

Technology Application in Safe and Secure Operation of Ferry Transportation in the New York Harbor



Transportation Technology Symposium
Jonathan Figueroa - NY Waterway
Amit Bhowmick - Port Authority of NY & NJ

November 20, 2015

THE PORT AUTHORITY OF NY & NJ

History of Hudson River Ferries in NY

1900-1930's:

- 300,000 trips across Hudson
- 19 highway and transit bridges and tunnels built

1967: Ferry Service not in use

1980's: Ferry Service Returns

- Weehawken to Midtown
- Highlands to Lower Manhattan
- Hoboken to World Financial Center

2000's- 2015:

- After 9/11 attacks, 30 routes operated with 70,000 riders
- As of today, 23 routes are operating with 35,000 riders

Commuting into Manhattan

Lower Manhattan	Pier 11	10 routes	13,000 riders
Lower Manhattan	WFC	4 routes	7,700 riders

West Midtown	39 th St.	5 routes	12,000 riders
East Midtown	34 th St.	2 routes	3,000 riders

Other		2 routes	800 riders
--------------	--	----------	------------

Returning from Manhattan



Hudson County

13 routes

27,300 riders

Monmouth County

5 routes

5,800 riders

Brooklyn/ Queens

2 routes

2,000 riders

Other:

3 routes

1,400 riders

Revival in Ferry Service: 1980's

1980's: Port Authority sought ways to ease congestion in the PATH system, tunnels, and bridges

Ferry transportation considered as an alternative transit mode to provide capacity with minimum capital investment

Development of a ferry service from Hoboken, New Jersey to Lower Manhattan, New York

Contract signed with Arcorp/Hartz (d/b/a NY Waterway).

Public/Private Partnership

- Port Authority leased property for terminals
- Operator provided vessels, crews and temporary terminals
- No operating subsidy
- PA construct permanent terminals when ridership warranted

