

LAKE ONTARIO EXPRESS Inc.

**The environmentally friendly EXPRESS SERVICE SOLUTION to a
major traffic congestion prone area**

**THE WATER LINK BETWEEN THE LOWER NIAGARA PENINSULA
AND THE CITY OF TORONTO**

A GNCC MEMBER COMPANY

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MISSION

- TO DEVELOP AND UTILIZE THE POTENTIAL OF LAKE ONTARIO AS A TRANSPORTATION RESOURCE, BEING MINDFUL, FIRST AND FOREMOST, OF THE HEALTH AND SAFETY OF OUR CLIENTS, CREWS, AND COMMUNITIES, WHILE BEING PROTECTIVE OF THE ENVIRONMENT.

OUR STRATEGY ^(1/2)

- The “**Water Link**” provides the “**EXPRESS**” service that GO TRAIN cannot provide.

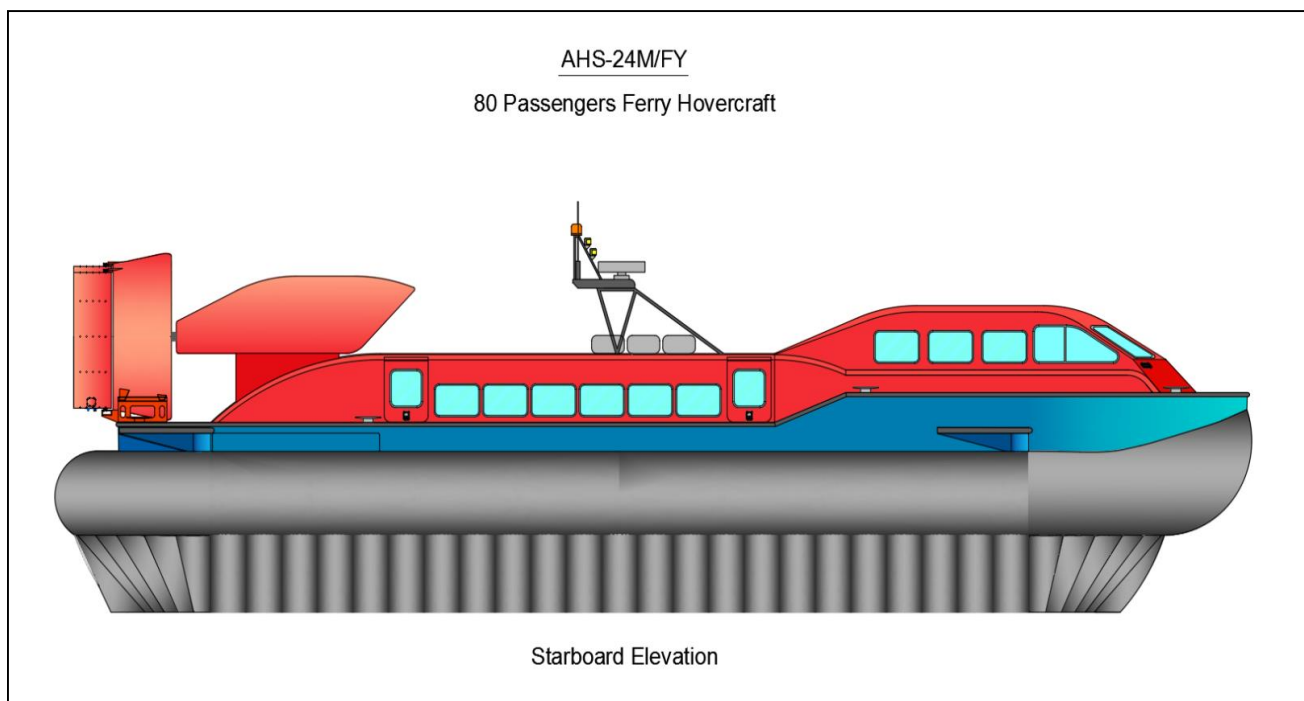
The “**Water Link**” complements the GO TRAIN service. Studies undertaken by Metrolinx estimate the ridership between the Lower Niagara Region and Toronto to be about 31000 passengers/day (p/d). For the ferry we are predicting 2100 p/d or 0.07%

OUR STRATEGY (2/2)

- **Two 80 passengers** vessels (Hovercraft) making **14 crossings** /day divided between NOTL, Port Dalhousie and the Beacon Harbour. These vessels will be powered by a diesel engine with Hydrogen injection, in order to reduce consumption and emissions.
- Crossings will be 7 d/w , 12 m/y with a loss of no more than 15 non-consecutive days/year for unfavorable weather conditions (reference our Lake Conditions Study).
- **Price per one way ticket \$25.00**
- Arrivals and Departures to be coordinated and integrated with Metrolinx and all local Transportation Services



**80-Passengers Ferry Hovercraft for Lake Ontario:
Fast all-year link between Toronto and the Lower Niagara Peninsula**



The high speed of the AHS-24M/FY hovercraft offers an attractive alternative to cars for the Niagara - Toronto corridor, while its amphibious capability provides an all-year link not limited by icing conditions on the lake. The very high stability of its exclusive lift system technology allows this hovercraft to stay operational in all but the severest weather conditions. Finally, its low fuel consumption and its low-emissions Hydrogen Injection system make this an environment friendly system, sparing many thousands of liters of polluting fuel that would otherwise be burnt by the car connection alternative.



