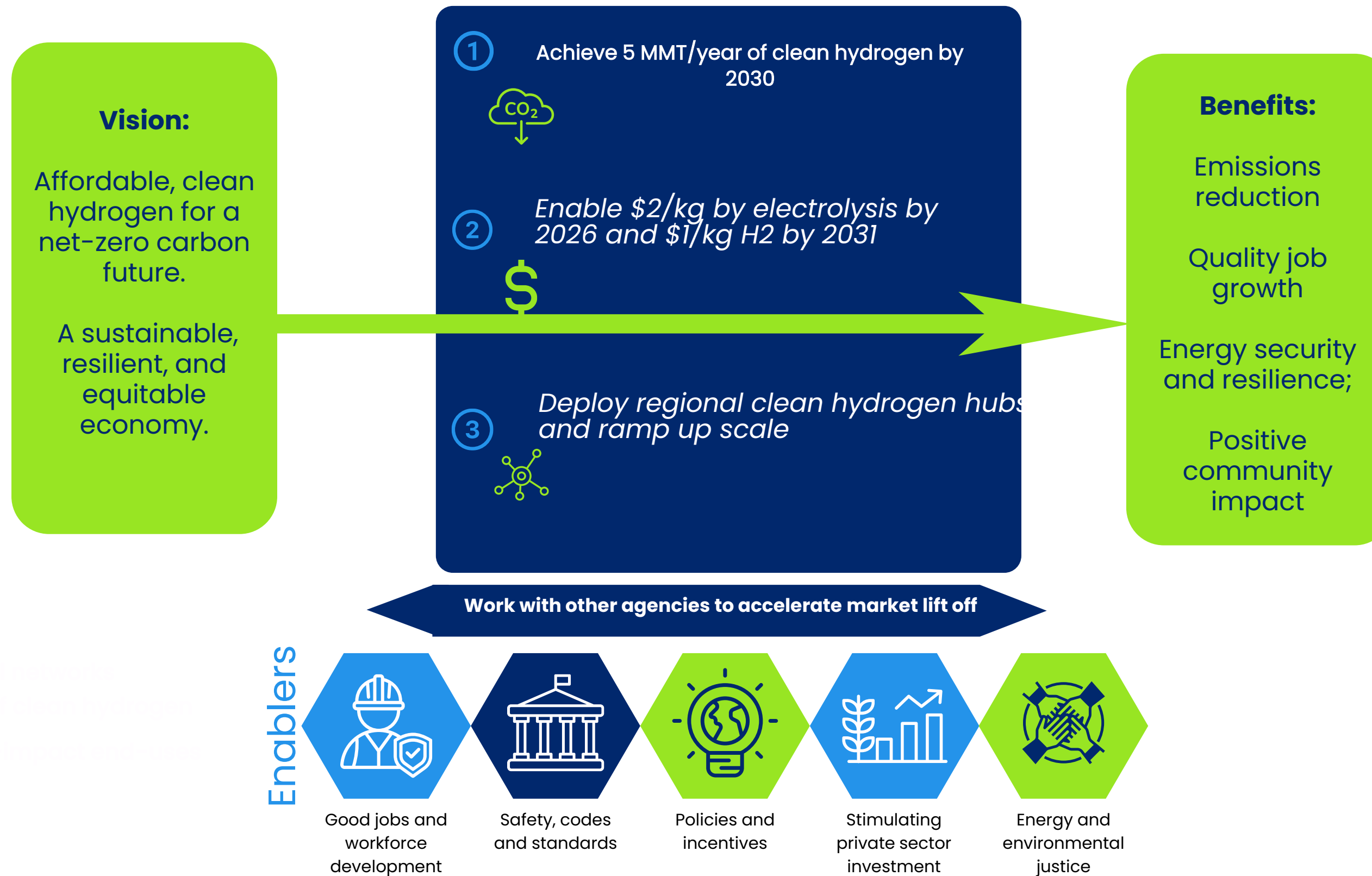
Funding Opportunity Announcement, Application Process, and Awardee Selection



