

A nighttime photograph of a city skyline, likely Dallas, with several tall skyscrapers illuminated. In the foreground, a multi-lane highway shows long-exposure light trails from cars, creating streaks of white and red light. The scene is framed by trees and a clear night sky with some clouds.

The Journey Ahead: Decarbonizing Industry in Texas

February 13, 2025

Welcome and Kickoff



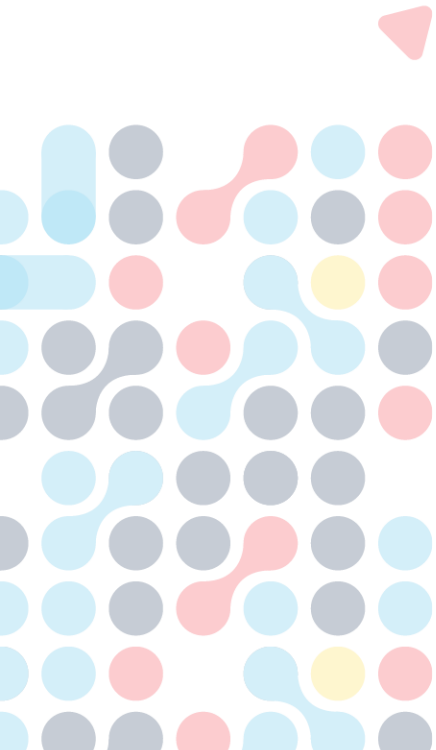
Welcome



Jane Stricker

Executive Director of
Houston Energy Transition Initiative (HETI)
htxenergytransition.org

VISION



Leverage
Houston's energy
leadership to
accelerate global
solutions for an
energy-abundant,
low-carbon future.

Drive sustainable and equitable economic growth in the Greater Houston region through a portfolio of technology, policy, and market initiatives that embrace and create value from the world's transition to low-carbon energy systems.

Delivering on this vision requires us to **build upon our history of leadership in the energy and chemical industries, provide new opportunities to our people, and leverage our assets and existing expertise, while creating conditions to attract new and innovative talent and capital.**

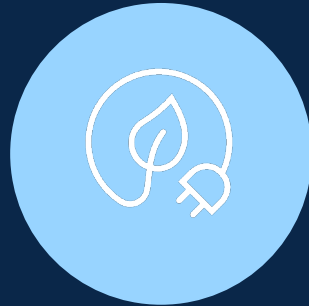
A successful effort would result in **economic growth and positive impact on the environment, thereby placing Houston as the leading hub of energy and clean tech innovation.**

MEETING THE GLOBAL DUAL CHALLENGE REQUIRES ALL ENERGY COMPANIES



INCUMBENT ENERGY FIRMS

actively decarbonizing
their own operations



RENEWABLE COMPANIES

with established and
growing presence in
Texas



MAJOR INTEGRATED ENERGY FIRMS

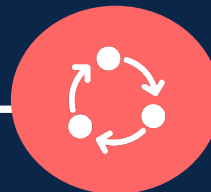
investing significant
capital into
new, low-carbon
businesses



NEW ENERGY FIRMS

bringing new
technologies and
solutions, backed by
venture capital / private
equity

