CAPE COD
COMMISSION

2024 REGIONAL TRANSPORTATION PLAN

Technical Appendix E: Freight

FINAL JULY 2023

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Technical Appendix E: Freight

Freight transportation is the movement of goods in large quantity. The movements are generally split up in to four major categories, truck, rail, and water and air freight, each with their own types of contracts. On Cape Cod, freight travel mostly reaches its end point for goods to be bought by consumers or movements are internal to the region. Few goods are exported. Cape Cod exports including solid waste, parcel post and seafood products.

Local economies typically depend on freight transportation to export and import goods. The freight industry on Cape Cod is different because of the seasonal tourist industry, abundance of waterways, and historic culture. The tourist industry creates more demand on goods in the summer months; the waterways create opportunities for sea freight, but also require crossings for truck freight. The historic character and geographic placement of Cape Cod limits the ability to create large-scale freight infrastructure.

In 2014 the Cape Cod Commission performed a regional freight study. The purpose of the study was to provide recommendations to improve freight flexibility, speed-efficiency, fuel-efficiency, and safety by transport method. The study overviewed freight infrastructure, featured data from a survey presented to local freight businesses, and finally provided recommendations for the improvement of freight operations and infrastructure on Cape Cod.

TRUCK FREIGHT

Vehicle transportation is the primary method of freight distribution in the region. It is important to note that all vehicle traffic on Cape Cod experiences two different seasons, extreme congestion in the summer or peak season, and normal congestion in the remaining seasons or off season.

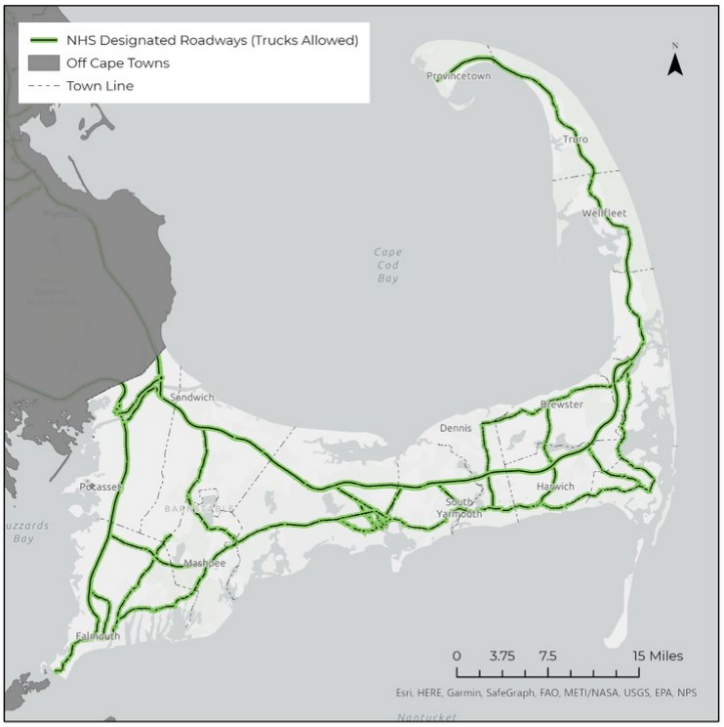
Maintaining properly designed intersection controls is important for the freight industry to ensure safety, and minimize delays. At signalized intersections this may mean optimizing signal timing and phases and providing turning lanes. At roundabouts this may mean the provision of truck aprons adjacent to the center island and on exit/entrance shoulders.

The maximum legal speed limit on most Cape Cod highways is 55 mph. Exceptions include Route 3 (60 mph) and Route 25 (65 mph) in Bourne. The speed limits on the road affect the movement of freight traffic by governing travel time. In order to encourage truck freight to remain on the limited-access portions of freeways such as the Mid Cape Highway, an evaluation of safety and free-flow travel speeds should be performed – possibly leading to an increase in some speed limits (perhaps limited to daytime hours).

Freight traffic is affected by congestion on Cape Cod. At certain times of the year freight carriers are not able to make trips due to travel times. Congestion is found on almost all Cape Cod roads in the summer. Year round, heaviest travel occurs on the Cape Cod Canal roads and bridges and the Mid-Cape Highway. High volumes of traffic are also found on the roads leading to and within the Hyannis area (an area that receives/sends goods to/from many businesses, institutions such as Cape Cod Hospital and multimodal facilities such as the ferry ports).