World Financial Center Ferry Terminal

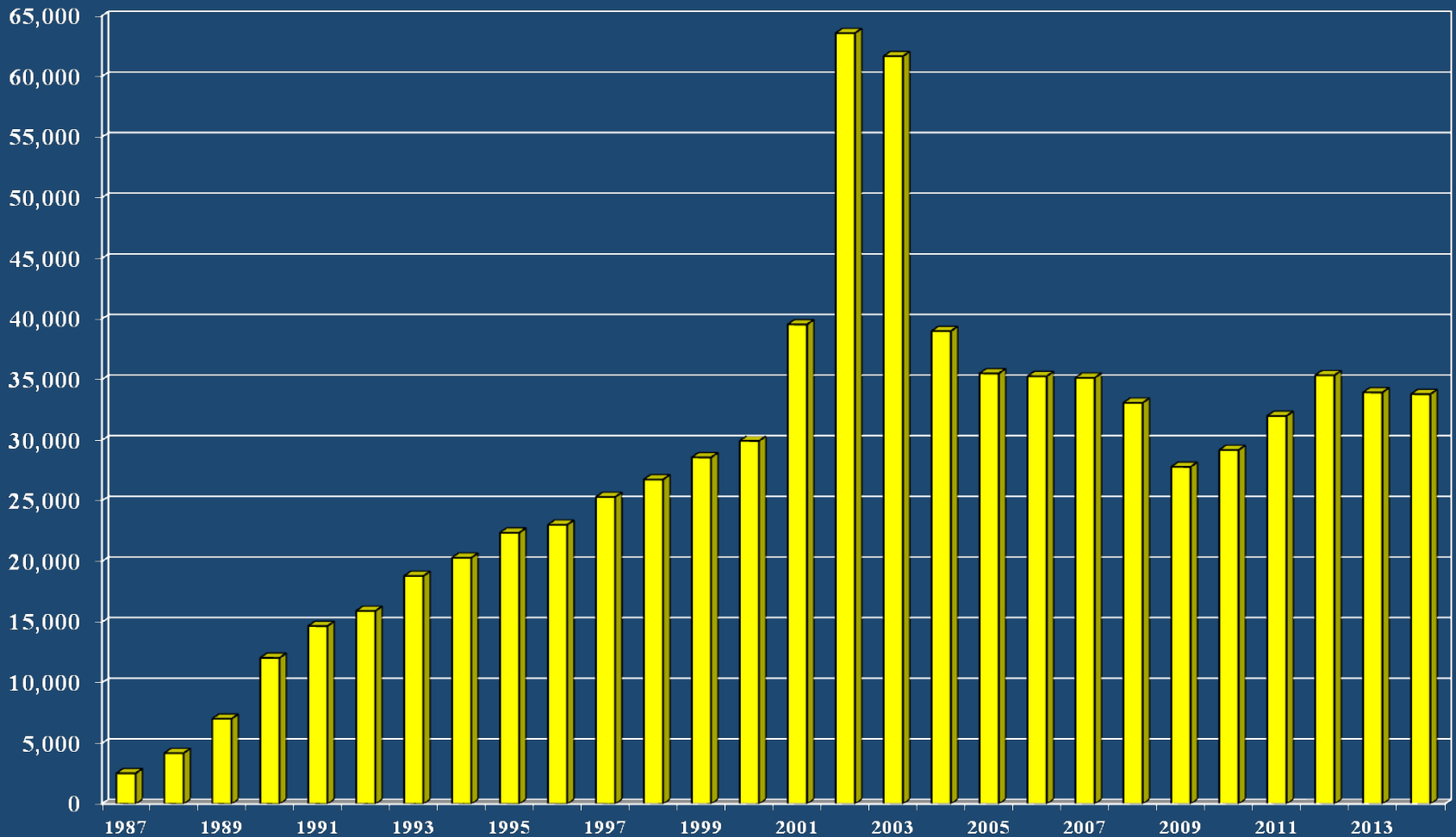


Hoboken Ferry Terminal



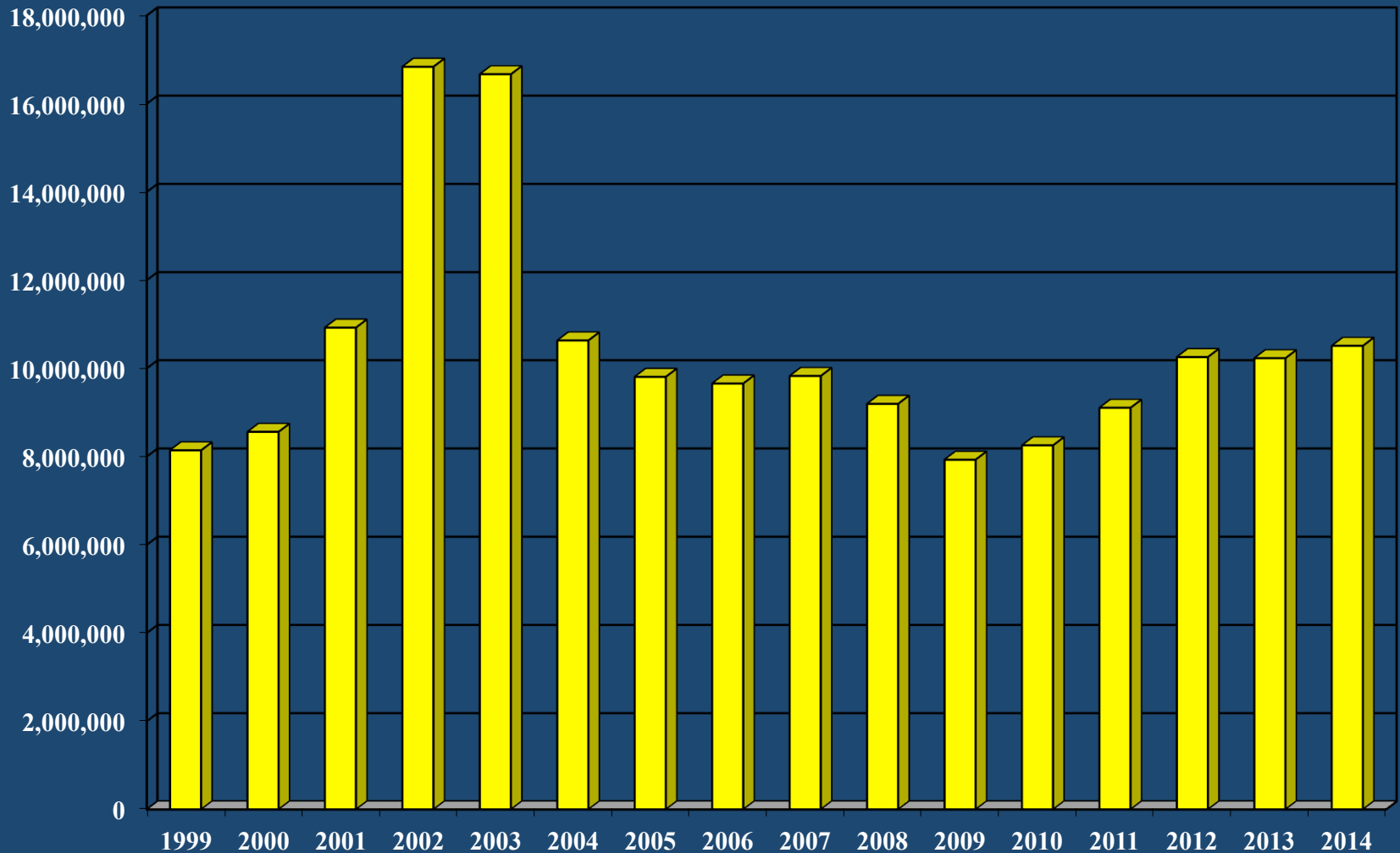
New York Harbor Private Ferry Services

Growth of Annual Average Weekday Passenger Trips



New York Harbor Private Ferry Services

Annual Ferry Passenger Trips



Response to Emergencies

- **December 1992 – Nor'easter storm flooded PATH tubes**
- **February 26, 1993 – World Trade Center Bombing**
- **September 11, 2001– World Trade Center Attacks**