SUPPLY CHAIN COMPANIES



SERVICE COMPANIES

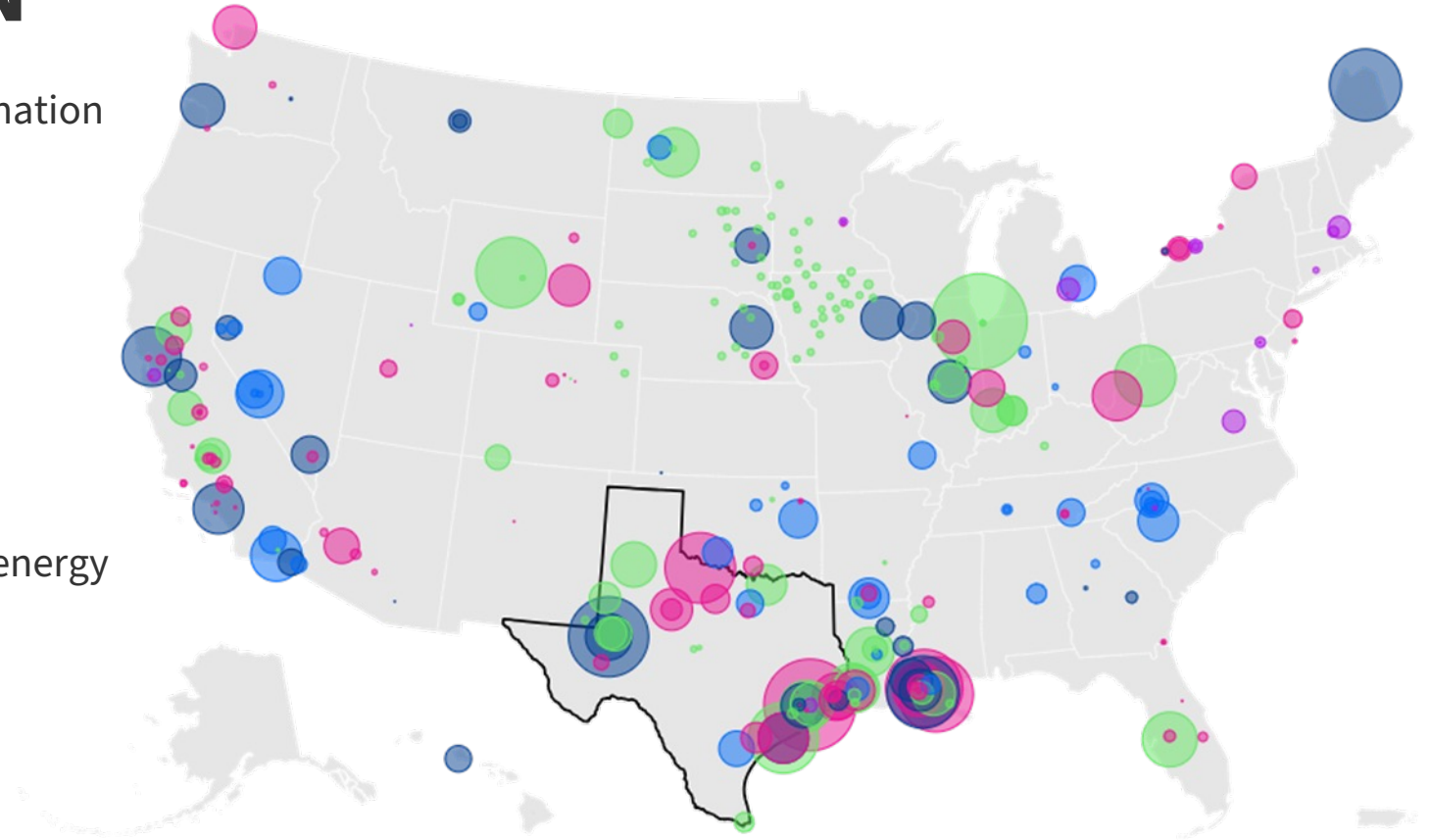
COLLECTIVE EFFORTS ARE DRIVING PROGRESS ACROSS THE REGION

In just 4 quarters (3Q23-3Q24), Texas has led the nation with **\$26.6bn** energy & industry investment:

- Wind - \$2.7bn
- Solar - \$12.6bn
- Storage - \$9.5bn
- SAF - \$.96bn
- Hydrogen - \$.47bn
- Carbon Management - \$.41bn

During that same period, Texas has seen **\$2.2bn** energy transition manufacturing investment:

- Batteries - \$432.6m
- Critical Minerals - \$765.6m
- Solar - \$892.9m
- Electrolyzers - \$144.3m



Source: Clean Investment Monitor Database (Rhodium Group & MIT CEEPR), data as of Nov. 20, 2024

Welcome

Bryan Fisher

Managing Director, RMI
rmi.org



Agenda

- 01** Welcome and Kickoff
- 02** Opening Remarks
- 03** A Legacy of Energy Leadership
- 04** PANEL: The State of Decarbonizing the Industrial Ecosystem in Texas
- 05** Forging a Clean Energy Future
- 06** PANEL: Texas Gulf Coast Power & Infrastructure
- 07** Closing

Ground Rules



BE PRESENT



ENGAGE



RESPECT CONFIDENTIALITY



CONNECT AND NETWORK



RESPECT OTHERS



HAVE FUN

Antitrust statement

The following guidelines on competition and antitrust laws have been developed to preserve the appropriate sharing of learnings with the group and to ensure that exchanges on opinions, experiences and deliberations do not interfere with the competitive relations of companies. These guidelines apply to all participants.

Do



- Discuss macroeconomic issues and how they impact the global and regional economy
- Discuss common problems and challenges of a general, administrative or logistical nature, as long as the purpose of the discussion is not to encourage uniform action or the elimination or restriction of competition, for example in relation to prices, capacity, inputs or outputs
- Share your opinion and experience, as long as this does not result in confidential or sensitive business information being shared
- Insist that any meeting has a list of topics known to you in advance; object if you see anything on the agenda that risks violating any of the prohibitions set out below
- Terminate a discussion or leave a meeting if you consider there is a risk of violating any of the prohibitions set out to the right
- Seek independent legal advice if you are at any time unsure of how to apply these rules

Do not



Recommend or agree on the following matters with members and participants:

- Actual purchasing or selling prices, price trends, price changes and their implementation, discounts, rebates or margins
- Asset specific costs, including input costs and staff costs without prior acknowledgement of data use Terms and conditions of purchase or sale or choice of suppliers and supplier categories
- Current or future levels of production and specific technological developments or changes that could have a competitive impact
- Division or allocation of geographies or customer groups, sales volumes or market shares
- Limitations on business methods or practices including those based on ethical or “fair” business practices
- Refusing to deal with customers or suppliers

