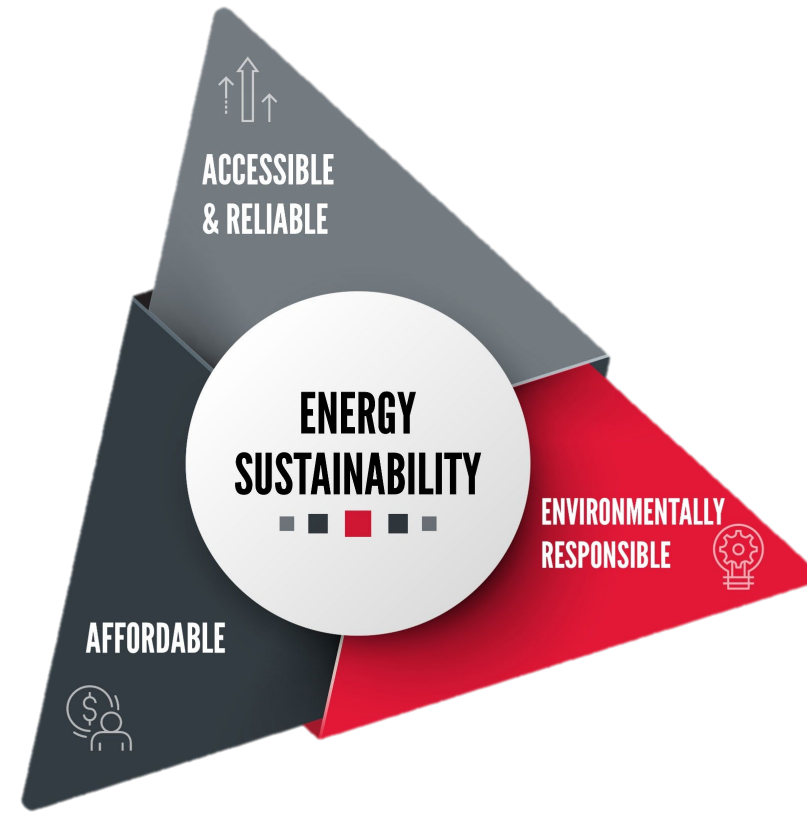


# CENTER FOR CARBON MANAGEMENT IN ENERGY

At

# UNIVERSITY OF HOUSTON

**Mission:** CCME is strategically driven by the challenges in oil and gas production, petrochemicals, and electric power sectors (including renewable energy platforms), as well as the entire energy value chain to consumer end use, to advance innovative and transformative solutions for a sustainable energy future.



<https://uh.edu/uh-energy-innovation/>

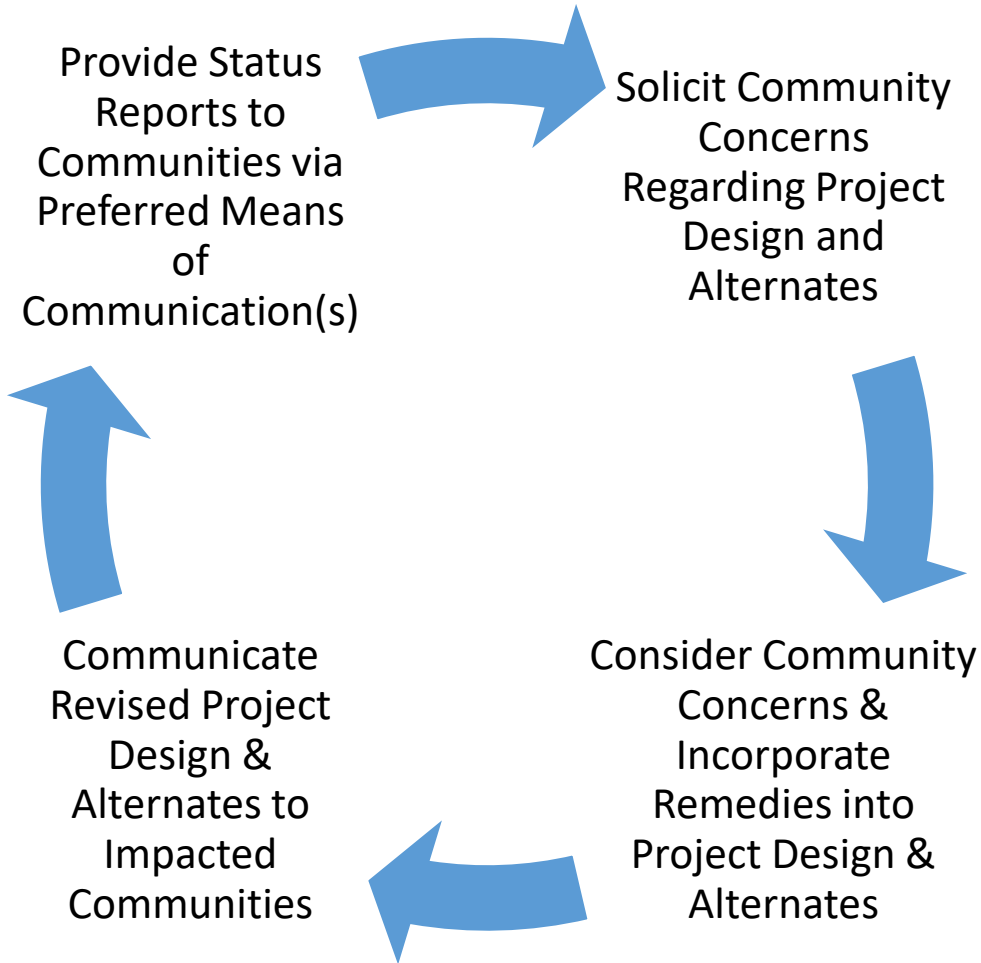
<https://uh.edu/uh-energy-innovation/uh-energy/energy-centers/ccme/>

