



Moving Energy with Integrity



TAMPA REGIONAL INTERMODAL CARBON HUB T-RICH AT PORT TAMPA BAY

(FE0032464)

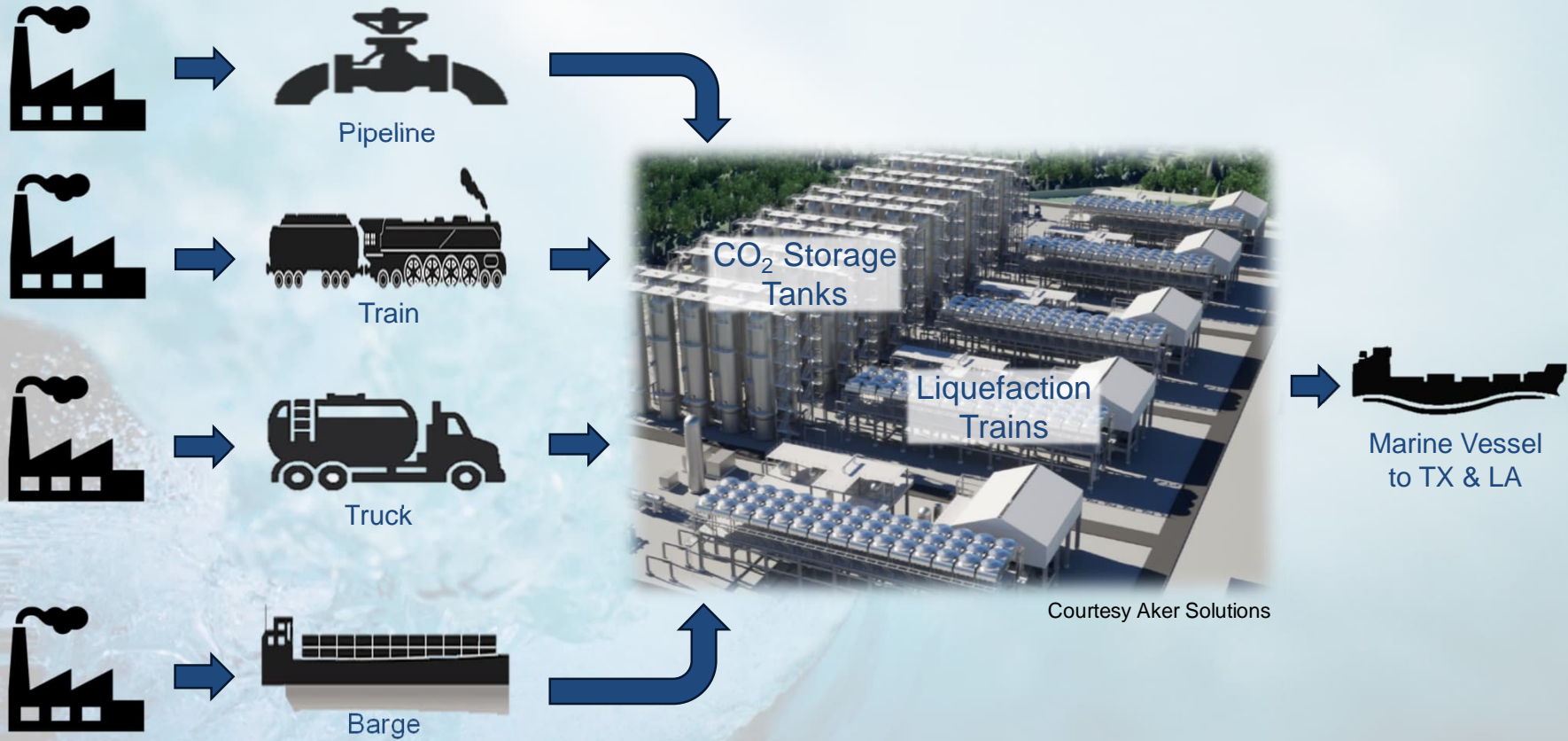
KENT MERRILL, DIRECTOR OF TECHNICAL SERVICES

AUGUST 7, 2024

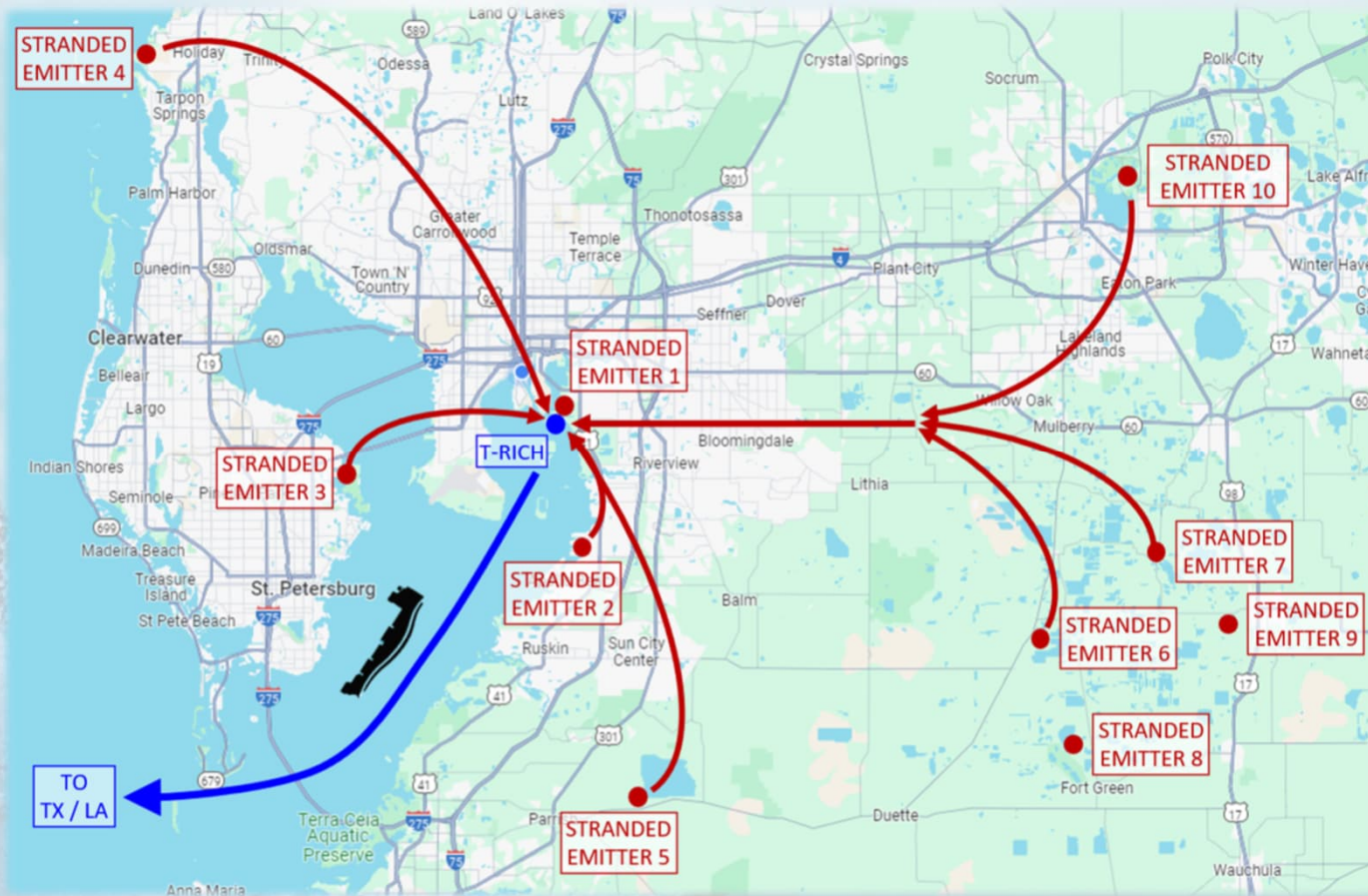
PROJECT NEED

- Florida has the 3rd highest CO₂ emissions in the U.S.
- 40% of those emissions, or 91M tons, comes from electric power generation (2021 data)
- Power generation is coming under increased pressure from the Federal Government, and society in general, for emissions reductions
- CCS is a prime solution for these plants, but Florida's geology is not conducive to underground sequestration (they are "stranded emitters").
- CO₂ must be transported out of the state for permanent sequestration. Texas and Louisiana are prime sequestration locations.
- The proposed T-RICH hub will be equipped to receive and aggregate locally-captured CO₂ by pipeline, rail, barge and truck from local stranded emitters, liquefy it, and discharge it to ships for long-haul transport to Texas or Louisiana for permanent sequestration.

