



*Achieving Critical Mass with U.S. Vessel Automation  
The Marine Highway as a potential platform*

*Harbor Harvest The Future of Environmentally Sustainable Marine Logistics*



# The Most Valuable Intelligence is not Artificial

***Technical Advances creates change, change creates debate. We define Autonomous operations as a cultural change in employment , a millennial skill set to supplement the historical skill set***

***“No group of individuals did more for establishing our country than the American Merchant Seamen and Privateers. Their record speaks eloquently of their devotion and sacrifices.” President John Adams***

***“I hold no branch in higher esteem than the Merchant Marine ...” General Douglas MacArthur – Supreme Allied Commander***

***“There were few survivors. Here, there. Nobody even knew who started it.... It was the machines” Sarah Connor .. The Terminator***



**amtech**  
alternative marine technologies

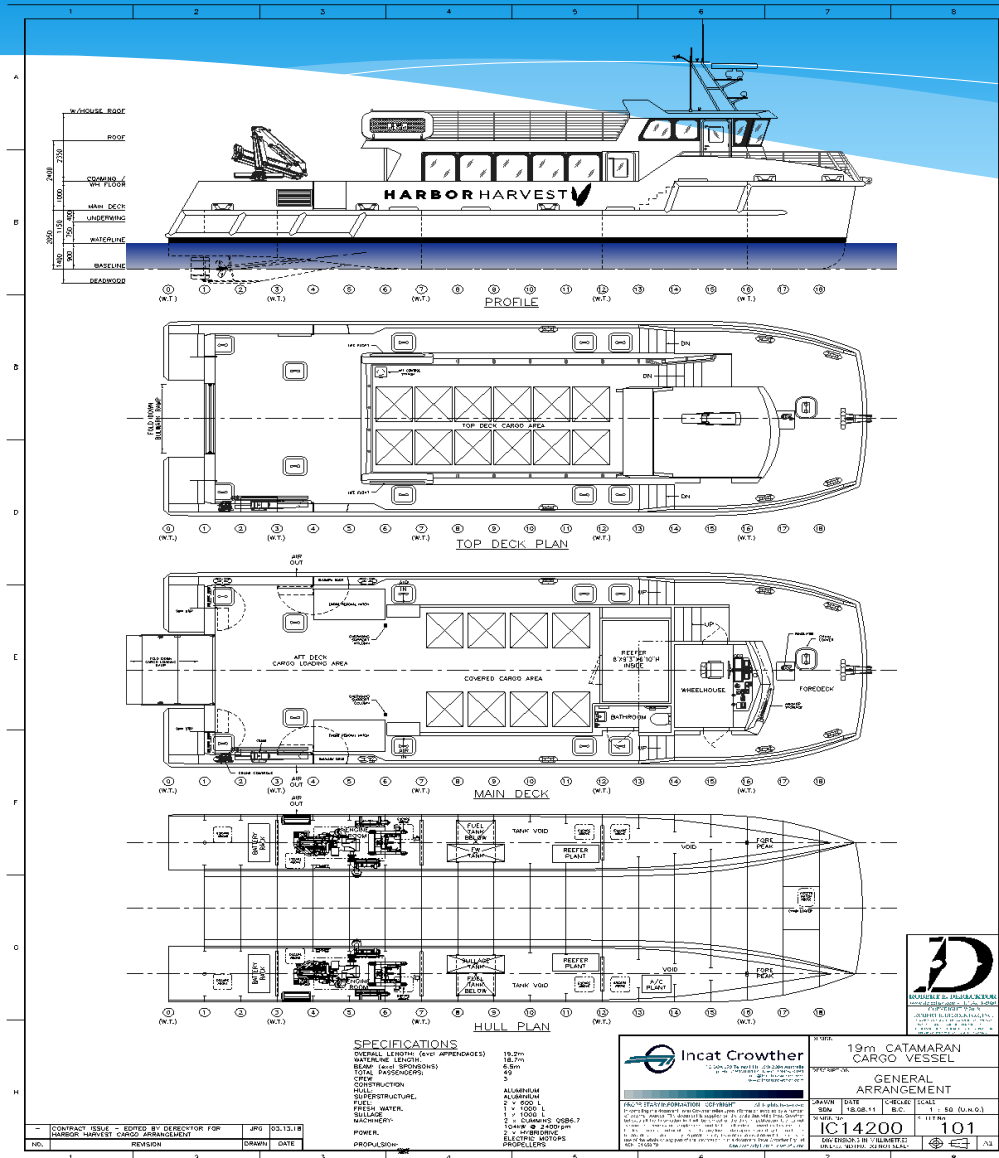


# Harbor Harvest & The Marine Highway Program

## The Challenge

- \* Relieve traffic choke points and bottle necks on state and interstate highways. An overburdened infrastructure struggling with congestion and the inability to meet shipper's schedules.
- \* Identify transportation **modes** capable of emissions free and environmentally sustainable movements on selected water & air ways and away from traditional truck routes. Land , Air & Sea
- \* Offer shipping companies additional modes of alternative transportation for areas LTL has difficulty in reaching.