Opening Remarks



Opening Remarks



Lucy Kessler

Senior Program Officer
of Sustainable Finance
Bezos Earth Fund

bezosearthfund.org



Faustine Delasalle

Chief Executive Officer
Mission Possible Partnership

missionpossiblepartnership.org



MISSION
POSSIBLE
PARTNERSHIP



Faustine Delasalle, CEO



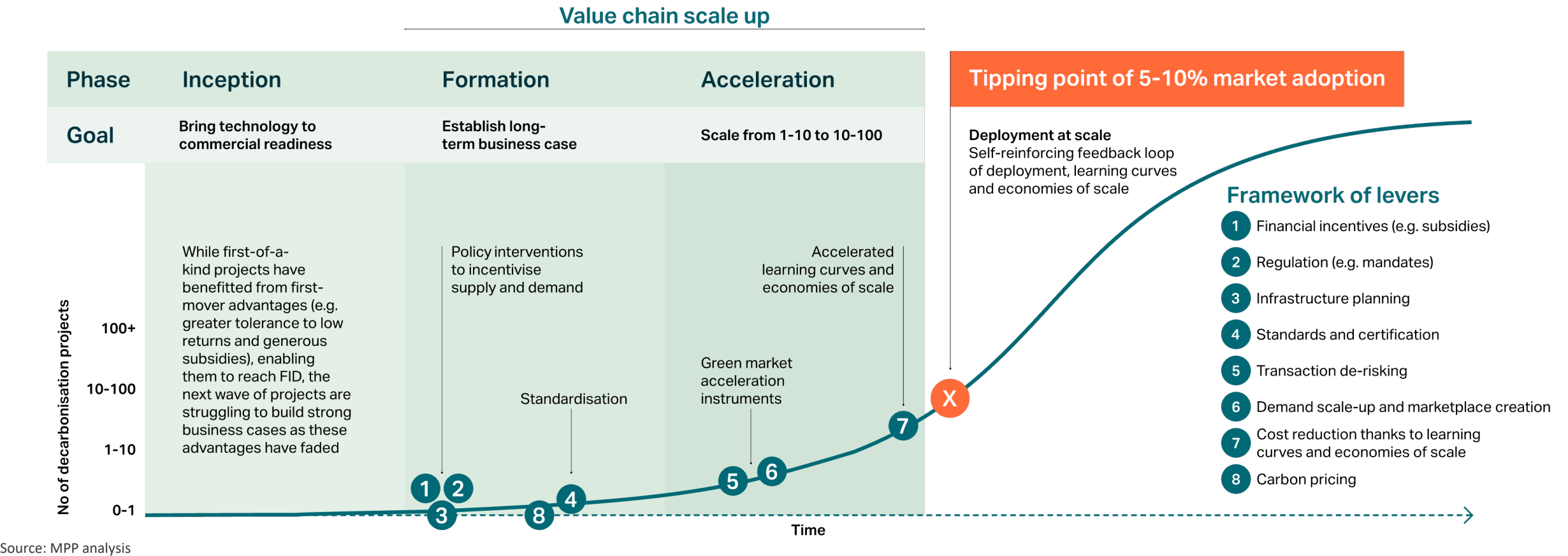
MISSION
POSSIBLE
PARTNERSHIP



BEZOS
EARTH
FUND

ARMI
ENERGY. TRANSFORMED.

We accelerate the scale-up of green value chains toward a tipping point to unlock exponential growth of green commodity markets



Through exchanges with project developers, we have confirmed that 5 critical challenges are slowing down investment in clean industrial projects

1

Green Demand

Struggle to find buyers for low / zero carbon products given green premiums from 10% to 200% - in the absence of appropriate policy incentives

2

Misaligned Policies

Struggle with country specific ill-suited policies (e.g. power market design, taxation policy,) & with lack of global harmonisation (e.g. EU CBAM & SAF criteria)

3

Clean Energy

Struggle to secure access to large volumes of low-cost renewable electricity and clean hydrogen, and to develop carbon transport and storage infrastructure

4

Finance

Struggle to mobilise own balance sheet in low-margin context, to get financing given market uncertainty & to access low-cost capital in developing markets

5

Technology

Struggle to deploy lower-TRL technologies at commercial scale & to access new technologies developed by competitors (esp. in developing countries)

Source: ITA analysis

Industrial Decarbonization in 2030

 In operation  Final Investment Decision (FID) reached  Announced  Pipeline Gap



*Progress includes zero emission capable assets. **FID is not applicable to Trucking

Source: MPP Global Projects Tracker (November 2024)

A Legacy of Energy Leadership





Scott Nyquist

Vice Chairman of
Houston Energy Transition Initiative (HETI)
htxenergytransition.org

Texas Energy Leadership

- **25%** of the United States domestically produced energy
- **25%** of the country's publicly traded oil and gas exploration and production
- **15%** of the nation's total refining capacity
- **44%** of the nation's base petrochemical manufacturing capacity



Texas Energy Leadership

- Houston's Carbon intensity of power generation reduced by **11%** - as net power generation increased **26%**
- Scope 2 emissions reductions, coal and gas going from **86%** of ERCOT's electric generation profile in 2001 to **62%** in 2023
- Led the country in wind (108,000 GWh) and solar (32,000 GWh) production in 2023

Texas Gulf Coast Energy Leadership



Could create up to 21,000 jobs annually in region



Reduce Scope 1 emissions by 61%, or 52 million MTCO₂e, by 2050



Investments in hydrogen and CCS could enable region to reach net-zero by 2050

Texas' Opportunity: A New Era of Industrial Development



- **\$20+ billion** private sector investment from Jan '23 to Oct '24



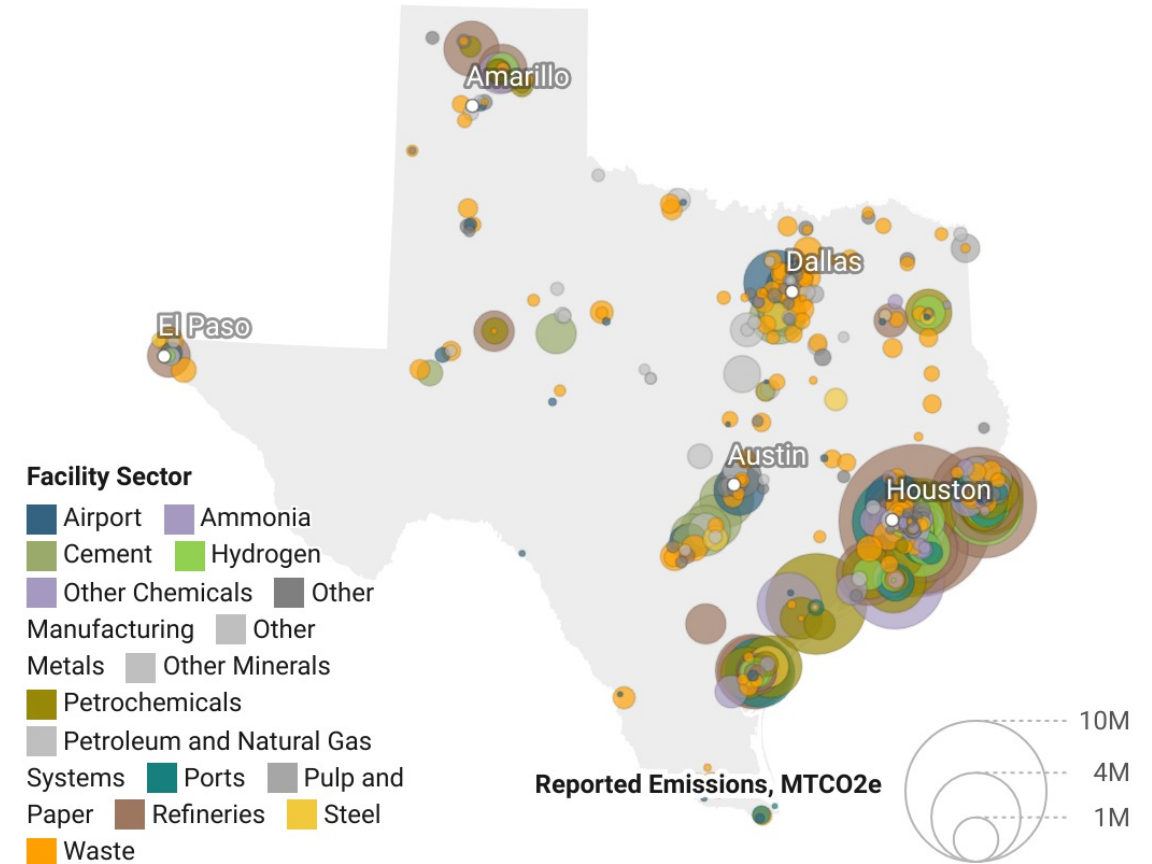
- **70+** announced industrial decarbonization projects with \$(100MM) of capital investment