The **AHS-24M/FY** has been especially designed for all-year operations on the Great Lakes of North America as a fast amphibious ferry. It is equipped with Argos Hover-Systems' exclusive lift system, which offers very high stability. The standard layout offers seating for 80 passengers, divided into 4 handicapped seats, 68 coach-class seats and 8 first-class seats, plus 2 control seats and 4 cabin attendant seats.

The hull will be made of strong marine aluminium alloys that will resist any possible impacts with ice ridges. Furthermore, the catamaran-like rounded bottom hull forms offer high structural efficiency. Also, its high freeboard provides greater buoyancy and safety.

SPECIFICATIONS

Dimensions:

Length (overall): 23.55 m.

Beam (overall): 11.03 m.

Air Cushion Height: 1.40 m.

Load Capacities:

Total load (including fuel): 12,000 Kg.

Standard fuel capacity: 4,000 liters.

Standard payload: 8,600 Kg.

Seating:

-Passengers:

--- 68 Coach seats.

--- 8 First Class seats.

--- 4 Handicapped seats.

- Crew: Commander, First Officer, 2 Cabin Assistants.

Speed:

Top speed over calm water, no wind: 45 knots.

Cruise speed: 35 knots.

Range & Endurance:

Standard Endurance : 8.6 hours.

Standard Range: 555 Km / 300 nautical miles.

Operational Limits:

Maximum wave height: 2.1 m (Sea State 4).

Maximum Wind: 7 Beaufort.

Maximum Solid Obstacle Height: 1.2 m.

Maximum gradient with speed: 10%.

Engines:

Propulsion: 3 Diesel engines .

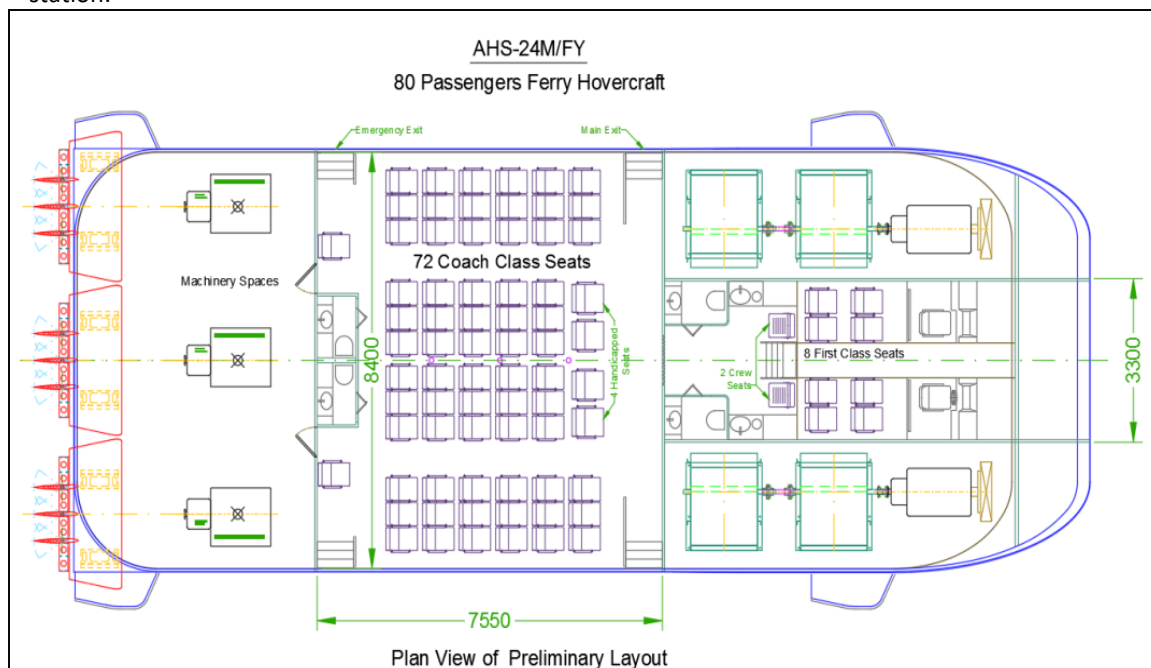
Lift: 2 Diesel engines.

