



GTI ENERGY

solutions that transform

Societal Considerations for the Hydrogen Economy

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*MRCI 2023 Hydrogen Workshop
October 5, 2023*

Agenda



GTI Energy Community Benefits



Deploying Hydrogen with Community Benefits in Mind



Community Concerns with H₂ and CO₂



Communicating with Communities about Hydrogen



Developing a Collaborative Community Approach




Key Takeaways


GTI Energy
Community Benefits




Community Benefits at GTI Energy




Elizabeth Kocs
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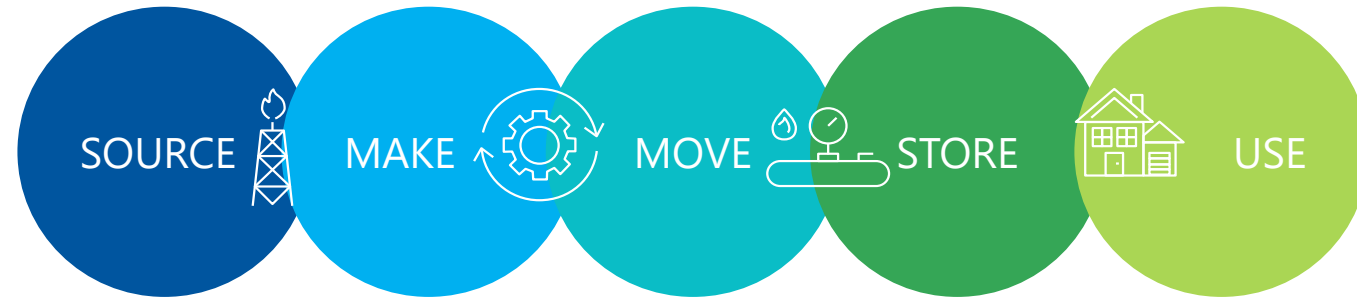


Cynthia Medina
Environmental Justice Analyst



Brianna Makumbi
Environmental Justice Assistant

Design, develop, and deliver CBPs across hydrogen value chain



Strengthen impact of hydrogen initiatives



Delivering on Community Benefits | Tracking & Monitoring Measurable Outcomes



Deploying Hydrogen with Community Benefits in Mind

- DOE H₂ HUBS COMMUNITY BENEFIT PLANS (CBP)
- JUSTICE40 INITIATIVE

DOE H₂ Hubs Community Benefits Plans (CBPs)

Community & Labor Engagement	Investing in American Workforce	Advancing DEIA	Justice40 Initiative
<ul style="list-style-type: none"> • Social Characterization Assessment (SCA) • Initial Stakeholder Analysis (ISA) • Engagement Methods and Timeline • Two-way Engagement Statement • Workforce and Community Agreements Statement • Engagement Evaluation Strategy 	<ul style="list-style-type: none"> • Ongoing & prior efforts for quality jobs, & workers rights • Quality Jobs – construction & ongoing, wages & benefits, and workforce efforts • Workforce Development – education & training, advancement, credentialed • Worker Rights – support & protect workers’ rights, mitigating labor disputes, worker input, labor / workforce agreements 	<ul style="list-style-type: none"> • Prior & ongoing efforts • Inclusive & welcoming programs, support underrepresented in STEM • Underrepresented businesses, and educational & training institutions • MSI, MBE, minority-, woman-, veteran-owned businesses, Tribal, community & faith based, community organizations 	<ul style="list-style-type: none"> • Assessment of EEJ concerns and Impacted Communities & Groups • Assessment of H2 Benefits / Where They Flow • Assessment of H2 Negative Impacts / Where They Flow • Assessment of Information Gaps • Opportunities & Risks • Assessment of Barriers to Realizing Benefits and Minimizing Impacts • Implementation Plan

Justice40 Initiative



Community & Labor Engagement

Investing in American Workforce

DEIA

Justice40

Greatest Benefit for Greatest Number

Decrease energy burden in DACs

Decrease environmental exposure and burdens for DACs

Increase parity in clean energy technology access and adoption in DACs.

Increase access to low-cost capital in DACs.

Increase clean energy enterprise creation and contracting (MBE/DBE) in DACs.

Increase clean energy jobs, job pipeline, and job training for individuals from DACs.

Increase energy resiliency in DACs.

Increase energy democracy in DACs.








