

New Bedford to Martha's Vineyard Freight Study Fall 2008

Global Logistics
Adam Isherwood
Kaitlyn Butler
Nick Strocia



Our Objective:

To accomplish a cost/benefit analysis of diverting the Steam Ship Authority freight traffic from Woods Hole to New Bedford with Martha's Vineyard as a destination point. Increased fuel costs and environmental aspects change the metrics for this service. This study also hopes to achieve:

- Use of planning controls such as incorporation of truck management policies into development plans.
- Use of licensing controls, for example environmental protection conditions, that can
- Be attached to operator licenses.
- Signing of suitable routes for commercial vehicles.
- Area-wide restrictions on lorry movements through use of regulatory signs.
- Creation of appropriately controlled pedestrian priority areas.

Contacts:

1. Captain Thomas Busy- Massachusetts Maritime Academy
 - Project Supervisor
 - Direct MMA Contact
2. Captain Greg Gifford
 - New Bedford Port Captain
 - Contact: 508-548-5011 ext. 313
3. James Barker
 - President of New England Fast Ferry
 - Contact: 203-977-8900
4. Vineyard Haven Wharf,
Vineyard Haven, MA 02568
(508) 693-1600
(508) 693-7387 (Fax)

The Description and Background of the Port of New Bedford:

New Bedford is located at 41°39'6"N 70°56'1"W 41.65167, -70.93361 and according to the United States Census Bureau, the city has a total area of 24.0 square miles. Of the total area, 20.1 square miles is land, and 3.9 square miles 16.23% is water. New Bedford is a coastal city, a seaport, bordered on the west by Dartmouth, on the north by Freetown, on the east by Acushnet and Fairhaven, and on the south by Buzzards Bay.

New Bedford Harbor is actually the estuary of the Acushnet River where it empties into Buzzards Bay. The river empties into the bay beyond Clark's Point, the southernmost point of the city. To the west of Clark's Point is Clark's Cove, which extends landward approximately one and a half mile from the bay. Just south of Palmers Island, even with Fort Phoenix in Fairhaven, lies a hurricane barrier, constructed in the twentieth century to protect the inner harbor, where the fishing fleets are anchored. Along with Palmer's Island, the city also lays claim to Fish Island and Pope's Island, between which the New Bedford-Fairhaven Bridge spans the harbor. Two immobile bridges span to the mainland, making the New Bedford-Fairhaven bridge the only entryway for boats anchoring north of the islands.

Port Statistics:

- Tidal Area: 13.2 square miles
- Depth of channel: 30 feet
- Principle activities and primary users: active fishing fleet, seafood processing, freight and passenger ferry service, cruise ship docking, recreational boating
- Cargo activity (type, volume): 818,000 short tons in 2001
- Maritime Infrastructure: Deepwater port with federal navigation channels and turning basins authorized to 30 ft.; hurricane Barrier that provides safe harbor during hurricanes and coastal storms; freight and passenger ferry facilities for service to Martha's Vineyard; regional airport; easy access to I-195 and the I-95 corridor; break-bulk marine terminals; seafood processing; commercial fishing berths; recreational marina berths; and ship and boat repair and maintenance services.

Current Transportation:

Intermodal transportation refers to the integration of transportation systems. It is the transport of passengers and freight in such a way that all parts of the process, including information exchange, are efficiently connected and coordinated to offer all users maximum flexibility. Intermodal transportation is *customer oriented*. It is the facility, hardware, and equipment involved with the movement of freight and people as well as the logistics of the movement.

At least three private ferry services originate at New Bedford. As of 2006, New England Fast Ferry Company offers fast catamaran ferry service between New Bedford and Martha's Vineyard; and the Cuttyhunk Ferry Company runs scheduled ferry services to Cuttyhunk Island. Ferry service from New Bedford dates back to May 15, 1818, when the steamboat The Eagle carried 600 passengers across the Nantucket Sound.

Highways I-195 and US 6 run from east to west through the city. US 6 leaves the city over the New Bedford-Fairhaven Bridge, a swing truss bridge, and the Popes Island Bridge. New Bedford is the southern terminus of MA 140, which is a freeway from MA 24. MA 18, also known as the John F. Kennedy Memorial Highway, is a freeway for the short stretch connecting I-195 to US 6 and the port area.

