

## **FERRY PROJECTS:**

# **STRONG ARM DOCKER GREEN FERRY ALTERNATIVES STUDY**

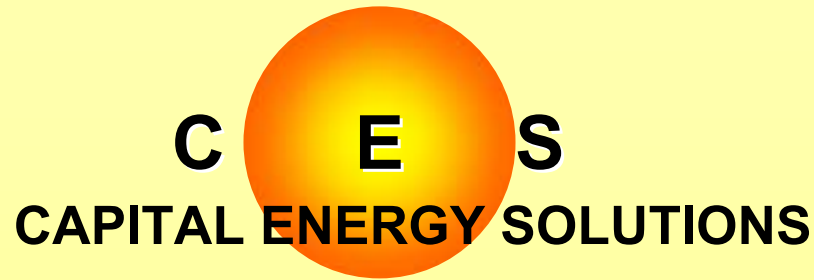
Presented to:

Long Island Sound Ferry Coalition  
New York Metropolitan Transportation Council

by

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September 21, 2005



The mission of Capital Energy Solutions is to provide tools that simplify the adoption of technology to solve energy consumption and environmental pollution problems.

Capital Energy Solutions specializes in identifying environmentally sensitive technologies that reduce energy consumption and assembles public and private entities to provide the resources necessary to bring these technologies to market.

# CES Conceived of and Manages Two Ferry Projects

- Green Ferry Study: Developing the ferry of the future. Looking at hull design and propulsion technology while considering conditions of local water.
- Strong Arm Docker: Developing a design for and testing a prototype of a mechanism for holding ferry boats to docks for passenger loading and unloading that will allow Captains to idle at dock.

# Ferry Projects

- Brought in Center for Economic and Environmental Partnerships as a 501(c)(3) to act as fiscal agent with NYSERDA.  
Using a not for profit for this type of project can be helpful in moving the project forward since it may open up other opportunities for funding.
- Interviewed and assembled the team capable of performing project tasks.

# Green Ferry

## Objective:

The objective of the project is to identify and determine the feasibility of one or more appropriate technologies to implement a “green ferry” initiative in New York State.

Green ferry alternatives comprise technologies that show significant potential to any or all of the following areas: increased energy efficiency, reduced environmental emissions, and reduced dependence on non-renewable petroleum fuels.

# Green Ferry

## Study Process Includes:

- Characterization of the Ferry Industry by creating a database of boats including size, capacity, engines etc..
- Looking at other green ferry initiatives throughout the country.
- Identifying a market segment (cross river)
- Identifying technologies to consider

# Green Ferry

## Technology Study:

- New, advanced prime movers (electric, hybrid, fuel cell )
- New, advanced propulsion systems
- New ship/hull designs
- Engine precombustion and exhaust after-treatment control devices
- Alternate fuels (biodiesel, low sulfur diesel, CNG, etc.)
- Operational changes – idle reduction

***Study will result in conceptual design of a green ferry***

# The NYSERDA/DOT Proposal

In 2002, CES through CEEP proposed to NYSERDA the development of the Strong Arm Docker

CES proposed at that time to include in the design:

- A hook and bar concept that would allow movement
- Manual actuators with safety lights visible in the pilothouse
- Fast grab and release cycles
- A dockside manual release
- Components corrosion protected

The commitment was to consider various options for fitting the boats with grab bars or other holdfast devices.”

# *A Win-Win Proposal*

- For the Public: Air Emissions Reductions
- For the Operator: Fuel Saving and less damage to boat from docking procedure
- For New York State: The Strong Arm Docker project envisions and provides incentives for manufacturing of the unit in New York State.

# Strong Arm Docker

## Objective:

The objective of the project is to develop a prototype of the Strong Arm Docker, including the designing, engineering, fabrication, and testing of the device for effectiveness for maritime use.

# Strong Arm Docker

Research indicates, most passenger ferries are using engine power to hold their boats to the dock.

Ferry throttles are often held at three quarter position to push ferry against the dock and safely allow passengers to embark and disembark the vessel.

# Strong Arm Docker

- Docking assistance will allow boats to idle at dock rather than power into the dock while loading and unloading passengers
- By idling at dock Captains will be:
  - Avoiding damage to the boats
  - Saving significant fuel costs
  - Reducing air emissions in a Severe non-attainment area under the Clean Air Act

# Emission Savings Potential

- In some cases dock time exceeded time transporting passengers
  - Example: Weehawken: cross time 5 min/dock time 5.5 min.
- Study concluded that by reducing to idle we could save 10%-59% on fuel use and corresponding emissions.
  - Example: On cross river routes alone could eliminate estimated over 650 tpy NOx

