

9.0 Marine Transportation

9.1 Introduction

The American Society of Civil Engineers reports Maine's waterways are in good condition. Maine has over 3,500 miles of coastline with 12 significant ports and harbors. Five of these ports: Portland, Searsport, Eastport, Bucksport, and Bangor are well-suited to handle the requirement of most modern cargo vessels. The remaining ports serve local commercial fisherman and recreational activities. Over the last several years, there has been a decline in commercial marine traffic upstream of the Bucksport area.

9.2 Freight Transportation

The Penobscot River Corridor

The Penobscot River has played a key role in shaping the development of central and eastern Maine. Beginning in the late 1700s, the River was used to provide transportation to the region, to power sawmills, and to float and boom logs used in the 1800s in the lumber and ship-building industries. The River was later used to generate power and support pulp and paper mills, as well as other industries. The importance of the River to the economy of the region has declined in recent years as the movement of fuel, raw materials and products have moved away from Maine's coast and inland rivers to trucks, rail lines, and pipelines.

The Penobscot River corridor extends from Searsport to Bangor on the west side of the river, and from Verona Island to Brewer on the east side. The corridor includes several highways, the Penobscot River, the Bangor International Airport (BGR), two rail lines, and commercial port facilities at Searsport, Bucksport, and Brewer. The Corridor also includes facilities such as the Maritimes and Northeast pipeline, which crosses the Penobscot River at Orrington. The Penobscot River carries a variety of freight, passenger and recreational vessels.

The Western Penobscot Corridor highways include U.S. Route 1A in Bangor extending to Stockton Springs, U.S. Route 202 in Bangor extending (and parallel to U.S. Route 1A) to U.S. Route 1A in Hampden, and U.S. Route 1 in Searsport extending to the Penobscot Narrows Bridge between Prospect and Verona. These roads are all two-lane rural highways, except for U.S. Route 202 in Hampden, which is a two-lane limited-access highway and functions as a bypass around Hampden for vehicular traffic. The Eastern Penobscot Corridor highway routes include U.S. Route 1 in Searsport extending north across the Penobscot Narrows Bridge to Verona Island and Bucksport, then north along Route 15 to Brewer and Bangor. Route 46 intersects with U.S. Route 1/Route 15 in Bucksport and provides an alternative connection to Route 1A in Holden and on to northern Hancock and Washington Counties.

Pilotage is required in both the Penobscot Bay and Penobscot River for foreign vessels and U.S. vessels under register in the foreign trade, with a draft of nine feet or more. Large vessels bound for upriver usually need a tug to assist in making the turns and in docking. Five tugs are available in Belfast for such assistance. The controlling depth in the marked channel is 13 feet between Winterport and Bangor. The head of navigation for commercial vessels is immediately downstream of the Joshua Chamberlain Bridge, while smaller recreational vessels can travel to a point about one mile upstream of the Penobscot Bridge. Ice impedes, but usually does not prevent, navigation above Winterport during the winter months. The river is kept free of ice to a point just upstream of the I-395 Veterans Remembrance Bridge by a Coast Guard icebreaker.

Although there has been minimal commercial marine transportation north of Bucksport, other than occasional asphalt and petroleum barge shipments, Cianbro Constructors' manufacturing of prefabricated components of industrial structures in Brewer has increased demand for water transportation on the Penobscot River. These components are shipped on the Penobscot River by barge at a deep water facility in Brewer.

9.3 Marine Ports

The State of Maine's three ports of Eastport, Portland and Searsport have shown steady, consistent growth. The ports collectively handle over 1.5 million tons of dry cargo. Additionally, Portland and Searsport also handle roughly 125 million barrels of petroleum products.

The Port of Eastport sits at the mouth of the Bay of Fundy and is the east coast's deepest shipping port, providing easy access to Eastern Canadian markets. The Estes Head Cargo Terminal can accommodate ships of 900 feet in Berth A and up to 550 feet in Berth B. Berth B is also an excellent berth for barges. The 55-acre site has several open storage areas, three 20,000 square foot, drive-thru warehouses, and one 43,000 square foot warehouse. Approach depths to this pier are in excess of 100 feet and the mean low water depth is 64 feet. The Eastport Breakwater Terminal has berthing for a vessel up to 700 ft. An equipment maintenance shop, the Eastport Port Authority office, US Customs, and Coast Station. The downtown Fish Pier berths the Port's two tugboats on the North side, and has slips for transient boats on the South side. Approach depths to the Breakwater are over 100 feet and the mean low water depth is 42 feet. The Breakwater is also used by the aquaculture industry, commercial fishermen, and recreational boaters and fishermen.