- \* Reestablish regional modes of transportation to support local businesses and shipping companies avoiding congestion.

***Follow the technical paths being developed and applied in Automotive and Flight.  
Alternative EV propulsion, autonomous operation & environmental sustainability***



## ZERO EMISSIONS LOW NOISE SPECTRUM

1. 65' Incat Catamaran
2. 28 standard pallets as cargo. 19,800 lbs
3. Full refrigerated space over 1500 cubic feet
4. 16 knot maximum speed
5. Full Hybrid EV propulsion
6. Self discharge – 3 ton crane and RoRo ramp
7. Shallow draft – dock anywhere – 3'
8. Three man crew
9. Built & Repaired locally at Derektor Shipyard
10. Completely GENTRIFIED, no noise, emission or environmental impact

# Our First Vessel delivered at Derecktor Shipyard , Mamaroneck- NY



**100% of materials and labor used in the construction of this ship was based in the USA.**

**Harbor Harvest ONE of FOUR – Keel laying February 23, 2018 – Launched April 12, 2019– In operation July 2019**

**The Hybrid propulsion system is two software upgrades away from autonomous operation with BAE Hybridgen.**

**The vessel is fully outfitted with CCTV and a full internet network**

**Navigation upgrades are required for autonomous day to day operations. A perfect pilot**

# Initial Marine Routes Along I-95 & I-287 Corridors



The Blue Arrow representing a 9 to 12 hour truck round trip – the yellow Hybrid routes representing 45 minutes to an hour of transportation on the waterway.