Freight traffic has the most significant effect on pavement conditions because of the stress that truck weight causes on the pavement. Freight is also affected by pavement conditions because potholes and other pavement issues can create safety hazards for truck drivers and cargo. Pavement condition data are collected with the intent to keep the roadway system in the best possible condition with the most efficient use of available funds.

MassDOT Designated Truck Routes



There are over 200 miles of designated truck routes under state authority (shown in Figure 1). These routes are only located on state highways (e.g., Routes 6, 28, 6A and 28A). There are several obvious gaps in connectivity, due to changes in jurisdiction (e.g., Route 6A in Barnstable Village, Route 28 in downtown Falmouth). Other gaps in connectivity occur between the truck route network and intermodal facilities such as the ferry ports in Hyannis and Provincetown.

FIGURE 1. MassDOT Truck Routes

Source: Massachusetts Roadway Inventory File 2021

Critical Freight Corridors

In 2017, the Cape Cod MPO identified the following as Critical Freight Corridors which provide access and connection with the national freight network and important ports, public transportation facilities, or other intermodal freight facilities :

- Route 6 from Cahoon Hollow Road in Wellfleet to Whitmanville Road in Truro.
- Willow Street/Yarmouth Road from Route 6 in Yarmouth to Route 28 in Barnstable
- Route 28 in Barnstable from Yarmouth Road to Airport Rotary
- Route 132 in Barnstable from Airport Rotary to Attucks Way

Canal Bridges

As detailed in the Appendix G, the largest bottlenecks on Cape Cod occur at the canal bridges. The Bourne Bridge and Sagamore Bridge permit vehicular travel over the Cape Cod Canal.

The bridges first opened to traffic in 1935. Historic records indicate a general upward trend in the annual bridge crossings and this traffic is currently over 100,000 vehicles per average day. Over the decades, the bridges have been exposed to deicing salts, the effects of which include progressive deterioration of the concrete deck and some steel members of the bridges. These effects are compounded by the fact that the bridges are located near salt water. An additional maintenance activity is the periodic painting of the exposed steel portions of the bridges.

For certain maintenance activities, including repairs to the concrete deck, the worksite requires the closures of two lanes. The ACOE is committed to minimizing these conditions by avoiding daytime lane reductions during the summer months and limiting work to one bridge at a time.

The Army Corps of Engineers established a website and email notification system for major maintenance efforts on the bridges. By providing timely warnings of impending closures, travelers may adjust travel mode, choice of bridge crossing and approach routes, or timing. The bridges do need to be maintained in order to continue to provide safe passage to and from the region. Foul weather may interfere sometimes in the maintenance efforts, and as a result the schedule prolonged. Some further strategies to minimize impacts are listed below.

- Scheduling Maintenance Activities for Off-Peak Periods minimizes disruptions to traffic during heavy travel periods. The Army Corps is already making efforts to achieve this - and should continue to do so. To the greatest extent possible, lane closures should avoid summer months and daytime periods during the spring and fall.
- Intelligent Transportation Systems (ITS) is collection and dissemination of real-time information through means such as cameras and/or cell phone data collection. The information is available on the state traffic information website and 511 telephone system. This allows for travelers to check online or via cell phones on current traffic conditions at the bridges. Radio stations also

look up and provide updates on bridge traffic. The Cape Cod Commission website provides links to transportation providers (www.capecodcommission.org) including a link to the ACOE website to provide travelers with the latest information on lane closures.

- Improve Transportation Alternatives to Offset Automobile Crossings by increasing express bus service, and improving marketing of bus and other alternatives. The marketing should inform travelers of the advantages of using alternatives and the disadvantages of driving during the lane closures. An additional strategy to enhance the attractiveness of buses and high-occupancy vehicles would be to allow travel on the shoulders (currently nonexistent on Route 6) of Routes 3, 6, 25, and 28 to bypass the queues (under police supervision). This concept would include construction of shoulders/breakdown lanes that could be used as a bus lane during peak times. This would encourage a shift from single-occupant vehicles and would likely result in an overall reduction of vehicles traveling through the lane closures.
- Traffic Management reduces traffic conflicts. During periods of traffic congestion at the Canal crossings, motorists seek alternate routes - regardless of whether or not such routes actually save travel time. In addition, such routings have effect on the capacity of the bridges, and may actually create bottlenecks in other locations such as the Exit One on-ramp at the approach of the Mid-Cape Highway westbound at the Sagamore Bridge. Techniques to be considered should include police officer traffic control, signage, and turn restrictions.

