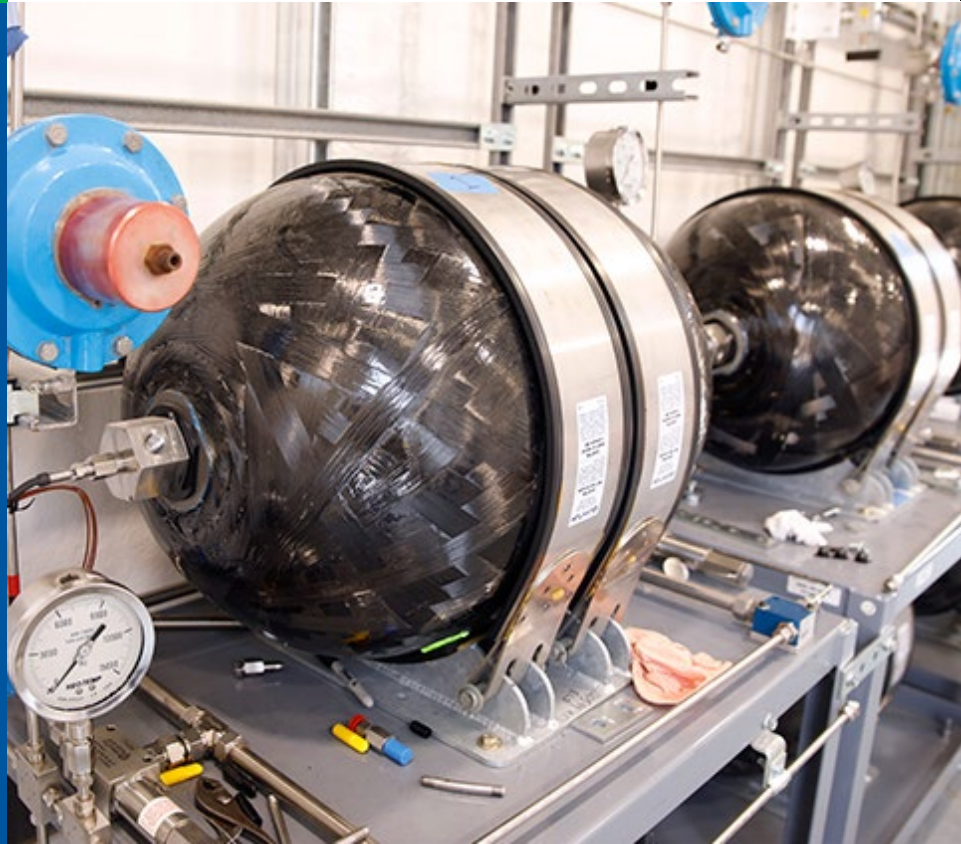




**GTI ENERGY**

*solutions that transform*



**HYDROGEN  
TECHNOLOGY  
CENTER**

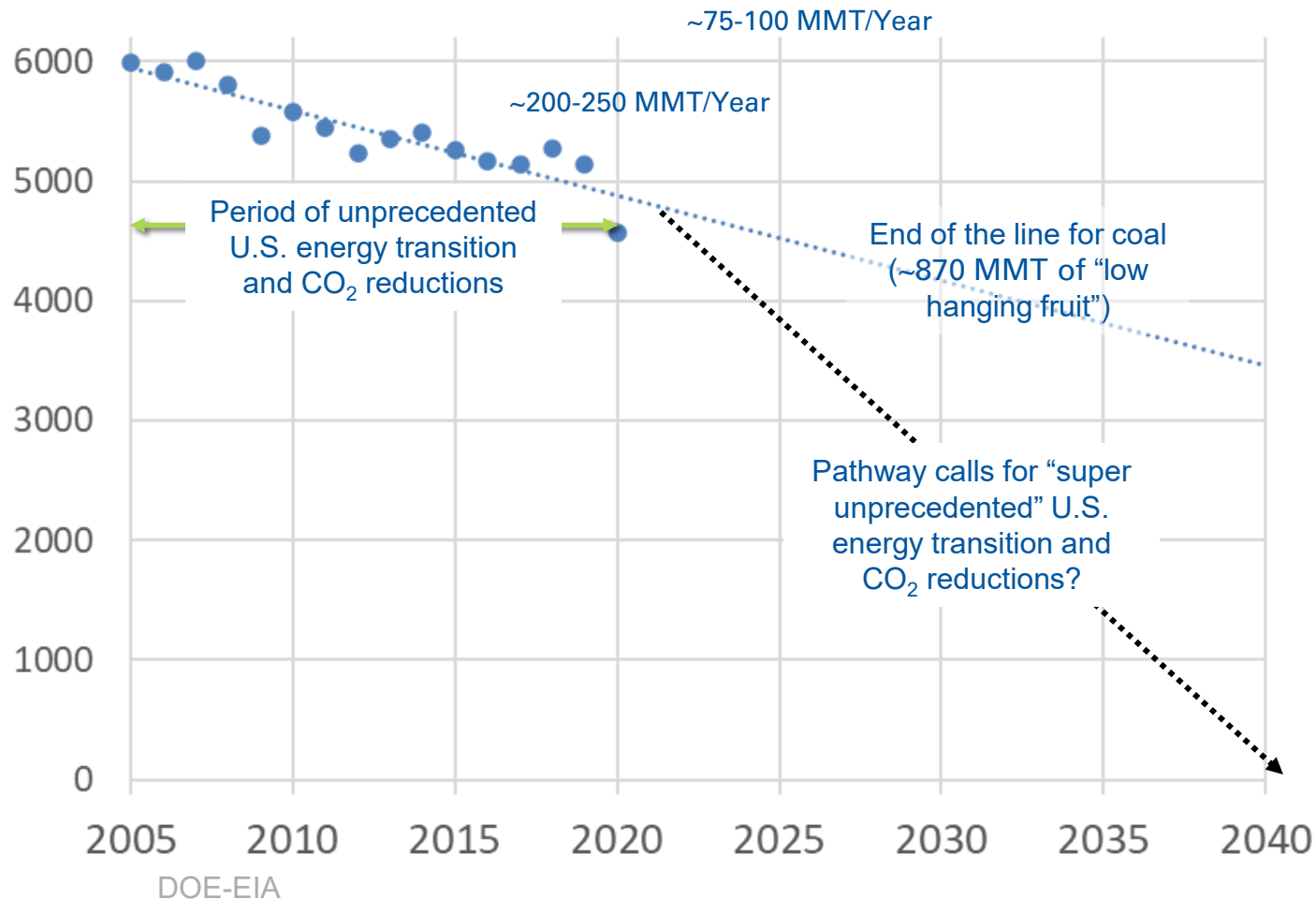


# Texas Hydrogen & Clean Hydrogen Hub Overview

1-11-2024

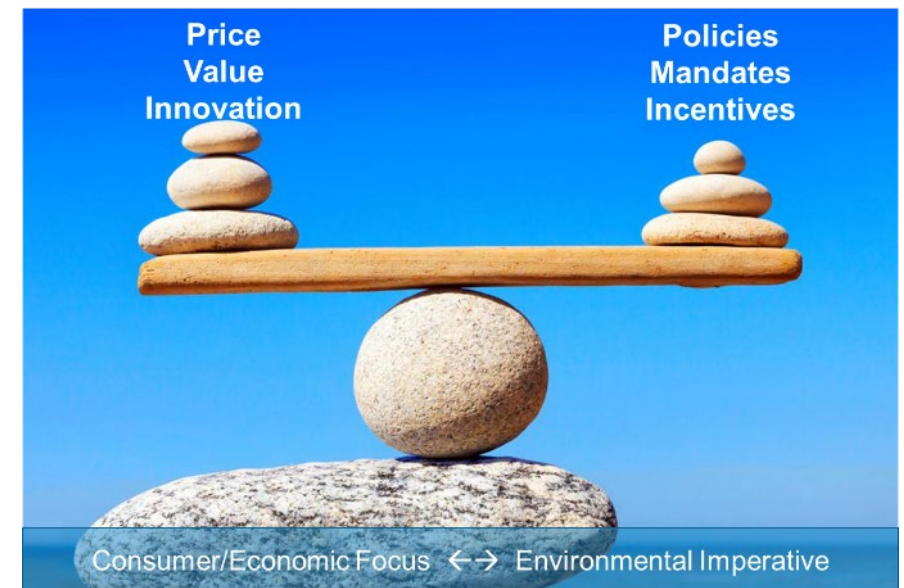
# Setting the Stage for Hydrogen

## U.S. CO<sub>2</sub> Emissions (MMT/Year)



Most CO<sub>2</sub> emission reductions since 2005 due to shale gas cost-effectively displacing coal (and with minimal consumer energy cost impacts).

How do we achieve even greater rates of reduction after “low hanging fruit” is picked? What are the consumer energy cost and energy system implications?

