



*Moving Energy with Integrity*



# CARBON OCEAN AND STORAGE TRANSPORT 20 COAST 20

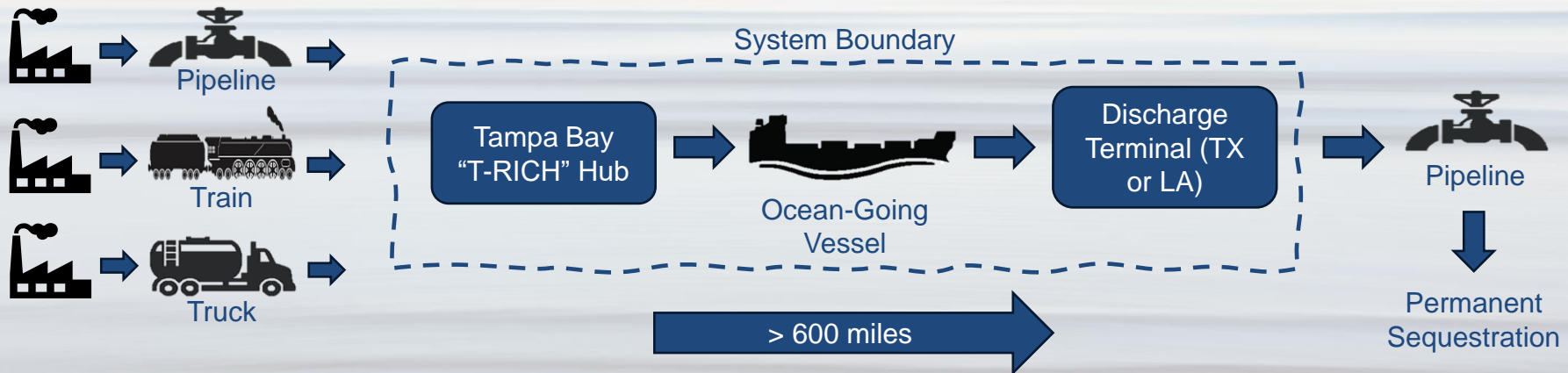
(FE0032510)

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# PROJECT DESCRIPTION

- COAST 20 is a CO<sub>2</sub> transportation system to move captured CO<sub>2</sub> from Florida's power plants and other major emitters to proven pore space in Texas and Louisiana for permanent sequestration.
- This DOE-funded FEED study will continue engineering to refine the cost estimate for the T-RICH loading hub (pre-FEED under FOA 2614), and study the ocean-going vessel and discharge terminals.



# MAJOR COMPONENTS

## T-RICH Intermodal Loading Hub



Courtesy Aker Solutions

## Ocean-Going Vessel



## Discharge Terminal



Courtesy Aker Solutions

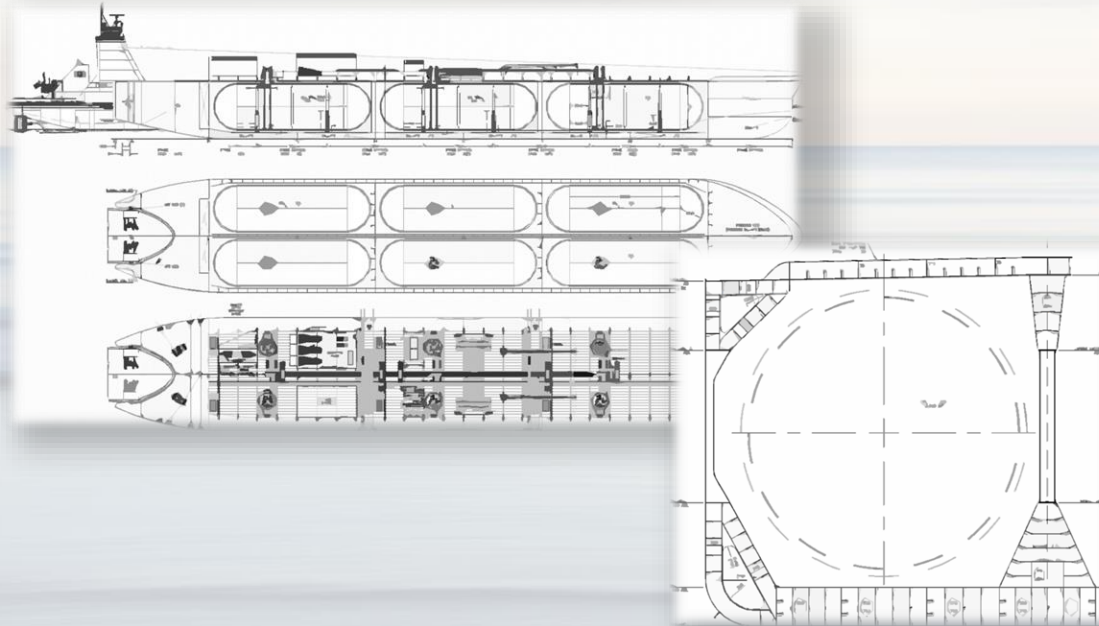
- 2 MTPA Throughput
- Incoming gas at pipeline spec
- Liquefaction and intermediate storage
- Deepwater berth and ship loading capabilities
- Pre-FEED will be completed

