



Demonstration and Framework for H2@Scale in Texas and Beyond

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Project ID: TA037

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Overview

Timeline

- Project Start Date: 2020
- Project End Date: 2023

Period of performance: 36 months

Budget

- Total Project Budget: \$10,800,000*
 - Total Recipient Share: \$5,400,000*
 - Total Federal Share: \$5,400,000
 - Total DOE Funds Spent*: \$0

** In contracting as of 5/29/2020*

Barriers

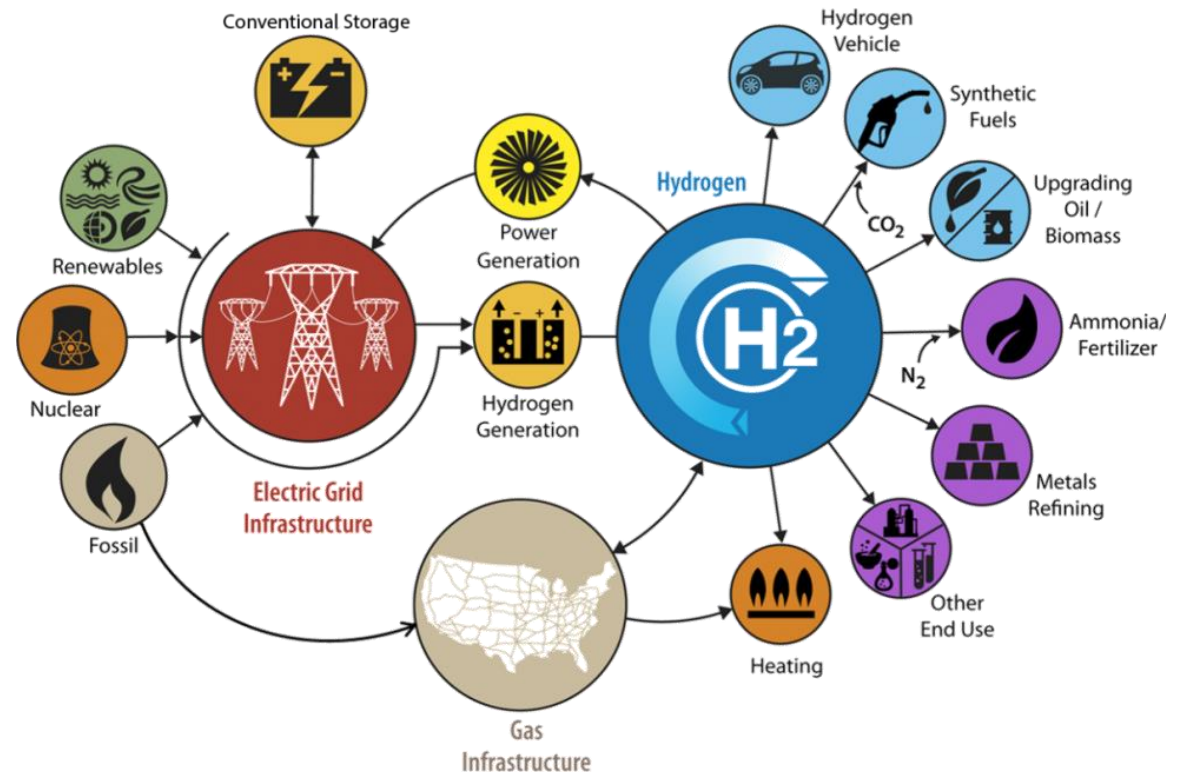
- Barriers addressed
 - See H2@Scale Vision (next slide)

Partners

- Gas Technology Institute
- OneH2
- ONE Gas
- SoCalGas
- Toyota
- University of Texas at Austin, Center for Electromechanics
- University of Texas at Austin, Energy Institute
- Waste Management

H2@Scale Vision

- H₂ enables zero emissions in transportation, stationary, remote, and portable power
- H₂ used as a grid “responsive load” for grid stability and GWh energy storage, and increase power generators utilization
- H₂ critical feedstock for entire chemicals industry
- Domestically sourced H₂ for multiple sectors or export

