

WEBB INSTITUTE SUSTAINABILITY IN SHIP DESIGN CONFERENCE 2023

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Sustainable Maritime along M87; Build a Little, Test a Little, Learn a Lot

Marine Highway M87



M87 History

- The River that Flows Both Ways (10,000 BC to 1608)
- A really nice river for local trade (1609 to 1824)
- The Erie and Champlain Canal (1825)
- Other canals, Cayuga- Seneca, Oswego, Genesee Valley Canal, Black River Canal, Chenango Canal
- Massive Economic Corridor (1825- 1950)
- Railroads (1847 – 1866 and later)
- St. Lawrence Seaway (1959)
- Containerization
- Open Sewer (before mid 1970's)





Alexander Hamilton (Decom. 1971)



M 87 Recently

- No longer an open sewer
- Very little commercial traffic
- Snowbird highway
- Generally depressed
- Very empty
- Efforts at revitalization, recreation and transportation
- Make Marine Highways
- Container barges 2005 to 2007
- Make Sustainable Marine Highways









Canals of the Northeast

- Day 1 - Embark in New York, NY
- Day 2 - West Point, NY *
- Day 3 - Kingston, NY
- Day 4 - Cruise the Erie Canal
- Day 5 - Sylvan Beach, NY
- Day 6 - Oswego, NY
- Day 7 - Clayton & Alexandria Bay, NY
- Day 8 - Cruise the Thousand Islands
- Day 9 - Cruise the St. Lawrence Seaway
- Day 10 - Quebec City, QC
- Day 11 - Quebec City, QC
- Day 12 - Three Rivers, QC
- Day 13 - Montreal, QC
- Day 14 - Disembark in Montreal, QC



The History Buff

From the Native American Lands to Women's Voting Rights, to Kodak cameras. If you are a History Buff, a vacation on the Erie Canal will not disappoint.



The Foodie

For Foodie's along the canal, there are fantastic farmer's markets featuring fresh, local ingredients or restaurants within steps from each port.



Wine Enthusiast

The Canal meanders through the Finger Lakes region, home to more than 100 critically acclaimed wineries. Limo tours or even Uber can help facilitate.



Beer Lovers

Upstate NY has seen a major resurgence of craft and microbreweries. In fact, the climate in our area is ideal for locally grown hops. Many of the best breweries are in close proximity to the canal.



Village Shoppers

Do you love to meander through villages that inspired Norman Rockwell? From antiques to Amish quilts to brick-a-brack of any sort, local shops have unique finds for any shopper.



Engineering Fans

There are many engineering feats to marvel the accomplishment of man over nature. If you are an engineering enthusiast, you need to witness "The Flight of Five" Locks in Lockport. Gravity be damned!



Outdoorsies

People have called Canal boats like camping on the water. Admittedly, Canal Boats are a lot more comfortable than camping... think hot water and a full kitchen. The wildlife along the canal is truly special. For true enthusiasts, visiting Montezuma Reserve is a must.



