HOUSTON-GALVESTON CLEAN CITIES COALITION Q4 2023 STAKEHOLDERS MEETING

November 15, 2023

Q4 Stakeholders Meeting

Agenda

1. Introductions – Vincent Sanders, *METRO / HGCCC Chair*

2. Update on Hydrogen Hub– Brian Weeks, GTI Energy

3. Clean School Bus Program and Alternative Fuels– Mandeep Singh, U.S. Environmental Protection Agency
   Kimari Hodges, U.S. Environmental Protection Agency

4. Update on the Redesignation Process – J. Ben Finley, HGCCC

5. Updates on Advisory Board and Subcommittees - J. Ben Finley, HGCCC

6. Current Funding Announcements and Updates – J. Ben Finley, HGCCC

7. Announcements of Current & Upcoming Activities
   a. Lunch and Learn Webinar: Natural Gas and Propane Federal Motor Tax Credit (Dec. 5)
   b. RNG Coalition Conference (Dec. 11-14)
   c. Act EXPO and Conference has moved to Las Vegas (May 20-23, 2024)

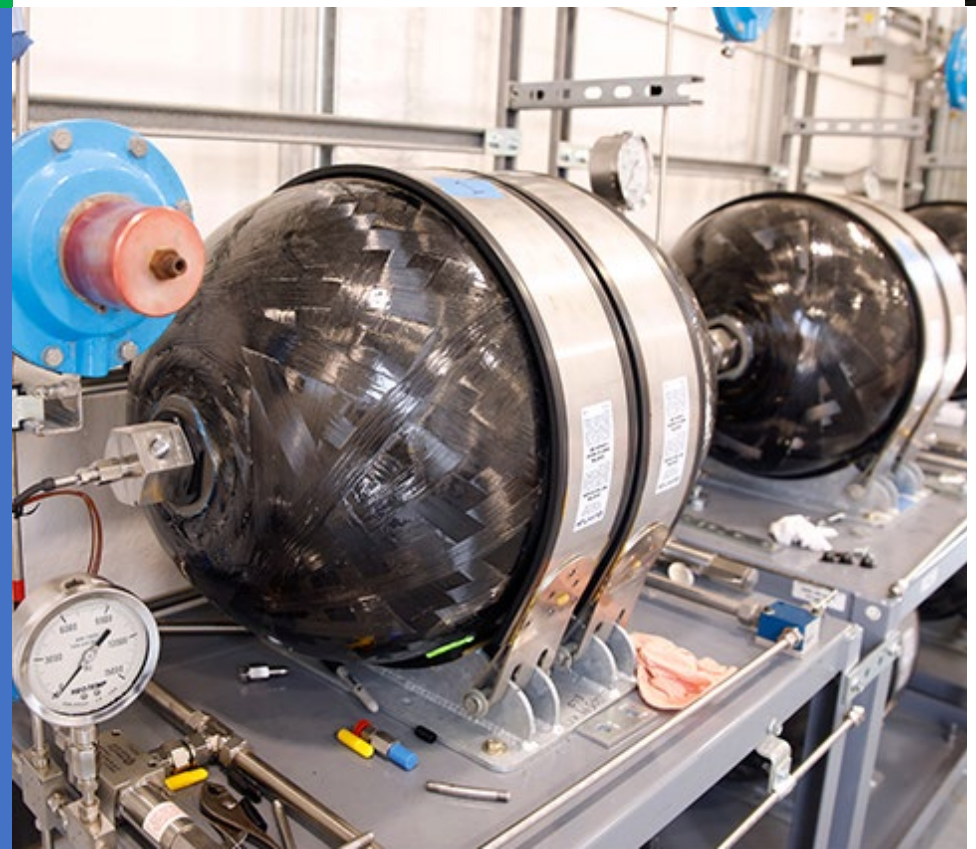
8. Adjourn meeting

UPDATE ON HYDROGEN HUB

Brian Weeks, GTI Energy

GTI ENERGY

solutions that transform



HGAC Clean Cities Hydrogen Overview 11-15-2023

HyVelocity Hub

Brian Weeks
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GTI Energy
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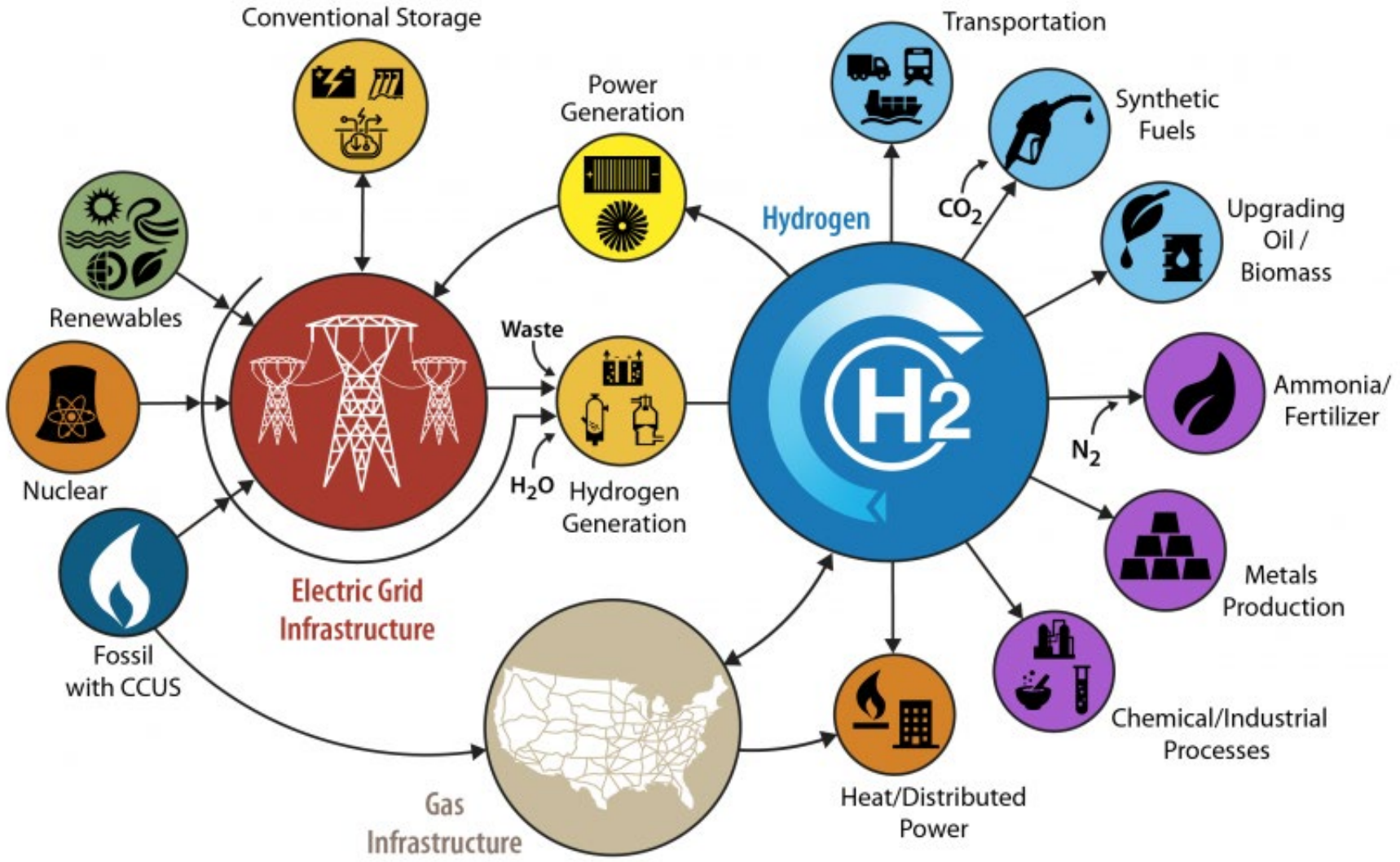
The Versatility of Hydrogen



Source: DOE H2@Sc

First - a few reference points…

1 kg of Hydrogen is about the same energy content as 1 gallon of gasoline

1 mcf of hydrogen has about 1/3 the energy content as 1 mcf of natural gas @ 1 atm

Hydrogen is colorless, odorless, non-toxic, and burns with an almost invisible flame

	Hydrogen	Natural Gas	Gasoline	No. 2 Diesel
Physical state	Compressed gas or liquid	Compressed gas or liquid (LNG)	Liquid	Liquid
Flammability range in air	4.1% - 74%	5.3% - 15%	1.4% - 7.6%	1.0% - 6.0%
Lower heating value btu/lb	52,217	20,263	18,676	18,394
Boiling temperature °F	-423	-259	80 - 437	356 - 644
Specific Gravity (60°F)	0.07	0.424	0.72 - 0.78	0.85

Source: U.S. DOE Office of Energy Efficiency and Renewable Energy; www.eere.energy.gov/

Hydrogen has many uses, but the vast majority is used for ammonia, refining, methanol, and chemicals

GTI ENERGY

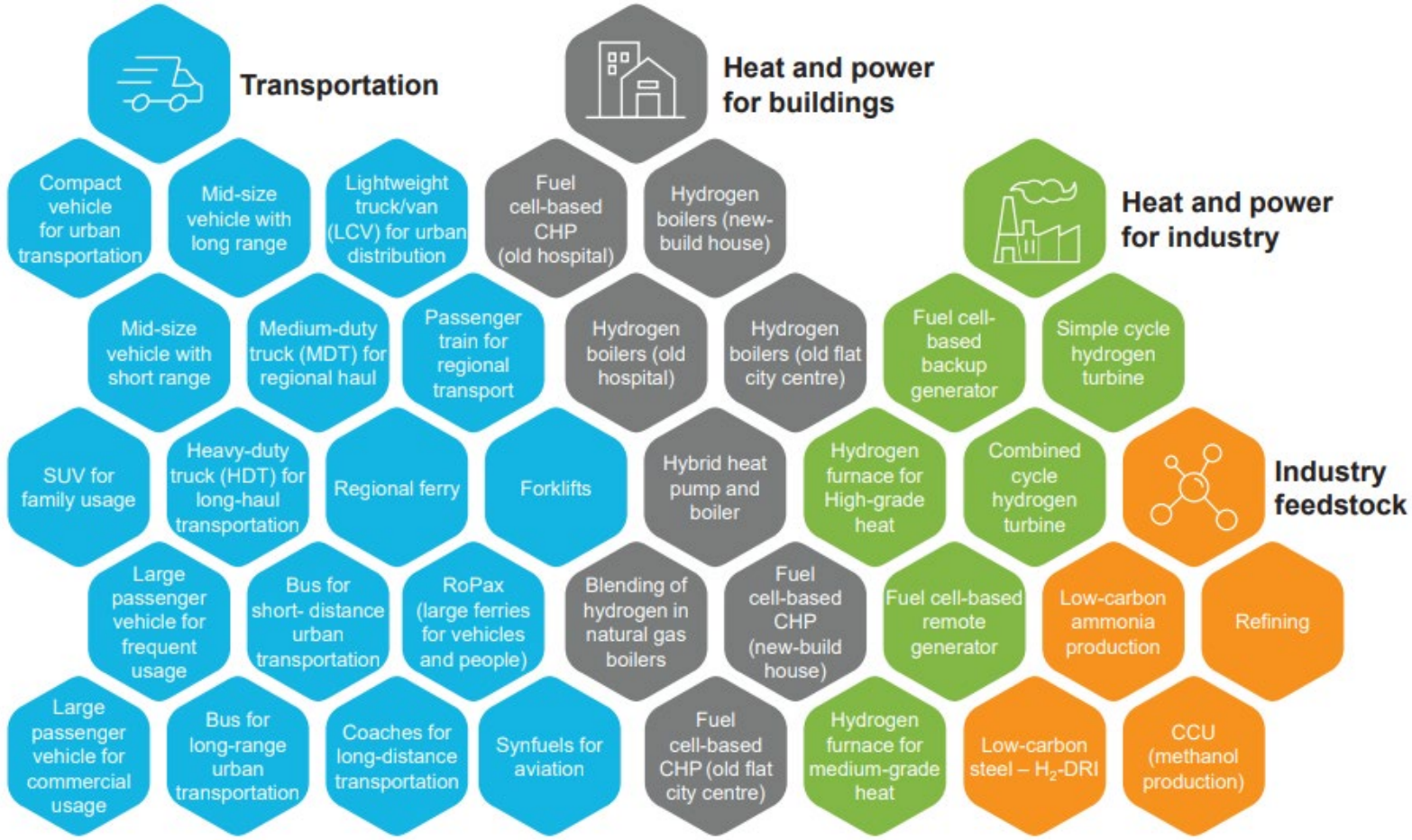
USE	Growth Rate to 2025	Current Use MM Metric tons/yr.	% of Total Demand	Outlook
Ammonia	3.1%	2.7	24%	Cheap natural gas supply in U.S. drives new ammonia capacity additions
Refining	1.5%	6.5	57%	Driven by continued global regulations toward low-sulfur fuels
Methanol	4.0%	1.6	14%	Methanol demand growing rapidly in China where it is used for fuel and for olefins Cheap natural gas in U.S. is driver for new methanol production
Metal processing	2.0%	0.2	2%	Welding, heat treatment of steel, glass production, Forming and blanketing of gas
Other (chemicals, glass, rocket fuel, electronics, etc.)	2.6%	0.4	3%	Cheap U.S. NGL's is driving new ethylene plants… leading to investments in derivative capacity such as resins and polymers that use hydrogen