The Port of Portland is the largest container seaport in the state closest to Europe. The cargo and passenger terminals are centrally located on the waterfront with easy access to air, rail and road based freight forwarding services. Portland's nine terminals (Table 9.1) are capable of accepting all types of cargo, including petroleum, bulk, break-bulk, project and containerized commodities. Recently Eimskip built its northeast facility in Portland, helping to solidify the Portland International Marine Terminal as the container shipping hub for the State of Maine. Portland is participating in the New England Marine Highway Project (NEMHP), a short-sea shipping initiative to design, build and operate a containerized Articulated Tug Barge (ATB) along the M-95 Marine Highway servicing ports from Portland to New York/New Jersey.

Terminal Name	Primary Cargo Service
Merrill	Bulk, Break Bulk, Project
Sprague Energy	Petroleum
Mobil	Petroleum
Global	Petroleum
Citgo/Turner's Island	Petroleum, Bulk, Break Bulk
International Marine Terminal	Containerized, Project
Portland Pipeline Pier #1	Petroleum
Gulf Oil	Petroleum
Portland Pipeline Pier #1	Petroleum

The Port of Searsport is an intermodal distribution center that serves coastal Maine and inland areas between Bangor and Augusta. The Port of Searsport has become a major shipping destination for wind energy developers with projects across the region. The Dry Cargo Pier has with two berths which can both accommodate vessels of 800 feet. Dry cargo commodities handled at the Port include minerals (salt),

cement clinker, chemicals, fertilizer, aggregate, agricultural products, gypsum, iron oxide, and copper slag. The Liquid Cargo Pier is a multipurpose hose platform with two berths, one which can accommodate a vessel of 700 feet and another of 500 feet. Liquid cargo commodities handled at the Port include heating oil, gasoline, diesel fuel, bio fuel, petroleum products, and kaolin. There are several storage areas, which include a 1.6 million barrel active tank, truck and rail loading racks, 5 paved storage pads, 90,000 square feet of warehousing, truck and rail access and more than 70 acres of land that is available for further development.

Sprague Energy Corporation owns and operates the liquid-bulk pier used to ship and receive petroleum products, logs, caustic soda, and dry bulk commodities that include coke, coal, salt, iron oxide, gypsum rock, cement clinker, and silica sand. Bunkering and fueling of vessels is also available at this pier. The dedicated dry bulk pier is located a mile and a half east of the Mack Point Marine Intermodal Cargo Terminal and is operated by Sprague Energy Corporation and Irving Oil Corporation.

The Port has recently undergone a major reconstruction effort positioning it to effectively serve the needs of shippers moving product both into and out of Maine, and through the onsite rail yard of the Central Maine and Quebec Railway (CMQ), to provide service within the United States and Canada. The rail is currently handling approximately 3,000 cars per quarter and can support 286,000 pounds including the railcar. The rail infrastructure is in need of rehabilitation and expansion, which will be completed as part of a project funded through a TIGER grant awarded to MaineDOT in 2015. The improvements planned include installation of 8 new turnouts as well as 18,000 linear feet of new rail.

An existing fuel oil pipeline runs from the Searsport terminal through Bangor to the Loring Commerce Centre in Limestone. The 200-mile long pipeline was decommissioned in 1994 and a portion of the corridor is now used for natural gas transmission by Bangor Natural Gas, which purchased the rights to the pipeline in 2012.

Improvements since 2012 include a new Liebherr mobile harbor crane that is used to move bulk materials including salt, petcoke, kaolin, and wind turbine components. Maintenance dredging has also been performed at the liquid cargo pier and future dredging is anticipated. Plans are also under development for additional pier structures that would support the construction of off-shore wind turbines.