Unplug Kids

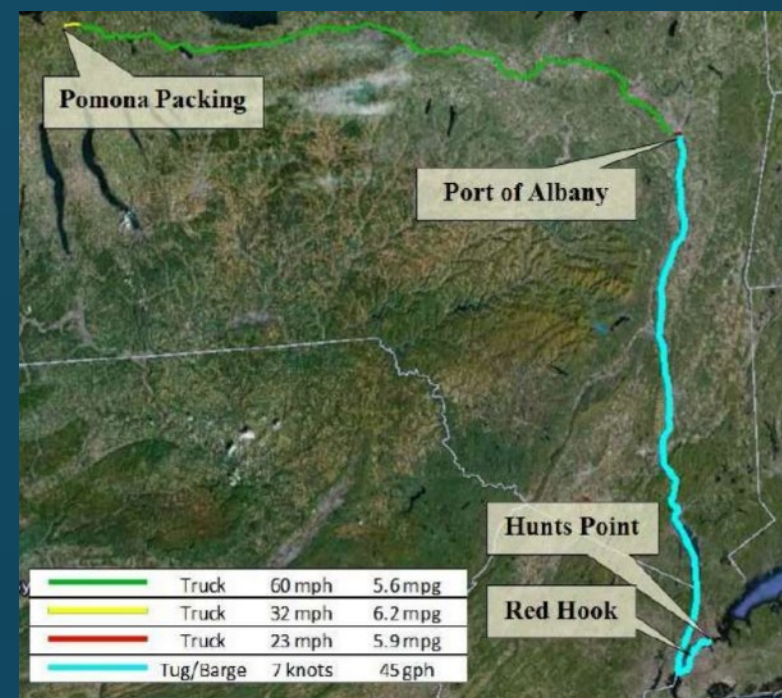
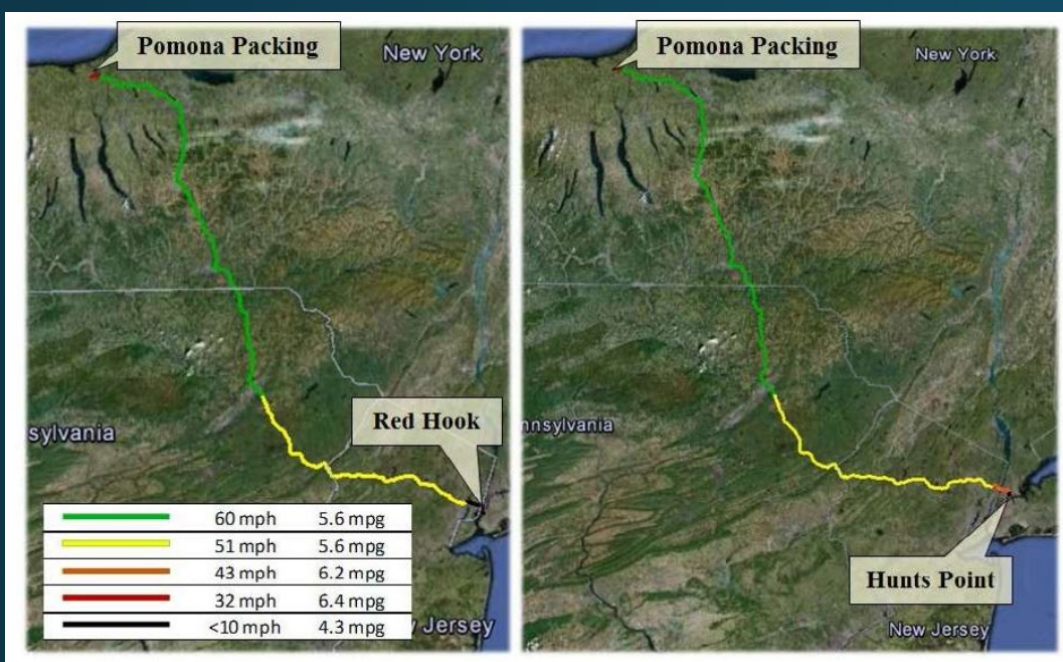
Want to spend quality time with your kids? With screen time at an all-time high, Canal Boating is an ideal way to recharge, reconnect, and unplug. There is plenty for kids to do and explore. On the canal towpath biking is awesome. Come out and replace on-line with a fishing line!



Hipsters

Today more than ever we are seeing a real rise in experiential travel. Young professionals like to experience the world and create memories that go far beyond the ordinary. Rent one of our canal boats and pilot a 42-foot canal barge along history's path. If that isn't memorable I will eat my fedora!