Total installed power: 3,200 HP.

All engines comply with US Tier 4f emissions and have Hydrogen Injection systems.

Propulsion power is provided by three diesel engines and lift power by two smaller diesel engines with a total maximum combined power of 3200 HP. All five engines will comply with US Tier 4f emissions regulations and are also fitted with a **Hydrogen Injection** system that reduces both carbon and other emissions as well as fuel consumption. With that power this hovercraft can reach a maximum speed of about 45 knots or a cruise speed around 35 knots and even higher speeds over ice.

The wheelhouse or control cabin is located at an elevated position at the front end of the hovercraft, offering 360° visibility. The standard layout has two adjustable seats for the captain and the second officer or navigator. In front of these seats is the control panel, with the instruments, the rudder wheel and the control levers. Eight first-class seats are installed on the elevated deck behind the control station.





The main cabin is located between the propulsion and the lift machinery compartments, around the longitudinal centre of the hovercraft. This way the payload lies near the centre of gravity and therefore longitudinal trim is very little affected by variations in the number of passengers. The available area in this cabin for seats and services (toilets and galleys) is 7.5 m (24 ft 7 in) long and 8.4 m (27 ft 7 in) wide with headroom of about 2 m (6 ft 7 in). Access is through two main doors at their front ends, one on each side of the craft. There are also two emergency exits at the rear end of the cabin. The standard layout features two toilet cabinets in this cabin, but its layout can be configured following the client's requirements.

At the front end of the main passenger cabin there is a service area with two toilet cabinets and a small galley area with lockers. Each of the toilet cabinets will be fitted with a toilet and a sink with pressurized fresh water.

MAINTENANCE PROGRAMS:

Argos Hover-Systems can provide both routine (planned) and corrective maintenance on site at the operational bases of the hovercraft. These services will be provided on the basis of maintenance contracts that can be signed at the same time or at a later date of the main construction and delivery contract.

The maintenance can be carried out either by personnel sent by **Argos Hover-Systems** or by local personnel trained by our company. Training of the hovercraft maintenance personnel can be done either at our premises in Mexico while the hovercraft is being built and tested, or on site after the hovercraft has been delivered.

Argos Hover-Systems will also provide a list of recommended spare parts to be kept at the hovercraft operational bases. These spare parts are usually included in the main construction contract and they are delivered together with the hovercraft.



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AHS-14/FY



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TIMETABLE

- We want to be operational by **MAY 2021** in order to be an asset to our municipalities for the CANADIAN SUMMER GAMES.

BACKGROUND (1/3)

On Friday December 16th, 2016 we held a meeting in the offices of the Hon. MP Chris Bittle. After reviewing our proposed project it was deemed that “... this type of project will reduce CO2 emissions (a government priority) and aligns with the government priority of transportation infrastructure.”

On June 7, 2017 Mayor Sandra Easton endorsed on behalf of the **Town of Lincoln** the Lake Ontario EXPRESS ferry service to Toronto from the Ramada Beacon Harbour. This Harbour was already permitted for a ferry operation.

On June 26th, 2017 the City Council of **Saint Catharines**, unanimously approved a motion in principle, to establish the “water link” to Toronto ,as proposed by Lake Ontario EXPRESS, operating out of the Port Dalhousie Pier Marina.

BACKGROUND (2/3)

- July & August 2017 , series of meetings with **Toronto Port Authority** (TPA) in order to obtain docking permit at the “International Ferry Terminal” (at the bottom of Cherry St.)
Conclusion: TPA deemed that this **ferry terminal** was in an area deemed **NOT SUITABLE for Ferry Operations**.
- 13 October 2017 , Lake Ontario EXPRESS (LOE) responded to the call for submissions of proposal for the West Island of Ontario Place. (Suggestion of MPP Jim Bradley)
- 14 December 2017, Lake Ontario EXPRESS was notified that the **RFP for the West Island of Ontario Place was put on hold**, however the Ministry of Tourism, Culture and Sport was interested in the project and directed LOE to start talks with the Toronto Waterfront Secretariat.

BACKGROUND (3/3)

- 16 March , 2018 Niagara Region Office of Economic Development endorsed the project.
- 1 May, 2018 MPP Sam Oosterhoff endorsed the project.
- 4 May, 2018 MP Rob Nicholson endorsed the project.
- 10 May, 2018 MP Dean Allison endorsed the project
- 16 July, 2018 MPP Wayne Gates endorsed the project
- 30 August, 2018 MPP Jeff Burch endorsed the project.
- 9 December, 2019 **NOTL** City Council gave conditional approval to the project.

BENEFITS _(1/3)

- **TIME**

We can make the crossing in 45 minutes.