A \$3 million dredging project to dig out the existing shipping channel and ship turning area and a \$6.4 million upgrade to the Port is planned for 2018 and 2019. The upgrade to the piers at Mack Point will be completed in two phases. The initial work to expand the fuel dock at Sprague Energy will be funded from fees paid by docking ships and construction of a crane platform next to the fuel dock, currently in the engineering phase, will be paid for separately. The construction will depend on whether Aqua Ventus, an offshore wind pilot project to collect data for a future floating wind farm that developers hope to locate offshore in the Gulf of Maine moves forward as planned. If so, two 6-megawatt wind turbines will be floated downriver in pieces from Hampden and assembled in Searsport at Mack Point. After the floating turbines are erected, they will be towed out to the mooring location at the Monhegan Island site.

Foreign imports at the Port of Searsport in 2015 totaled \$567,636,823. Exports in 2015 were \$1,649,762. The value of container cargo imported into Port of Searsport represented 2.7% of all vessel imports, \$15,296,985 versus \$567,636,823. The top countries sending goods to Port of Searsport were Canada, Denmark, Russia, China and Italy and the top countries receiving goods were Turkey, Japan, India and Sweden.

Local Facilities

Bangor Harbor is a United States port of entry about 30 miles upriver from Penobscot Bay. It is owned by the City of Bangor and open through the fresh water boating season from mid-May until mid-October.

In 2015, foreign imports to Bangor Harbor were \$4,332,023 and exports were \$2,916,798. The value of container cargo imported into Bangor Harbor represented 0.8% of all vessel imports.

Exxon-Mobil Oil Corporation maintains a privately-owned petroleum facility located in Bangor. The facility includes an earth-filled timber crib bulkhead with a gravel deck approximately 30 feet wide and 40 feet long, nine storage tanks, two tanks for storing additives and a single-story building used as an office and warehouse. The Exxon-Mobil facility receives its gasoline, heating oil, diesel, and kerosene via a pipeline from South Portland and, while maintaining the capability to accommodate barges as a contingency measure, seldom uses its pier for shipping or receiving petroleum products.

Pike Industries is a privately owned liquid asphalt supply facility located in Hermon. The facility includes one 700 foot pier, seven medium sized storage tanks, office, and boiler building. The storage tanks are used to store liquid asphalt, a petroleum product used in the production of highway paving. Pike Industries receives its asphalt products via barge.

Webber Energy Fuels operates a privately owned petroleum facility located in Bangor. The facility includes a steel and concrete dock 30 feet wide by 40 feet long, 11 storage tanks and an office building. Webber receives the majority of its petroleum products via pipeline originating in South Portland. Fuel is occasionally delivered by barge to the Bangor Webber facility.

Cold Brook Energy is a privately-owned petroleum facility located in Hampden that includes a 20' by 30' dock and nine storage tanks. Cold Brook Energy receives its diesel fuel, heating oil, and kerosene via pipeline from South Portland but maintains a docking facility for occasional barge deliveries.

Dead River Company operates a privately owned petroleum facility located in Brewer that includes a timber crib dock approximately 30 feet wide by 40 feet long, five storage tanks, and an office building. Dead River receives the majority of its heating oil, diesel fuel, and kerosene via truck originating from their Bucksport terminal facility. Dead River maintains a pier for the occasional barge delivery.

Cianbro's Eastern Manufacturing Facility features a deep water bulkhead that will accommodate large ocean-going barges for transporting 1,000 ton modules for industrial process plants. Cianbro is also constructing a smaller commercial dock system located immediately upriver of the deep water bulkhead which will be available to meet the marine shipping needs of other BACTS area businesses.

9.4 Intermodal Facilities

Intermodal connectivity is critical to the long-term success of shipping and handling cargo through Maine's ports. The two most critical modal connectors, highways and rail, provide avenues for moving freight to and from port terminals.

There are 18 FHWA-designated intermodal connectors in Maine. The only FHWA designated connector in the BACTS area is Bangor International Airport. However, there are a number of other terminals that have statewide and/or regional impact on transporting freight in the State. One such facility that has the greatest impact on the BACTS region is Mack Point at the Port of Searsport. In the past few years, Central Maine and Quebec Railroad (CMQ), which took over the former Montreal Maine and Atlantic line, has invested over \$22 million upgrading its tracks and infrastructure connecting Montreal to the port of Searsport. Since their first quarter of taking over in 2014, they have increased service from 3,000 carloads per quarter to over 7,000 carloads per quarter today.