- **530,000 jobs** created through 2050

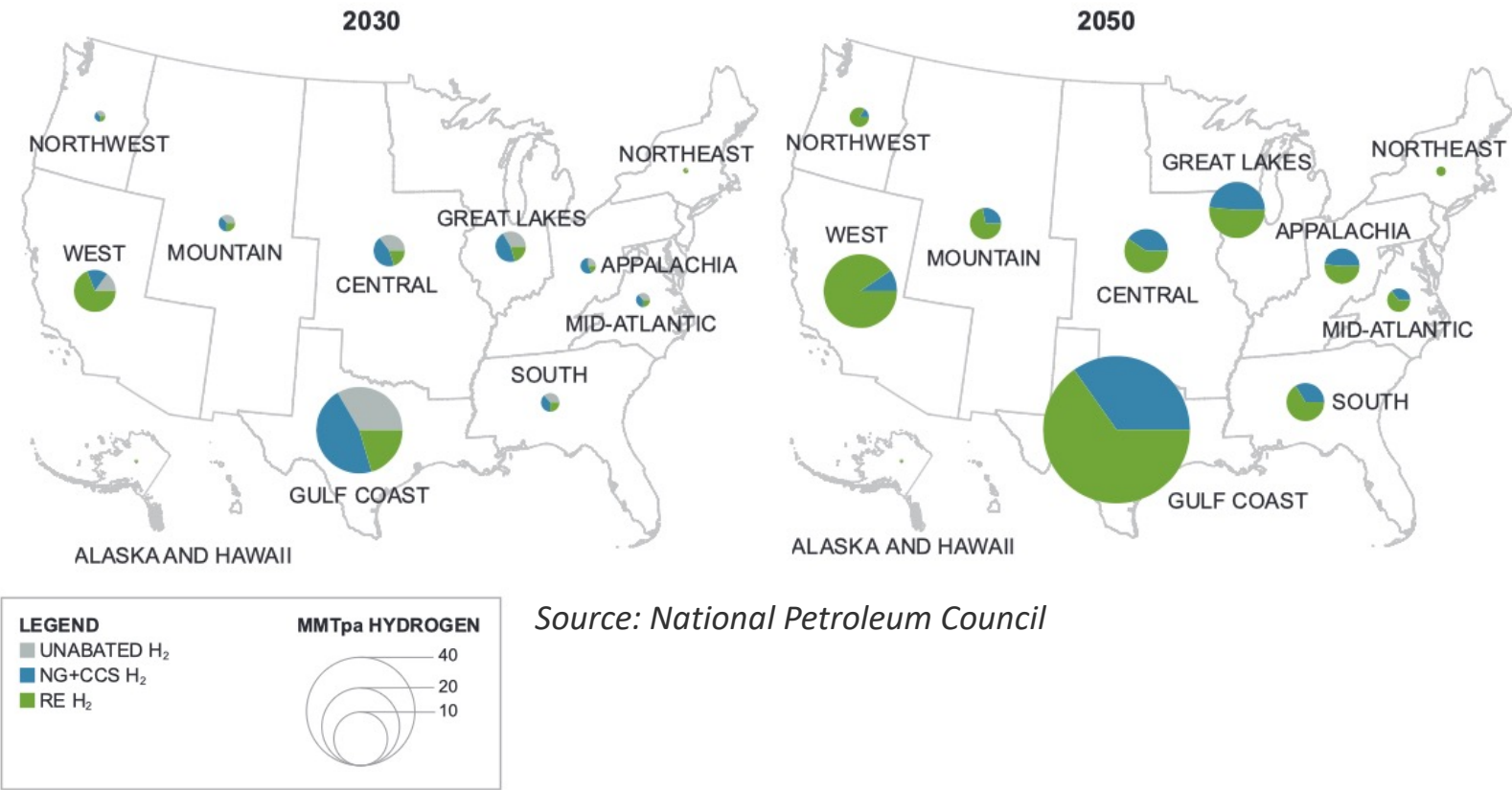
Texas can lead in both molecules and electrons