RAIL FREIGHT

Freight service is the major user of Cape Cod's rail network in addition to scenic excursions and weekend passenger service. The Commonwealth of Massachusetts, through MassDOT, still owns most railroad tracks on Cape Cod today. Massachusetts Coastal Railroad (a company of Cape Rail, Inc.) operates under contract to provide freight service.

Currently, the primary use of Cape Cod's rails is for transporting solid waste by Mass Coastal Railroad. Mass Coastal is a short line freight railroad serving Cape Cod and southeastern Massachusetts between Middleboro, Joint Base Cape Cod, Hyannis, and South Yarmouth. The majority of Cape Cod's solid waste is transported to the SEMASS trash-to-energy plant in Rochester, MA via Mass

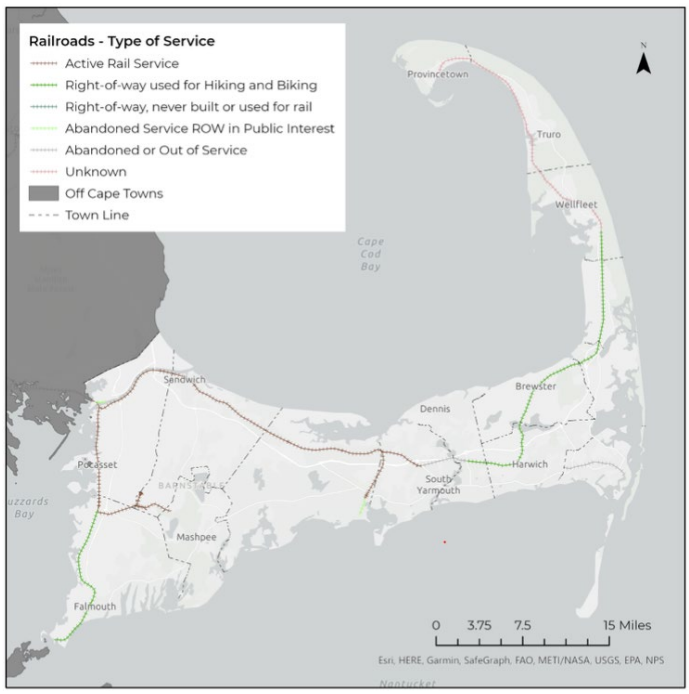


FIGURE 2. Cape Cod Rail Infrastructure

Coastal's Energy Train. Other freight Mass Coastal carries includes food, construction materials, chemicals, heavy equipment amongst many other things.

Rail service has a long and rich history on Cape Cod. The region's early growth was in part brought about by the railroad. Many miles of usable track still exist on Cape Cod, intersecting the roads and waterways. MassDOT owns the majority of rail tracks on Cape Cod, but some tracks are owned by federal agencies. If freight rail service were to be expanded, upgrades would be necessary to the tracks, stations, and signals. Moreover, issues of accessibility, mobility and connectivity would need to be addressed. Funding for these improvements would need to be identified and secured. As many tracks are converted in bicycle paths, the future of rail on Cape Cod is still uncertain. A major advantage of rail freight is the movement of goods across the Cape Cod Canal without adding vehicle crossings to the congested highway bridges.[1]

Mass Coastal operates the "Energy Train" transporting solid waste from the Yarmouth Transfer Station to the Southeastern Massachusetts Resource Recovery Facility – "SEMASS"). Given the current regulatory, with an increasing reluctance to permit new landfill capacity in the Massachusetts region, additional solid waste transportation capacity is likely needed. A transfer facility on the Upper Cape may be needed should there be a desire to transport additional solid waste out of the region by rail.

WATER FREIGHT

Waterborne freight to and from Cape Cod uses a variety of vessel types and seaports. The primary form of public water transportation on Cape Cod is ferry service, carrying passengers between the mainland and the islands of Martha's Vineyard and Nantucket. A significant amount of freight is carried by water transportation as well. As a result, the region's seaports and channels are vital in addressing the economic and transportation needs of Cape Cod.

Cape Cod Seaports

Cape Cod has 586 miles of tidal coastline, with many inlets and bays that provide marine access to the land. Seaports have been constructed along several of these bays and inlets to facilitate the transfer of people and goods from water to land transportation. Significant Cape Cod seaports are recognized in reports by the Army Corps of Engineers, the agency that maintains many of them. These and other seaports are discussed in the Existing Conditions appendix.