Hudson River Foodway Corridor Study

Mode Comparison Findings

- For the selected origin-port-destination configuration, no benefits for barge
- Two primary reasons for the findings:
 - ❖ Geometry of the transport routes is significant
 - ❖ Volume of products

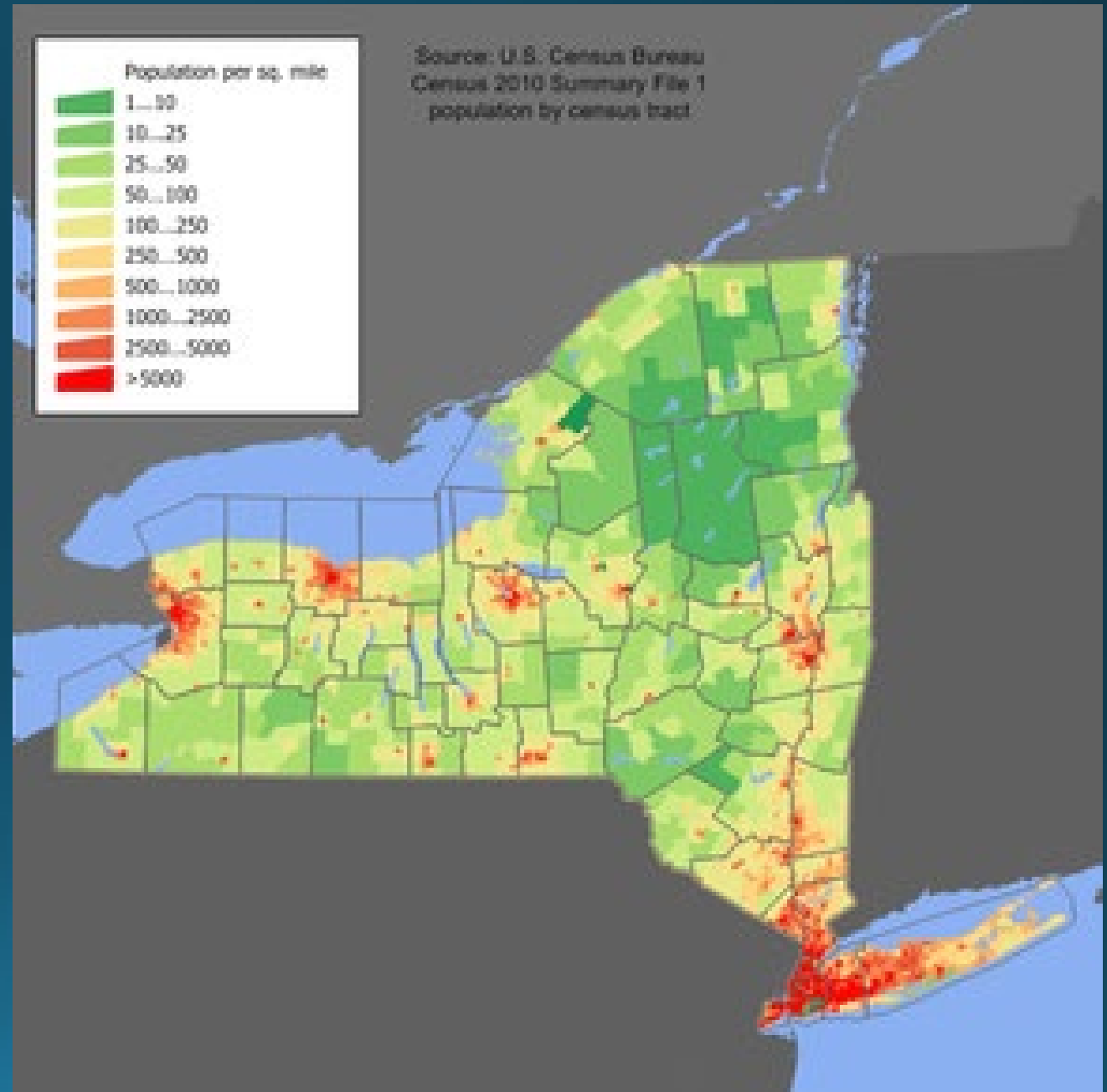


Agreement #21190



Lower Hudson Long Island
Resource Conservation and
Development Council

It is all geography



Marine and Road, there is a difference

- Highways and byways can be built, but our navigable waterways are fixed.
- Our waterways are relatively inexpensive to maintain (as compared to roads), have massive unused capacity and massive potential for reduced emissions. But can they be brought back on line in our transportation infrastructure at low cost
- We have lost our entrance and exit ramps to our waterways. Both physically and emotionally.
- Road highways and byways are inherently separated, while waterways are a much more complex (and interesting) combined resource. You cannot walk on a highway, but you can still do a Tom Sawyer on a waterway and we need to take advantage of that.

Is that all there is?

- Most waterfront infrastructure is gone
- What is not gone has been separated from the towns by railroads
- Railroads are very efficient too
- As long as the farm products move to New Jersey (and not NYC), trains are as efficient as boats
- Large scale experiments have failed
- Humans are creatures of habit; in recreational habits, in commercial habits and in their visions of the future
- But then there is BALTALLAL

Let's talk BALTALLAL

- Aberration; Accidental BALTALLAL
- Apollonia; Intentional BALTALLAL



Aberration

- SHEWAC; Solar Hybrid Electric Wheelchair Accesible Catamaran
- Built to allow wheelchair bound wife to enjoy the water
- Also built to satisfy her husband's desire go from sail to power while spewing as little carbon as possible.
- Electric cruising is really nice
- The backup diesel generator deals with range anxiety
- But the fun part is to use the generator as little as possible (not unlike auxiliary power on a sailboat)
- Then it became an M87 testbed