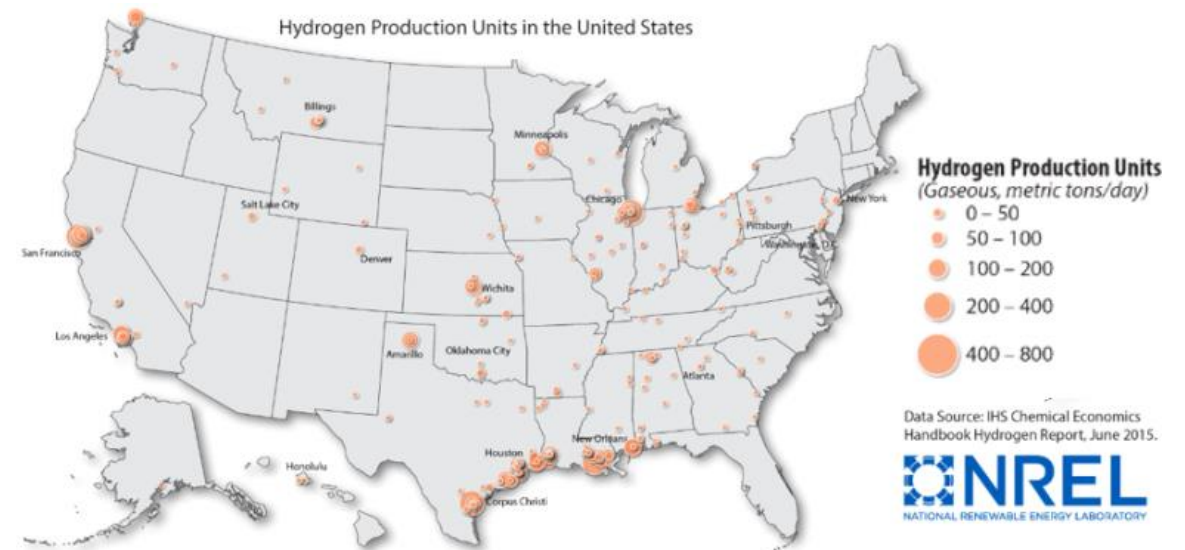


<https://www.energy.gov/eere/fuelcells/h2scale>

Relevance

Texas ideal to lead H₂ production for a sustainable energy system

- Excellent resources of natural gas, solar and wind for RH₂
- Largest H₂ producer in the nation
- Major industry leaders on Hydrogen Council have significant presence in Texas
 - Toyota, Shell, and Air Liquide



Approach

Two unique RD&D tracks to understand the potential of integrating hydrogen with multiple co-located platforms and existing resources

- Demonstrate multiple RH_2 generation options, co-located with vehicle fueling and a large base load consumer to enable cost-effective H_2 energy solutions
- Develop framework for actionable $H_2@Scale$ pilot plans in Texas, Port of Houston and Gulf Coast region, including energy storage

Project Duration: 3 years, beginning in 2020

	Key milestones & deliverables
Year 1	<ul style="list-style-type: none">• Demonstration site planning and construction• Technoeconomic $H_2@Scale$ models in Texas
Year 2	<ul style="list-style-type: none">• Commence demonstration activities• Complete framework for $H_2@Scale$ in Texas
Year 3	<ul style="list-style-type: none">• Complete demonstration and assess ability to provide cost-effective hydrogen

Demonstration activities at UT (track 1)