- 20,000 tons capacity
- 2 vessels, 1 MTPA Throughput ea.
- 50 voyages per year
- Medium pressure regime (18 bar, -30°C)
- Articulated tug and barge
- Pre-FEED will be completed

- 2 MTPA Throughput
- Outgoing gas at pipeline spec
- Regassification and intermediate storage
- Deepwater berth and ship loading capabilities

# OCEAN-GOING VESSEL PRE-FEED

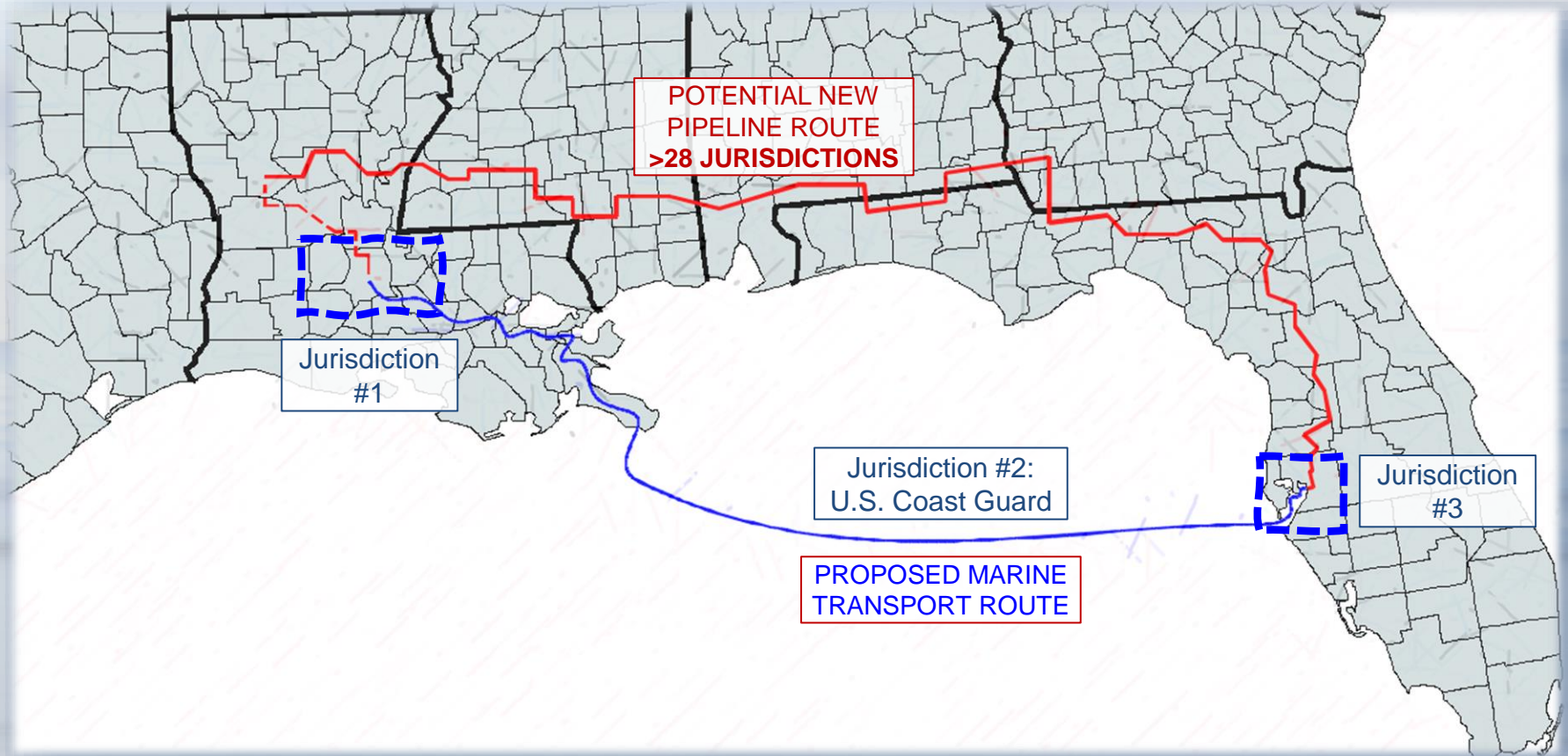
- Vessel pre-FEED is nearing completion, scheduled for 4Q24
- FEED tasks to include detailed shipyard cost estimating and Approval-in-Principle by Class Society and U.S. Coast Guard