Car & Buses: 1H.15 minutes with no congestion.

Car & Buses: 2H + with congestion.

Train: 2H 20 min

Assuming that each passenger saves 1H/Crossing,

Operational Days per Year: 350/y , then 2000 p/d = are saving
700,000 hours /year from this commute! If we apply the
Ontario Min. Wage for Gen. Workers at \$14/hr = \$9,800,000/y
(an hypothetical person would save \$4,900/y)

BENEFITS (2/3)

- **FOSSIL FUEL USAGE REDUCTION**

2018 Data for Canada shows that the average car uses 10.8L/100km. Let's assume that the distance from our area to Toronto is just 130km or a fuel consumption of 14L/car. We further estimate that at 2000 passenger/d we are taking out between 600 to 900 cars/day from our highways, using an average of 750c/d this saves:

a) **Liters/day = - 10,530** b) **Liters/y= - 3,685,500**

However, the normal fuel consumption for this type of hovercraft is 450 L/ hour (Diesel). With Hydrogen Injection we save about 30% so we utilize **315 L/ H** or about **236 Liters/ each trip, each Hovercraft.**

a) **Liters/day (2 HC)= +6,608** b) **Liters/year (2HC) = +2,312,800**

TOTAL SAVING= -3,922 Liters/Day Liters/ year= -1,372,700

BENEFITS (3/3)

- **JOBS CREATION**

Each Hovercraft requires a Crew of 6 FTE/shift : Captain, Navigator, and 4 cabin attendants. 4 shift/week + Security + Cleaning crews+ Office Personnel = About **50 FTE** Direct

Indirect job creation: **200 to 500** in the General Services, Construction, Entertainment, and Security sectors of our economy.

LAST BUT MOST IMPORTANT:

SAFER COMMUTE

THE WATER LINK NEEDS

- **APPROVAL by the City of Toronto** to have a dedicated dock in the Inner Harbour for the ferry service to the Lower Niagara Peninsula .
- **COORDINATION WITH METROLINK** in order to provide seamless service.
- **COORDINATION WITH LOCAL LAND TRANSPORTATION SERVICES**

REFERENCE SECTION

- LAKE ONTARIO EXPRESS Inc. TEAM
- DETERMINING DAILY TOTAL DEMAND
- CONDITIONS ON LAKE ONTARIO

LAKE ONTARIO EXPRESS TEAM

**LMM Engineering Inc.....Transportation consultants,
Oakville , ON**

Argos Hover Systems.....Hovercraft , Ensenada, Mexico

**Coastwise Management...Marine advisory services ,St.
Catharines, ON.**

**Chimpanzee...Marketing planning & implementation, St.
Catharines, ON.**

**Taylor Leibow, LLP ... Accountants and Advisors,
Hamilton, ON.**

Baird...Coastal and Harbour Engineers, Oakville, ON

Redrock Power Systems, Charlottetown. PEI...H2 Power

Determining Daily Total Demand (From the 2011 GO TRAIN STUDY)

Commuter	Tourist	Total
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11,314		
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	20,120	
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		31,434
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<i>Forecast 2017 Daily Trips*</i>		
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	1,660	
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<i>Forecast 2027 Daily Trips**</i>		
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	1,840	
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NOTE: from the study of our consultants LMM ENGINEERING, all figures are one way trips

* Based on 5% Capture Rate (absolute minimum)

**Based on 5% capture rate and 1% annual growth rate

STUDY: Conditions on Lake Ontario

Hourly Data from buoy c45139, Department of Oceans & Fisheries,
Government of Canada, from 1991 to 2015 (25 years):

Wave height(meters)	(# of entries)	%	Cum. #	Cum. %
0-1.0 m	117000	96.74	117000	96.74
1.0-2.5	3718	3.07	120718	99.82
2.5- 3.0	119	0.10	120837	99.92
>3.0m	101	0.08	120938	100.00

Data Analyzed by Dr. Alfred DeMaris, Bowling Green University , OH ,USA
(From his “Report on Lake Ontario Wave Heights “ prepared for
Lake Ontario EXPRESS, December 11, 2017).

Conditions on Lake Ontario (cont.)

After reviewing the data we have concluded :

1- Navigation will be allowed when Wave Height do not exceed 2.0 meters:

Wave height(meters)	(# of entries)	%	Cum. #	Cum. %
0 to 1.99 m	120420	99.57	120420	99.57
> 2.00 meters	518	0.43	120938	100.00

2- From December 15 to March 15, there may be small ice floes that may impede navigation by conventional vessels. Small harbors and bays may be iced over. Lake Ontario itself is known to be ice free. Winter time is when gale force winds are more frequent:

Wind speed >6.4meters/second from NE direction, are more likely to generate high waves.