Moving Beyond Existing H_2 Demand

Hydrogen can be used to reduce emissions in many hard-to-abate sectors

Despite current limitations in use cases, hydrogen could be an economically viable solution across the energy landscape, including:

- Land Transport
- Marine Transport
- Aviation
- Steel Production
- Industrial Heat
- Power Generation
  - Long Duration Power Storage
- Natural Gas Pipeline Blending



Source: Hydrogen Council, 2020

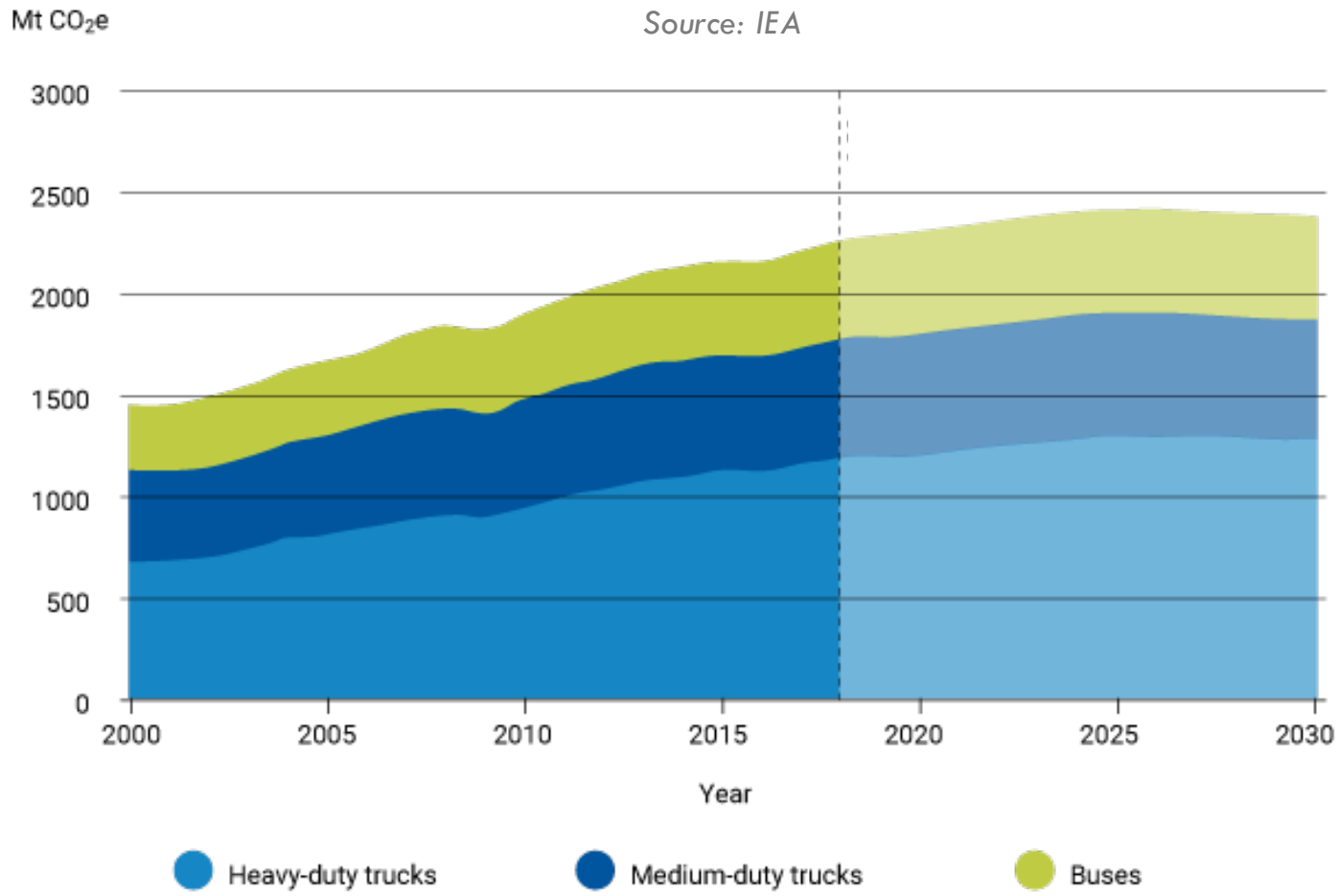
Why Focus on Heavy Duty Vehicles

Commercial, heavy-duty transport remains **challenging to decarbonize** cost effectively.

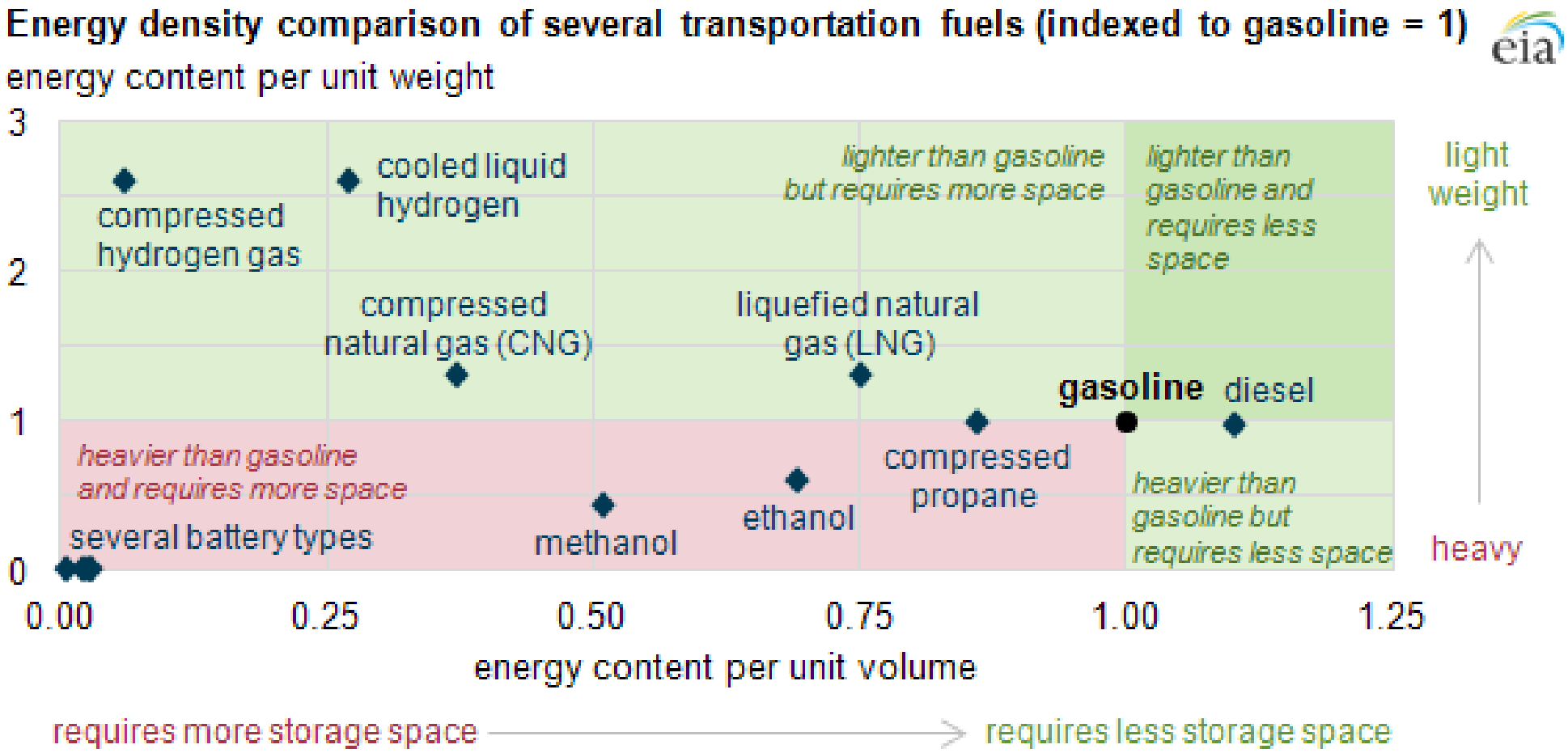
- HD Vehicles Transport 80% of Goods in the US
- HD Vehicles represent 4% of vehicle traffic but consume 20% of fuel
- Routes and fuel logistics are predictable.

CO2 Emissions from Heavy-Duty Vehicles in the Sustainable Development Scenario, 2000-2030

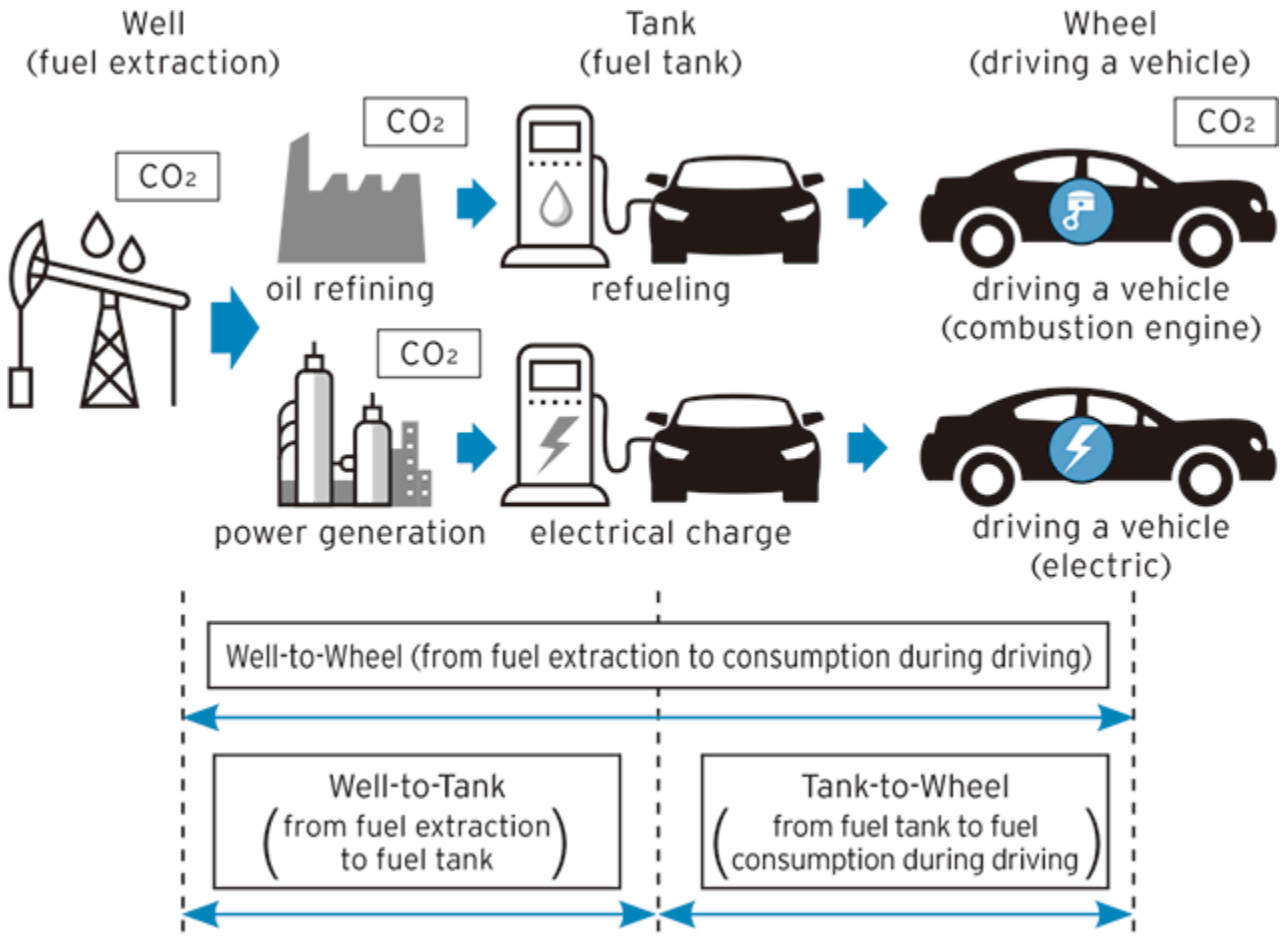
Source: IEA



Clean Fuel trade-offs begin with Energy Density



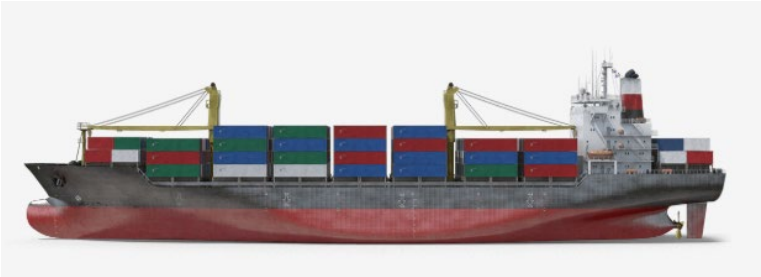
Well to Wheel Life Cycle Analysis



A Full LCA will consider:

- Emissions (NOx, PM, GHG, VOC's, etc
- Efficiency
- Costs (including materials costs, recycling/environmental costs, operating costs, etc.)
- Energy source (electricity from wind, gas, coal, other, conventional natural gas, renewable natural gas, etc)
- Energy conversion technology (refining gasoline from oil, electrolysis of water to hydrogen, natural gas to hydrogen, etc.
- Energy transport (trucking, on-site generation such as for hydrogen, electric T&D)
- Compression, dispensing, charging, etc.
- Lots of other considerations
- ANL's GREET model is industry standard.

Hydrogen for Port Applications



Ship to Short Power

Yard Tractor

Rail / Switching Yards

Industrial Power Generation

Energy Storage

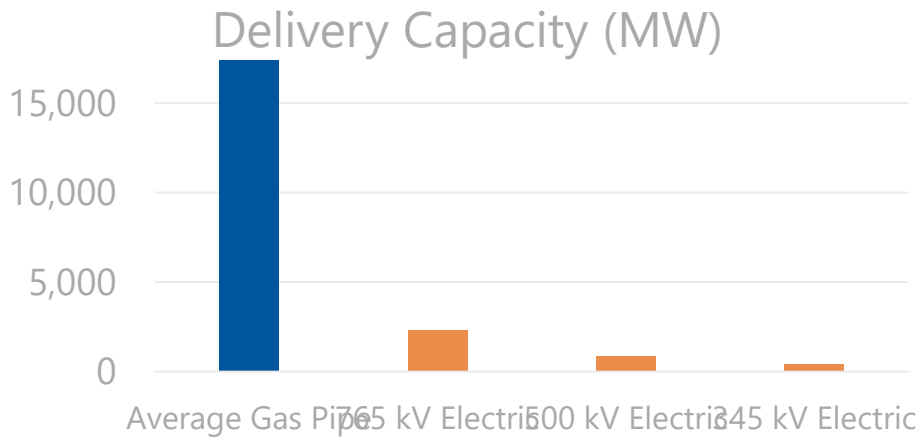
HD Truck Transport

Export

Comparison of Large-Scale Energy Delivery Systems
Natural Gas Transmission Pipelines and Electric Transmission Lines

GTI ENERGY

- Chemical energy delivery systems, like gas pipelines, have much greater energy delivery capability than electric power lines (10-50+ times higher)
- Gas pipelines are more cost effective, feature improved aesthetics (out of sight), and less vulnerable to weather impacts



350 U.S. Gas Transmission Pipelines	Delivery Capacity, MW
Average Gas Pipeline	17,386

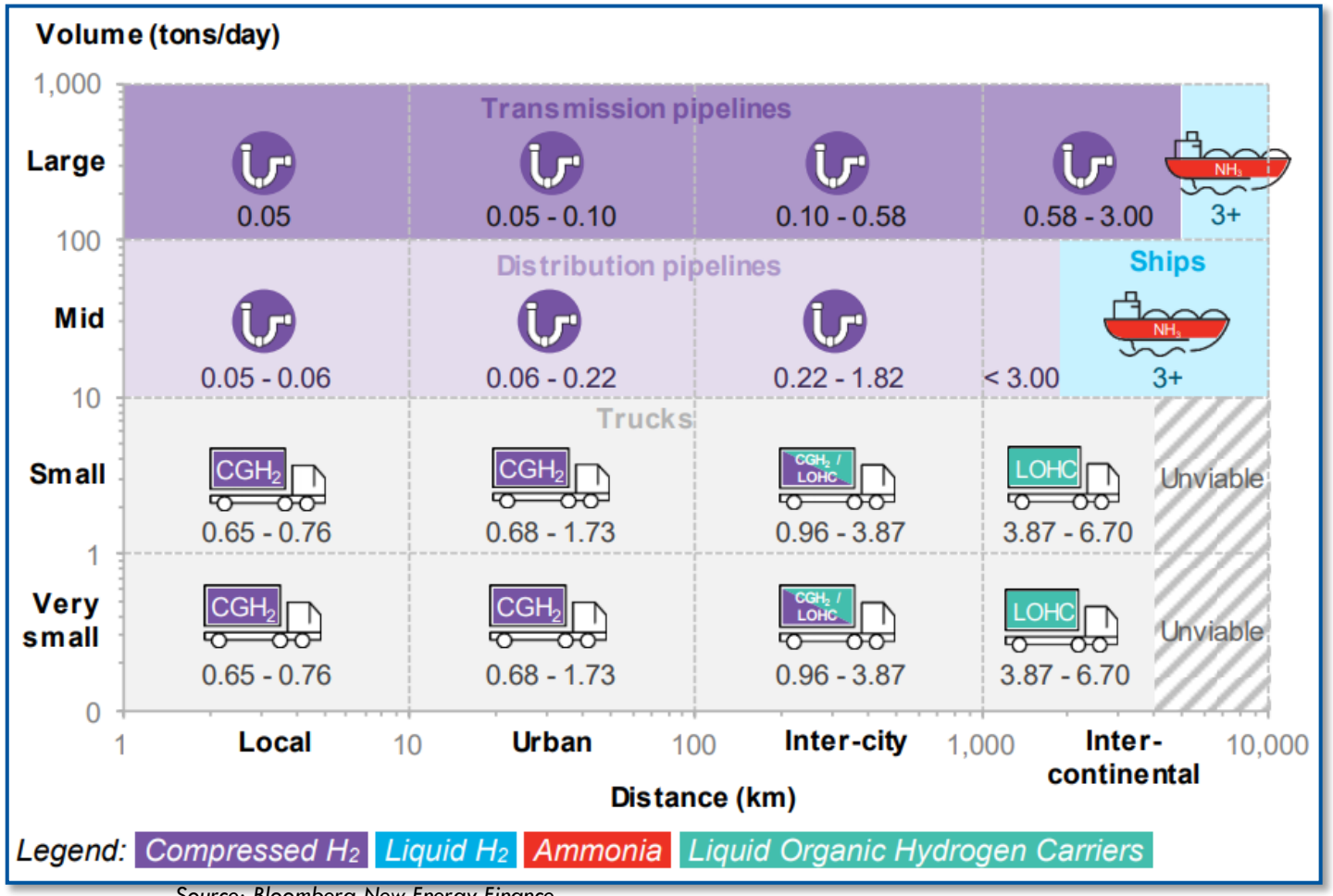
Electric Transmission	Nominal Capacity, MW
765 kV Line	2,300
500 kV Line	900
345 kV Line	400

Source: DOE EIA (top 80% of interstate gas pipelines).
http://web.ecs.baylor.edu/faculty/grady/_13_EE392J_2_Spring11_AEP_Transmission_Facts.pdf

Hydrogen Transportation Costs

The cost to move H_2 is a function of volume and distance

H_2 Transportation Costs ($/kg H_2)

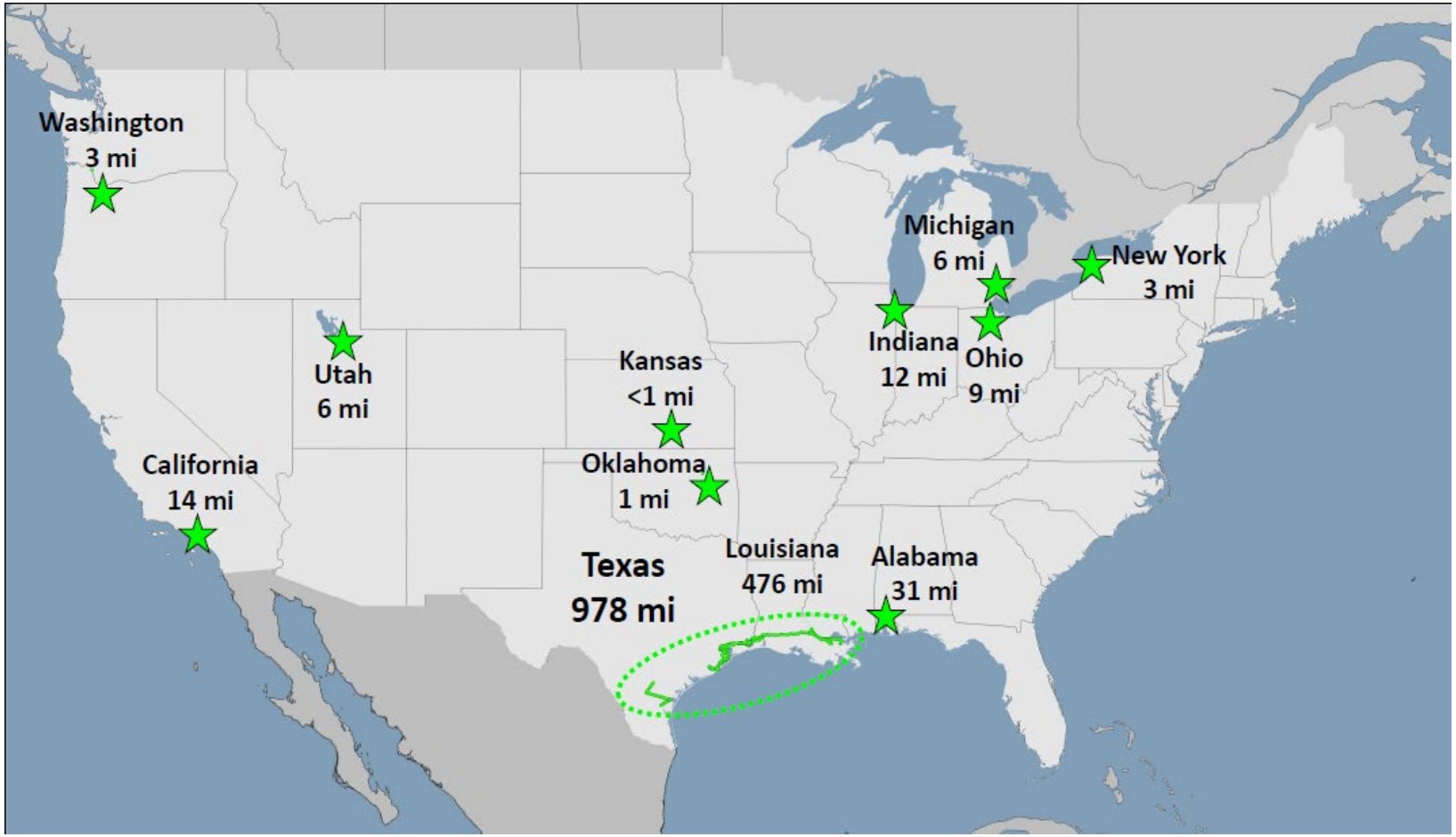


Source: Bloomberg New Energy Finance

Low energy density and propensity to leak make hydrogen transmission and distribution technically challenging.