The Port of New Bedford serves as a break-bulk handler of perishable items, including fruit and fish, however the port also handles other cargo. For 2006, the port expected upwards of 30 cruise ship calls. One public and several private marinas offer limited transient dockage for recreational boats. As of November, 2005, the port is the top U.S. fishing port in terms of dollar value of catch.

New Bedford Regional Airport EWB, a towered Class D airport offering two 5,000-foot runways and a precision instrument landing system, is located in the central portion of the city with easy access to highways. Frequent scheduled passenger service is provided to Nantucket and Martha's Vineyard by Cape Air, and scheduled cargo service to Nantucket and Martha's Vineyard by Boston-Maine Airways. Charter services, including seaplane charters, are available for destinations throughout the southern New England/New York region. In addition, the airport provides a range of general aviation and corporate jet services including aircraft maintenance facilities and flight instruction.

The MBTA has proposed providing commuter rail service to the city. As of May 14, 2006, total capital costs for commuter rail service to New Bedford were projected to be \$800 million, and the project has not yet been funded by the state; which is still reeling financially from the financial excesses of the Big Dig project in Boston. CSX Transportation provides freight rail service to New Bedford, terminating at the New Bedford Rail Yard in the port area.

With the efficiency of intermodal transportation, it is very important to transfer the freight according to certain specifications. Whether it's time sensitive products (diary) or other bulk items, the speed and cost of moving freight dictates how the product is to be delivered. Therefore it is important to have a regional intermodal system that is efficient enough and flexible enough to accommodate the shipment and transfer of freight.

Proposed Plan:

To re-route the freight to Martha's Vineyard via New Bedford in a cost effective and environmental friendly manner.

Route Evaluations:

- Nautical Evaluations
- Route Evaluations

Environmental Concerns:

We studied the history of development in the watershed surrounding New Bedford Harbor and examined how that development impacted environmental conditions in the harbor. The harbor has been subjected to a complex mix of impacts over a number of years.

New Bedford Harbor is contaminated with metals and organic compounds, including polychlorinated biphenyls (PCBs). Because of the high concentrations of PCBs in the sediment, New Bedford Harbor was listed by the U.S. Environmental Protection Agency (EPA) as a Superfund site in 1982 and cleanup is underway. In addition to contaminated harbor sediments, numerous brownfield properties are located in proximity to the port, especially on the New Bedford side. Using the port field's designation to maintain momentum, New Bedford and Fairhaven seek to implement additional components of the state-approved New Bedford/Fairhaven Harbor Plan for the DPA. Priority projects identified by the regional port field's steering committee include navigational dredging of sediments contaminated below Superfund levels; waterside brown field's remediation and reuse; pier and bulkhead enhancements; and the creation of public access points on the harbor. The committee also seeks to identify suitable sites for habitat restoration to offset impacts from port infrastructure development projects.

Facts About Using the Landside Impact of Using the Steamship Woods Hole Docks

New Bedford: I-195 Downtown exit Route 18 to Woods Hole SSA Docks

Distance	45 Miles
Estimated Driving Time (No Traffic Delays)	55 Minutes
Normal Automobile Fuel Consumption (Light Duty-21.0 mpg)	2.15 Gallons
Normal Truck Fuel Consumption (Heavy Duty- 10.0 mpg)	4.50
Estimated Trucking Expense (\$2.00 per mile)	\$90.00

Round-trip

Distance	90 Miles
Estimated Driving Time (No Traffic Delays)	110 Minutes
Normal Automobile Fuel Consumption (Light Duty-21.0 mpg)	4.3 Gallons
Normal Truck Fuel Consumption (Heavy Duty- 10.0 mpg)	9.0
Estimated Trucking Expense (\$2.00 per mile)	\$180.00

Variables

Traffic Delays:	Time	Fuel Consumption		
		Autos	Trucks	
Bourne Bridge (off season)	None			
Bourne Bridge (seasonal F-Su)		.30	1.0	
Falmouth (Off Season)	5 Mins	.05	.30	
Falmouth (Seasonal F-Su)	15 Mins	.15	.50	

Fuel Consumption

One-Way Seasonal Trucks (Diesel)	Auto (Gasoline) Trucks (Diesel)	4.45 Gal	\$17.80
		10.30 Gal	\$51.50