[1] More information available at www.capecodcommission.org/CapeRailStudy

Ferry Freight

The Steamship Authority records movements of trucks between Cape Cod and the Islands. Generally, these trucks are transporting goods from the mainland to the Islands. In 2022, truck movements exceeded 95,000 vehicles. The total number of trucks carried excludes pick-up trucks, vans, and other commercial vehicles under 20' in overall length. In The numbers of trucks, automobiles, or passengers are reported as one-way segments or movements. A truck carried round trip is reported as two trucks carried.

TABLE 1. Trucks Carried by Steamship Authority Ferries

Source: Steamship Authority

YEAR	TO AND FROM MARTHA'S VINEYARD	TO AND FROM NANTUCKET
2003	44,159	25,276
2004	45,846	26,622
2005	45,703	28,074
2006	47,072	30,499
2007	47,856	30,992
2008	47,335	28,615
2009	44,246	24,137
2010	44,467	23,233
2011	44,037	23,524
2012	42,617	24,545
2013	45,638	26,720
2014	47,344	27,707
2015	49,069	29,588
2016	50,343	31,584
2017	52,305	32,936
2018	53,526	33,293
2019	53,366	33,672
2020	47,999	30,456
2021	56,522	34,933
2022	59,233	36,000

Channels

CAPE COD CANAL

The Cape Cod Canal is a significant aspect to freight infrastructure in the region. This channel allows safe passage from ports north and south of Cape Cod, relieving the hazard of navigation around the peninsula. Details on the Cape Cod Canal can be found in the Existing Conditions Sections.

The Cape Cod Canal is owned and operated by the Army Corps of Engineers. In 2017 there were more than 21,000 vessel transits of the Canal, of which about 7,500 were ships of more than 65 feet in length. Cargo tonnage for 2016 was about 6.9 million tons. Auto carriers, cruise ships and military vessels are among the largest ships that use the Canal today.[2]

WOODS HOLE CHANNEL

The Woods Hole Connects Buzzards Bay with Great Harbor in Woods Hole. Freight vessels traveling to Boston and points north can also use the channel on their way to the Cape Cod Canal. The channel is used by seasonal passenger ferries from New Bedford to Martha's Vineyard. As a result, the channel is heavily traveled.

NANTUCKET CHANNEL

The Nantucket Channel provides passage through the Nantucket Sound and between Cape Cod and the Islands. Ferries, ships navigating around the Cape, and other vessels used this channel.

CAPE COD FREIGHT STUDY

This 2015 Cape Cod Freight Study was the first attempt by the Cape Cod Metropolitan Planning Organization to bring a comprehensive assessment of issues facing freight haulers to, from and within Barnstable County. In order continue to make progress in improving freight safety and reliability, the following strategies were offered in the report:

Identify "Critical" Freight Commodities

Work with planners to identify commodities critical in all stages of emergency preparedness and response. These stages include advanced planning and resiliency preparations, emergency management during events, and follow-up/rehabilitation.

[2] "Cape Cod Canal Highway Bridges Major Rehabilitation Evaluation Report And Environmental Assessment" US Army Corps of Engineers New England District (March 2020)

Encourage Specific Types of Freight Transportation

Freight modes that minimize travel over Cape Cod's narrow and congested roadways are to be encouraged. Such modes include rail and waterborne. Trucking deliveries during off-peak times are also encouraged.

Make Infrastructure Improvements for Freight Industry

Maintain and rehabilitate bridges and roads – focusing on higher functional class facilities. During roadway and intersection rehabilitation on truck routes, include properly-engineered pavement, turning radii, and avoid height obstructions.

Update Truck Routes

Work with town and state officials to refine preferred truck routes. Currently, truck routes are based on a limited number of state roads and may be discontinuous based on jurisdiction. Refined truck routes would be included in the MassDOT's Roadway Inventory.

Bridge Maintenance Scheduling

To reduce impact to freight traffic, restructure Bourne and Sagamore bridge repair contracts (night work or 24-hour shift).

MASSDOT FREIGHT PLAN

The 2023 Massachusetts Freight Plan is currently in a 30-day public comment period which ends on June 29, 2023. The Freight Plan is a planning document that will define short and long-term vision for the freight system in the Commonwealth. The principles of the draft plan are reflected in the Freight Mobility goal in the RTP.

CAPE COD COMMISSION

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