ARCH2 Phases

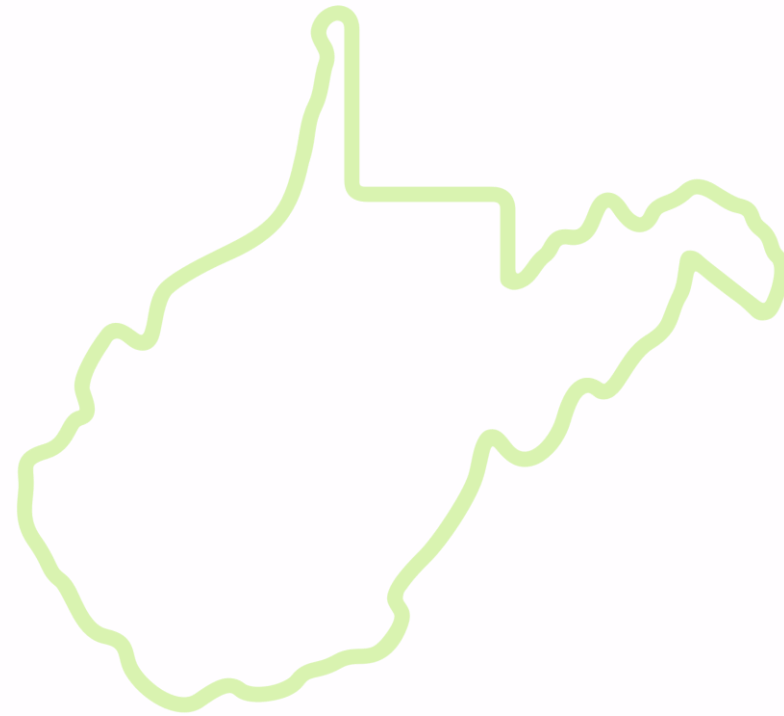


ARCH2 Aligned with DOE Clean Hydrogen Strategy



These graphics originally appeared on the U.S. Dept. of Energy Office of Clean Energy Demonstration's website and were created and funded by the U.S. DOE.

ARCH2 Proposed Projects in West Virginia



NG + biomass with CCS to produce Low CI H2 with on-site, short-haul pipeline to deliver hydrogen for end use in datacenters, power generation and other off-takers

**Point Pleasant,
WV**



Clean fuel services depot (fueling and maintenance facilities); clean H2 off-take to power heavy- and medium-duty trucks, busses, and material handling and processing equipment

**Fairmont,
WV**



Low-CI ammonia production via natural gas autothermal reforming with CCS for agriculture and marine industries.

Southern WV



In partnership with Watt Fuel Cells and EQT, produce clean H2 from NG for blending in Hope local distribution system and residential fuel cells.

Installation Locations TBD



Anaerobically digested food waste based H2 production for industrial and transportation fuel.

Follansbee, WV

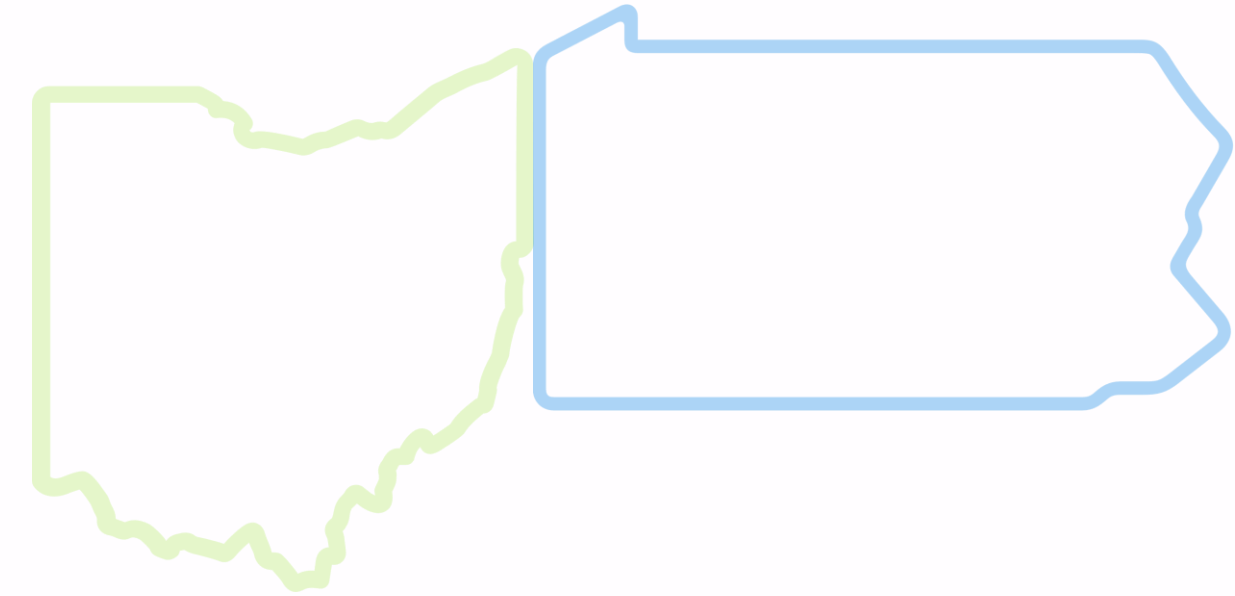


Retrofit and expand H2 production and liquefaction at an existing chemical plant using industrial off-gas and/or electrolysis for H2 production.