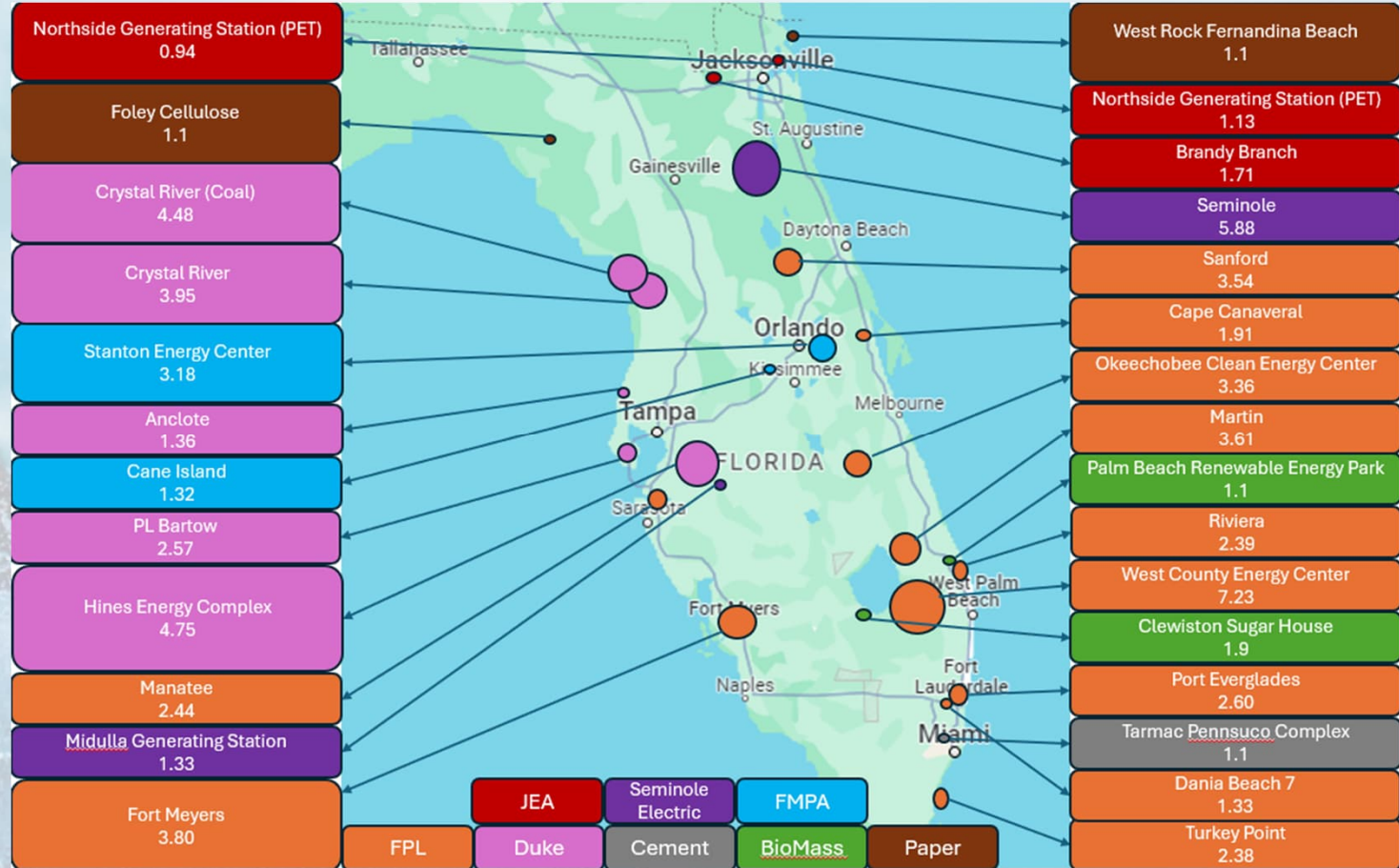
T-RICH HUB SCHEMATIC



PROXIMITY OF MAJOR EMITTERS TO HUB



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PORT TAMPA BAY CO₂ HUB SITE



KEY PROJECT PARTICIPANTS

- OSG
 - Principle Investigator / Project Organizer
 - Potential Hub Operator / Partner
- Port Tampa Bay
 - Site Owner
 - Civil Engineering / Permitting
- Aker Solutions
 - Site Layout / Dispersion Study
 - Equipment specifications
 - Cost Estimate
- Blue Sky Maritime Coalition
 - Community Benefits Plan



PROJECT EXECUTION PLAN & OBJECTIVES

Funding

DOE: \$320,000

OSG: \$69,861

PTB: \$11,400

Total: \$401,231

(20.25% Cost Share)

		MONTH											
		2024			2025								
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	Project Execution Plan												
2	Project Cost Estimate												
2.1	Site Improvements												
2.2	Cargo Handling System												
2.3	Storage Tanks												
3	Land Acquisition Plan												
4	Permitting Plan												
5	Hazard Identification Study												
6	Design Basis Report												
6.1	Overview of Codes												
6.2	Facility Siting Study												
6.3	Maps												
6.4	Operating Philosophy												
6.5	Coordination Study												
6.6	CO2 Conditions												
6.7	Prelim Process Flow Diag												
6.8	List & Description of Equip.												
6.9	GA Drawing												
6.10	Electric Load List												
7	ES&H Analysis												
8	Long Lead Mat. & Equip. List												
9	Business Case Analysis												
10	Regulatory Plan Analysis												
11	Projected Hub Use 50 Years												
12	R&D Community Benefits Plan												
	Project Administration												

EXPECTED PROJECT OUTCOMES & RISKS

- There is little technical or legal risk associated with this desktop study.
 - Technical feasibility has been proven at similar plants worldwide.
 - This involves a single site and land ownership is clear.