Renewable H₂ generation

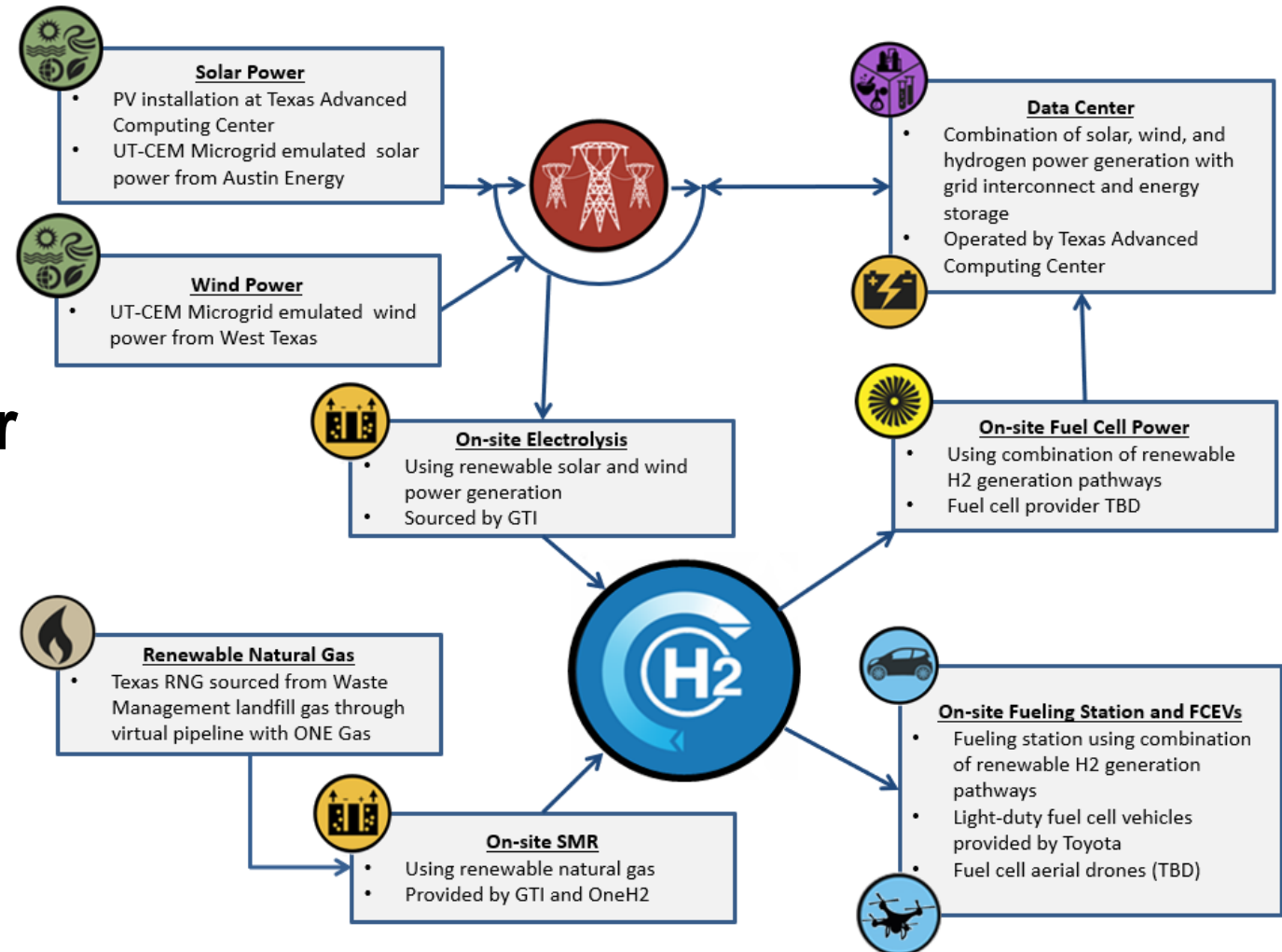
- SMR using RNG
- Electrolysis using wind and solar power

Large scale, industry H₂ user

- Fuel cell powering Texas Advanced Computing Center

Vehicle refueling

- Light-duty vehicles
- Unmanned aerial vehicles



Port of Houston H₂ Framework *(track 2)*

- Identify key stakeholders, existing H₂ infra and business in region
- Identify policy and regulatory barriers
- Define use and implementation plans leveraging existing industry resources
- Develop actionable plan for H₂@Scale and FCEV rollout in region



Accomplishments and Progress

In contracting – project has not commenced

Summary

Period of performance: 36 months

	Key milestones & deliverables
Year 1	<ul style="list-style-type: none">• Demonstration site planning and construction• Technoeconomic H2@Scale models in Texas
Year 2	<ul style="list-style-type: none">• Commence demonstration activities• Complete framework for H2@Scale in Texas
Year 3	<ul style="list-style-type: none">• Complete demonstration and assess ability to provide cost-effective hydrogen