^aBased Upon Estimates

Differentials of Using the Steamship Woods Holes as Opposed to New Bedford

Time Comparison:

New Bedford to Vineyard Haven:

New Bedford	0 Mins
Parking to Ferry Shuttle Time	15 Mins
Ferry Time	120 Mins
Total Time	135 Mins
Fuel Savings (Round Trip)	\$62.80

New Bedford to Vineyard Haven via Woods Hole:

New Bedford	50 Mins
Parking to Ferry Shuttle Time	30 Mins
Ferry Time	45 Mins
Total Time	125 Mins

Voyage Comparison:

New Bedford to Vineyard Haven	20 Nautical Miles	Ferry Time 120 Mins
Woods Hole to Vineyard Haven	5.2 Nautical Miles	Ferry Time 45 Mins

*Based Upon Estimates

Transportation Issues for the New Bedford Service to the Islands

Major Shippers:

- Cape Cod Express
- Stop and Shop
- Fuel Carriers
- Falmouth Lumber
- Nickerson Lumber Companies
- Moving Vans

Major Shippers Sending Cargo off the Islands:

- Trash Haulers



Steamship Authority

Background:

The Woods Hole, Martha's Vineyard and Nantucket Steamship Authority is a public instrumentality created by the Massachusetts legislature to provide for adequate transportation of persons and necessities of life for the islands of Nantucket and Martha's Vineyard. The enabling legislation empowers the Authority to acquire, maintain and

operate a boat line between the mainland ports of Woods Hole (Falmouth) and Hyannis (Barnstable) on the one hand, and the islands of Martha's Vineyard and Nantucket, on the other. The Authority's statutory mission is to serve as the "Lifeline to the Islands" and it is the only ferry service for the Islands that carries both passengers and vehicles, including commercial freight trucks.

The Authority's enabling act further provides licensing authority to the Authority to regulate the carriage of freight by water by private operators between the Massachusetts mainland and the Islands, as well as to regulate vessels certified by the U.S. Coast Guard to carry in excess of forty passengers in their operation between the Massachusetts mainland and the Islands. Such provisions, however, do not apply to so-called "grandfathered" services operating prior to May 1973. The Authority currently licenses private ferry operators to provide passenger service between New Bedford and Oak Bluffs (seasonal), New Bedford and Vineyard Haven (year-round), Falmouth and Edgartown (seasonal), Hyannis and Oak Bluffs (seasonal), Hyannis and Nantucket (both seasonal and year-round), and Harwichport and Nantucket (seasonal).

Organization:

The Authority has its principal office in Woods Hole, Massachusetts with ferry terminals in Woods Hole and Hyannis on Cape Cod, terminals at Vineyard Haven and Oak Bluffs on the island of Martha's Vineyard, and a terminal on the island of Nantucket. The Authority owns and operates year-round parking lots in Woods Hole and Hyannis, and operates seasonal off-site parking lots in Falmouth, Bourne and Hyannis as well. The Authority also has a vessel maintenance facility in Fairhaven and a receiving warehouse in Falmouth, and it rents property in Edgartown and Mashpee for its two reservation offices.

The Authority serves a complex clientele including year-round residents of the Islands who depend on the ferries for all commerce and transportation to and from the mainland, a significant seasonal population and tourist group, and the communities that serve as ports through which all traffic to the Islands pass. Each group has special needs and points of view that impact the Authority and how it does business.

The popularity of the Islands for both residential and recreational purposes has been reflected in increasing traffic and demands for service. The Authority currently operates nine vessels (including a high-speed passenger-only ferry) carrying passengers, automobiles and freight trucks. The Authority employs 750 people (peak season) with a workforce that is almost totally unionized, with eight bargaining units represented by four different unions.

The Authority's budget is supported by operating revenues of around \$65 million. Since 1962, the Authority has had only four annual operating deficits, and it has not had to assess the taxpayers of the participating communities for monetary support since 1963. Additionally, the Authority has an on-time performance record of nearly 100 percent (except for the high-speed ferry), with service interruptions generally caused only by inclement weather.