At low volumes and short distances, compressed tube trucks can satisfy demand. As volumes and/or distances increase, liquefaction, dedicated pipelines, and alternative H_2-rich vectors such as ammonia become more economically viable.

Location of Existing Hydrogen Pipelines



Source: PHMSA

Regional Clean Hydrogen Hubs

Build 6-10 regional clean H2Hubs across the country to create networks of clean hydrogen producers, consumers, and local connective infrastructure to accelerate use of clean hydrogen.

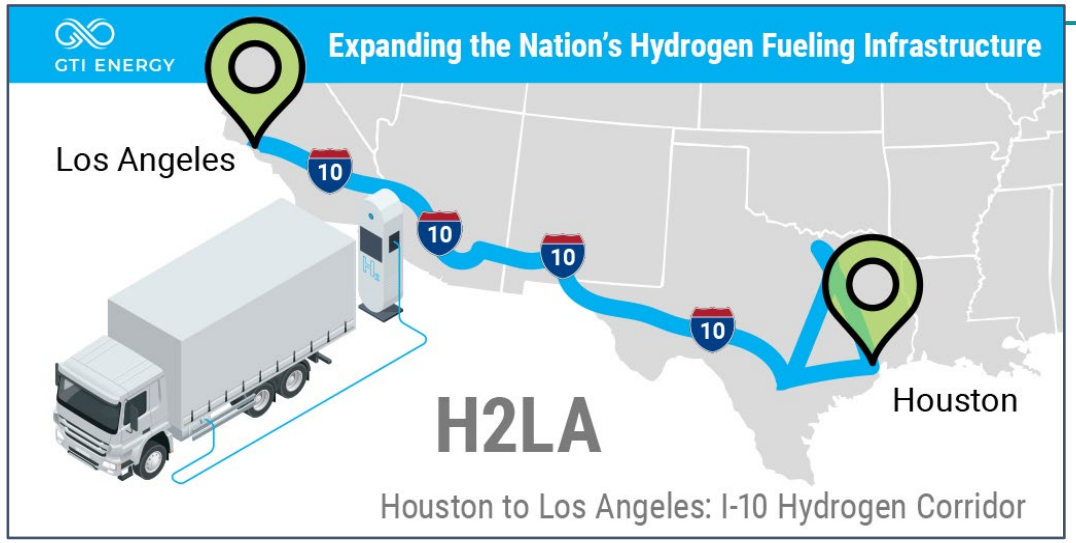
H2Hubs Demand-Side Support Initiative

- Sept 2023: Announced $1B RFP. Responses are due on October 26, 2023.
- Learn more about the initiative here: https://www.youtube.com/watch?v=QgOL_Xg7K1Q

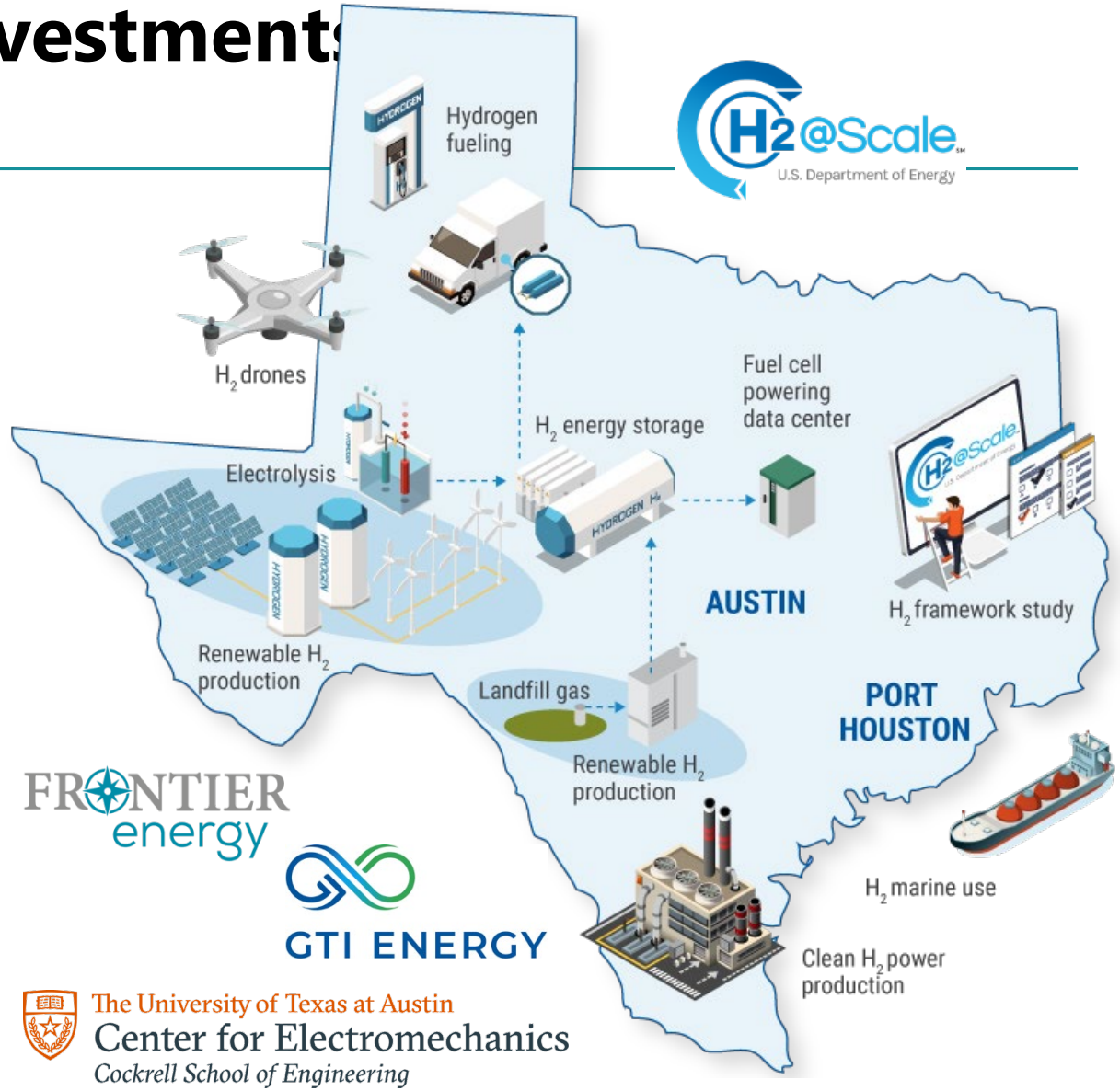
H2Hubs Current Status

- **October 2023: DOE announced 7 projects selected for award negotiations.**
- April 2023: Received full applications.

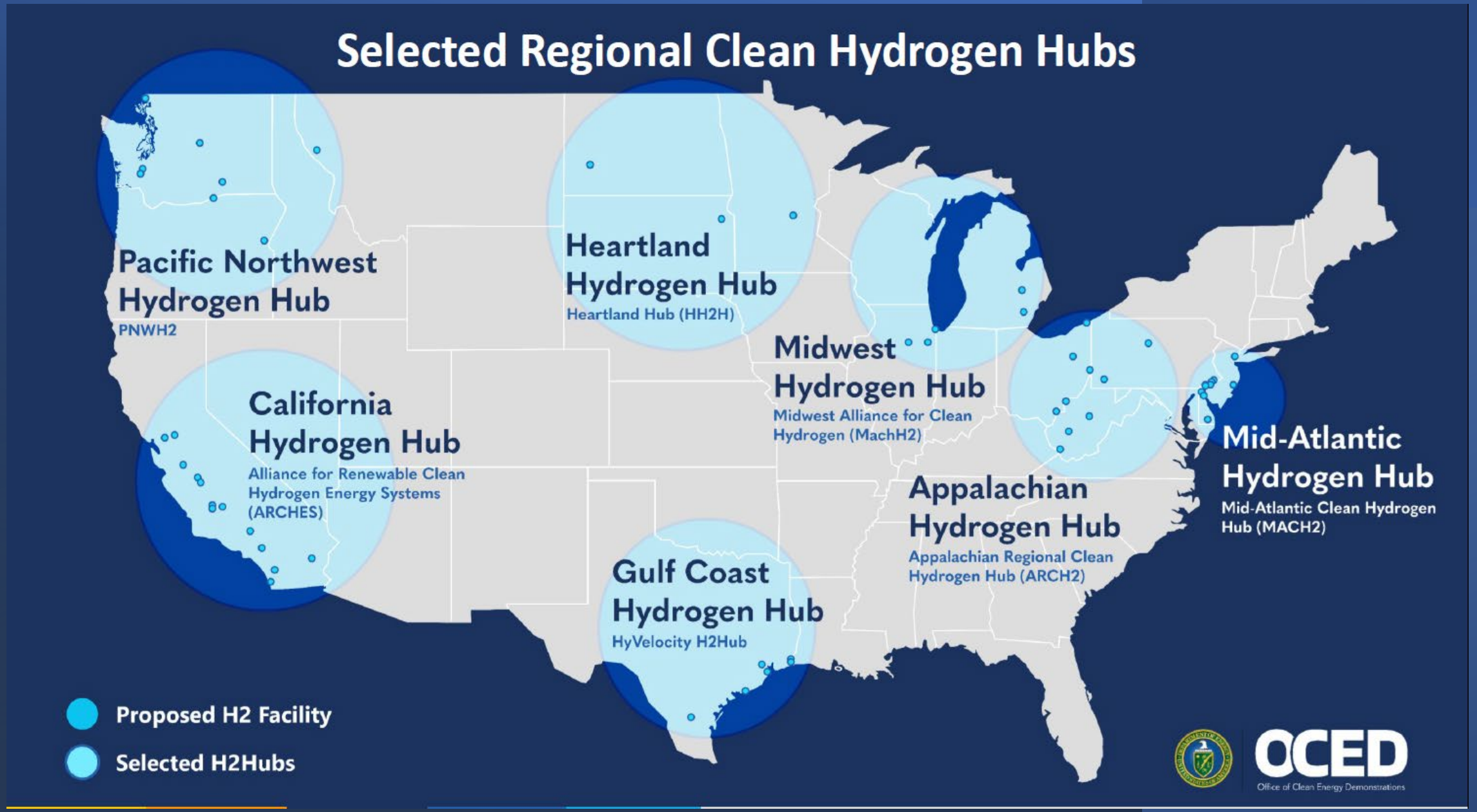
DOE's Regional Hydrogen Investments



- 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




What is a Regional Clean Hydrogen Hub?
OCED
Office of Clean Energy Demonstrations
ENERGY
CONSUMERS
COMMUNITY
HYDROGEN PRODUCTION STORAGE
NUCLEAR POWER PLANT
RENEWABLE ENERGY
HYDROGEN PRODUCTION FACILITY
SMALL, MINORITY, DISADVANTAGED LOCAL BUSINESSES
HYDROGEN STORAGE
SAFETY TRAINING CENTER
TRANSPORTATION
WORKFORCE DEVELOPMENT TRAINING CENTER
RESIDENTIAL COMMERCIAL HEATING
TRANSPORTATION
STEM EDUCATION & COMMUNITY CENTER
*Images are not drawn to scale


Selected Regional Clean Hydrogen Hubs
Pacific Northwest Hydrogen Hub
PNWH2
Heartland Hydrogen Hub
Heartland Hub (HH2H)
Midwest Hydrogen Hub
Midwest Alliance for Clean Hydrogen (MachH2)
California Hydrogen Hub
Alliance for Renewable Clean Hydrogen Energy Systems (ARCHES)
Appalachian Hydrogen Hub
Appalachian Regional Clean Hydrogen Hub (ARCH2)
Mid-Atlantic Hydrogen Hub
Mid-Atlantic Clean Hydrogen Hub (MACH2)
Gulf Coast Hydrogen Hub
HyVelocity H2Hub
Proposed H2 Facility
Selected H2Hubs
OCED
Office of Clean Energy Demonstrations

DOE Timeline and Program Requirements

HyVelocity Hub

Initial Application

Go/No-Go Decisions

Application → **Phase 1:** Detailed Plan → **Phase 2:** Develop, Permit, Finance → **Phase 3:** Integrate, Construct → **Phase 4:** Ramp-Up & Operate