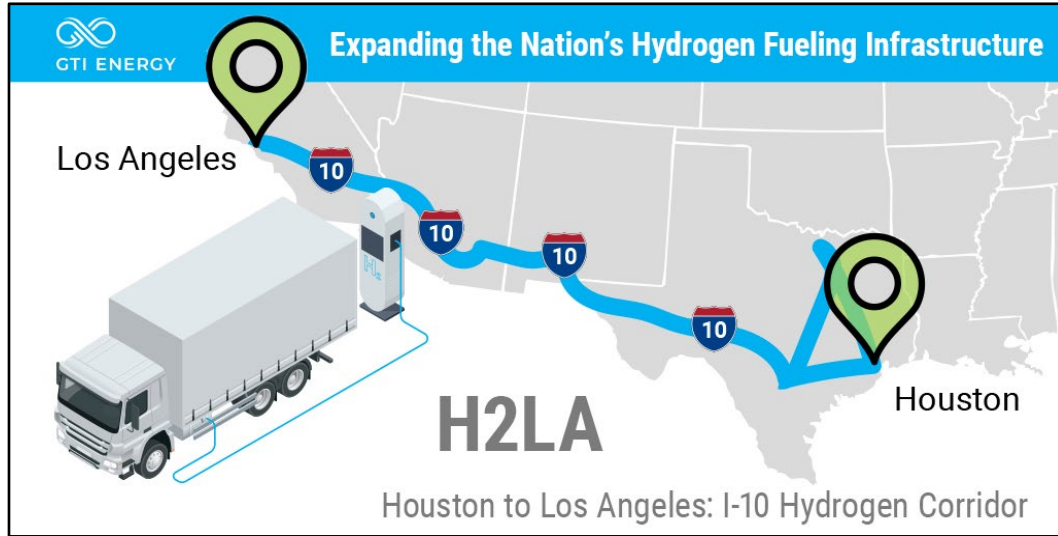


# Announced Clean Hydrogen Projects in Texas and Louisiana

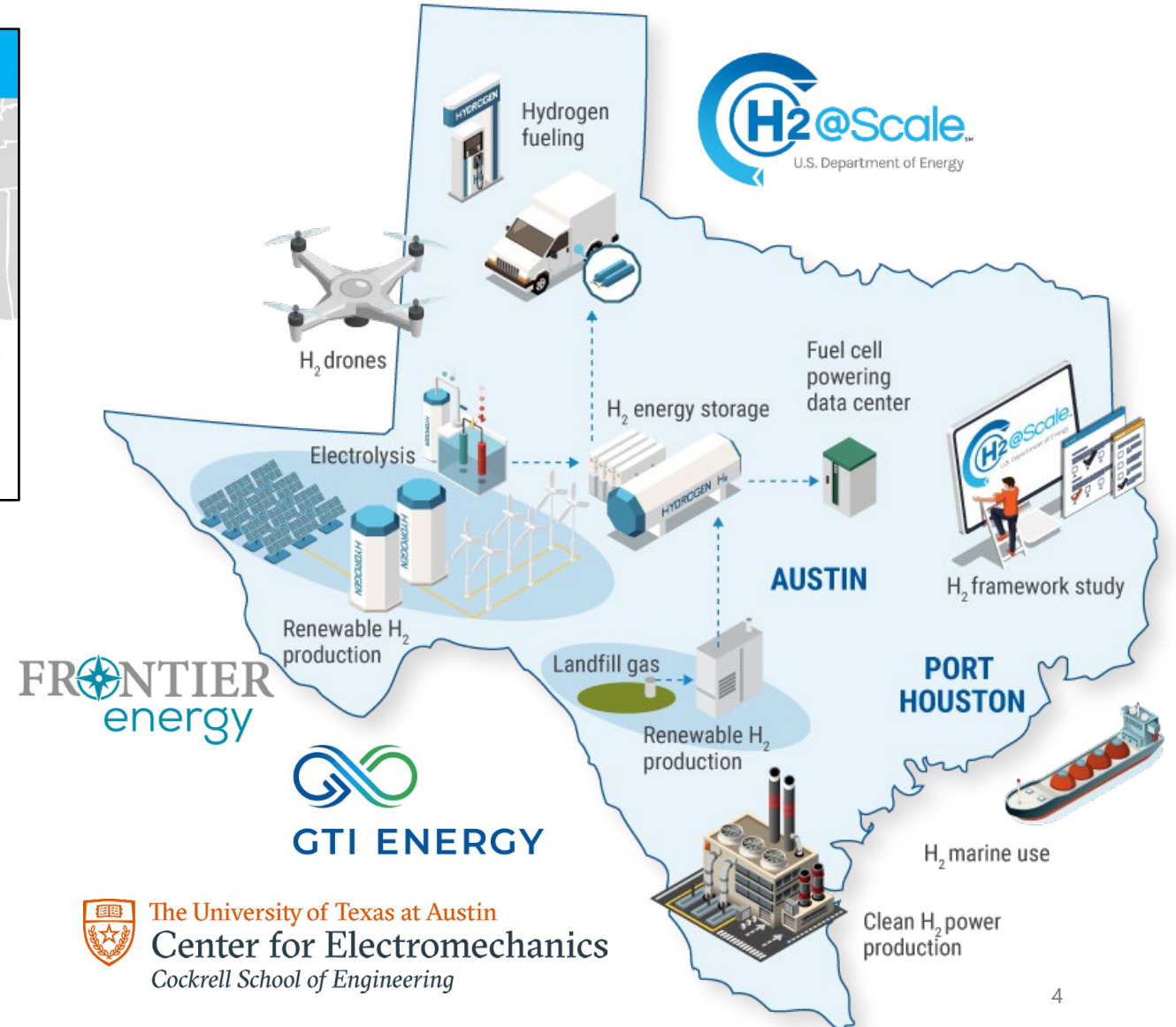


Source: Center for Houston’s Future

# U.S. DOE's Existing Hydrogen Demonstration Investments in Texas



- Build AGENT-based models (ORNL's proprietary model) for transport infrastructure