The Authority is governed by a five-member board: A Nantucket resident appointed by the Nantucket County Commissioners; a Martha's Vineyard resident appointed by the Dukes County Commissioners; a Falmouth resident appointed by the Falmouth Selectmen; a Barnstable resident appointed by the Barnstable Town Council; and a New Bedford resident appointed by the Mayor of New Bedford, with the approval of the New Bedford City Council. Each of the Island board members has 35% of the members' combined vote; and each of the mainland board members has 10% of the members' combined vote.

Woods Hole

Woods Hole is a census-designated place (CDP) in the town of Falmouth in Barnstable County, Massachusetts, United States. It lies at the extreme southwest corner of Cape Cod, near Martha's Vineyard and the Elizabeth Islands. The population was 925 at the 2000 census.

Historically, Woods Hole included one of the few good harbors (along with Hyannis) on the southern side of Cape Cod (i.e. Great Harbor, contained by Penzance Point) and became a center for whaling, shipping, and fishing, prior to its dominance today by tourism and marine research.

Woods Hole, the town, is located at Woods Hole the strait, which separates Cape Cod from the Elizabeth Islands (specifically, Uncatina Island and Nonamesset Island). It is one of four straits allowing maritime passage between Buzzards Bay and the Vineyard Sound. The others are Canapitsit Channel, Quick's Hole and Robinson's Hole.



New Bedford

New Bedford is a city in Bristol County, Massachusetts, United States, located about 51 miles (82 kilometers) south of Boston, 28 miles (45 kilometers) southeast of Providence, Rhode Island, and about 12 miles (19 kilometers) east of Fall River. As of the 2000 census, the city had a total population of 93,768. It is the seventh largest city in the state. New Bedford is nicknamed "The Whaling City" because it was one of the most important ports for the whaling industry. The city is considered one of the two major cities along the area of Massachusetts known as the South Coast (along with Fall River).

At least three private ferry services originate at New Bedford. As of 2006, New England Fast Ferry company offers fast catamaran ferry service between New Bedford and Martha's Vineyard; and the Cuttyhunk Ferry Company runs scheduled ferry services to Cuttyhunk Island. Ferry service from New Bedford dates back to May 15, 1818, when the steamboat *The Eagle* carried 600 passengers across the Nantucket Sound.

Highways I-195 and US 6 run from east to west through the city. US 6 leaves the city over the New Bedford-Fairhaven Bridge, a swing truss bridge, and the Popes Island Bridge. New Bedford is the southern terminus of MA 140, which is a freeway from MA 24. MA 18, also known as the John F. Kennedy Memorial Highway, is a freeway for the short stretch connecting I-195 to US 6 and the port area.

The Port of New Bedford serves as a break-bulk handler of perishable items, including fruit and fish;^[5] the port also handles other cargo. For 2006, the port expected upwards of 30 cruise ship calls.^[6] One public and several private marinas offer limited transient dockage for recreational boats. As of November, 2005, the port is the top U.S. fishing port in terms of dollar value of catch.^[7]

New Bedford Regional Airport EWB, a towered Class D airport offering two 5,000-foot (1,500 m) runways and a precision instrument landing system, is located in the central portion of the city with easy access to highways. Frequent scheduled passenger service is provided to Nantucket and Martha's Vineyard by Cape Air, and scheduled cargo service to Nantucket and Martha's Vineyard by Boston-Maine Airways. Charter services, including seaplane charters, are available for destinations throughout the southern New England/New York region. In addition, the airport provides a range of general aviation and corporate jet services including aircraft maintenance facilities and flight instruction.

The city bus terminal offers local and long distance bus connections. A free shuttle bus connects the bus terminal and the ferries. The Southeastern Regional Transit Authority (SRTA) provides bus service between the city, Fall River, and the surrounding regions.^[8] As of October, 2006, private carrier DATTCO provides daily commuter bus service to Boston via Taunton.^[9] Private carrier Peter Pan Bus Lines no longer offers bus service to Boston.



The MBTA has proposed providing commuter rail service to the city. As of May 14, 2006, total capital costs for commuter rail service to New Bedford were projected to be \$800 million, and the project has not yet been funded by the state; which is still reeling financially from the financial excesses of the Big Dig project in Boston. CSX Transportation (formerly Conrail) provides freight rail service to New Bedford, terminating at the New Bedford Rail Yard in the port area.

