



Portland Area Mainline Needs Assessment

DRAFT

Alternative 6 – Public Transportation: New or Expanded Commuter Rail Service

HNTB Corporation
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6.1 Overview

The Downeaster, operated by Amtrak and managed by the Northern New England Passenger Rail Authority, provides commuter rail service from Portland south to Boston and from Portland to Freeport/Brunswick and possible future points north. Additionally, a possible commuter rail service from Portland to Lewiston/Auburn and up to Montreal is currently being studied by the Northern New England Passenger Rail Authority (NNEPRA) and the Maine Department of Transportation (MaineDOT). Service to the west via the Mountain Division was previously evaluated by MaineDOT. In this alternative, the rail system will be evaluated to determine the effects of:

- Increases in commuter rail ridership with practicable system improvements including more frequent service (reduced headways), new stops/routes, more available parking, and faster service for each of the three commuter rail services identified above; and
- Change in vehicular demand on the Maine Turnpike in the Portland Area.

6.2 Key Assumptions

This alternative involves an examination of existing and planned commuter rail service, and discussions with program directors to determine practicable improvements to the commuter rail services. Descriptions of the key assumptions and methods follow.

6.2.1 Planned Improvements to the Downeaster

Currently, the Downeaster has five daily trips from Portland to Boston’s North Station during weekdays. There are three daily trips from Portland to Freeport/Brunswick during weekdays. Fares are approximately \$50 round trip for Portland to Boston. Increase in number of passengers using commuter rail in the future was estimated based on current ridership numbers¹, planned rail improvements, and improved travel times that would result based on the planned rail improvements. It was assumed that any decrease in travel times from Portland to Boston would result in a corresponding increase in ridership. Downeaster improvements assumed in this alternative based on information provided by NNEPRA² were:

- Reduction in travel times between Boston and Portland of 15 minutes;
- Extension of the siding in Wells and adding a second platform;
- Addition of a second boarding track with a center island platform in Portland;
- Completion of the Royal Siding Project by end of 2018, enabling all 5 Downeaster round trips to begin and end in Brunswick (only 3 do currently);
- Additional parking at Portland Transportation Center in conjunction with MaineDOT and Concord Coach Lines; and
- Additional peak hour train northbound from Wells into Portland then Freeport/Brunswick. Corresponding train southbound during peak period.

¹ Northern New England Passenger Rail Authority, *Annual Report, Fiscal Year 2017, July 1, 2016 – June 30, 2017* (NNEPRA, 2017).

² March 1, 2018 and March 5, 2018 emails from Patricia Quinn/NNEPRA to PAM Study team re: Downeaster improvements and ridership/schedule details.

6.2.2 Ridership forecasts for Potential New Commuter Rail Routes

Ridership forecasts from MaineDOT's 2011 Intercity Feasibility Study³ were used to forecast future peak hour ridership from Portland to Lewiston/Auburn region. MaineDOT's 2007 Mountain Division Rail Study⁴ ridership forecasts were used to determine future peak hour ridership to Standish and Windham along the Mountain Division line.

6.2.3 Rail Infrastructure

It was assumed that commuter rail ridership would not be limited by infrastructure deficits such as available trains, tracks, parking, etc. Capital improvement costs identified by NNEPRA and MaineDOT Rail Studies were included in the Capital cost estimate for this alternative. Parking is generally at capacity at the Portland Transportation Center. Parking will need to be sizably extended in the future to accommodate additional transit demand identified in this alternative, either through surface lot or parking structure.

6.3 Estimate of Increased Commuter Rail Ridership

6.3.1 Downeaster

Potential increases in commuter rail ridership were estimated for the existing commuter rail service – Downeaster – as well as two potential commuter rail lines – one to Lewiston/Auburn, and the Mountain Division line to Standish and point west.

Currently, the Downeaster operates five train trips that travel from Portland to Boston. Three of those trips extend to Freeport and Brunswick. To allow more trips north of Portland, the Royal Junction Siding project, which is under construction, will build an additional track that will allow two trains to pass. By the end of 2018, it is assumed that all five train trips will extend to Freeport and Brunswick.

Funding has also been secured for the rehabilitation of the Rockingham Siding located in the town of Newfields, NH. Rehabilitation of this approximately two-mile section of track will increase speeds and improve train operations for the Downeaster, which is expected to increase ridership to Boston. It is expected that the speed could be lowered to from its current 2 hours, 30-minute travel time to 2 hours, 15 minutes – an approximate 11% reduction in travel time. These improved travel times result in similar travel time for rail as to the intercity bus. No additional peak hour trains between Portland and Boston were assumed, as this was not identified by NNEPRA.

It was assumed that the reduction in travel time would result in a corresponding increase in commuter rail ridership. Table 6-1 identifies current, future forecasted, and additional ridership forecasts based on improved travel times.

As shown in Table 6-1, projected 2040 Downeaster summer weekday ridership would increase from approximately 1,760 riders to 1,960 or 11%. Peak hour ridership would increase from approximately 201

³ Maine Department of Transportation, *Portland to Lewiston/Auburn & Montreal Intercity Passenger Rail Feasibility Study* (MaineDOT, August 2011).