- The ultimate outcome of the project is expected to be the determination of the CAPEX and OPEX in order to determine the cost to move each ton of CO₂ through the hub. This cost presents the primary risk to the ultimate success of the project.
- Cost per ton of CO₂ is critical in determining if the 45Q tax credit of \$85 per ton is enough to incentivize the mass adoption of CCS in the United States.

COMMUNITY BENEFITS PLAN

- Where applicable and possible, the Recipient will endeavor to hire qualified MWBE contractors to contribute to this desktop Study.
- The study will consider the fact that the proposed site is near disadvantaged communities in the Tampa Bay Region, and will address the potential risks and benefits to those communities.
- The Study will identify the types of skillsets that the Hub workforce will need, estimate number of jobs for the Hub, and the likelihood of those jobs being filled by stakeholders covered by the CBP.
- The CBP will consider:
 - Community and Labor Engagement
 - Investing in Quality Jobs
 - Diversity, Equity, Inclusion and Accessibility
 - Justice40 Initiative

NEXT STEPS & SCALE-UP POTENTIAL

- The study will consider the future scale-up potential and maximum possible throughput (beyond the initial planned 2MTPA) through strategies such as
 - Expanding the liquefaction plant
 - Adding more ships and increasing utilization of the single ship berth or adding a 2nd berth for handling multiple ships at a time.
- Next step is to continue studying this hub design and associated transportation system at the FEED level under our next grant under FOA-2730.
 1. Loading Hub: Bring in equipment maker for FEED, refine cost estimate.
 2. Design of 20,000 ton vessel.
 3. Discharge Terminal: Bring on site owner / operator, layout site and define equipment.



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THANK YOU