- **August 14, 2003 – New York City Black Out**
- **January 15, 2009 – Miracle on the Hudson**
- **October 28, 2012 – Super Storm Sandy**

CHALLENGE

Create a sustainable wireless mesh network throughout the East and Hudson Rivers, that would allow NY Waterway to keep constant connectivity with our fleet of vessels and upland facilities.

SOLUTION

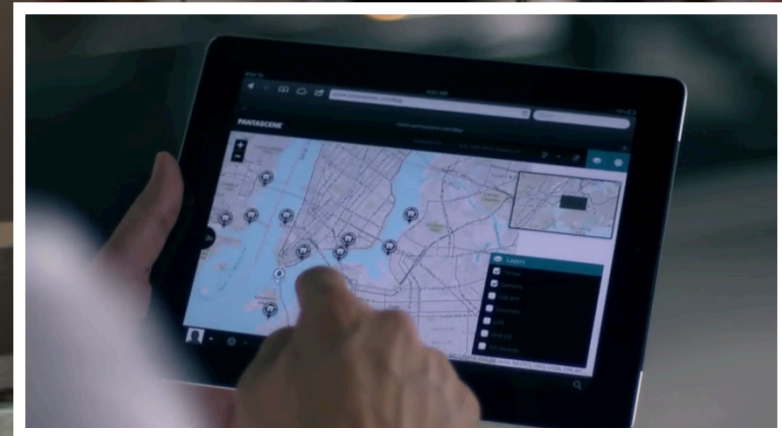
“Cloud Based Remote Access”

“Real Time Information Sharing”