Industrial Facilities and Emissions



Texas is Current and Future Leader for Hydrogen Supply

Outlook of Regional Hydrogen Development under a Net-Zero by 2050 Scenario



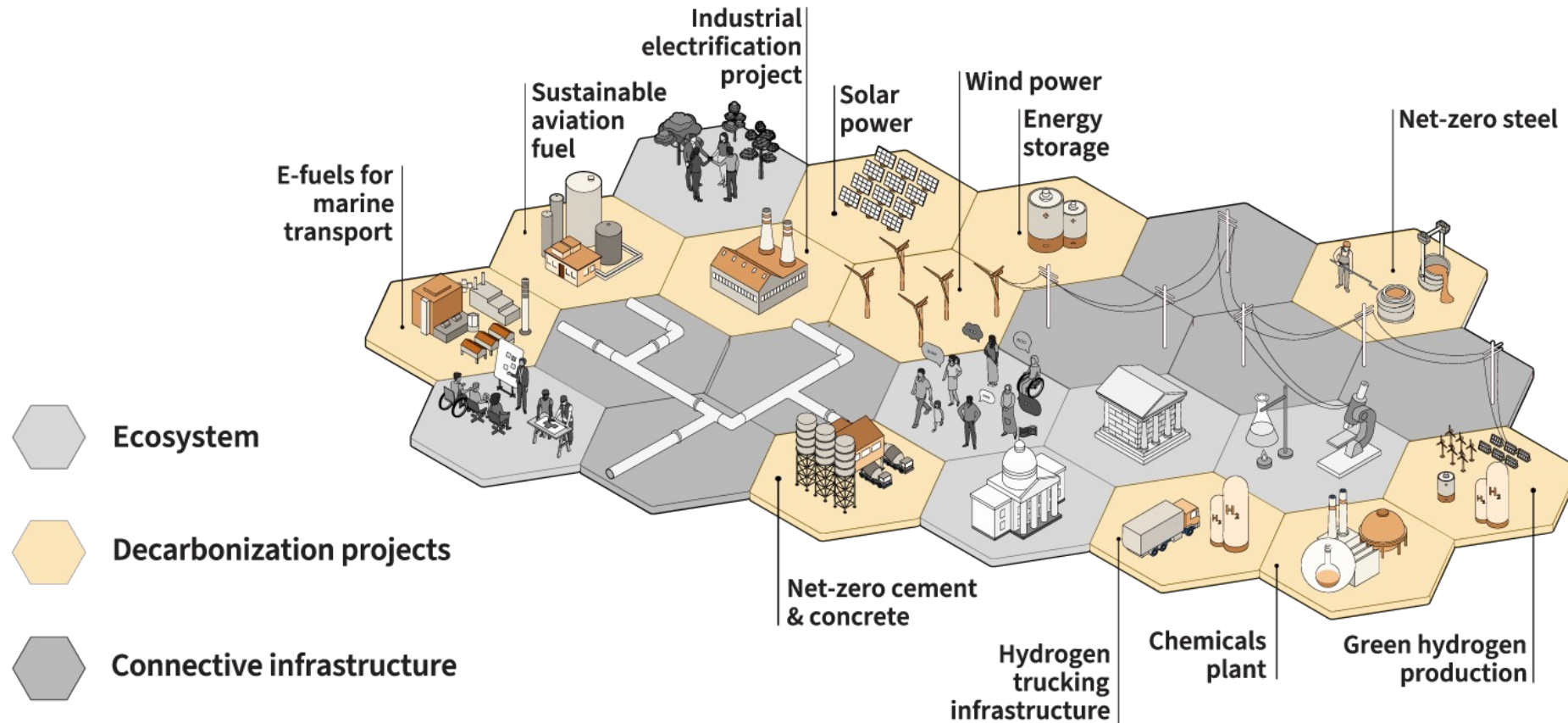
Source: National Petroleum Council

Up to 60% of all H₂ supply in the US could come from Texas

Potential to produce **20 MMTpa of H₂** by 2050 (50% for export), up from **3.5 MMTpa** today

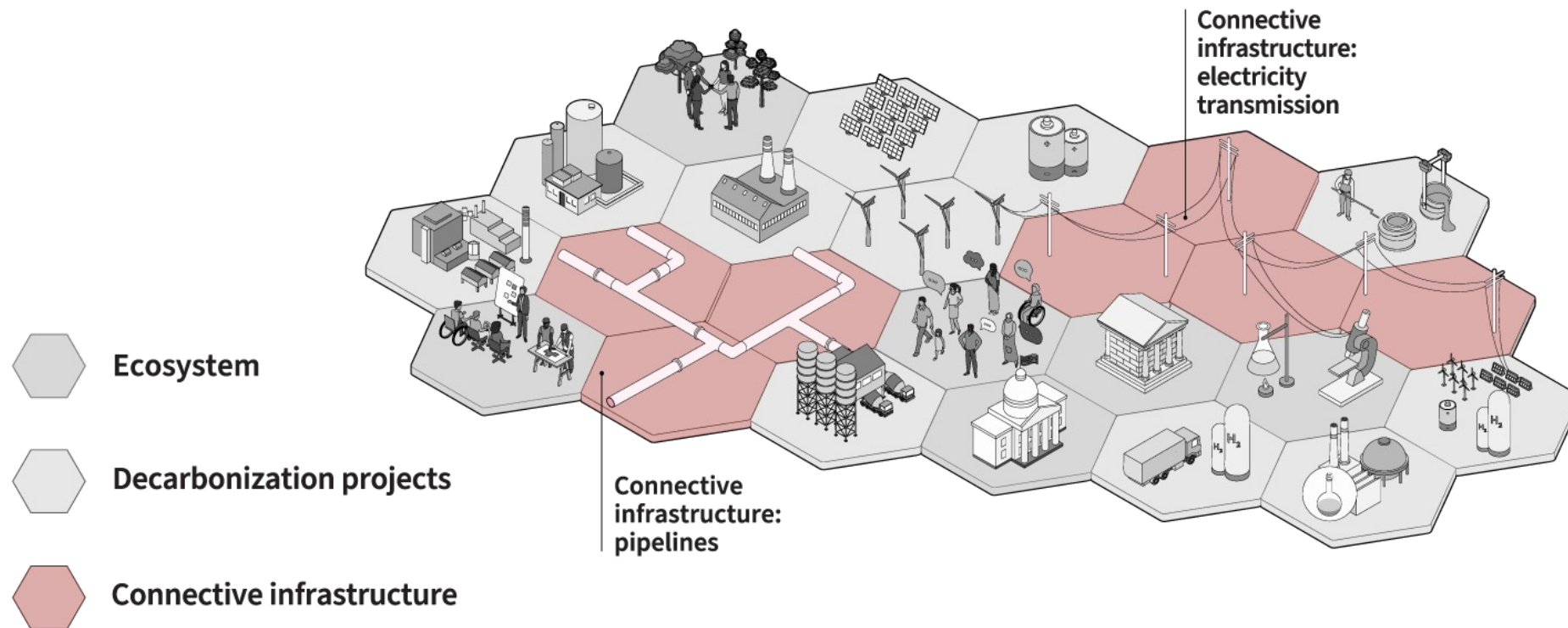
Texas Clean Industrial Hub/Cluster

Clean industrial hubs bring together project developers, policy makers, financial institutions, and community-based organizations to support regional clusters of clean energy and industrial decarbonization projects