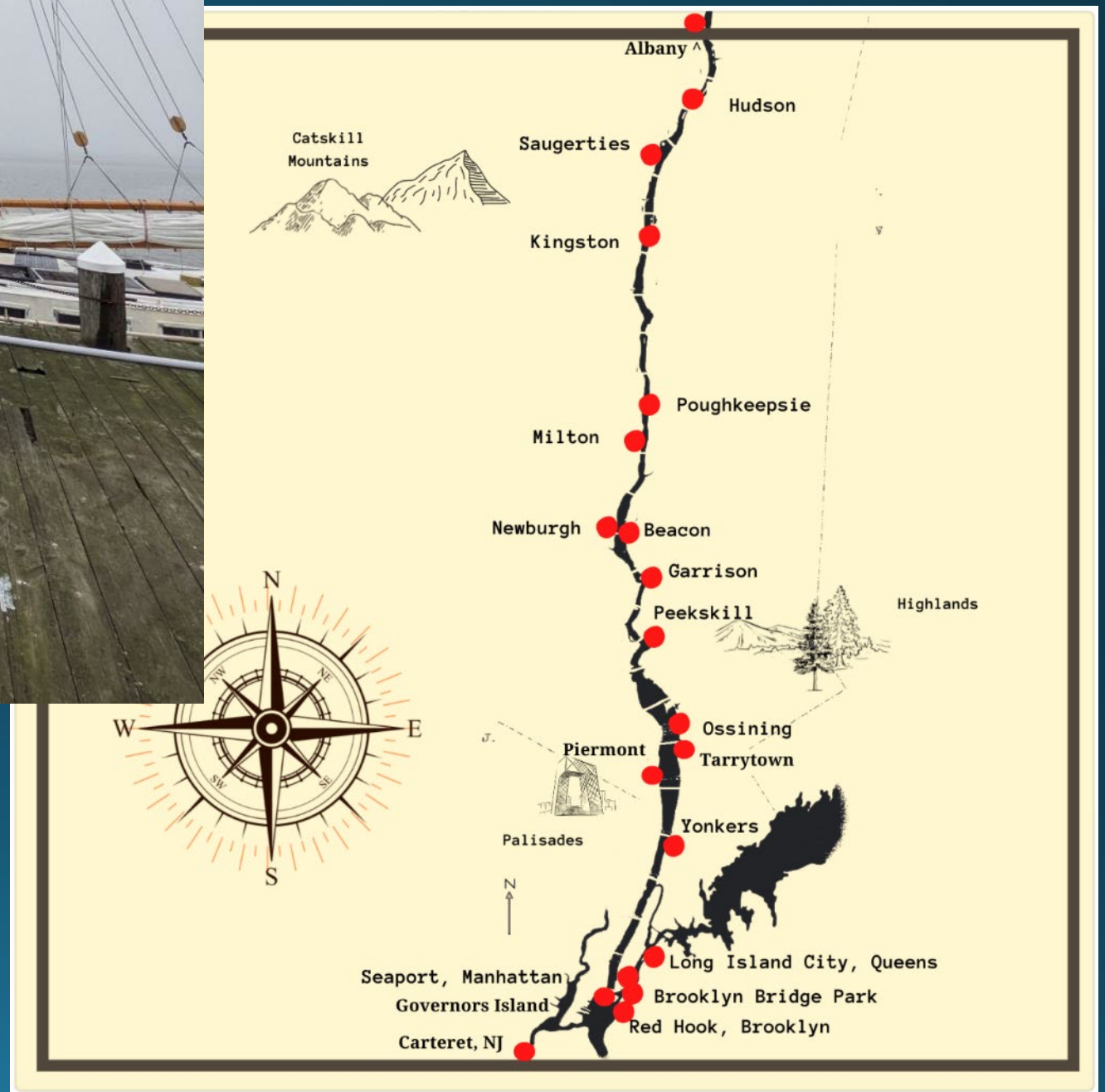
Aberration; M87 Testbed

- No rush, no CO₂ emissions
- Canals are no rush
- Shore power makes the difference
- In canals electric drive is totally possible today
- But you need to know where the shore power is
- Make canals all electric
- Make canals more fun
- Take advantage of all the available power



Apollonia

- OK, this sounds crazy. Deliver commercial cargo on a small boat under sail
- But once you try it, it gets interesting
- Focus on reducing CO₂ emissions to an absolute minimum including last mile shore side delivery
- Quite predictable if there is no rush. Wind and tides 3 mph.
- And then the cargo shows up. Malted barley for microbreweries, pumpkins, maple syrup, mushroom logs, beer, cider, solar panels, coffee beans, flour, honey, condiments and mead.
- And then it gets really interesting.