“Streamline Integration”

“Efficient
Management Tool”

“WIFI for Passengers”



Key Security Features

- **Interoperability with State and Local Law Enforcement:**
 - **United States Coast Guard (USCG)**
 - **Department of Homeland Security (DHS)**
 - **Port Authority of NY & NJ (PANY&NJ)**
 - **New Jersey Transit Police Department (NJTPD)**
 - **New York City Police Department (NYPD)**
- **Safety and Security**
 - **NYWW Transports over 30,000 passengers daily**
 - **Primary mode of transportation during emergencies where ferries are part of NYC & NJ greater mass transit system**

Infrastructure Design

(total devices deployed 715)

Mesh Antennas:

Terminals: 69

Vessels: 68

Total: 137

Public Address System:

Terminals: 11

Vessels: 63

Total: 74

Passenger Information Displays:

Terminals: 31

Vessels: 33

Total: 64

CCTV:

Terminals: 204

Vessels: 140

Total: 340

OPERATIONS MAP

KEY

OUR PIERS

- NY WATERWAY
- EAST RIVER FERRY
- DOCK NYC

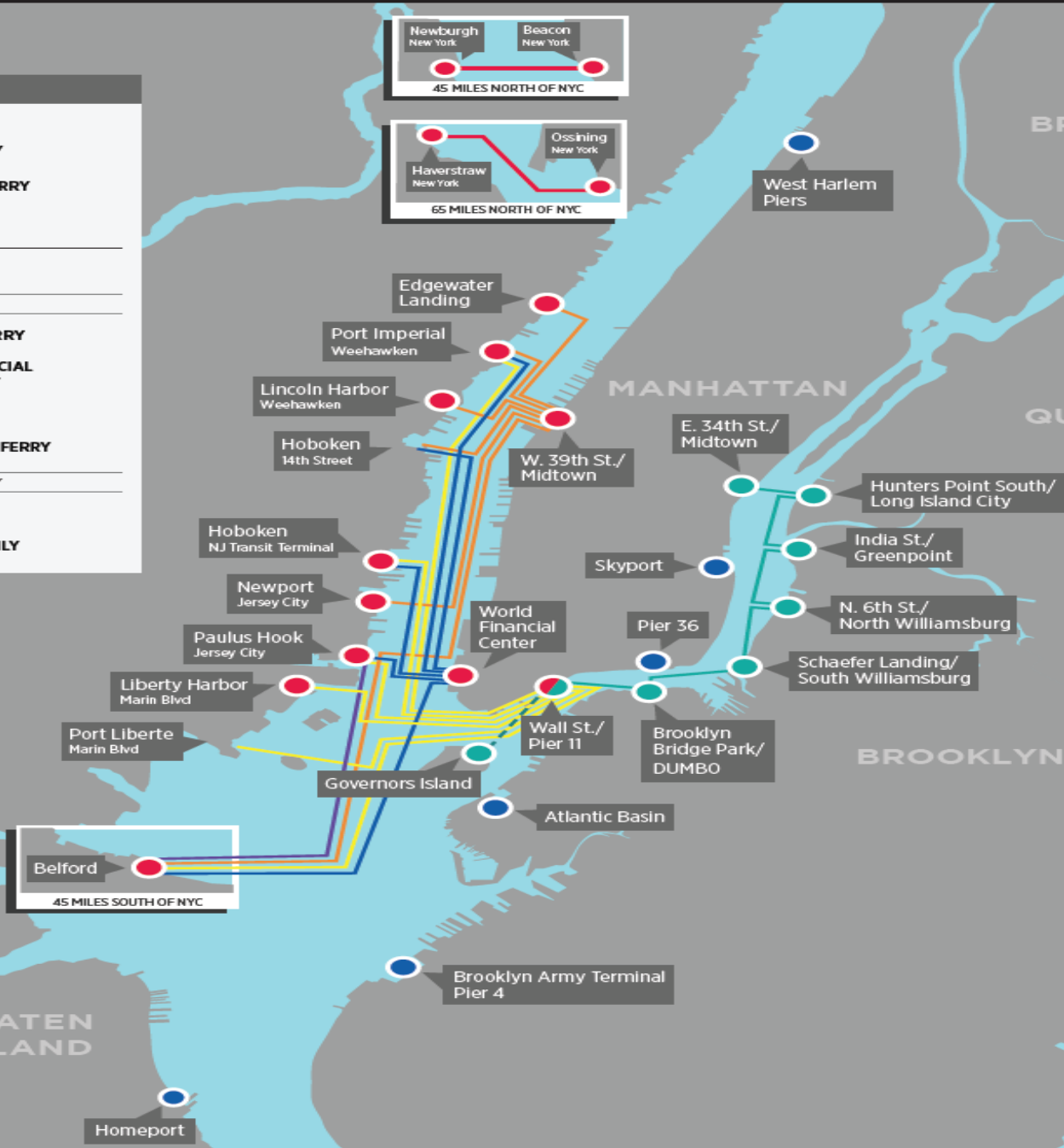
OUR ROUTES

NY WATERWAY

- MIDTOWN FERRY
- WORLD FINANCIAL CENTER FERRY
- PIER 11 FERRY
- PAULUS HOOK FERRY

EAST RIVER FERRY

- DAILY
- WEEKENDS ONLY