- Acquire relevant vehicle, fueling infrastructure, and operational data
- Establish a hydrogen fueling and heavy-duty freight truck network leveraging this fueling infrastructure in the Texas Triangle and I-10 corridor from Houston to Los Angeles





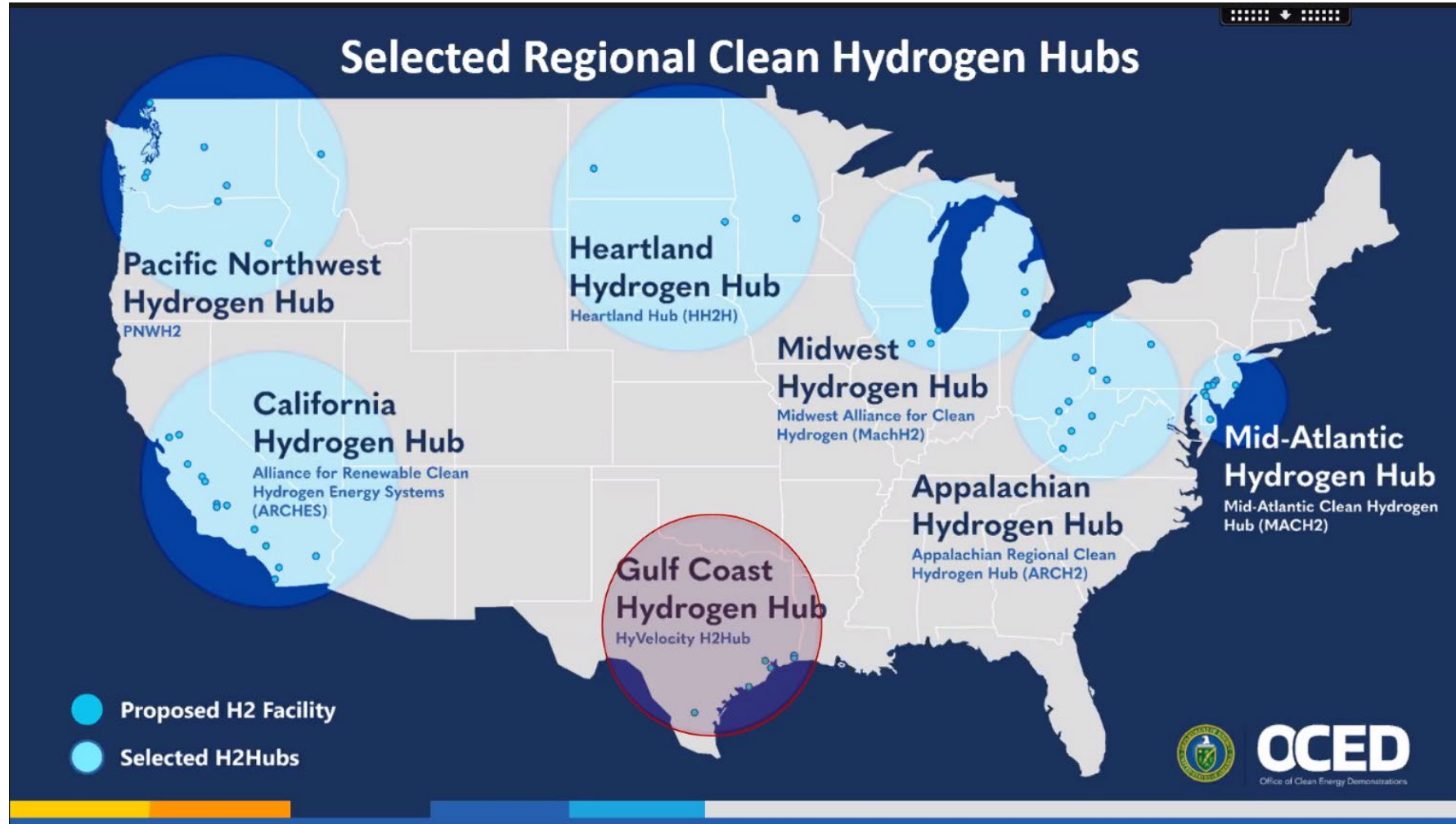
# Clean Hydrogen from Texas, Southwest Louisiana, and the Gulf Coast