$0.4B - $1.25B Total DOE Funding; Non-Federal Cost Share ≥ 50%

		Pre-DOE funding	Up to $20M DOE Funding, ~12-18 Months	Up to 15% of Total DOE Funding, ~2-3 Years	DOE Funding To be Negotiated, ~2-4 Years	DOE Funding To be Negotiated, 2-4 Years
Business Development and Management	Technical Volume	• H2Hub Summary • Business Plan (BP), including preliminary site selection • Management Plan (MP) • Financial Plan (FP)	• Market, feedstock, and offtake letters of commitment • Final site selection • Financial model • Updated BP, MP, FP	• Teaming, offtake, and feedstock agreements • Site access secured • Confirmed project financing • Updates BP, MP, FP • Labor agreements	• Regular progress/status reporting for all agreements • Regular financial status reports • Other reporting per terms and conditions (T/Cs) • Updated BP, MP, FP covering Phases 3-4	• Financial model updated with offtake and production data • Revised growth plan and projections • Updated BP, MP, FP covering ramp-up and steady state operations
Engineering, Procurement, Construction, and Operations	Technical Volume	• Engineering concept (~5%) • Technology Readiness Level (TRL) descriptions • Integrated Project Schedule (IPS); Full Project – L-1; Phase 1 – L2 • Class 4 Total project Cost (TPC) estimate • Operating and disposition concepts	• Engineering and Design (~30%) and related documents • Performance model • TRL analysis and uncertainties • IPS: Full Project – L2: Phase 2 – L3 • Class 3 TPC estimate	• Engineering and Design (~90%) and related documents • TRL updates • IPS: Full Project – L3 • Class 1 TPC estimate • Standard project management tool in use • Updated Operating Plan • Updated Disposition and Decommissioning (D&D) Plan	• Progress execution reporting • Integrated project completion testing	• Regular operations status reporting • Performance ramp verification and validation (V&V) • Final TPC accounting
Safety, Security and Regulatory Requirements	Technical Volume	• Safety history/culture description • Permitting workflow overview • Environmental Considerations Summary	• Initial Safety Plans (hydrogen and site; 30% design) • Cyber Security Plan • Environmental Information Volume	• Execution-ready Safety Plans (hydrogen and Site; 90%design) • Final Cybersecurity Plan • Permits in place for construction • Complete environmental review/assessments	• Status reporting on required permits and environmental • Safety and security incident reporting and audits • Permits for operations	• Ongoing permit, safety and security reporting
Risk Analysis and Mitigation	Technical Volume	• Risk Management Plan (RMP) • Risk Register	• RMP, Risk Register updates	• Quantitative risk analysis • RMP, Risk register updates	• RMP, Risk Register updates • Periodic quantitative updates	• Tech risk updated for operations • Ongoing risk reporting
Technical Data and Analysis	Technical Volume	• Preliminary Techno-economic Analysis (TEA) • Preliminary Life Cycle Analysis (LCA)	• Updated TEA • Updated LCA	• Mature LCA • Mature TEA with risk analysis • Technical Verification and Validation (V&V) Plan	• Periodic TEA and LCA updates • V&V data collection analysis	• LCA & TEA incorporating operational data • Ongoing data collection and dissemination
Community Benefits: Job Quality and Equity	Community Benefits Plan (CBP)	Initial plan, including: • Community and Labor Engagement • Investing in the American Workforce • Justice40 Initiative • Diversity, Equity, Inclusion and Accessibility (DEIA)	• Implement Phase 1 scope of CBP • Update CBP for future phases based on activities and lessons learned, including documentation of stakeholder engagement status, workforce development Justve40 implementation and documentation of extent of community consent	• Implement Phase 2 scope of CBP • Measure and report on all CBP metrics • Updated CBP for future phases based on activities and lessons learned	• Implement Phase 3 scope of CBP • Measure and report on all CBP metrics • Updated CBP for future phases based on activities and lessons learned	• Implement Phase 4 scope of CBP • Measure and report on all CBP metrics • Final report including accomplishments, findings and plan for steady state operations

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)

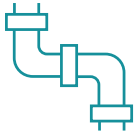
Production capacity

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

2.4 billion tons of CO_2 storage capacity (10,000x Houston's current CO_2 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

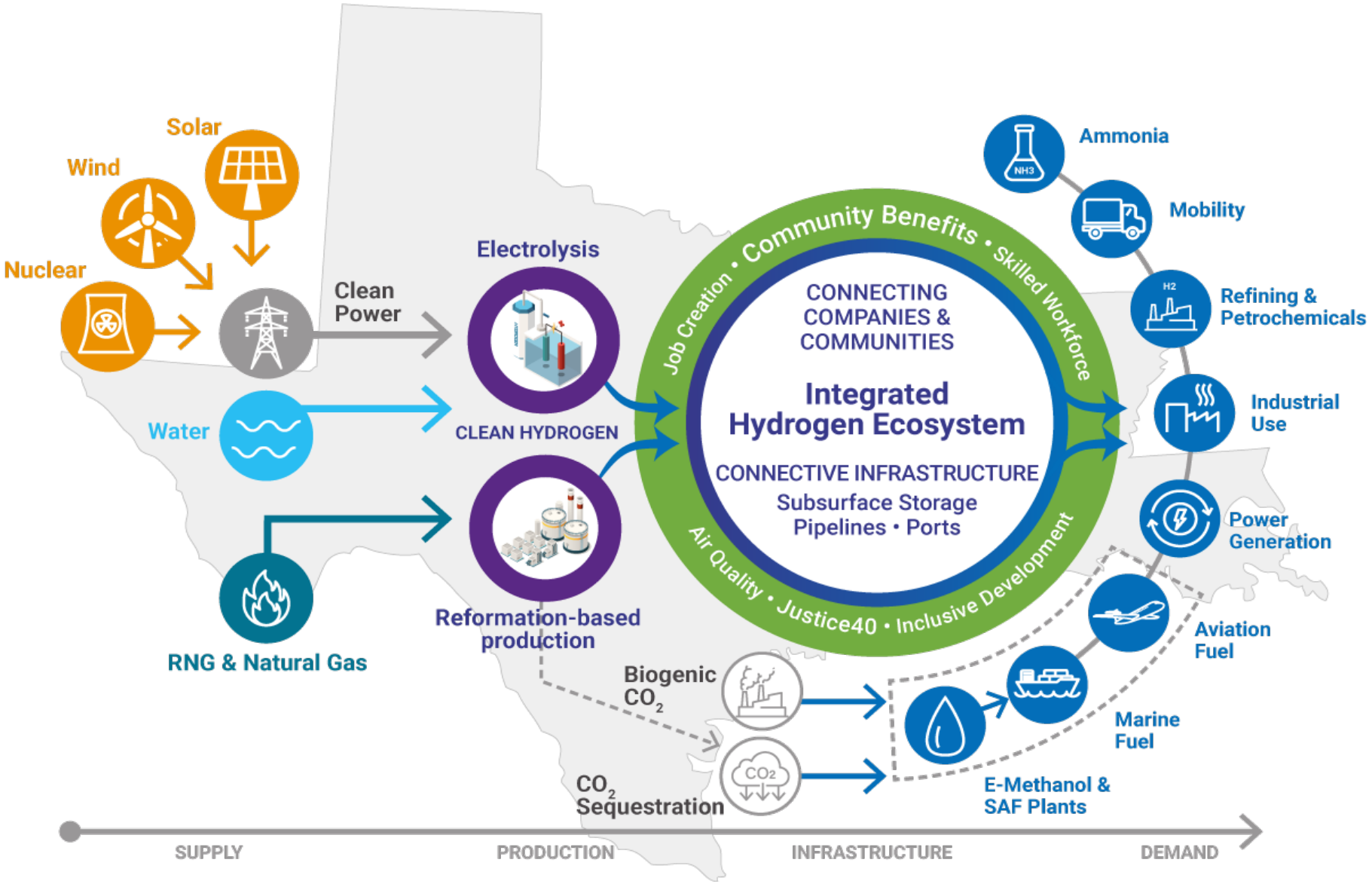
3 of the 6 hydrogen storage caverns in the world

Source: McKinsey and CHF Gulf Coast Hydrogen Roadmap , 2022 US DOE Energy and Employment Report