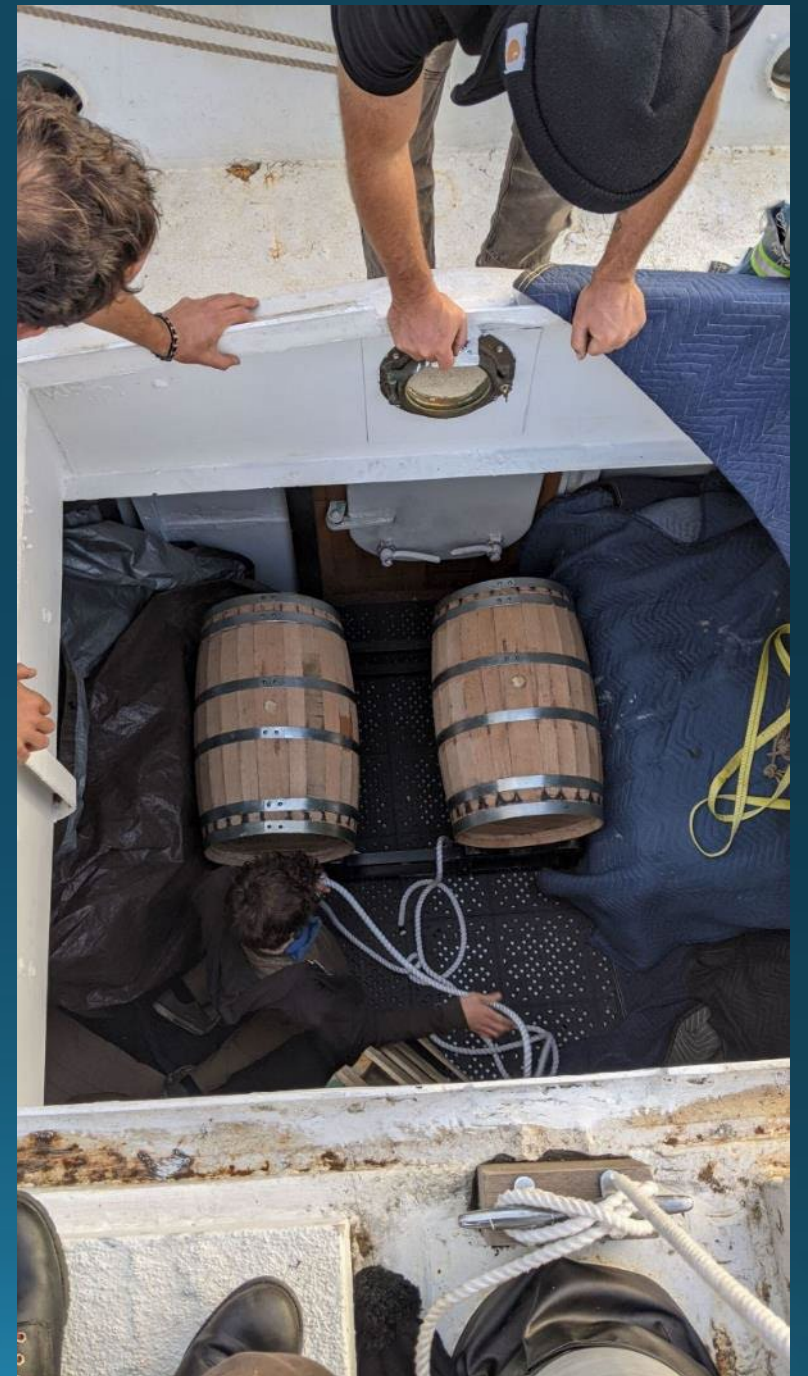


Apollonia, M87 Testbed

- At first you have to fight for cargo, but once people become familiar with the system, there is repeat cargo. Repeat cargo is like an annuity.
- It is not the cargo; it is the community
- The cargo owner can use zero CO₂ transportation as a marketing asset. That means somewhat higher freight rates
- Apollonia opens new ports
- Apollonia raises maritime awareness and maritime job growth
- Port calls become community events
- Communities become part of the upland delivery system
- It is not just cargo it is also a waterfront farmer's market.

How does it grow?

- Partly organically
- Partly by marketing
- Partly by getting better port facilities
- Partly by community support
- Partly by unexpected opportunities
- Partly by adjusting as needed
- Partly by finding solutions in the field
- All by just doing and keep doing it
- BALLALTAL