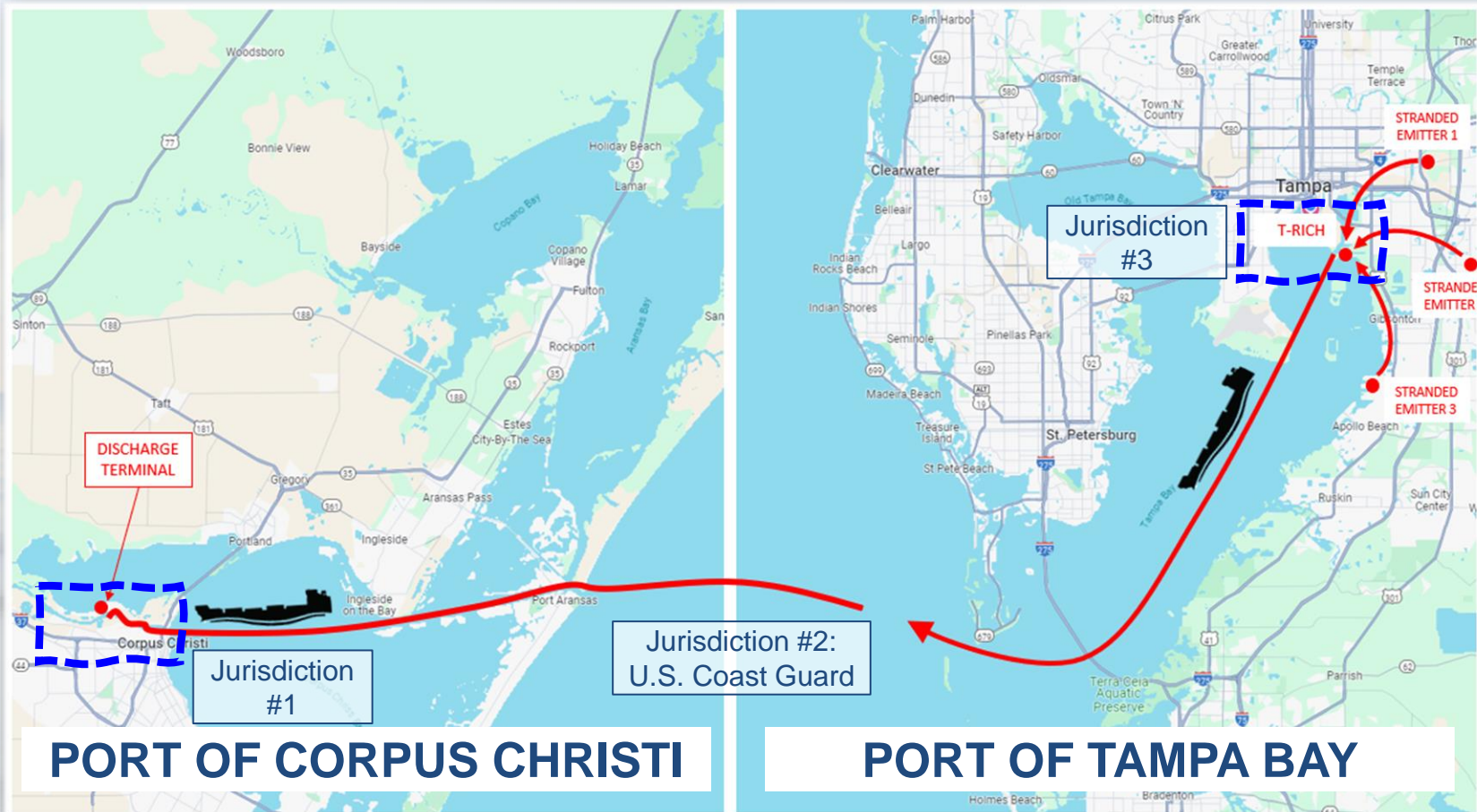
# PROJECT NEED

- As stated in our earlier presentation for our “T-RICH” hub study, CO<sub>2</sub> captured at power plants and other major emitters in the state of Florida must be transported to Texas or Louisiana for permanent sequestration.
- On-land transportation of CO<sub>2</sub> from Florida to Louisiana would likely require the development of a 700+-mile pipeline traversing through 4 to 5 states, 28-36 counties, and numerous public and privately owned properties.
- Alternatively, offshore transport of CO<sub>2</sub> from Florida to Louisiana via barge would involve the passage through as few as 3 jurisdictions via already-approved and proven navigable waterways.
- The main objective of this FEED study is to determine the cost of building and operating an equivalent marine transport system which we believe will cost a fraction of a new pipeline’s cost, and be much more flexible with future expansion and serving other regions.

# MARITIME TRANSPORT VS PIPELINE



# ALTERNATIVE COAST 20 ROUTE



# KEY PROJECT PARTICIPANTS

- OSG
  - Principle Investigator
  - Potential Hub Operator / Partner
  - Ocean-going vessel design and operation
- Port Tampa Bay
  - Site Owner, Civil Engineering & Permitting
- Discharge Terminal (TBD)
  - Site Owner, Civil Engineering & Permitting
- Equipment Maker (TBD)
  - Site Layout Input
  - Equipment design and specifications
- Blue Sky Maritime Coalition
  - Community Benefits Efforts