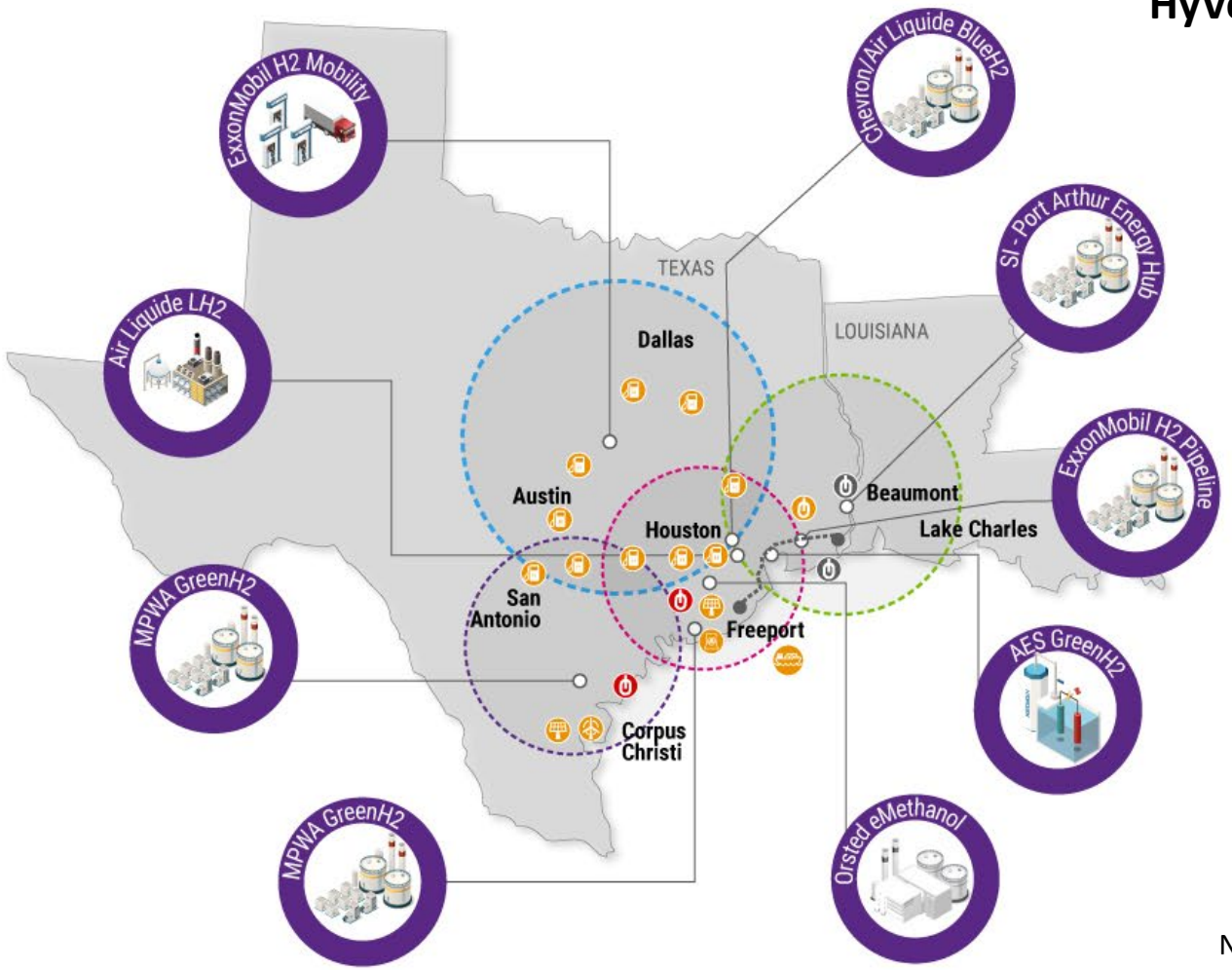
HyVelocity's Clean Hydrogen Ecosystem

- 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

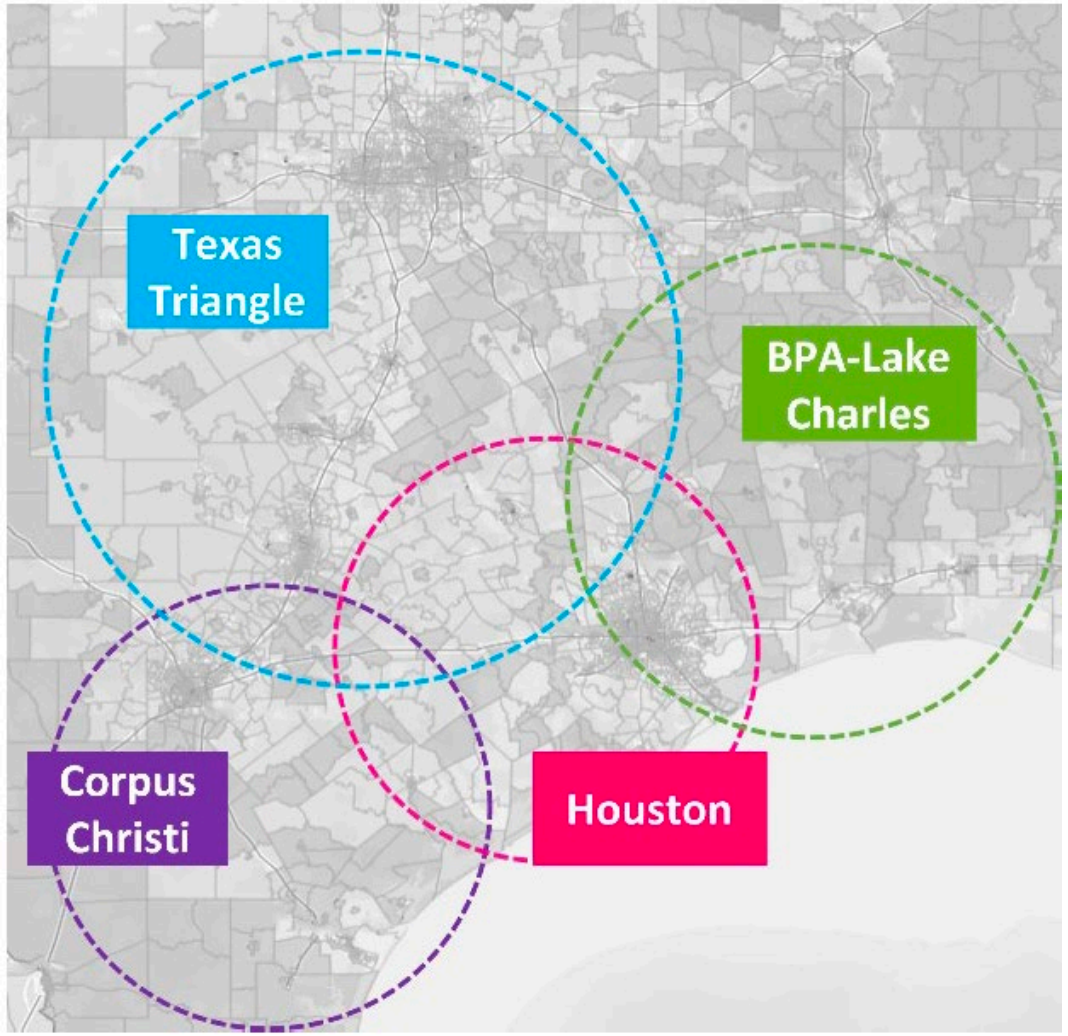
Corpus Christi Demand Cluster
Houston Demand Cluster
BPA-Lake Charles Demand Cluster
TX Triangle Demand Cluster

HYVELOCITY HUB > INTEGRATED INFRASTRUCTURE

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

CENTER FOR HOUSTON'S FUTURE

GTI ENERGY
solutions that transform

THE UNIVERSITY OF TEXAS AT AUSTIN

CLEAN SCHOOL BUS PROGRAM AND ALTERNATIVE FUELS

Mandeep Singh, U.S. Environmental Protection Agency
Kimari Hodges, U.S. Environmental Protection Agency

EPA CLEAN SCHOOL BUS

2023 Clean School Bus Rebate Program
November 15, 2023 @ 2 PM CST

Region 6
U.S. Environmental Protection Agency

AGENDA

Overview of the Clean School Bus (CSB) Program

2023 CSB Rebate Program Overview

How to Apply

Next Steps and Resources

Overview of the Clean School Bus Program

Bipartisan Infrastructure Law

- Under **Title XI: Clean School Buses and Ferries**, the Bipartisan Infrastructure Law (BIL) provides **$5 billion** over five years (FY22-26) for the replacement of existing school buses with zero-emission and clean school buses.

CSB Funding Opportunities

- EPA has offered rebates and grants in past funding opportunities.
- EPA is offering another round of rebate funding.
- The 2023 Rebates is the third CSB funding opportunity.

EPA

EPA CLEAN SCHOOL BUS

Why Clean School Buses?

Reduced Greenhouse Gas Emissions
CSBs emit zero or low tailpipe emissions.

Cleaner Air
CSBs result in cleaner air on the bus, in bus loading areas, and in the communities in which they operate.

Cost Savings
Replacing older diesel school buses with CSBs often reduces maintenance and fuel costs.

Resiliency
Vehicle-to-Grid (V2G) capable CSBs can provide power to the grid or buildings during power shutdowns.

Improved Student Attendance & Achievement
The transport of students with CSBs has been linked to student attendance and academic achievement improvements.

CSB Program Goals

Engage	Engage stakeholders in program development.
Evolve	Evolve the program, as needed, based on successes and lessons learned.
Promote	Promote cost parity between bus technologies.
Allow	Allow school districts multiple opportunities to apply for funding.
Maximize	Maximize the number of zero-emission and clean buses that get funded.
Ensure	Ensure a broad geographic distribution of awards.

CSB Rebates versus CSB Grants

While both grants and rebates provide selectees with award funds prior to purchasing eligible buses and infrastructure, there are a few differences between these types of funding programs:

	Rebates	Grants
Application Process	Quick and simple; applications submitted through EPA portal	Longer, more detailed; applications submitted through grants.gov
Selection Process	Random number generated lottery process	Evaluation of application materials and scoring criteria
Selectee support and flexibility	EPA provides less support and flexibility in funding to selectees	EPA may offer more support for selectees during the project, as well as flexibility in funding – e.g. covering project implementation costs - and timing of the project, such as extending project periods to complete the project.
Number of Replacement Buses	Funds the transition of smaller fleets (lower bus replacement minimum and maximum)	Funds the transition of larger fleets (higher bus replacement minimum and maximum)

EPA

Application packages must be submitted to EPA no later than 1/31/24 at 4:00 p.m. ET.
For more information, please visit *www.epa.gov/cleanschoolbus.*

EPA CLEAN SCHOOL BUS

2022 CSB Rebates

Applications

- Nearly **$4B** in applications for over 12,000 buses
- More than **90%** of requests were for **electric buses**
- Majority of applicants met priority criteria as low-income, rural, or Tribal

Awards

- EPA has awarded **~$965M** in rebates
- This has funded **~2,400 buses** in **~400 school districts**
- Many schools have received a positive response from students, drivers, parents and faculty about use of their awarded bus(es), with some selectees indicating plans to acquire additional CSBs

Application packages must be submitted to EPA no later than 1/31/24 at 4:00 p.m. ET.
For more information, please visit *www.epa.gov/cleanschoolbus.*

2023 CSB Rebate Program Details

Application packages must be submitted to EPA no later than 1/31/24 at 11:59 p.m. ET.
For more information, please visit www.epa.gov/cleanschoolbus.

EPA CLEAN SCHOOL BUS

Eligible Applicants

Who can apply?

- **State and local governmental entities** responsible for: providing bus service to one or more public school systems; or the purchase, lease, license, or contract for service of school buses
- **Public charter school districts** responsible for the purchase, lease, license, or contract for service of school buses
- **Indian Tribes, Tribal Organizations, or tribally controlled schools** responsible for: providing bus service to one or more Bureau-funded schools; or the purchase, lease, license, or contract for service of school buses
- **Nonprofit School Transportation Associations**
- **Eligible Contractors** (OEMs, dealers, private school bus fleets, etc.)

EPA

Application packages must be submitted to EPA no later than 1/31/24 at 4:00 p.m. ET.
For more information, please visit *www.epa.gov/cleanschoolbus.*

EPA CLEAN SCHOOL BUS

Prioritization Criteria

2023 CSB Rebates*

Please note that program criteria may be different from prior CSB funding opportunities and are subject to change in future rounds of CSB funding

Applications due Jan. 31, 2023.
www.epa.gov/cleanschoolbus

HIGH-NEED SCHOOL DISTRICTS AND LOW-INCOME AREAS

- School districts listed in the Small Area Income and Poverty Estimates (SAIPE) School District Estimates for 2021 as having **20% or more students living in poverty**.
- School districts located in the U.S. Virgin Islands, Guam, American Samoa, and the Commonwealth of the Northern Mariana Islands.
- **Title I-funded public school districts and charter school districts not listed in the SAIPE data.**
- **Title I-funded large public school districts (more than 35,000 students and/or more than 45 public schools) that do not meet the 20% SAIPE threshold may be eligible to self-certify.***

RURAL

- School districts identified with **locale code "43-Rural: Remote"** by the National Center for Education Statistics (NCES).

BUREAU OF INDIAN AFFAIRS FUNDED SCHOOL DISTRICTS

SCHOOL DISTRICTS THAT RECEIVE BASIC SUPPORT PAYMENTS FOR CHILDREN WHO RESIDE ON INDIAN LAND

**See the Prioritization Self-Certification Instructions, which can be found on the CSB Rebates webpage, for more information on this option.*

EPA

EPA CLEAN SCHOOL BUS

CSB Funding per Replacement Bus

School District Prioritization Status	Replacement Bus Fuel Type and Size					
	ZE – Class 7+*	ZE – Class 3-6*	CNG– Class 7+	CNG – Class 3-6	Propane – Class 7+	Propane – Class 3-6
Buses serving school districts that meet one or more prioritization criteria	Up to $345,000 (Bus + Charging Infrastructure)	Up to $265,000 (Bus + Charging Infrastructure)	Up to $45,000	Up to $30,000	Up to $35,000	Up to $30,000
Buses serving school districts that are not prioritized	Up to $200,000 (Bus + Charging Infrastructure)	Up to $145,000 (Bus + Charging Infrastructure)	Up to $30,000	Up to $20,000	Up to $25,000	Up to $20,000

**Funding levels include combined bus and EV charging infrastructure. Recipients have flexibility to determine the split between funding for the bus itself and the supporting infrastructure.*

ADA-Compliant Buses:
Applicants can request up to an **additional $20k** to purchase ADA-compliant clean school buses of any fuel type equipped with wheelchair lifts.

High Shipping Costs:
Applicants in non-contiguous U.S. states and territories will receive up to an **additional $20k** per bus to cover high bus shipping costs.

Tax Credits:
Selectees may be eligible for IRA tax credits applicable to their bus and infrastructure purchase(s) not reflected in the funding table.

Application packages must be submitted to EPA no later than 1/31/24 at 4:00 p.m. ET.
***For more information, please visit** www.epa.gov/cleanschoolbus.*

IRS Tax Credits

- Selectees may be **eligible for Inflation Reduction Act (IRA) tax credits applicable to their bus and infrastructure purchases**, mainly the:
  - **Commercial Clean Vehicle Credit**, which provides up to $40,000 for qualified commercial clean vehicles; and the
  - **Alternative Fuel Vehicle Refueling Property Credit**, which provides up to $100,000 for qualified charging and refueling infrastructure.

EPA cannot give tax advice. Refer to guidance on the IRS website for further instruction.