# ROUTE EMISSIONS SAVING CHART

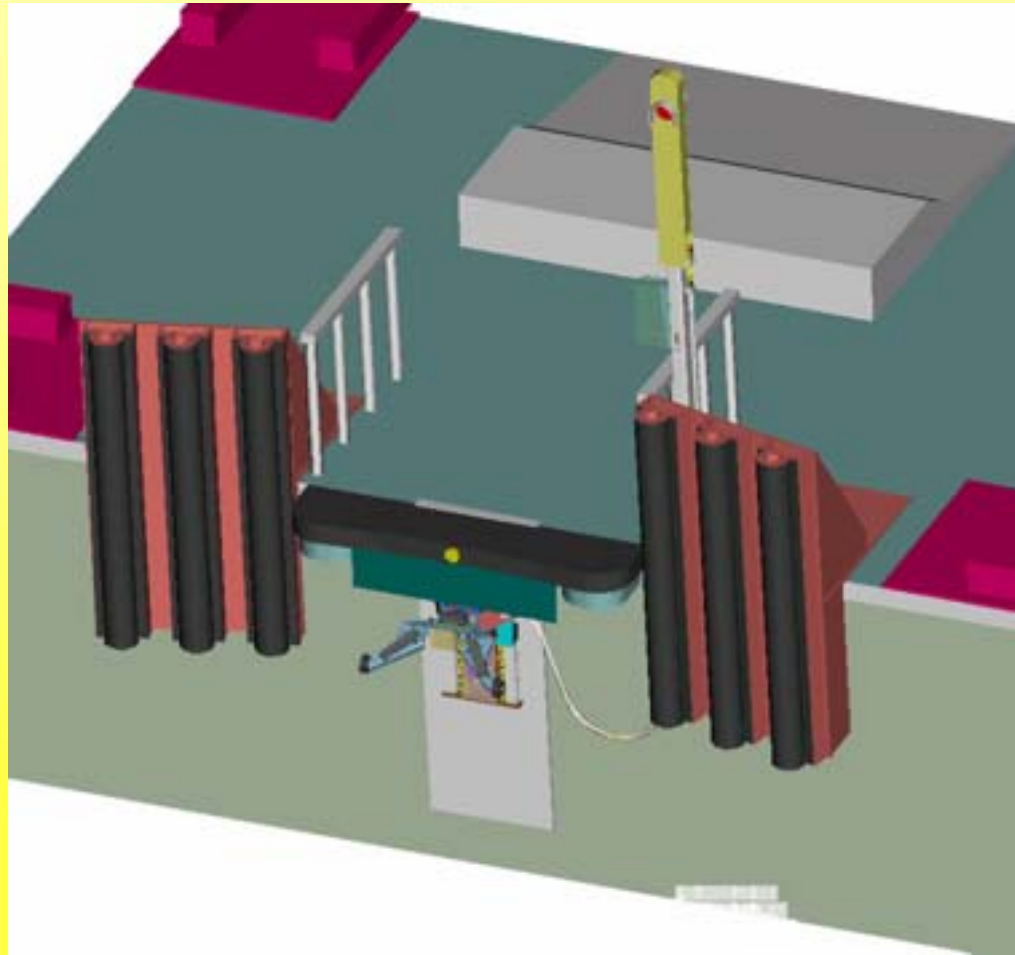
ROUTE	ROUTE TIME	DOCK TIME	MAX EMISSIONS SAVINGS
Fulton Landing, Brooklyn to Pier 11	3.3	3.2	50%
WTC to Chelsea W. 23street	7.5	2	20%
Pier 11 to Fulton Landing	3.4	3	45%
Port Imperial –WTC	12	2	15%
W. 38 <sup>th</sup> – Port Imperial	6	2	25%
Chelsea 23 <sup>rd</sup> St. – W44th Street	4.5	1	20%
Havestraw-Ossining	11	10	48%
WTC – Pier 11	9.5	5	53%
Financial Center – cross river	3.9	2	34%
Bridgeport- Port Jefferson	1hour 6min	20	30%
Port Imperial – 38 <sup>th</sup> Street	5	2-5	50%
Greenport –New London	1 hour 13min	35	32%
Colgate- 38 <sup>th</sup> Street	10	2-4	28%
Pier A –WTC	3.3	1.5	32%
Pier 11 – Pier A	5.1	7.2	59%