# PROJECT MANAGEMENT



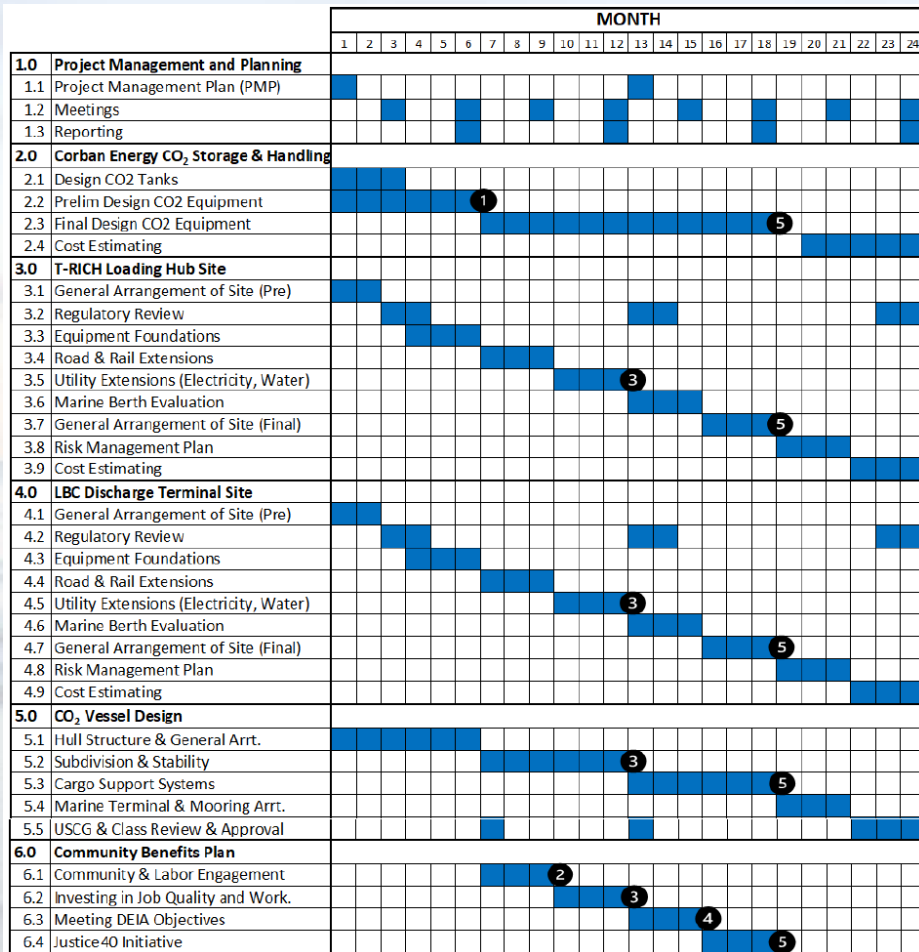
Milestone Table

Milestone No.	Task/ Subtask	Milestone Title and Description	Planned Completion Date	Verification Method
1	2.2	Preliminary Design of CO2 Liquefaction and Purification Equipment	6 mos.	Vendor Report & Calculations
2	6.1	Community Benefits Plan Section 1	9 mos.	Vendor Report & DOE Review
3	3.5 4.5 5.2 6.2	T-RICH Hub Site Review LBC Discharge Terminal Site Review Review of Ship Structure & Stability Community Benefits Plan Section 2	12 mos.	Vendor Reports, Drawings, Shipyard Proposals & DOE Review
4	6.3	Community Benefits Plan Section 3	15 mos.	Vendor Report & DOE Review
5	2.3 3.7 4.7 5.3 6.4	Final Design of CO2 Equipment Review of Final Loading Hub Arrangement Review of Final Disch. Term. Arrangement Review of Ship Cargo Systems Community Benefits Plan Section 4	18 mos.	Vendor Reports, Site Drawings & DOE Review

	FY 2025		FY 2026		Total	
	DOE Funds	Cost Share	DOE Funds	Cost Share	DOE Funds	Cost Share
OSG (Applicant)	\$1,101,675	\$312,150	\$1,176,675	\$312,150	\$2,278,350	\$624,300
Port Tampa Bay (Team Member)	\$100,000	\$25,000	\$100,000	\$25,000	\$200,000	\$50,000
<b>Total</b>	<b>\$1,201,675</b>	<b>\$337,150</b>	<b>\$1,276,675</b>	<b>\$337,150</b>	<b>\$2,478,350</b>	<b>\$674,300</b>

**GRAND TOTAL: \$3,152,650**

**21.4% Cost Share**



# EXPECTED PROJECT OUTCOMES

- There is little technical or legal risk associated with this desktop study.
  - Technical feasibility has been proven at similar sites worldwide.
  - Similar vessels have been in operation for decades in Europe and several more have recently been built with the latest technology.
  - This involves a single site at each end of the route 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 CO<sub>2</sub> through the system. This cost presents the primary risk to the ultimate success of the project.
- Cost per ton of CO<sub>2</sub> 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 APPROACHES

- Where applicable and possible, the Recipient will endeavor to hire qualified minority, veteran and women-owned businesses to contribute to this desktop Study.
- The study will consider the fact that the proposed land sites are near disadvantaged communities and will address the potential risks and benefits to those communities.
- The Study will identify the types of skillsets that the workforce will need, estimate number of jobs for the Hub, and the likelihood of those jobs being filled by applicable stakeholders.
- Future stages of the project 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 processing equipment at both the loading hub and discharge terminal
  - Adding more ships and increasing utilization of the single ship berths or adding a 2<sup>nd</sup> berth for handling multiple ships at a time.
  - Adding additional discharge terminals to send the Tampa region's CO<sub>2</sub> to multiple proven pour spaces throughout Texas & Louisiana
- Next steps are to:
  - Finalize business relationships with partners & customers
  - Develop the detailed engineering packages
  - Sign contracts with construction contractors and shipyards



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**THANK YOU**