BRONX

MANHATTAN

QUEENS

BROOKLYN

STATEN ISLAND

TYPICAL VESSEL INSTALLATION



OPERATIONS MAP

KEY

OUR PIERS

- NY WATERWAY
- EAST RIVER FERRY
- DOCK NYC

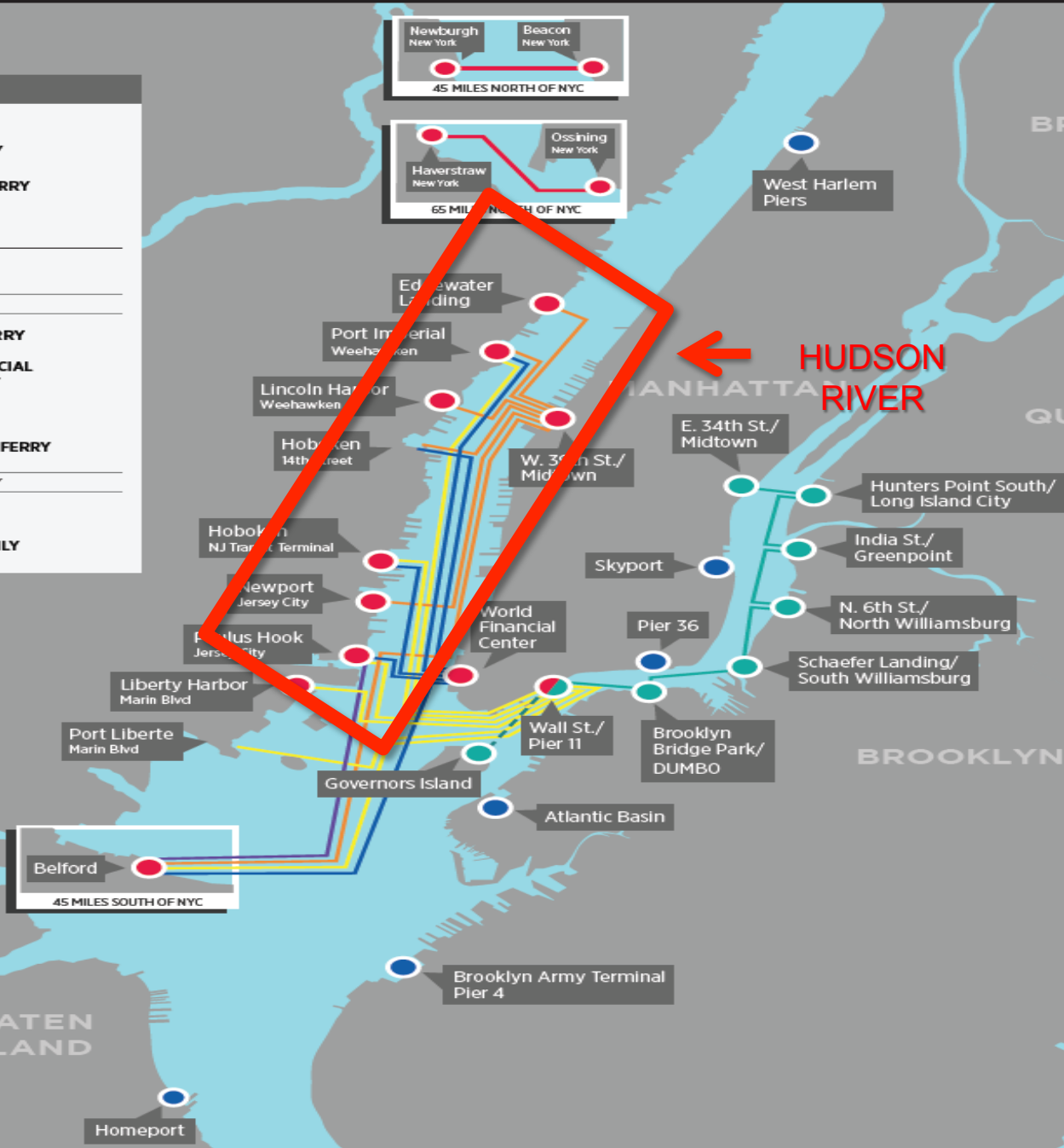
OUR ROUTES

NY WATERWAY

- MIDTOWN FERRY
- WORLD FINANCIAL CENTER FERRY
- PIER 11 FERRY
- PAULUS HOOK FERRY

EAST RIVER FERRY

- DAILY
- - WEEKENDS ONLY



BRONX

QUEENS

BROOKLYN

STATEN ISLAND

HUDSON RIVER

MANHATTAN

Newburgh New York
Beacon New York
45 MILES NORTH OF NYC

Haverstraw New York
Ossining New York
65 MILES NORTH OF NYC

Belford
45 MILES SOUTH OF NYC