9.5 Passenger Transportation

There are no passenger marine services in the BACTS area. However, recreational marine traffic is increasing due primarily to improved dockage facilities and increased mooring space. The present river depth of 11 feet at low water is adequate for most recreational vessels. Bangor and Brewer are both implementing waterfront redevelopment plans that are improving opportunities for recreational boating and passenger ferry opportunities.

The cities of Bangor and Brewer are at the head of navigation of the Penobscot River. The deepest draft ordinarily trading to Bangor is about 16 feet. Three fixed highway bridges and a railroad swing bridge connect Bangor with Brewer. The first bridge has a clearance of 74 feet and the second has a clearance of 22 feet. There is no navigation above the third bridge. The river between the second and third bridge is used only to moor small craft.

Bangor Landing is owned by the City of Bangor and open through the fresh water boating season from mid-May until mid-October. It is located at river front park immediately downstream of the Joshua Chamberlain Bridge. The landing offers two public docks for recreational vehicles and three floating docks with steel ramps. Water and power are available, as are pump-out services. Docks can handle private vessels of virtually all sizes, although larger vessels are required to provide advance of arrival. A float replacement and expansion project on the Bangor waterfront is scheduled in the MaineDOT workplan for 2018-2019.

Turtle Head Marina off Route 1A in Hampden has two public boat launch ramps for recreational vessels and a marina facility, which is leased to a private operator, Hamlin Marina. Hamlin Marina on the Penobscot River provides seasonal dockage. Dock rental is limited and reserved for customers who purchase boats at Hamlin's Marina, but mooring facilities are available to the general public.

The Orrington Public Boat Landing is a publicly owned ramp located off an old section of State Route 15 in South Orrington. The facility provides parking for vehicles and boat trailers.

9.6 Recommendations

Maine's seaports are in good condition with more than \$80 million in State and Federal funds invested over the last eight years. Projected growth will require an additional \$120 million for necessary investments in areas of industrial infrastructure, intermodal connections, cruise ship terminals, and municipal fishing and recreational facilities. The Federal Maritime Commission projects an annual rate of growth around 5 percent for containerized shipments to East Coast ports; the marine route from Portland to New York/New Jersey was included in America's Marine Highway Program; and cruise ship calls increased 6% in 2016.

- Encourage improved mobility and safety on U.S. Route 1A (from the Port of Searsport to the greater Bangor area) and Route 15 (from Brewer to Bucksport) including access management, constructing passing lanes, reducing level grade crossings and improving road shoulders to facilitate more efficient movement of goods and people.
- Promote and support efforts to encourage deep draft vessel traffic and channel improvements on the Penobscot River, such as dredging the Penobscot River.
- Encourage MDOT to perform a feasibility study on the potential for an intermodal facility at the Bangor/Brewer waterfront.

- Support investment in Maine’s industrial ports with emphasis on waterfront infrastructure, intermodal connections, rail connectivity, upland storage facilities, and short sea shipping.

Resources:

2016 Trade and Transportation Overview:

<http://www.mitc.com/wp-content/uploads/2014/07/Trade-and-Transportation-Overview-2016.pdf>

Report Card for Maine’s Infrastructure 2016: https://www.infrastructurereportcard.org/wp-content/uploads/2016/10/Maine-Report_Card_final_booklet.pdf

<https://www.ustradenumbers.com/ports/port/port-of-bangor-maine/>
http://www.worldportsource.com/trade/USA_ME_Bangor_Harbor_1788.php

August 3, 2017 Intermodal Commodity Studies:

http://maine.gov/mdot/ofbs/docs/SearsportIntermodalCommodityReport_FINAL_20170803.pdf

http://maine.gov/mdot/ofbs/docs/EastportIntermodalCommodityReport_FINAL_20170803.pdf

FHWA’s Roundtable on the Freight Economy in Bangor, Maine:

<https://www.fhwa.dot.gov/freighteconomy/bangor.cfm>

2015 Freight Facts and Figures:

https://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/FFF_complete.pdf

June 2011 Multi-Modal Corridor Management Plan for the Penobscot River Corridor:

<http://www.hpcme.org/transportation/needs/penobscotriver/PenobscotRiverCorridorPlan070811.pdf>