⁴ Maine Department of Transportation, *Mountain Rail Division Rail Study, Report on Potential Uses and Implementation Costs* (MaineDOT, December 2007).

to 223 riders. Using Portland area US Census data, this would result in an estimated additional 15 peak hour vehicles removed from the Maine Turnpike between Exits 44 and 53.

6.3.2 Portland to Lewiston/Auburn

The 2011 Intercity Feasibility Study⁵ estimated that up to 46,000 trips per year (2015) would use transit to commute from the Lewiston/Auburn area to Portland and points south. This assumed three roundtrip trails from Portland to Lewiston/Auburn each weekday. By 2040, this would result in almost 400 weekday riders and approximately 60 peak hour riders each way from Portland to Lewiston/Auburn. Table 6-1 provides 2040 daily and peak hour ridership estimates from Portland to Lewiston/Auburn.

Using American Commuting Survey data from the US Census⁶, this would result in an estimated five peak hour vehicles removed from the Maine Turnpike between Exits 44 and 53. This is due to the vast majority of trips being destined to/from Portland Transportation Center, resulting in minimal trip reduction on the Maine Turnpike.

6.3.3 Mountain Division to Standish/Windham

The 2007 Mountain Rail Division Study estimated that approximately 90 trips per peak period could use transit to commute from Standish and Windham along the Mountain Rail line to Portland. This would increase to approximately 150 trips by 2040. Table 6-1 provides 2040 daily and peak hour ridership estimates from Standish/Windham to Portland.

From the American Commuting Survey data from the US Census, this would result in an estimated six peak hour vehicles removed from the Maine Turnpike between Exits 44 and 53. Again, this is due to the vast majority of trips being destined to/from Portland, resulting in minimal trip reductions on the Maine Turnpike.

Table 6-1: Estimates of 2040 Annual, Daily, and Peak Hour Commuter Rail Ridership

	Estimated 2040 Annual Ridership ⁷	Estimated 2040 Summer Weekday Ridership	Estimated 2040 Summer Peak Hour Ridership
Amtrak Downeaster ⁸ w/o Improvements	1,076,400	1,765	201
Amtrak Downeaster with Improvements (<i>North Station to Freeport/Brunswick</i>)	1,196,000	1,960	223
Portland to Lewiston/Auburn	95,900	390	63
Mountain Division	81,750	330	147

⁵ Ibid, Footnote 3.

⁶ <https://www.census.gov/data/tables/time-series/demo/commuting/commuting-flows.html>.

⁷ Assumes 3% per year increase.

⁸ North Station/Boston to Freeport/Brunswick.

6.4 Capital and Operating Costs

Capital Costs for the new/expanded Commuter Rail Service would be approximately \$208 million in 2018 dollars and include the following elements:

- Cost to rehabilitate the Rockingham Siding to improve travel times - \$1.6 million;
- Cost to build Royal Junction Siding to improve travel times - \$9.4 million;
- Cost to build the Lewiston/Auburn commuter rail line - \$100-\$250 million;
- Cost to build the Mountain Division commuter rail line - \$42 million; and
- Costs to add another train to Brunswick/Freeport - \$2 million.

Operation and Maintenance Costs for the new/expanded Commuter Rail Service would be approximately \$17.2 million and include the following elements:

- Additional operating and maintenance costs for adding another train trip to Brunswick/ Freeport – \$7.3 million;
- Additional operating and maintenance costs for a Lewiston/Auburn commuter rail line – \$5.9 million; and
- Additional operating and maintenance costs for a Mountain Division commuter rail line – \$4 million.

6.5 Findings

New and expanded commuter rail service as defined for this alternative yielded a substantial increase in rail ridership. This is summarized by each commuter rail line as follows:

- Downeaster/Boston to Freeport/Brunswick – approximately 120,000 additional riders per year;
- Portland to Lewiston/Auburn – approximately 100,000 riders per year; and
- Mountain Division – approximately 80,000 riders per year.

The estimated number of vehicles that could be reduced from the peak hour traffic on the Maine Turnpike in the Portland area with new and expanded commuter rail service is 26 – less than 1 % of the peak hour traffic between Exits 46 and 47. With this reduction, the volume to capacity ratio would still be greater than one in 2040 (1.36). Therefore, this alternative does not address identified capacity issues on the Maine Turnpike.

This alternative was evaluated against several Measures of Effectiveness (MOEs) which are summarized in the Alternatives Evaluation Matrix, dated April 12, 2018. The key findings from that matrix for this alternative are as follows:

6.5.1 Key Benefits

The key benefits of Alternative 6 – Commuter Rail Service are the following:

- 0.5% reduction in regional vehicle mile traveled (VMT);
- 0.3% reduction in regional vehicle hours traveled (VHT);

- 23% increase in transit ridership; and
- Reduction in NO_x (-0.5%) and HC (-0.4%), improving air quality.

6.5.2 Key Impacts

The key impacts and challenges of Alternative 6 – Commuter Rail Service are the following:

- A volume to capacity ratio (v/c) that is still greater than one (1.36) on the Maine Turnpike;
- Potential wetland impacts; and
- Potential for lost revenue on Maine Turnpike.