## HyVelocity Hub Overview

November 2023



# Regional Clean Hydrogen Hubs Selected by DOE



Bi-Partisan  
Infrastructure  
Bill (BIL)

Inflation  
Reduction Act  
(IRA)

45Q, 45V

# The Gulf Coast's Regional Hydrogen Advantages

## Gulf Coast's Energy Assets



Broad base of industrial energy customers across multiple demand segments



Welcoming environment for infrastructure development



33% of U.S. hydrogen production capacity



Highly skilled energy workforce (11% of U.S. energy jobs)



Large concentration of academic and industry-driven energy innovation: major research universities and a new innovation campus



Largest energy manufacturing cluster (7000+ establishments)

## Production capacity



Largest renewable energy market in the nation (36 GW wind, 15 GW solar)

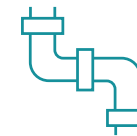


2.4 billion tons of CO<sub>2</sub> storage capacity (10,000x Houston's current CO<sub>2</sub> emissions)



Access to abundant low-cost natural gas (11.2 Tcf natural gas produced in 2022)

## Transportation and storage



1000+ miles of hydrogen pipeline – largest networks in the nation



3 of the 6 hydrogen storage caverns in the world

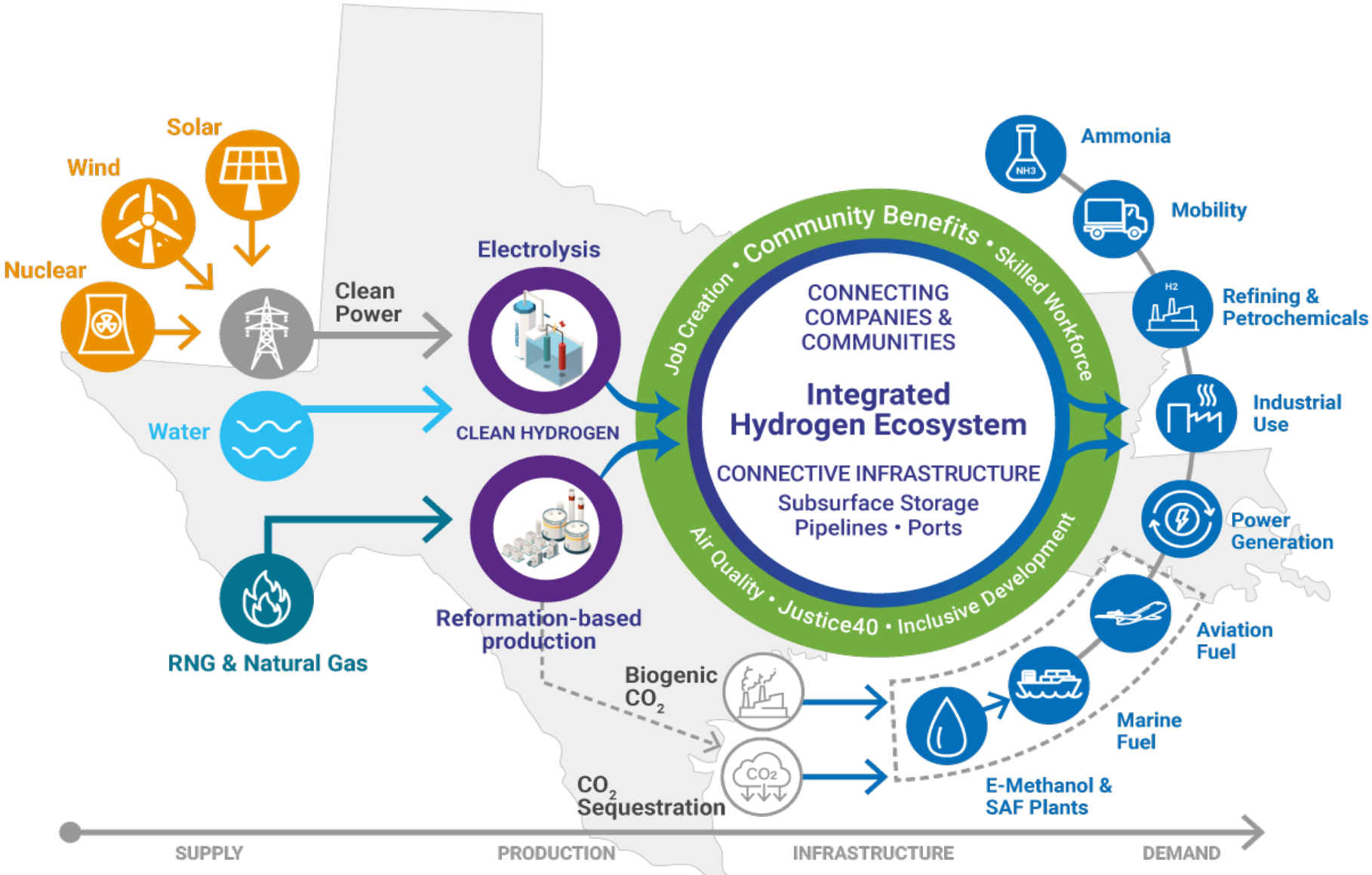
# HyVelocity's Clean Hydrogen Ecosystem

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- 7 Project Sponsors (AES, Air Liquide, Chevron, ExxonMobil, Mitsubishi Power, Orsted and Sempra Infrastructure)
- 3 Hub Organizers (GTI Energy, Center for Houston's Future, The University of Texas at Austin)
- 6 Special Advisors (HARC, EPRI, NETL, NREL, Port Houston, Upskill Houston)
- 8 Major academic institutions (including 3 HBCUs and MSIs)
- 20+ Community, workforce, and economic development organizations
- 17 Clean Hydrogen Off-takers Identified
- 100+ Energy and Industrial Gas Industry Supporters



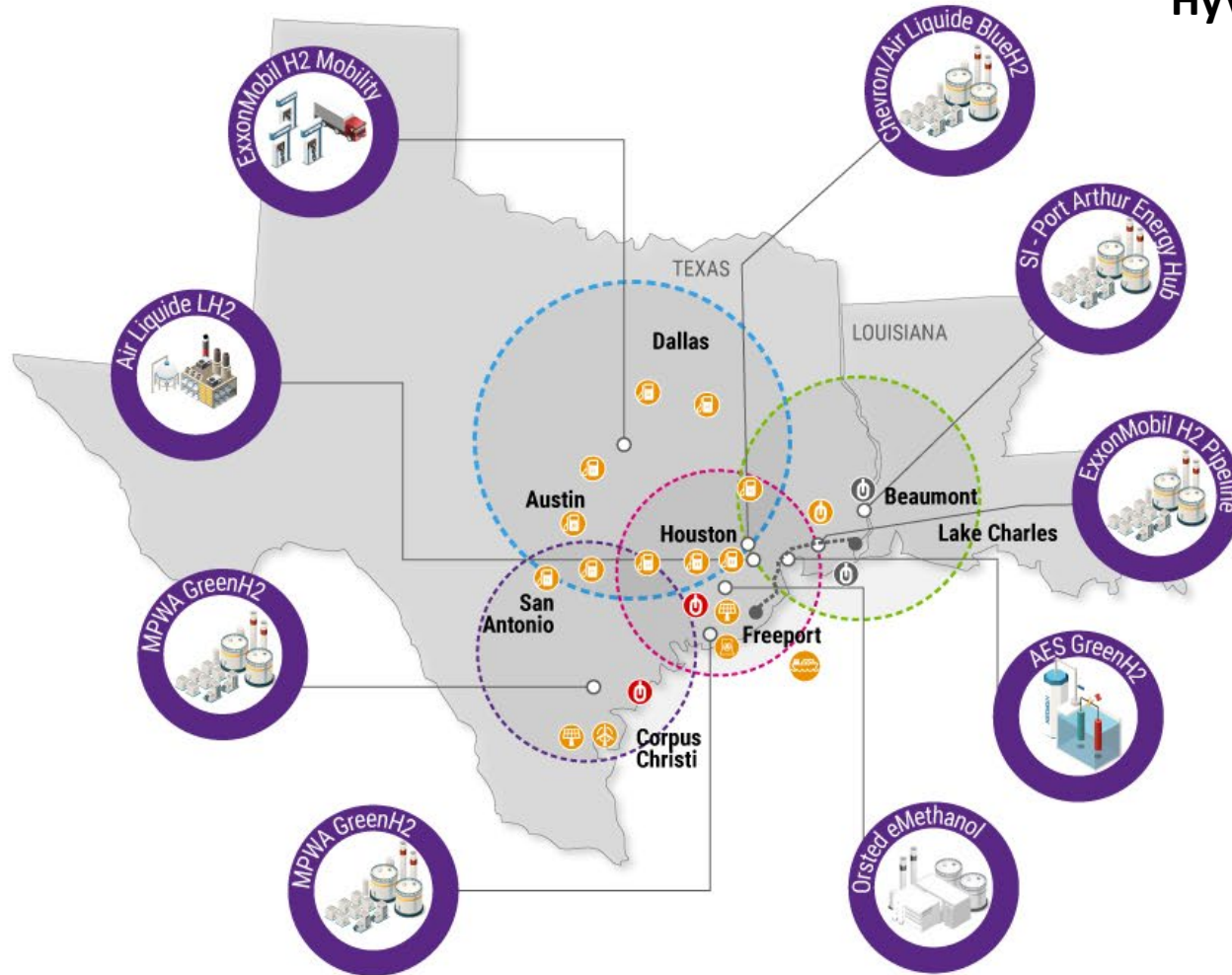
# HyVelocity: Envisioned Clean Hydrogen Ecosystem