# Strong Arm Docker

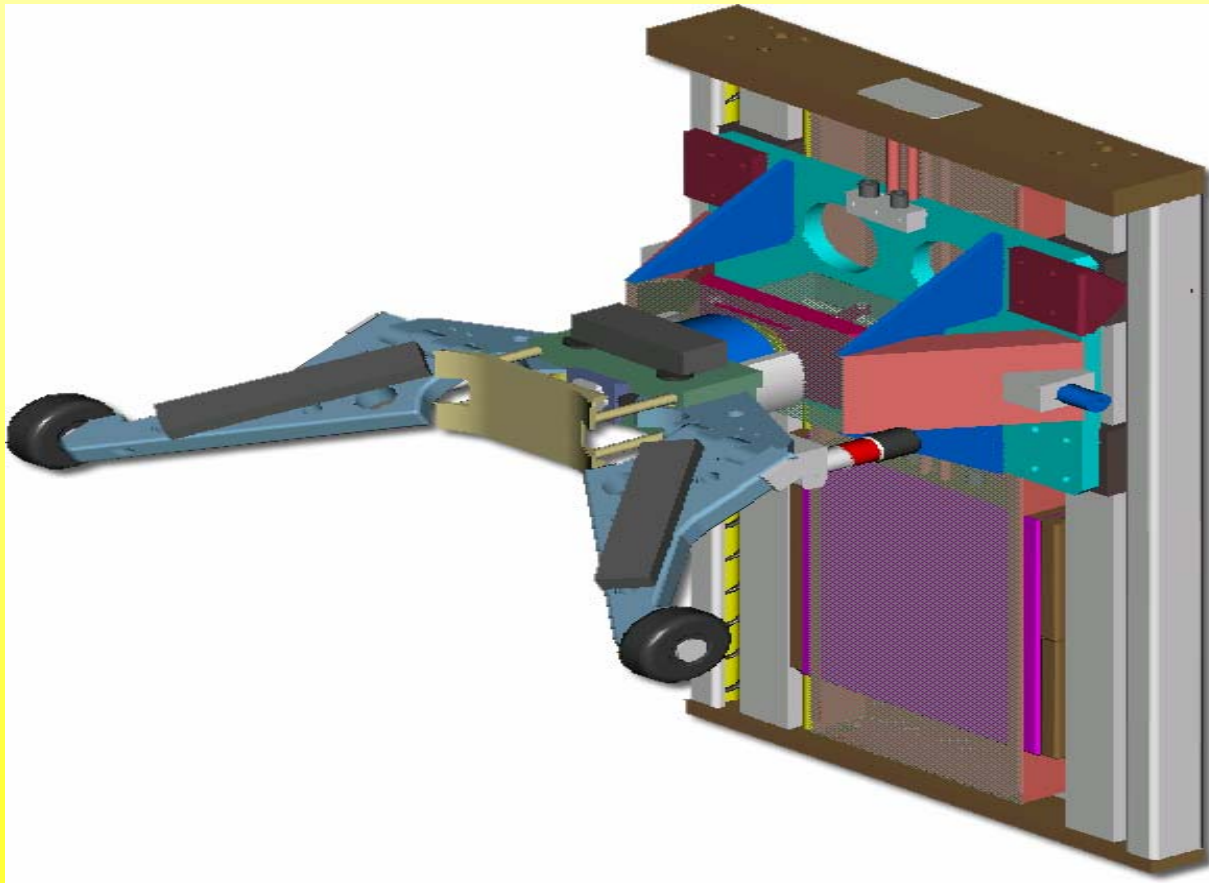
INITIAL APPROACH WOULD PROVE TO  
BE PERHAPS MOST VIABLE

NOW THIS IS NOT JUST IDEA IT IS  
BEING BUILT

# *Dock - Hooking*

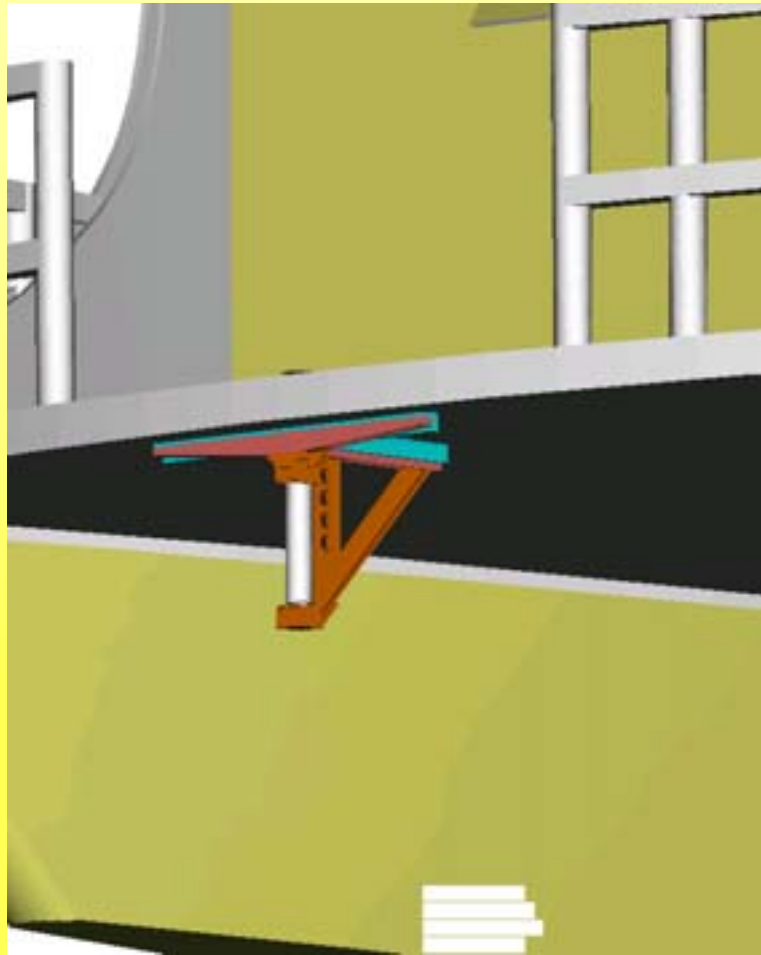


# *The Jaws – Close Up*

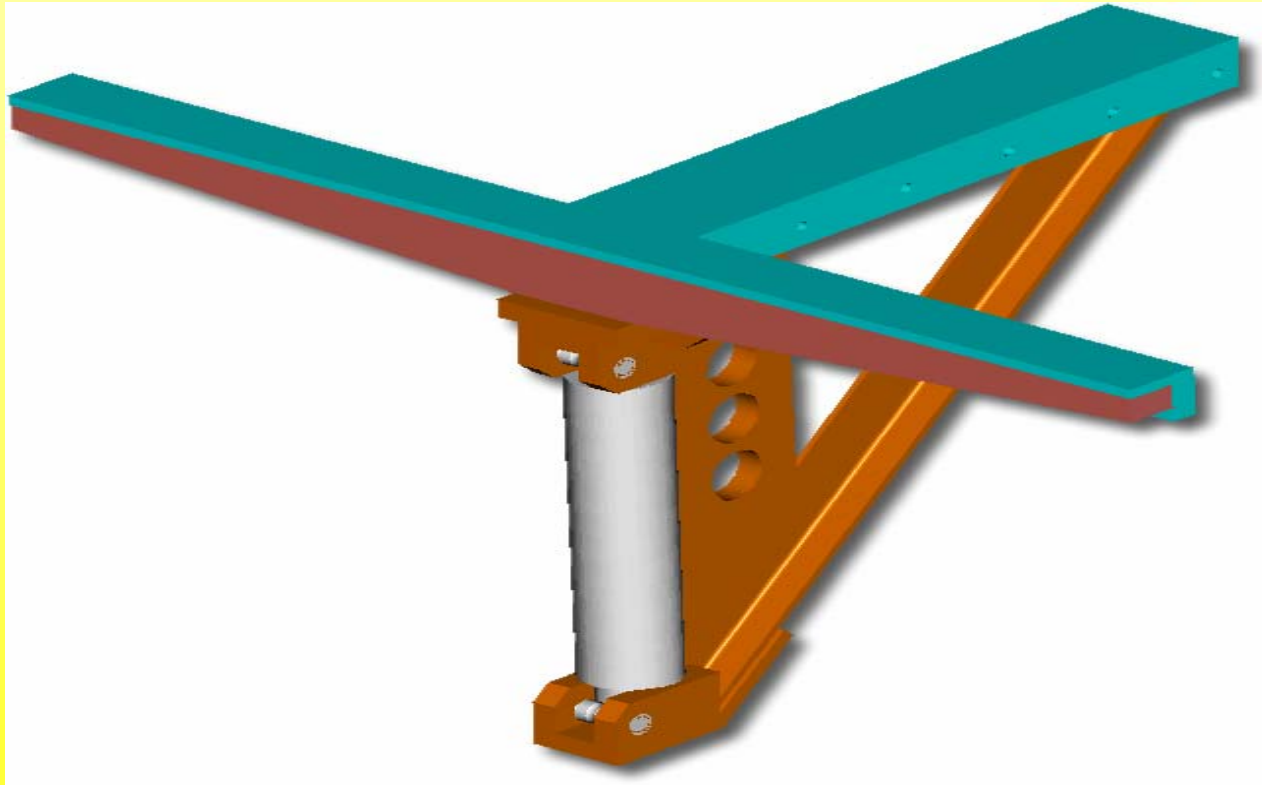


*Allows for use on catamaran or monohull ferry*

# *Boat - Engaging Rod*



# *Engaging Rod – Close Up*



*Provides support for rod and allows breakaway before damaging hull*

# *Release Lever on Dock*



# Next Steps

- Parts have been ordered and assembly has begun
- NY Water Taxi will work with the Team to test the Docker on dock and boat in Brooklyn, NY this Fall
- The test will take place over a two week period.

# QUESTIONS

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