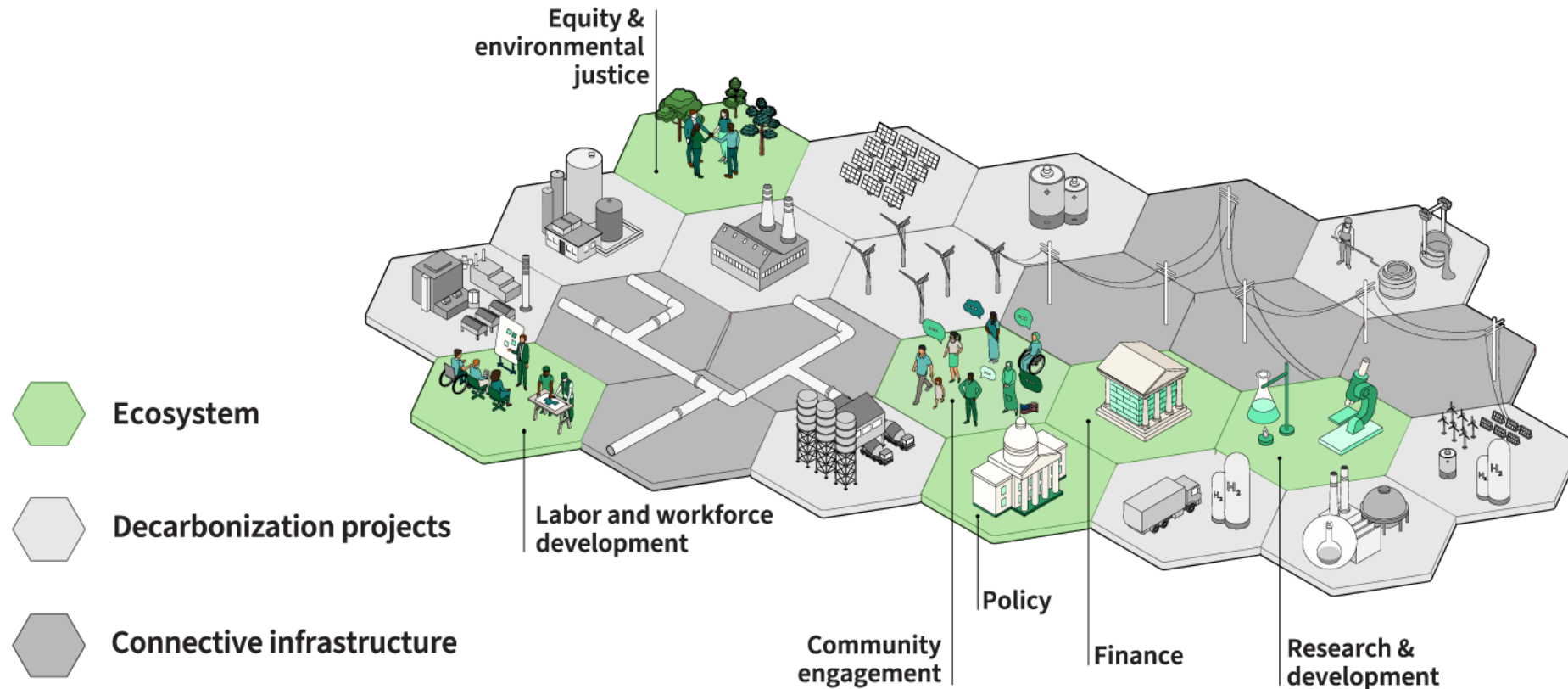
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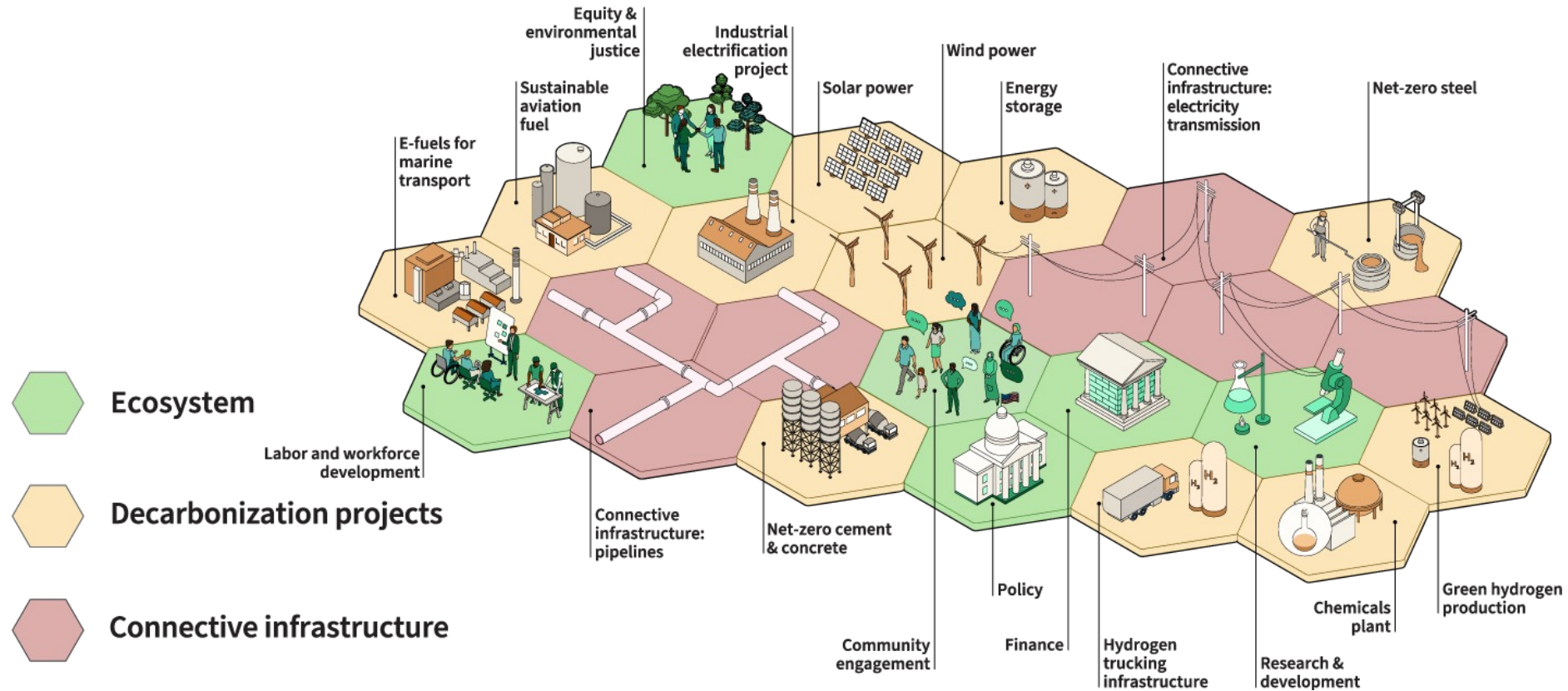
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Texas Clean Industrial Hub/Cluster