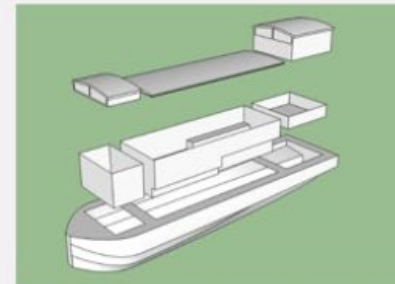
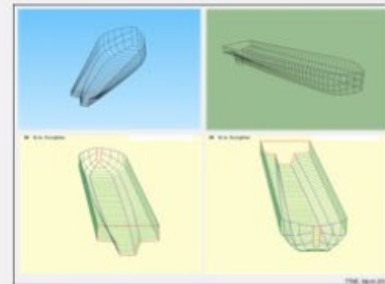
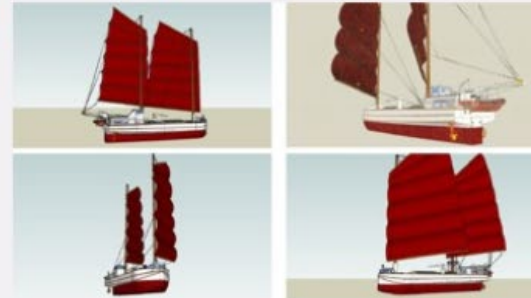
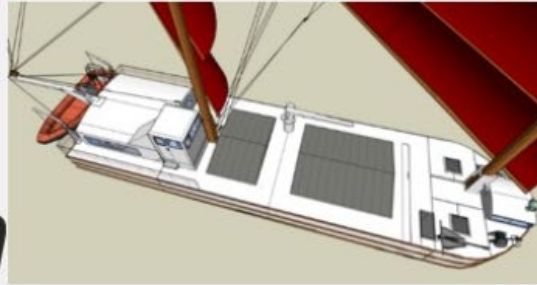
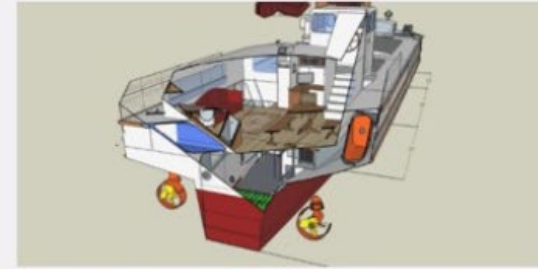
M87, the Next Steps

For example:

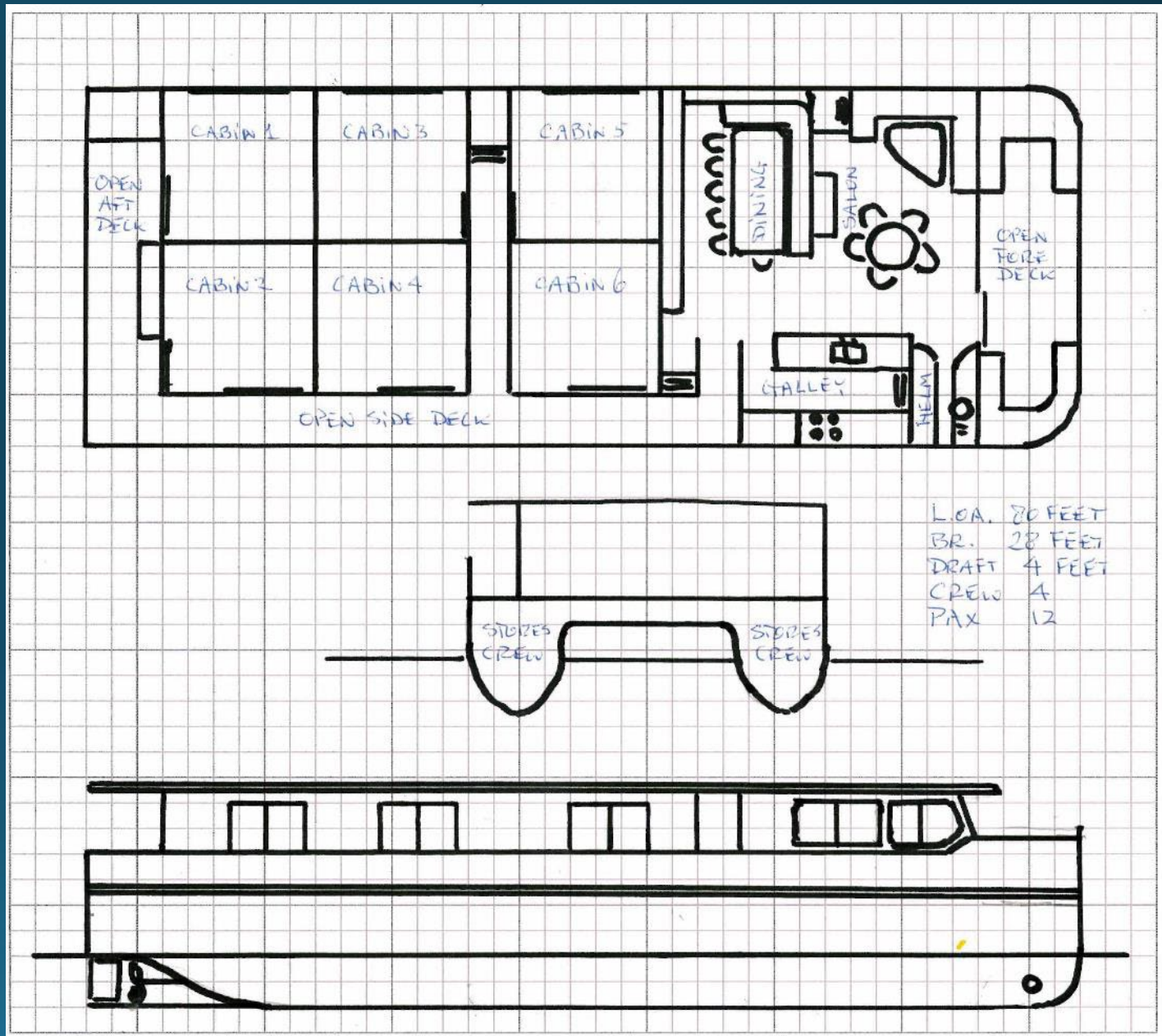
- Provide each Hudson River town with a public dock that allows cargo landing and loading, and short term recreational mooring
- Focus recreational marketing on Europe
- Optimize and grow the Apollonia concept
- Continue development of Erie Canal electric barges
- Revive the Canal passenger cruise trade.