<https://uh.edu/uh-energy-innovation/uh-energy/energy-centers/eti/>

# CCME: TECHNOLOGY & INNOVATION

	CO <sub>2</sub> Value Chain			Methane and Hydrocarbons	
	Capture	Transportation	Utilization and Sequestration	Emissions: Monitoring and Mitigation	Conversion and Monetization
Power Generation	<u>Novel Capture Technologies:</u> Adsorption; Electrochemical Selective Membranes; Modular & Distributed; Integration with Renewables  <u>Re-engineering Processes:</u> Integration; Intensification	<u>Pipeline Technologies:</u> Materials, Corrosion & Leak Testing  <u>Shipping of CO<sub>2</sub>:</u> Technologies, Economics & Policies  Compressors & Power Systems	<u>Conversion:</u> Fuels Chemicals Plastics  <u>Enhanced Oil Recovery:</u> Conventional ROZ Unconventional Offshore Water Use & Recycle  <u>Geological Sequestration:</u> Seismic, Acoustic, Modeling & Policy	<u>Monitoring:</u> (i) Remote Monitoring using Drones (ii) Distributed Acoustic Sensing  <u>Mitigation:</u> (i) Pipeline Modeling (ii) Renewable Integration for Pneumatic Valves	Distributed Catalysis and Power Generation  <u>Conversion:</u> Fuels (methanol) Chemicals Polymers & Materials  <u>Monetization:</u> Gas Injection EOR
Hydrocarbon Exploration & Production					
Petrochemical Refining					
Chemicals and Fertilizers					

# CCME & UH'S ENGAGEMENT OF COMMUNITY FOR ADVANCING CARBON MANAGEMENT DEPLOYMENT



# UH ENERGY WHITEPAPERS



UH ENERGY WHITE PAPER SERIES: No. 07. 2023

## Carbon Dioxide Pipelines: Role in Responding to Carbon Emissions

Authored by: Paul Doucette and Mohan Vedala



### Best Practices

Pipeline operators can significantly reduce the risk of accidents, as well as improve relationships with people living and working in the path of a CO<sub>2</sub> pipeline, by following some essential best practices.

- Follow all regulations set by the Pipeline and Hazardous Materials Safety Administration, including regular monitoring and assessment of pipeline integrity, scheduled inspections, and promptly addressing any identified issues.
- Use the latest technology to provide real-time data on pipeline conditions to catch problems early and allow a rapid response. These technologies include leak detection systems, remote sensors, and predictive analytics.
- Actively engage with people living near pipeline routes, addressing concerns in order to build trust and foster cooperation. Understand there is no one-size-fits-all solution.
- Develop comprehensive emergency response plans that outline procedures for addressing leaks, ruptures, and other incidents. Work with local emergency responders and training programs to ensure they have the information and skills to effectively manage emergencies.



UH ENERGY WHITE PAPER SERIES: No. 06. 2023

## CCUS Infrastructure Preparing for the Future of Houston

Authored by: Charles McConnell



<https://uh.edu/uh-energy-innovation/uh-energy/energy-research/white-papers/white-paper-files/community-co2.pdf>

<https://uh.edu/uh-energy-innovation/uh-energy/energy-research/white-papers/white-paper-files/future-of-houston-113023draftc.pdf>

# CCME & UH'S TWO-WAY ENGAGEMENT WITH COMMUNITY

- JEDI (I-O Models) to accommodate the project specifications and estimate jobs and economic impacts
- Engage with Community Colleges, Workforce Development Organizations and Community Partners to deliver appropriate workforce development
- Assessing Life-Cycle Analysis (LCA), Monitoring, Reporting & Verification (MRV) of Storage of Demonstration Projects
- Develop and Host an impact tracking database and geospatial dashboard that track benefits at the census tract level
  - Addressing Justice – 40 Goals and Attainment Thereof
- Providing expertise at Community Engagement meetings
  - To date engaged with over 50 communities