New Bedford State Pier allows intermodal transfers of waterborne freight and freight carried by truck and rail. The terminal features a 27-foot pier depth, roll on-roll off capability, offsite cold storage, and easy access to the interstate highway system. The ramp is 100 feet long and 18 feet wide and will hold up to 200 tons. The facility complies with all applicable Americans with Disabilities Act (ADA) requirements. The HDC is responsible for the daily operation and maintenance of the facility.



View of New Bedford Freight Ferry Terminal
Photos: Diana Konstantakos/HDC



Left: Truck on freight boat
Above: View from ferry with truck
Photo: Doug Motta/Mayor's Office

Conclusions and Reasons

Making New Bedford a short sea shipping hub would stimulate economic growth and bring jobs to the region, said Kristin Decas, the new executive director of the city's Harbor Development Commission.

"It looks promising," she said. "It could really work for us."

Short sea shipping would be a "major harbor-front economic development engine" for the Port of New Bedford, Mayor Scott W. Lang said in a prepared statement.

It would "grow and diversify" the port and "enhance the markets for our industry," he said.

The estimated economic impact of developing short sea shipping operations in New Bedford and Fall River could be as high as \$120 million, according to a study prepared Reeve & Associates, Yarmouthport consulting firm.

The study, funded by the Massachusetts Department of Business and Technology and Seaport Advisory Council, estimates that short sea shipping could create up to 800 jobs in and around Bristol County.

"The system would support industry here in Massachusetts and New England," said Richard Armstrong, executive secretary and director of port development for the council.

Pierre Bernier, manager of shipping operations and logistics for Maritime International, said the New Bedford company stands to benefit from short sea shipping.

"We would like to participate in the loading and unloading of vessels," Mr. Bernier said.

Environmental Aspects:

We studied the history of development in the watershed surrounding New Bedford Harbor and examined how that development impacted environmental conditions in the harbor. The harbor has been subjected to a complex mix of impacts over a number of years.

New Bedford Harbor is contaminated with metals and organic compounds, including polychlorinated biphenyls (PCBs). Because of the high concentrations of PCBs in the sediment, New Bedford Harbor was listed by the U.S. Environmental Protection Agency (EPA) as a Superfund site in 1982 and cleanup is underway. In addition to contaminated harbor sediments, numerous brownfield properties are located in proximity to the port, especially on the New Bedford side. Using the port field's designation to maintain momentum, New Bedford and Fairhaven seek to implement additional components of the state-approved New Bedford/Fairhaven Harbor Plan for the DPA. Priority projects identified by the regional port field's steering committee include navigational dredging of sediments contaminated below Superfund levels; waterside brown field's remediation and reuse; pier and bulkhead enhancements; and the creation of public access points on the harbor. The committee also seeks to identify suitable sites for habitat restoration to offset impacts from port infrastructure development projects.

The Output of Carbon Dioxide

Carbon dioxide is used by the food industry, the oil industry, and the chemical industry. It is used in many consumer products that require pressurized gas because it is inexpensive and nonflammable, and because it undergoes a phase transition from gas to liquid at room temperature at an attainable pressure of approximately 60 bar (870 psi, 59 atm), allowing far more carbon dioxide to fit in a given container than otherwise would. Life jackets often contain canisters of pressurized carbon dioxide for quick inflation. Aluminum capsules are also sold as supplies of compressed gas for airguns, paintball markers, for inflating bicycle tires, and for making seltzer.



According to the Union of Concerned Scientists, although large trucks account for just six percent of total highway miles driven in the U.S., they are responsible for a host of environmental threats. These include