# Building infrastructure along the Connecticut and New York Coasts

**Preparations to move cargo without environmental impact into New York City**

The Harbor Harvest Huntington Long Island  
Marine Highway Terminal



The Harbor Harvest Norwalk Connecticut  
Marine Highway terminal



**Simple Platforms working towards robotic vessel to warehouse transfers**

# Initial Air Routes open in the same locations

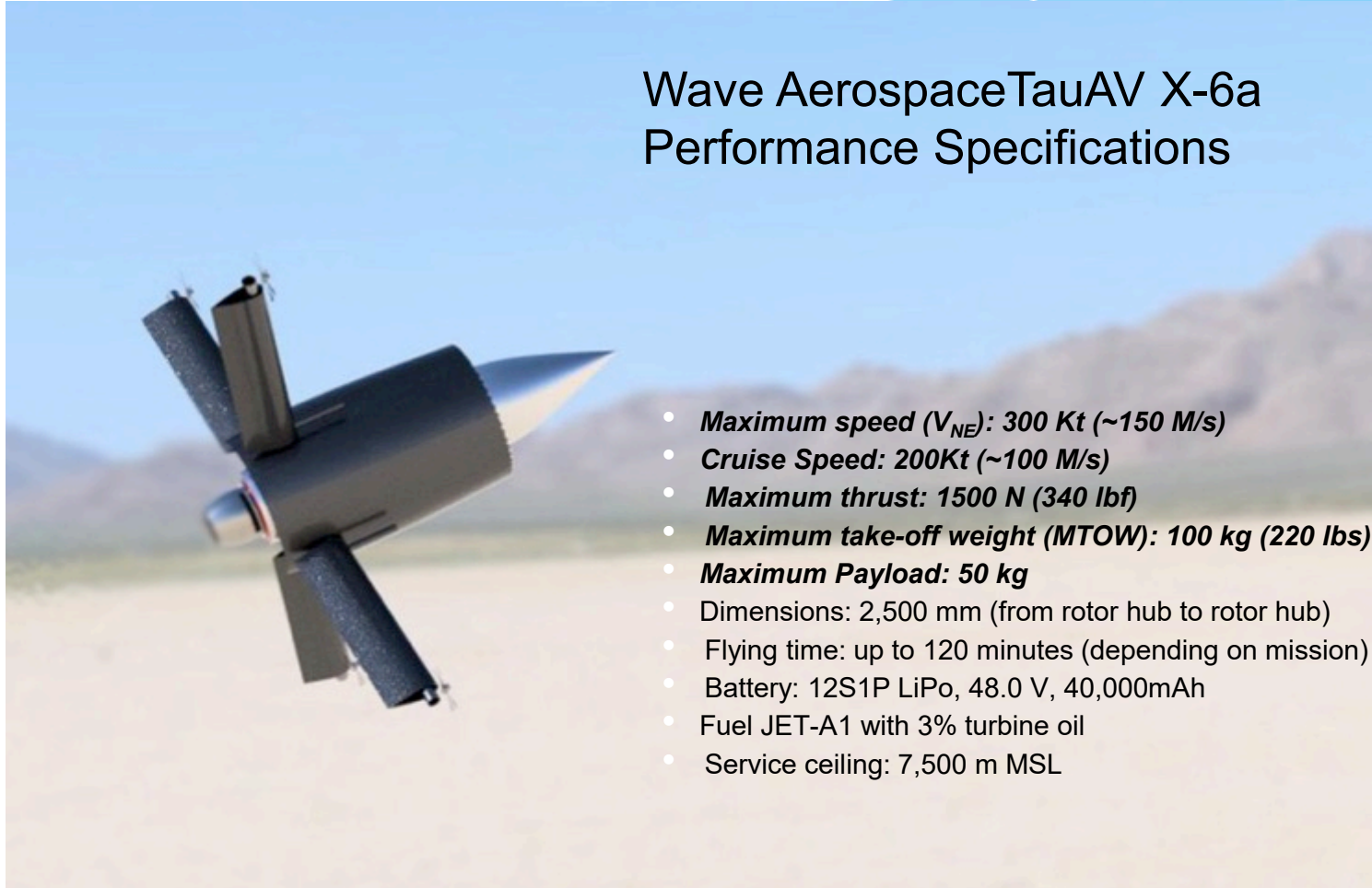
Drone product delivery – Restricted to open air space, elevation, lift technology and the autonomous application. Open air space – Our Stamford/Norwalk to Huntington itinerary – a 15 minute flight carrying upwards of 200 lbs





# Advancements in Logistics – New skill sets, New Job Descriptions

## Wave Aerospace TauAV X-6a Performance Specifications



- **Maximum speed ( $V_{NE}$ ): 300 Kt (~150 M/s)**
- **Cruise Speed: 200Kt (~100 M/s)**
- **Maximum thrust: 1500 N (340 lbf)**
- **Maximum take-off weight (MTOW): 100 kg (220 lbs)**
- **Maximum Payload: 50 kg**
- Dimensions: 2,500 mm (from rotor hub to rotor hub)
- Flying time: up to 120 minutes (depending on mission)
- Battery: 12S1P LiPo, 48.0 V, 40,000mAh
- Fuel JET-A1 with 3% turbine oil
- Service ceiling: 7,500 m MSL



Our Commercial Drone  
Aircraft carrier

If no infrastructure is  
available we deliver by  
drone

**Automation that allows us to work around the historical port infrastructure**

# Harbor Harvest Strategic Partnerships

- \* Harbor Harvest is building Strategic Partners who will benefit with an alignment with the company's logistic platform and it's sustainable business model.
- \* Expand their business by being on the cutting edge of new technologies in commercial transportation and alternative energy.
- \* Assist in relieving traffic congestion and make their operations more tenable in high traffic regions with coastal access.
- \* Share in solving tremendous Social Responsibility/Public Relations campaign centered around energy conservation and pollution control in the "Move to Zero" emissions movement.



*Thank you ..*