Optimize Apollonia Concept

***The Eriemax
RSS – 80.
Liberty Ship
for a carbon
constrained
future***



- 80feet
- Capable of full M87 electric cruising with solar and shorepower
- 12 passengers
- 4 or 5 crew
- 7 day cruise from NYC to Westport, NY



SUSTAINABLE DEVELOPMENT GOALS



Conclusions and Recommendations (1)

1. Build a little, Test a little, Learn a lot, appears to be the only approach that has a chance of success in a Chicken and Egg problem
2. M87 is an excellent test bed for BALTALLAL
3. Marine Highways don't exist without on and off ramps, byways, cargo and scenic attractions. Marine Parkways may be a better designation.
4. Maritime trade development has always been organic, it takes advantage of the right conditions. Identify and develop the right conditions and trade will develop.

Conclusions and Recommendations (2)

5. In multi customer situations (ferries, freight forwarders, recreational boaters, tourism) there are inevitable long start-up periods with no or low profits. If we want to achieve sustainability, we may have to bite that bullet every now and then.
6. Sustainability can only be achieved with proper fossil fuel taxes or with changing public perceptions.
7. The former does not exist in the United States.
8. The latter can be achieved by offering quality of life benefits and/or subsidies and incentives in the switch to sustainability. Quality of life can be as simple as reduced environmental noise and as complex as the emotional trade offs between pumpkins delivered with or without the use of fossil fuels. The ideal model is: Outlaw gasoline leaf blowers. The other approach is: Battery leaf blowers that outperform gasoline leaf blowers.

Conclusions and Recommendations (3)

9. Nobody can predict what will work in the future. But a sustainable future can only be created by doing. Doing may not result in immediate success but it will almost always open new doors in totally unexpected ways.
10. Remember that loop speed is central to OODA. It is imperative that BALTALLAL experiments do not stall.
11. Rapidly developing and reduced cost sustainability technology opens even more doors.
12. Do not allow non-sustainable technologies to engage in M87 trade revival, or even equipment upgrades.
13. Every failed experiment made public is valuable. But low cost failed experiments are preferred.
14. It is the CO2 stupid. Reduce CO2 first and try to fit in as many of the other sustainable development goals as possible.