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Hubs' value proposition – four key takeaways

RMI and the Mission Possible Partnership's work with partners in Texas has shown the market potential hubs create through supply and demand side drivers



Co-locating supply and demand



Concentrating Feedstocks



Reducing Logistic Complexity



Leveraging Transition Infrastructure

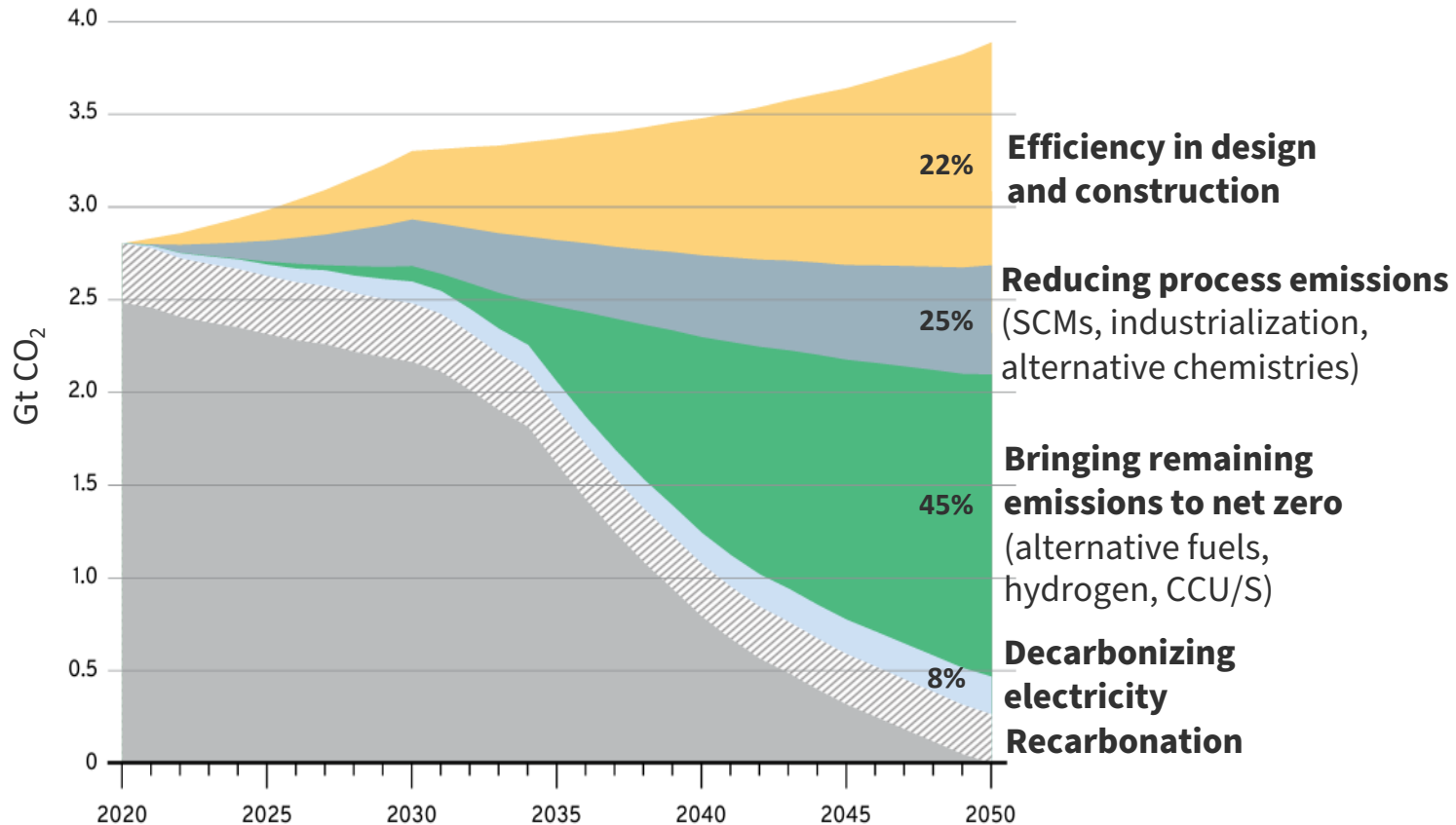
Hydrogen, SAF, and e-methanol: Hubs can help hydrogen derivatives producers secure high-quality feedstocks

- End product value depends on **low emissions biogenic carbon**
- Carbon supply networks are thin so **competition will be fierce**
- **First movers** can extract more value by locking in suppliers early
- **Clustering demand** for feedstocks leverages economies of scale



Cement: Logistics simplicity, demand pooling support 1.5C aligned product growth

A Net Zero Aligned Cement Sector is Possible by 2050



- **Low carbon cement** depends on CCS and nearby sources of alternative fuels, SCMs
- Logistics costs can make or break **competitive advantage**
- **Pooled demand** reduces transaction costs
- **Coordinated investment** in transport infrastructure would elevate the region

**Has or will
your strategy and
investment focus
change(d) over the
next few months?**



"Business as Usual!" (Not much change)



"Significant Shift!"
(Meaningful pivot occurring or expected)

Panel 1: Decarbonizing the Texas Industrial Ecosystem



The State of Decarbonizing the Industrial Ecosystem in Texas

MODERATOR



Nabil Bennouna

RMI
Principal
Climate-Aligned Industries



Chris Shugart

Ambient Fuels
Senior Vice President of
Development



Allie Lamb

Zaffra
Senior Business Analyst
Americas



Marian Simo, PhD

Linde
Senior Manager of
Business Development



Stefano Zullian

CEMEX
Climate Action Roadmap
Leader



10-minute break

- Catch up with your neighbor
- Take a tech/restroom break...