HUDSON RIVER



Edgewater Ferry Terminal

Port Imperial Ferry Terminal

Lincoln NJ Cooling

Lincoln Harbor

Hoboken 14th Street

Hoboken / NJ Transit Terminal

Newport - Jersey City

Liberty Harbor - Jersey City

- Jersey City

Army Corps

NY Lincoln Cooling

Pier 79 / Midtown

Holland Air Ducts

Paulus Hook

World Financial Center

Google earth

OPERATIONS MAP

KEY

OUR PIERS

- NY WATERWAY
- EAST RIVER FERRY
- DOCK NYC

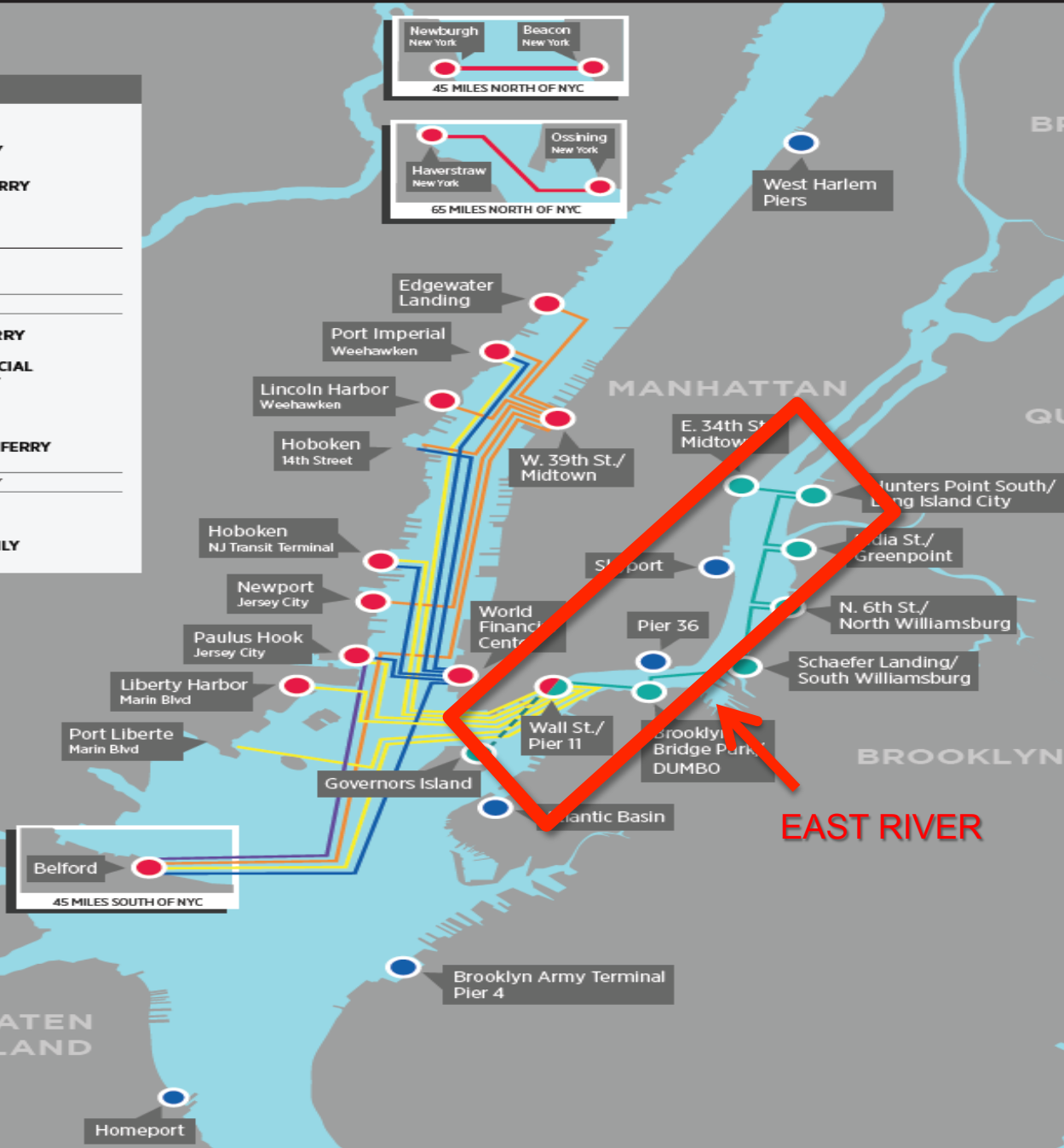
OUR ROUTES

NY WATERWAY

- MIDTOWN FERRY
- WORLD FINANCIAL CENTER FERRY
- PIER 11 FERRY
- PAULUS HOOK FERRY