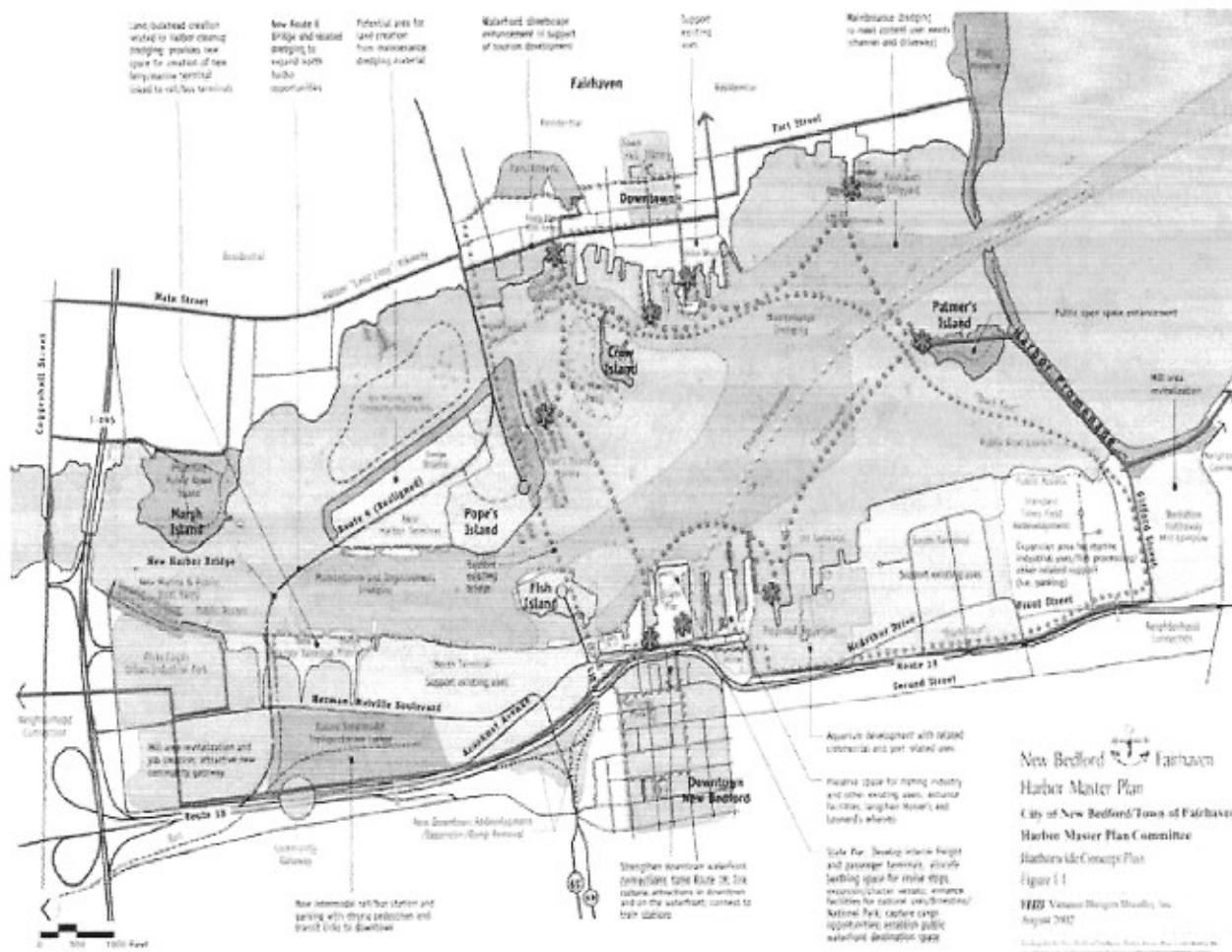
over half the soot and a quarter of the smog-causing pollution generated by highway vehicles, six percent of the nation's global warming pollution, and more than a tenth of the country's oil consumption.

A typical diesel-powered 18-wheeler can emit as much nitrogen oxide and fine particulates—key elements in the formation of asthma-inducing smog—as about 150 passenger cars.

Carbon dioxide is used in enhanced oil recovery where it is injected into or adjacent to producing oil wells, usually under supercritical conditions. It acts as both a pressurizing agent and, when dissolved into the underground crude oil, significantly reduces its viscosity, enabling the oil to flow more rapidly through the earth to the removal well. In mature oil fields, extensive pipe networks are used to carry the carbon dioxide to the injection points.

Study Conclusion: After studying the two ports and the variables associated with both, we have concluded that the port of New Bedford shows more potential for future business growth, freight diversification, and overall efficiency. Woods Hole is a vital port to Cape Cod and should remain a venue for Cape Cod based business to move their products to Martha's Vineyard and Nantucket. However, freight that is generated north and west of Boston should use the port of New Bedford as an outlet to ship products to the island of Martha's Vineyard.





New Bedford  Fairhaven
Harbor Master Plan
City of New Bedford/Town of Fairhaven
Harbor Master Plan Committee
October 16, 2009