# HyVelocity Envisioned Projects



HyVelocity Clean H2 Production Capacity: >5,000 mtpd



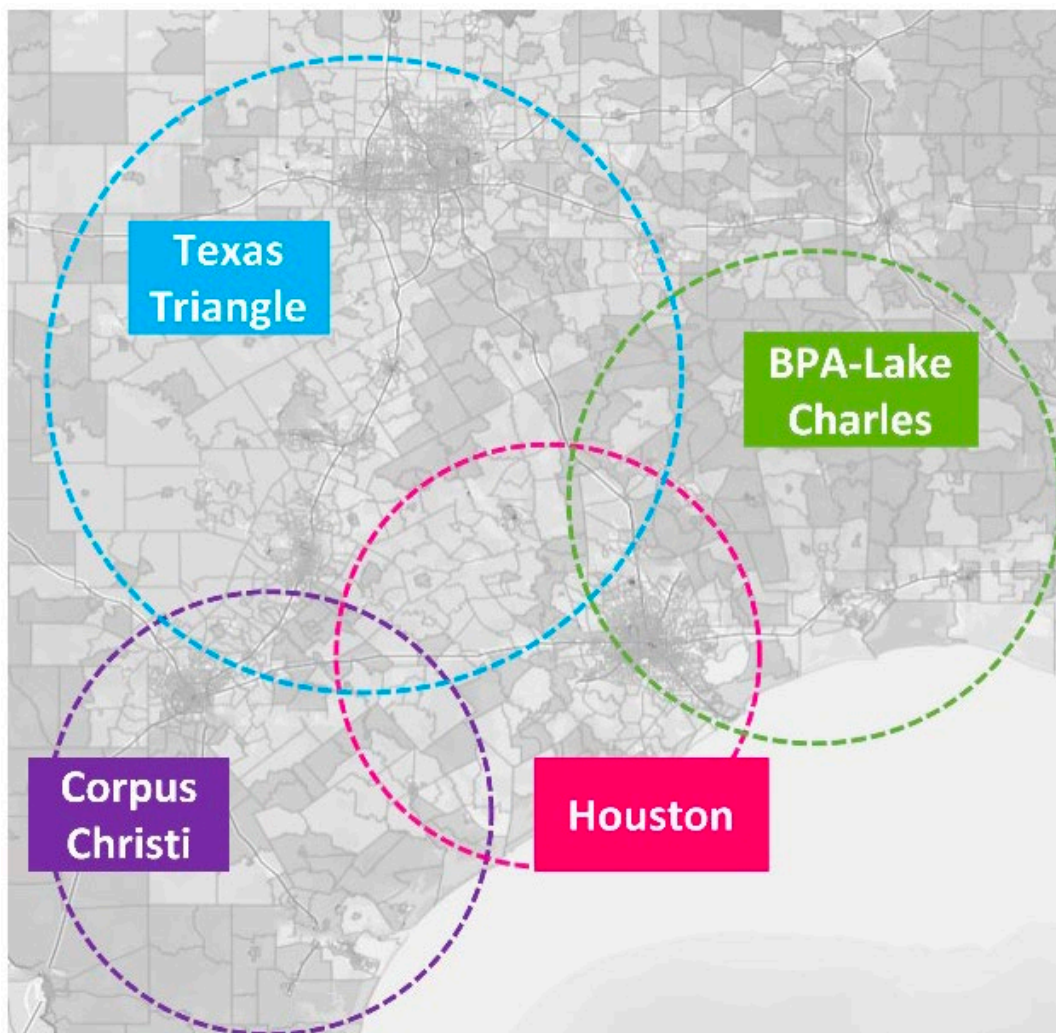
- Corpus Christi Demand Cluster
- Houston Demand Cluster
- BPA-Lake Charles Demand Cluster
- TX Triangle Demand Cluster