- Selectees may also be eligible to claim all or a portion of the value of IRA credits using either the new elective pay, and transferability mechanisms introduced by the IRS.
- See the Internal Revenue Service (IRS) website for more information on these credits.
- **Please review the IRS' guidance linked above for more information about your eligibility for this credit, as well as when you may be able to receive the credit.**

Texas State Funding

- **Texas Volkswagen Environmental Mitigation Program (TxVEMP)**

  https://www.tceq.texas.gov/agency/trust

- **Texas Emissions Reduction Plan (TERP)**

  https://www.tceq.texas.gov/airquality/terp

- **Texas Clean School Bus Program (TERP)**

  https://www.tceq.texas.gov/airquality/terp/school-buses.html

Eligible Existing School Buses Must*:

1. **Be a vehicle MY2010 or older diesel-powered school buses that will be scrapped if selected for funding.**
    1. If a fleet has no eligible 2010 or older diesel school buses and is requesting zero-emission school bus replacements, the fleet can either:
        1. Scrap 2010 or older non-diesel internal combustion engine buses; or
        2. Scrap, sell, or donate 2011 or newer diesel or non-diesel internal combustion engine buses.
2. Have a Gross Vehicle Weight Rating (GVWR) of 10,001 lbs or more
3. Be fully operational at the time of application submission.
4. Have provided **bus service for at least 3 days/week on average during the 2022/2023 school year** at the time of applying, excluding emergency-related school closures.**

**Refer to the Program Guide for specific eligibility information.*

*** EPA strongly encourages third-party applicants to replace existing buses that provided service to the public school district listed on the application, or another school district eligible for priority consideration, as listed in the Prioritized School Districts list found on the 2023 CSB Rebates webpage.*

Eligible New Replacement School Buses Must*:

All replacement school buses must (continued):

8. Not be ordered prior to receiving official notification of selection for EPA funding.
9. Be **purchased**, not leased or leased-to-own.
10. Serve the school district listed on the application for **at least 5 years from date of delivery.***
11. **Not be manufactured, retrofitted with, or otherwise have installed, a power unit or other technology that creates air pollution within the school bus**, such as an unvented diesel passenger heater. EPA strongly encourages applicants to consider alternative cold weather mitigation strategies (e.g., insulation of cabin and/or batteries, cabin and battery preconditioning) until other viable alternatives become available.
12. **Not be purchased or otherwise subsidized with other federal grant funds.**
    8. The total of funds from the CSB grant and other eligible external funds allocated for the bus replacements cannot exceed the cost of the new buses.
13. Upon request, be made available for inspection by EPA or its authorized representatives for 5 years from the date of delivery to verify the buses are serving their intended purpose.

* *Refer to the Program Guide for specific eligibility information.*

Eligible New Replacement School Buses Must*:

Applications must include projects which replace existing internal combustion engine school buses with propane, CNG, and/or electric school buses. All replacement school buses must:

1. **Have a battery electric, CNG, or propane drivetrain.**
    1. Biofuels will not be included as an eligible replacement technology for this funding opportunity.
2. **Be a new vehicle.**
    1. Buses which have been converted to a battery-electric, propane, or CNG drivetrain after the first retail sale are not eligible for funding.
    2. The conversion of a bus to a battery-electric, propane, or CNG drivetrain is not eligible for funding.
3. **Be model year 2022 or newer.**
4. Have a Gross Vehicle Weight Rating (GVWR) of 10,001 lbs or more.
5. Conform to all applicable Federal Motor Vehicle Safety Standards (FMVSS).
6. Be maintained, operated, insured, registered, and charged/fueled according to manufacturer recommendations and state requirements.
7. Be equipped with an EPA certified engine if they are Propane or CNG fueled buses.

** Refer to the Program Guide for specific eligibility information.*

Eligible Bus Replacement by Fuel Type

EPA CLEAN SCHOOL BUS

Existing Bus Fuel Type	Replacement Bus Fuel Type		
	Propane	Compressed Natural Gas	Battery-Electric
2010 or Older Diesel Bus	☑	☑	☑
2011 or Newer Diesel Bus*	☒	☒	☑
Gasoline Powered Bus*	☒	☒	☑
Propane Bus*	☒	☒	☑
Compressed Natural Gas Bus*	☒	☒	☑

*Can only be substituted if existing fleet does not have 2010 or older diesel buses available for scrappage; existing, non-diesel internal combustion engine buses that are 2010 or older must be scrapped; existing, diesel or non-diesel internal combustion engine buses that are 2011 or newer may be scrapped, sold, or donated.

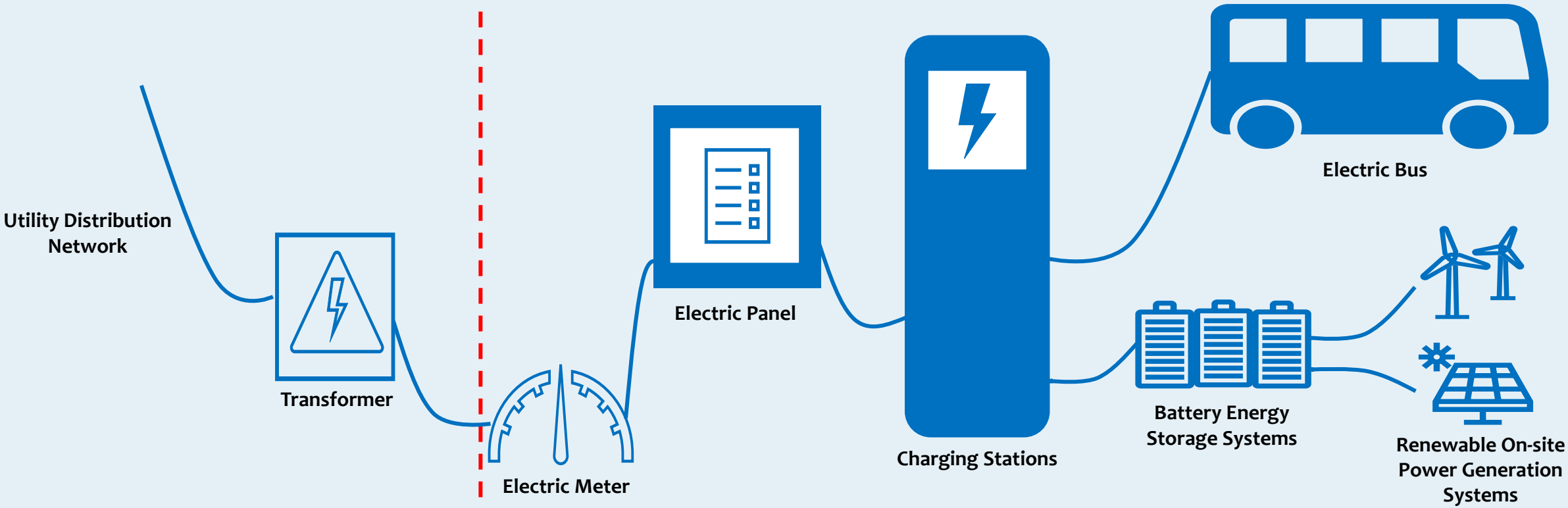
Application packages must be submitted to EPA no later than 1/31/24 at 4:00 p.m. ET.
For more information, please visit *www.epa.gov/cleanschoolbus.*

Infrastructure Funding Restrictions

EPA CLEAN SCHOOL BUS

Non-Eligible Expenses

Eligible Expenses



Front-of-the-Meter (FTM)

Behind-the-Meter (BTM)

Application packages must be submitted to EPA no later than 1/31/24 at 4:00 p.m. ET.
For more information, please visit *www.epa.gov/cleanschoolbus.*

Eligible Infrastructure Equipment*

If applicants are purchasing electric school buses, they may also receive funding for eligible charging infrastructure and installations.

All electricians installing, operating, or maintaining EVSE must meet one of the following requirements: (i) Certification from the Electric Vehicle Infrastructure Training Program (EVITP), OR (ii) Graduation or a continuing education certificate from a registered apprenticeship program for electricians that includes charger-specific training and is developed as a part of a national guideline standard approved by the Department of Labor in consultation with the Department of Transportation.

- Eligible infrastructure costs are limited to installations and upgrades **from the electrical meter to the charging port of the bus**, including (but not limited to):
  - **charging equipment** (such as alternating current (AC) Level 2 charging equipment, direct-current (DC) fast charging equipment, or vehicle-to-grid (V2G) enabled equipment);
  - **design and engineering;**
  - **installation costs** such as trenching, wiring and electrical upgrades, labor, and permitting;
  - **related intelligent equipment and software designed to monitor bus and infrastructure performance** (such as telematics or charge management software); and
  - **battery energy storage systems** (BESS) associated with replacement electric school buses funded in the program, as well as renewable on-site power generation systems that power the buses and equipment. To be eligible, these systems must behind the electrical meter.
- **Build America, Buy America (BABA) requirements apply to eligible vehicle charging infrastructure equipment.**

** Refer to Appendix B Program Guide for specific eligibility information.*

Infrastructure Funding Restrictions (cont.)

- **All chargers must be certified by an Occupational Safety and Health Administration Nationally Recognized Testing Laboratory.**
  - DC Fast Chargers and AC Level 2 chargers should be certified to the appropriate Underwriters Laboratories (UL) standards for EV charging system equipment.
  - **All AC Level 2 charging infrastructure purchased and installed under this program must be EPA ENERGY STAR certified chargers.**

- **EPA also strongly encourages recipients to consider long-term fleet electrical needs when installing charging equipment.**
  - EPA funding may be used to install additional electrical capacity behind the meter to support future charging needs (e.g., purchasing and running additional electrical conduit during trenching and wiring upgrades).
  - Applicants applying for ZE school buses should contact their utility early to initiate the necessary discussions about planning for the required infrastructure.
    - EPA's Electric Sector Pledge can help facilitate communication between school districts and their electric providers.

Application packages must be submitted to EPA no later than 1/31/24 at 4:00 p.m. ET.
For more information, please visit *www.epa.gov/cleanschoolbus.*

Build America, Buy America Requirements

EPA CLEAN SCHOOL BUS

What is Build America, Buy America (BABA)?

Certain infrastructure projects are subject to BABA provisions of the Bipartisan Infrastructure Law (BIL).

- These require that all the iron, steel, manufactured products and construction materials used in federal infrastructure projects are produced in the U.S.
- This includes, but not limited to: the EV charger, all wiring or fixtures to support the charging equipment, breaker panels or subpanel, conduit from the meter to the panel.

- School buses are **NOT** subject to BABA requirements.
- Electric Chargers (EVSE) and supporting equipment **ARE** subject to BABA
  - Due to anticipated payment processing timeframes for this funding opportunity, **applicants should plan to purchase American made charging infrastructure products.**
  - More information is located at Build America, Buy America (BABA) | US EPA

Application packages must be submitted to EPA no later than 1/31/24 at 4:00 p.m. ET.
For more information, please visit *www.epa.gov/cleanschoolbus.*

Next Steps on *How to Apply* and Resources

Application packages must be submitted to EPA no later than 1/31/24 at 11:59 p.m. ET.
For more information, please visit *www.epa.gov/cleanschoolbus*.

CSB Program Website Tools and Resources

Technical Assistance

- Clean School Bus Technical Assistance
- Charging and Fueling Infrastructure Resources

Workforce Development

- Bus Manufacturer Job Quality and Workforce Development Practices
- Workforce Development and Training Resources

Educational Materials

- Clean School Bus Reports to Congress
- Benefits of Clean School Buses

All links can be found on: *epa.gov/cleanschoolbus*

EPA

Application packages must be submitted to EPA no later than 1/31/24 at 4:00 p.m. ET.
For more information, please visit *www.epa.gov/cleanschoolbus.*

EPA CLEAN SCHOOL BUS

EPA Utility Engagement Pledge

A primary barrier school districts are facing is uncertainty around charging infrastructure deployment and how to engage with electric companies

- **Installation of charging infrastructure can undergo long lead times and requires close coordination with the local utility**

EPA is working with national electric utility company organizations to support school districts through a Utility Pledge that includes:

- **Facilitating Communication Between Electric Providers and School Districts**
- **Providing Technical Support and Assistance**
- **Increasing Funding and Deployment**

Additional information on the Utility Pledge and other technical assistance resources are available on: epa.gov/cleanschoolbus technical assistance

EPA

Application packages must be submitted to EPA no later than 1/31/24 at 4:00 p.m. ET.
For more information, please visit *www.epa.gov/cleanschoolbus.*

EPA CLEAN SCHOOL BUS

EPA Coordination with the Joint Office of Energy and Transportation

The Joint Office can provide **applicants and selectees** with support on the following topics:

- Coordinating with electric utilities
- Identifying available funding and incentives
- Analyzing charging infrastructure needs
- Conducting a route analysis and planning routes
- Training and workforce development
- Resiliency (V2X)
- Analyzing energy needs and grid impact
- Identifying solar and battery storage opportunities

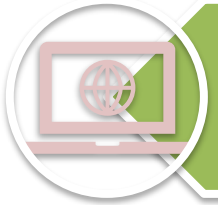
cleanschoolbusTA@nrel.gov
driveelectric.gov

EPA

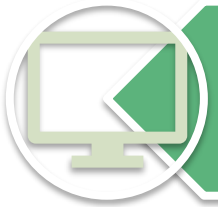
Application packages must be submitted to EPA no later than 1/31/24 at 4:00 p.m. ET.
For more information, please visit *www.epa.gov/cleanschoolbus.*

EPA CLEAN SCHOOL BUS

Next Steps – *How to Apply*



1. Visit the Clean School Bus Website for Tools & Resources



2. Register your Organization with SAM.gov

3. Complete your Application Form and Supplemental Applicant Forms

4. Submit Application Package by **January 31st, 2024 at 4:00pm ET**

EPA

Application packages must be submitted to EPA no later than 1/31/24 at 4:00 p.m. ET.
For more information, please visit *www.epa.gov/cleanschoolbus.*

EPA CLEAN SCHOOL BUS

Next Steps – *Supplemental Application Forms*

School Board Awareness Certification

- **All applicants** must submit a School Board Awareness Certification to verify the school board's awareness of the school district's rebate application. It is imperative that the school board is aware of the application as they will likely have to vote on the approval of the project if the school district is selected for a rebate.