Forging a Clean Energy Future



Texas is poised to extend its energy market leadership into the next century – if it galvanizes all its advantages for future demands



Project Development



Advantage Resources



Everyone has a role to play in taking these markets to the next level



FINANCIAL INSTITUTIONS



PROJECT DEVELOPERS



POLICYMAKERS & PLANNERS

FINANCE: New sources of capital and ways to manage risk are critical to market liftoff

PATHWAY
TO
IMPACT

1

Broaden

The pool of capital providers willing to engage with FOAK / nOAK projects



2

Deepen

The impact of existing sources of capital by facilitating new deal syndicates and products



3

Align

Investment strategies & frameworks with changing energy sector risks / opportunities



4

Influence

Policymakers and public pension managers to implement supportive policies based on insights



INFRASTRUCTURE: Invest in midstream assets, leveraging supply and demand aggregation at hubs



TRANSMISSION: 2-3x
electricity demand
growth by 2050



PIPELINES: ~\$120B by
2050 for carbon and
hydrogen



STORAGE: ~\$13B by 2050
for carbon and hydrogen



What are the levers you can help pull to make this vision a reality?

PAIR SHARE

Panel 2: Texas Gulf Coast Power & Infrastructure



Texas Gulf Coast Power & Infrastructure

MODERATOR



Bryan Fisher

RMI
Managing Director
Climate-Aligned Industries



Rick Miller

LyondellBasell
Sr. Director Net Zero
Transition US Region



Mark Egan

Energy Evolution Advisors
/ Infield Clean Energy
Founder



Brett Perlman

Center for Houston's
Future
CEO



Brian Weeks

GTI Energy
Senior Director - R&D
Business Development

Closing



Leveraging best practices to DERISK deployment of industrial decarbonization projects in Texas and U.S. Gulf Coast

OUR EFFORTS IN 2025 ONWARDS ...

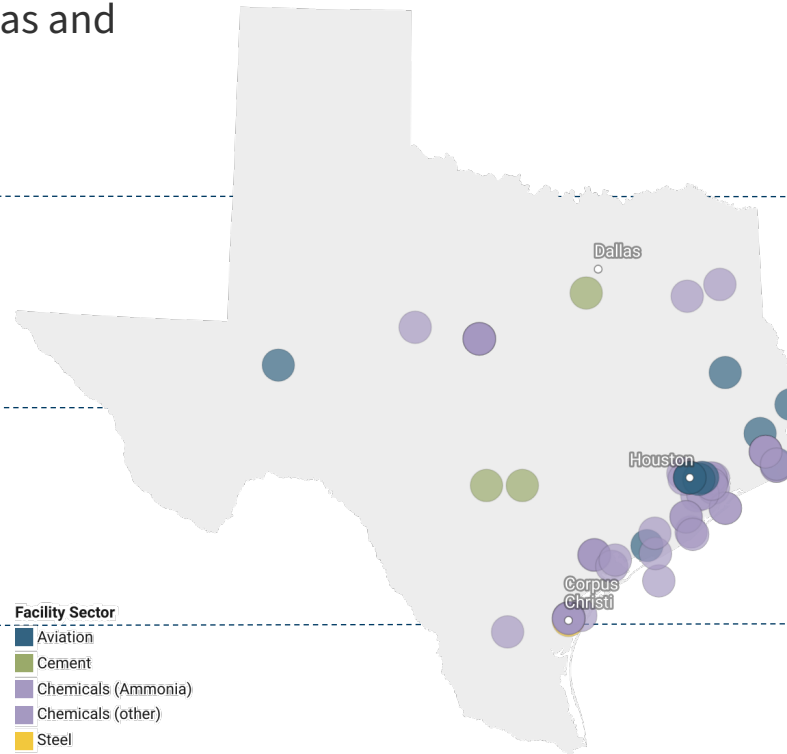
... WITH IMPACTS 2030 AND BEYOND

1 accelerating implementation of hubs in Texas and beyond

2 amplification of bespoke toolkits and resources to overcome deployment barriers across sectors;

3 leveraging multi-stakeholder (NGOs, academia, policymakers etc.) partnerships for industrial decarbonization;

4 derisking production + deployment of clean ammonia and methanol projects in the U.S. Gulf Coast



Includes small scale to commercial scale projects, from public announcement stage, to FID reached, to operating.
Source: RMI Analysis • Created with Datawrapper

↑ local and regional multi-stakeholder partnerships for effective implementation;

↓ derisk siting and permitting for deployment of clean energy and infrastructure projects;

↑ advance economic development, and environmental and social impacts and quality of life across regions;

↓ emissions CO₂ and other pollutants (NO_x, SO_x, PM_{2.5} etc.)

The Journey Ahead: Decarbonizing Industry in Texas

Texas is a Leader



25% of the US
produced energy



Decrease in
carbon intensity



wind and solar
energy



leading hydrogen
exporter

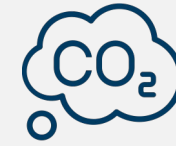
There are Challenges



Policy



Curtailment risk to tax
credit



Champion needed for c02
infrastructure



Demand Side
Agreement

More Investments in Infrastructure Needed



Enabling Policy



Financial Capital



Infrastructure Development



Project Acceleration

Thank you for coming!