HYVELOCITY HUB > INTEGRATED INFRASTRUCTURE

- Solar Farms
- Wind Farms
- CO2 Storage Cavern
- H2 Storage Cavern
- Future H2 Pipelines
- Future H2 Storage Cavern
- Maritime
- H2 Fueling Stations
- Nuclear
- HyVelocity Infrastructure Elements

Note: Map shows general preliminary project locations and are subject to change during future negotiations and site planning

# HyV Community Engagement



## Community Benefits:

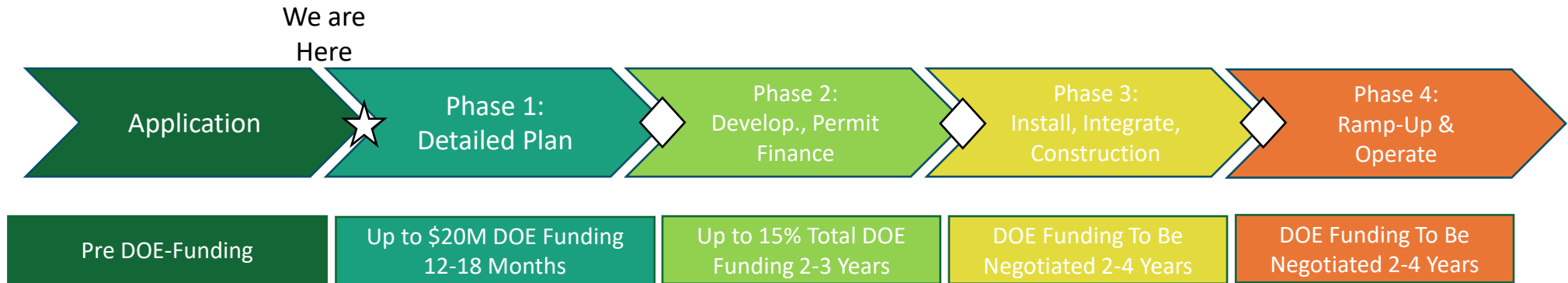
- Anticipated Community Benefits Plan Funding – \$120 million.
- Meaningful engagement with stakeholder organizations to ensure disadvantaged and impacted communities benefit from this hub.
- Potential for reductions in Scope 3 emissions for industries purchasing hydrogen.
- Reduction in local air pollution for parts of the region most impacted, including disadvantaged communities.

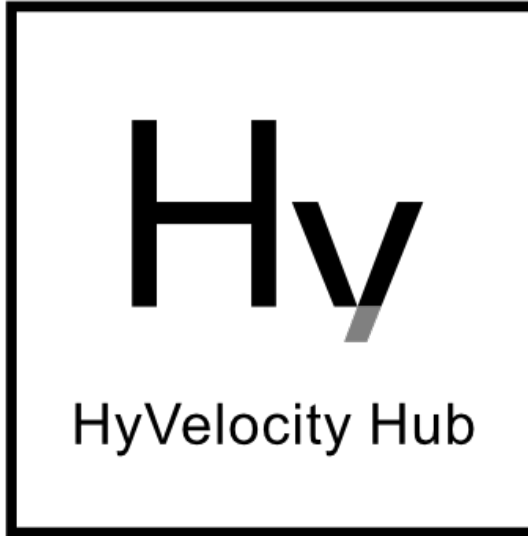
## Job Creation:

- Potential for **up to** 45,000 direct jobs
  - Up to 35,000 construction jobs
  - Up to 10,000 permanent jobs

# Regional Clean Hydrogen Hub Project Phases

◇  
Go/No-Go  
Decision





[www.hyvelocityhub.com/contact](http://www.hyvelocityhub.com/contact)