EAST RIVER FERRY

- DAILY
- WEEKENDS ONLY



EAST RIVER

Holland Air Ducts

E 34th / Midtown

Hunters Point South

India St Greenpoint

Pier 11 - South Street

N 6th Street / N Williamsburg

Governor's Island

DUMBO

Schaefer Landing / S Williamsburg

Atlantic Ave

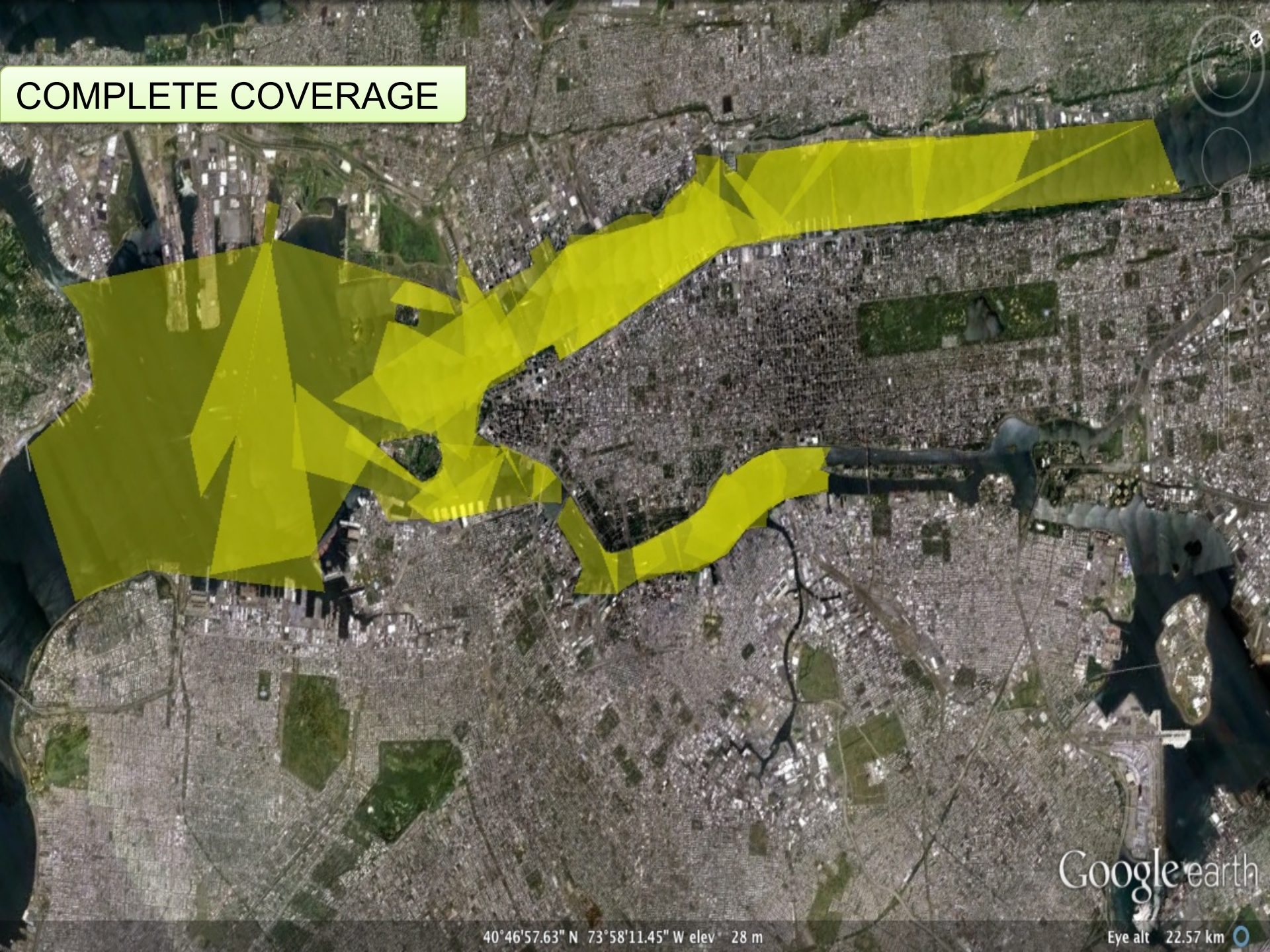
Google earth

1994

40°42'27.91" N 74°01'11.31" W elev -1 m

Eye alt 9.89 km

COMPLETE COVERAGE



40°46'57.63" N 73°58'11.45" W elev 28 m

Google earth

Eye alt 22.57 km

**THANK
YOU**

Jonathan Figueroa
figueroa@nywaterway.com

Amit Bhowmick
abhowmic@panynj.gov