Community Concerns with H₂ and CO₂

- UNDERSTANDING H₂ & CO₂ SAFETY & RISK
- H₂ & CO₂ SAFETY BASICS

Understanding H₂ & CO₂ Safety & Risk

NFPA 704

Diamond	Hazard	Value	Description
	 Health	0	No hazard beyond that of ordinary combustible material.
	 Flammability	4	Burns readily. Rapidly or completely vaporizes at atmospheric pressure and normal ambient temperature.
	 Instability	0	Normally stable, even under fire conditions.
	 Special		



Hydrogen (gas)



Hydrogen (liquid)



Compressed Natural Gas



Ammonia



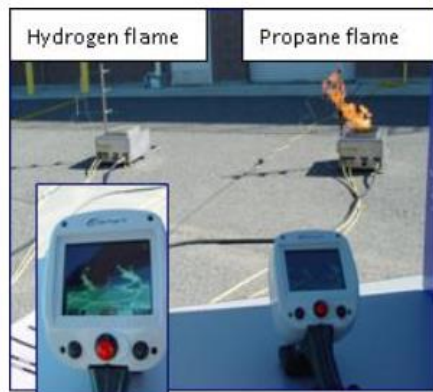
Gasoline



Carbon Dioxide

Both H₂ and CO₂ have respective risks that must be properly communicated and managed.

H₂ and CO₂ Safety Basics



Hydrogen and Propane Flames in Daylight
(Photo courtesy of HAMMER)



Hydrogen and Propane Flames at Night
(Photo courtesy of ImageWorks)

Hydrogen Safety Basics



Adequate ventilation
and leak detection

Flame detectors



Selecting appropriate
materials



CO₂ Safety Basics



Adequate ventilation
and leak detection

Properly store and
seal CO₂ storage



Regulate temperature
and avoid electrical
discharge



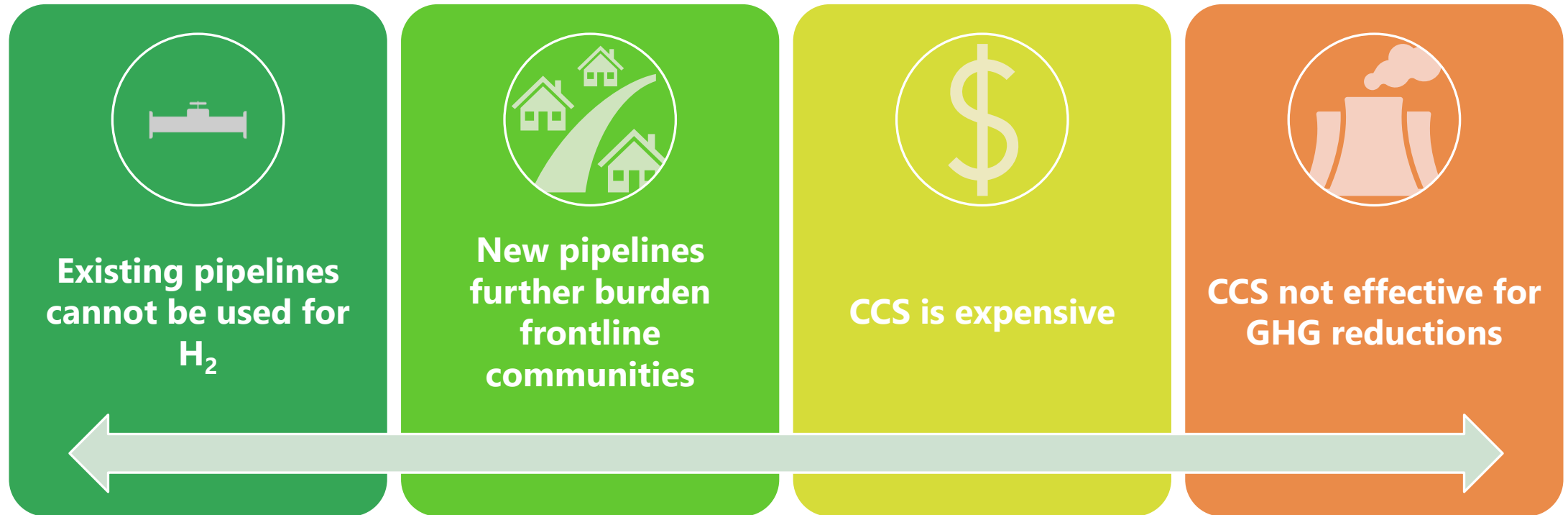
With proper handling and control, hydrogen can be as safe (or safer) than other fuels we use today.



Communicating with Communities about Hydrogen

- DOE COMMON CONCERNS ABOUT HYDROGEN & CCS
- STRATEGIES TO COMMUNICATE WITH COMMUNITIES

DOE Common Concerns about Hydrogen & CCS



Source: [DOE Hydrogen Program Responses to Common Hydrogen Questions & Concerns \(energy.gov\)](https://www.energy.gov/hydrogen-ccs/doe-hydrogen-program-responses-to-common-hydrogen-questions-concerns)

Strategies to Communicate with Communities

Access to information is a right; it can save lives

Promotes sustainable relationships & trust

Enables transparency and accountability

Minimizes misinformation

Central to successful deployment

Effective

Adapt information for the audience

Appeal to diverse communities

Communicate with empathy

Ineffective

Initiate fear

Use technical jargon and acronyms

Assume lack of education

Communicating with communities is not an option. It is necessary.