School District Approval Certification

- **Third Party applicants** (eligible contractors and nonprofit school transportation associations) applying for rebates must submit a signed School District Approval Certification to verify the school district's approval of the third party's rebate application for new buses that would serve their school district.

Utility Partnership Agreement

- **Applicants applying for ZE school buses** must also submit a Utility Partnership Agreement to verify the electric utility provider's awareness of the school district's rebate application. Coordination and communication between the school district and the local utility(ies) is critical to initiate early and to continue throughout the project.

EPA

Application packages must be submitted to EPA no later than 1/31/24 at 4:00 p.m. ET.
For more information, please visit *www.epa.gov/cleanschoolbus.*

EPA CLEAN SCHOOL BUS

Getting to the Application

- After reading the program guide and rebate webpage, please begin completing your application.
- The link to the application, additional information on SAM.gov requirements, an application user guide, and other help resources can be found here.
- Sample applications with screenshots will be posted on this page soon.

Electric School Bus (ESB) Myths

MYTH: ESBs can't operate in hilly terrain

FACT: ESBs may need to use more energy than a conventional bus while traveling uphill, but regenerative braking while traveling downhill can capture extra energy to extend the ESB's range

Regenerative braking can reduce the use of the brake system to about 5 times less than a conventional diesel vehicle.

Source: AFDC Flipping the Switch

MYTH: The initially high cost of an ESB will never be recouped

FACT: While the purchase price of an ESB may be higher, ESBs usually end up costing a fleet less over the lifetime of the bus

ESBs usually make up for their higher purchase costs within 13 years of operation and save over $31,000 over the lifetime of the bus compared to a conventional diesel bus.

Source: Thomas Built Buses

MYTH: ESBs don't have enough range to cover a full school bus route

FACT: Most ESBs on the market have a range of about 100 miles, which is more than enough for most school districts

Type C ESBs have a range of up to 210 miles! If needed, buses can also be charged mid-day while not on the road to extend the range.

Source: WRI Electric School Bus Initiative

MYTH: ESBs don't work properly in cold climates

FACT: ESBs are still operational in cold climates but will use more energy to operate heaters, which can reduce range

A school district in Utah found that winter conditions cause ESB range to drop around 18%, but about 16% of additional range was gained through regenerative braking.

Source: WRI Electric School Bus Initiative

EPA

EPA CLEAN SCHOOL BUS

Important Dates

September 27, 2023	**2023 Rebate Program Opens**
September 2023 – January 2024	**Various Webinars on CSB Program** *More information can be found on the epa.gov/cleanschoolbus website under the 'Webinars' section.*
January 10, 2024 by 4:00 pm (ET)	**Final Date to Submit Questions**
January 31, 2024 by 4:00 pm (ET)	**Application Deadline**
April 2024	**Anticipated Notification of Selection**
April 2024 – October 2024	**Selectees submit Payment Request Forms with purchase orders**
April 2026	**Project Period Deadline**

EPA

Application packages must be submitted to EPA no later than 1/31/24 at 4:00 p.m. ET.
For more information, please visit *www.epa.gov/cleanschoolbus.*

EPA CLEAN SCHOOL BUS

Summary

2023 CSB Rebates

- Applications must be submitted to EPA no later than **1/31/24 at 4:00 p.m. ET.**
- Dates and topics for future webinars are on our website under the 'Webinars' section.

Future Funding Opportunities

- EPA encourages school districts to consider which competition structure (grants or rebates) best suits their needs.
- EPA anticipates opening a grant program in Spring 2024.

Resources

- EPA's CSB Program website
- The Joint Office of Energy and Transportation (cleanschoolbusTA@nrel.gov)
- The CSB helpline (cleanschoolbus@epa.gov)

Stay in Touch

- Learn more about the 2023 CSB Rebates at epa.gov/cleanschoolbus/school-bus-rebates-clean-school-bus-program
- Submit questions to cleanschoolbus@epa.gov
- Don't miss any updates! To sign up for the listserv, please visit epa.gov/cleanschoolbus.

Application packages must be submitted to EPA no later than 1/31/24 at 4:00 p.m. ET.
For more information, please visit *www.epa.gov/cleanschoolbus.*

EPA CLEAN SCHOOL BUS

cleanschoolbus@epa.gov

epa.gov/cleanschoolbus

HOUSTON-GALVESTON CLEAN CITIES COALITION REDESIGNATION RESULTS

J. Ben Finley, Houston Clean Cities Co-Director

Official Letter of Redesignation

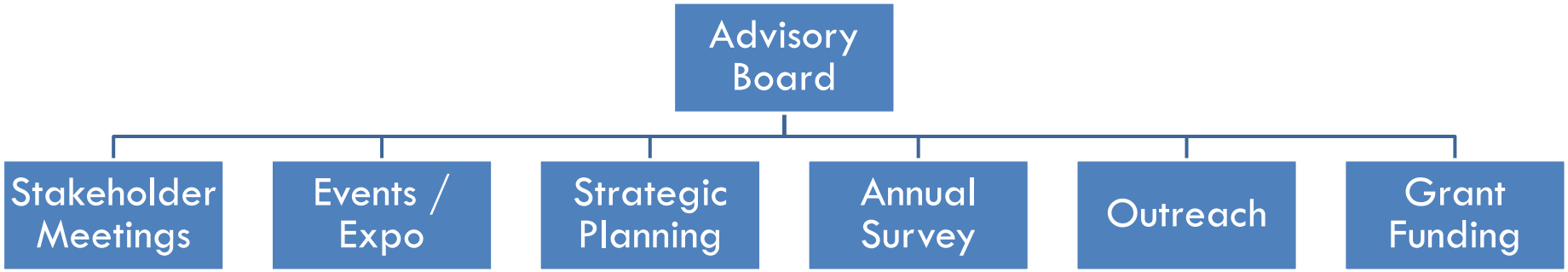
- Received the official letter of redesignation on October 25, 2023
- Anticipated next redesignation in 2028

- BIG THANK YOU TO OUR PARTNERS AND STAKEHOLDERS!

UPDATES FROM ADVISORY BOARD AND SUB-COMMITTEES

J. Ben Finley, Houston Clean Cities Co-Director

Advisory Board and Subcommittees



Ben.finley@h-gac.com

Subcommittee: Stakeholders Meetings

- Suggestions to improve Stakeholder Meetings
  - More relevant presentations geared towards stakeholders
  - Move meetings to Noon for a “Lunch and Learn” feel
  - Return to an “In Person” or at least a “Hybrid” meeting
  - Rotate the meeting place through out the region

Subcommittee: Events and EXPO

- Decisions and activities from Events and Expo Subcommittee
  - We will be targeting an audience of Fleet Managers, Elected Officials, and current Stakeholder and Partners
    - 1 day event
    - 150 atendees
    - Vendor Hall and a Ride and Drive
  - Have a draft agenda that needs further work
- Next Steps
  - Finalize agenda
  - Find a venue
  - Set a date
  - Find speakers

Subcommittee: Strategic Planning

- Overview of the purpose and meaning of Strategic Planning
  - Working on establishing mission and vision statements

Subcommittee: Annual Survey

- Not activated
  - Review the previous Annual Survey Form for streamlining
  - Identify new contacts for Annual Survey submittal
    - Meet said contacts face to face?
  - Hold a meeting / webinar with new contacts to express the importance of submitting a survey

Subcommittee: Outreach

- Not activated
  - Waiting for guidance from the Strategic Plan

Subcommittee: Grant Funding

- Activated
  - Research open grant funding opportunities
- Next Steps
  - Finalize steps in researching open grants
  - Develop additional goals

Questions and Comments

- Ben.finley@h-gac.com

GRANT OPPORTUNITIES PRESENTATION

J. Ben Finley, Houston Clean Cities Co-Director

Vehicle Purchase, Lease, Replace, and Repower

Agency	Name	Might Be Good For	Close Date	Link
Environmental Protection Agency	2023 Diesel Emissions Reduction Act (DERA)	Governments and Nonprofits	12/31/2023	DERA
	Clean School Bus Program	Public school districts, Nonprofit schools, private schools, and bus dealerships	1/10/2024	EPA Clean School Bus Program
	Clean Ports Program	Ports and Port Authorities	9/30/2027	Clean Ports Program
Texas Commission on Environmental Quality	Texas Emission Reduction Program (TERP): Light Duty Motor Vehicle Purchase or Lease Incentive Program	Open to the public, corporations, organizations, government entities, partnerships, and associations	3/22/2024	TERP: Alternative Fuel Vehicles
Department of Transportation	Rail Vehicle Replacement Grant Program	Government entities	12/18/23	RAIL

Infrastructure

Agency	Name	Might Be Good For	Close Date	Link
Department of Energy	Energy Storage Demonstration and Validation	Unrestricted	12/04/23	DE-FOA-0003036
	Alternative Fuel Tax Credit	Fueling facilities	12/31/23	Alternative Fuel Tax Credit
Department of Agriculture	Higher Blends Infrastructure Incentive Program	Individuals, government entities, schools districts, nonprofits, small businesses, and private schools	9/30/24	HBIIP

Research and Development

Agency	Name	Might Be Good For	Close Date	Link
US Department of Agriculture	Renewable Energy Systems and Energy Efficiency Improvements Program	Rural Small Businesses (Agriculture)	12/31/23	Renewable Energy Systems & Energy Efficiency Improvement
	Renewable Energy Systems and Energy Efficiency Improvements Program	Rural Small Businesses	12/31/23	REAP
Department of Energy	Carbon Utilization Procurement Grant	Government Entities	4/30/24	DE-FOA-0002829

Bipartisan Infrastructure Law (BIL)

Numerous other grants for alternative fuel projects including a focus on electric powered vehicles and infrastructure from the Bipartisan Infrastructure Law (BIL), or BIL.

For a list of funding opportunities, please visit the BIL website.

Texas Volkswagen Environmental Mitigation Program

The All-Electric Program funded by the Volkswagen Settlement is open.
Eligible projects include replacements of:

- Class 8 freight or port drayage trucks
- Class 4-8 school bus, shuttles, and transit buses
- Class 4-7 freight trucks
- Airport ground support equipment
- Forklifts and port cargo handling equipment
- Refueling infrastructure

Opening Soon

Agency	Name	Might Be Good For	Link
Texas Commission on Environmental Affairs	Texas Emission Reduction Program (TERP): Texas Hydrogen Infrastructure, Vehicle, and Equipment Program	Open to the public, corporations, organizations, government entities, and partnerships	TERP: THIVE

ANNOUNCEMENTS OF CURRENT & UPCOMING ACTIVITIES

Open Forum

Upcoming Events

- Lunch and Learn Webinar: Natural Gas and Propane Federal Motor Tax Credit (Dec. 5, 2023)
- RNG Coalition Conference (Dec. 11 – 14, 2023) https://www.rngcoalition.com/rng-conference
- Act EXPO and Conference has moved from Southern California to Las Vegas (May 20-23, 2024) https://www.actexpo.com/

Other Anouncements

Please visit our website:
Houston-Cleancities.org

Thank You!

Signature: Ben Finley
Ben Finley (Nov 16, 2023 09:21 CST)

Email: ben.finley@h-gac.com