Location TBD

**All projects are currently considered as proposals for DOE funding, DOE has not made a final decision on whether to fund construction of these projects. Regardless of DOE funding, all projects must comply with all applicable federal, state, and local laws, regulations and processes.*

ARCH2 Proposed Projects in Ohio and Pennsylvania



H2 production via electrolysis with on-site storage and fueling to supply clean H2 to Stark Area Regional Transit's fleet of hydrogen fuel cell buses.

Canton, OH



Distribution centers with on-site liquid H2 storage and refueling stations for FCEV delivery trucks plus stationary fuel cells for MHE and back-up power.

OH sites TBD



H2 production facility that recycles industrial waste gas to provide clean hydrogen for material handling equipment, transit systems, and other transportation uses.

Ashtabula, OH



H2 production via natural gas autothermal reforming with CCS and hydrogen liquefaction to be used for FCEVs, industrial heat and ammonia, urea, and diesel exhaust fluid production

Near Clinton, Clearfield & Centre counties, PA

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ARCH2 Proposed Projects – Locations To Be Determined



Convert natural gas into hydrogen-rich syngas via autothermal reforming with CCS to produce low-carbon aviation fuel and other products; purify hydrogen for mobility sector and blending into natural gas pipelines (location TBD with plans to locate nearby Air Liquide project)

Location near Air Liquide project



Build and operate a hydrogen liquified facility with on-site storage and loading facilities to serve off-takers in the mobility sector (location TBD with plans to locate nearby EQT project).

Location near EQT project

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National Environmental Policy Act (NEPA) – The Big Picture



- NEPA is a law that requires a federal environmental review process when a federal agency, among other things, proposes or provides financial assistance for a proposed major federal action.
- The NEPA regulatory process applies to ARCH2 due to the use of federal funding for proposed activities, including planning, construction and operations of the proposed ARCH2 projects.
- Through the NEPA process an agency evaluates a proposed action and analyzes reasonably foreseeable environmental and socioeconomic impacts to inform the federal agency and the public.
- DOE OCED will conduct a programmatic review in Phase 1 of potential environmental impacts of ARCH2's proposed projects.

Upcoming Opportunities

ARCH2 Solicitation for Additional Projects

- Expects to add up to 3 new projects.
- Currently reviewing projects to prepare full submittals (aligned with FOA).
- Late November/December: Full submittals will be evaluated.
- Late December: Brief OCED on proposed additional projects
- End of December: Project selection notifications.

ARCH2 Consortium

- Open to all entities interested in developing a clean and socially-just hydrogen economy in Appalachia.
- Includes ARCH2 Project Team members and non-Project Team members.
- Membership levels, fees, and benefits will be published by end of December.
- Membership registration will begin January.

ARCH2 Steering Committee

- ARCH2 Consortium members will have the opportunity to participate in steering committees and working groups.
- Committees/groups may be proposed by ARCH2 Consortium members.
- The ARCH2 Executive Board will approve committees/groups and participants.
- More information will be provided with the ARCH2 Consortium membership information in December.

Upcoming Regional Engagement

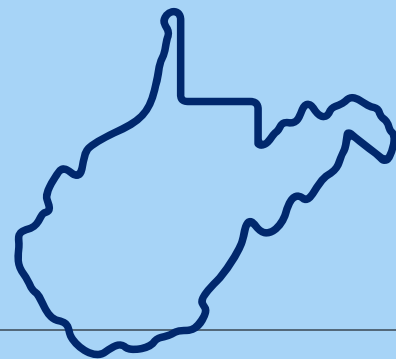
Engagement will be Open House Forums.

Exact dates, venues, and details are tentative.

Stakeholder engagement will contribute to the process.

Finalized details will be announced.

1



Southern, WV

Week of November 4.

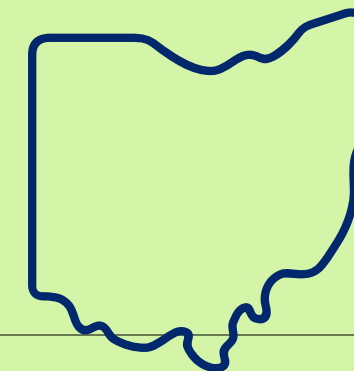
2



Southwest, PA

Early 2025.

3



Northeast, OH

Early 2025



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