Developing a Collaborative Community Approach

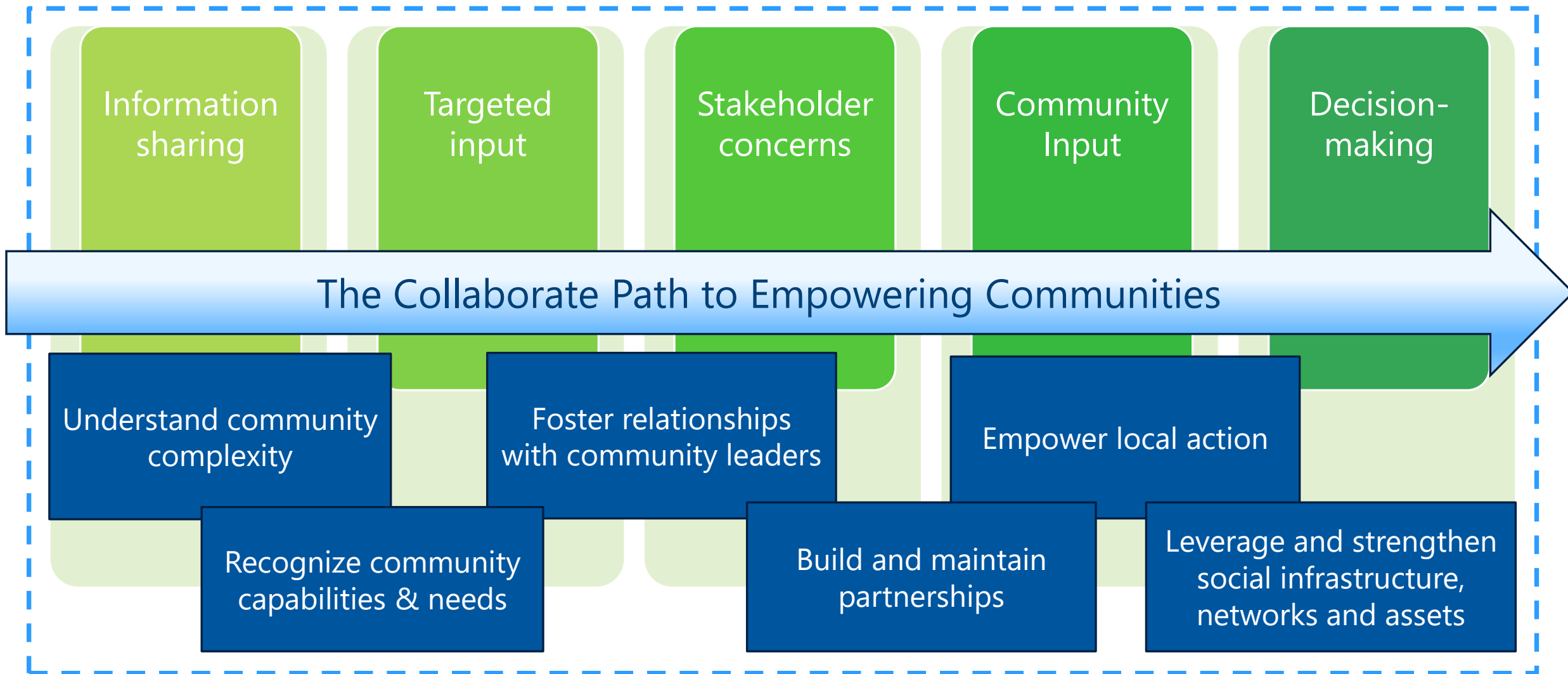
- EFFECTIVE H₂ & CO₂ SAFETY & RISK COMMUNICATION
- COMMUNITY ENGAGEMENT AND INVOLVEMENT

Effective H₂ & CO₂ Safety & Risk Communication

Existing Communication Plans



Community Engagement and Involvement





Key Takeaways

Key Takeaways



NORMALIZE - Large amounts of hydrogen will be used close to communities



PRIORITIZE - Keep community benefits and disbenefits / risks a priority



COMMUNICATE - H₂ and CO₂ have benefits & risks that must be properly communicated and managed



INDIVIDUALIZE - Revisit communication in each community to address different community and safety concerns



COLLABORATE - Partner with communities and stakeholders to develop communication plan for each project



EMPOWER - Communicate effectively; empower communities



ENABLE - Communicating hydrogen (and/or CO₂) safety to trusted community stakeholders is crucial



GTI ENERGY

solutions that transform

GTI Energy develops innovative solutions that transform lives, economies, and the environment