



Portland Area Mainline Needs Assessment



DRAFT

Alternative 5b – Public Transportation: New or Improved Local Bus Service

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5b.1 Overview

This alternative assesses the potential for new or improved local bus services to reduce demands on the Maine Turnpike between Exits 44 and 53. Local bus providers included in this alternative are Greater Portland METRO and City of South Portland Bus Service. In this alternative, these bus systems were evaluated to determine the effects of:

- Increases in local bus system ridership with practicable system improvements including more frequent service (reduced bus headways), and implementation of a bus rapid transit type system (reduced bus travel times) along key corridors; and
- Change in vehicular demand on the Maine Turnpike in the Portland Area.

5b.2 Approach

This alternative involved an examination of existing and planned bus service, specifically the proposed local transit network assumed in the Portland Area Comprehensive Transportation System (PACTS) travel demand model for 2040. The Metro contains eight routes (shown in Figure 5b- 1) in the Greater Portland Area. Rides range in price from \$1 - \$1.50 one-way, with 10-punch, day, and monthly pass options. In addition to these existing Metro Routes, two new routes are planned for Augusta in 2018: the Husky Line with service to Gorham, University of Southern Maine (USM) campuses, and downtown Portland; as well as the Blue Line with service from Westbrook to the Maine Mall Area.

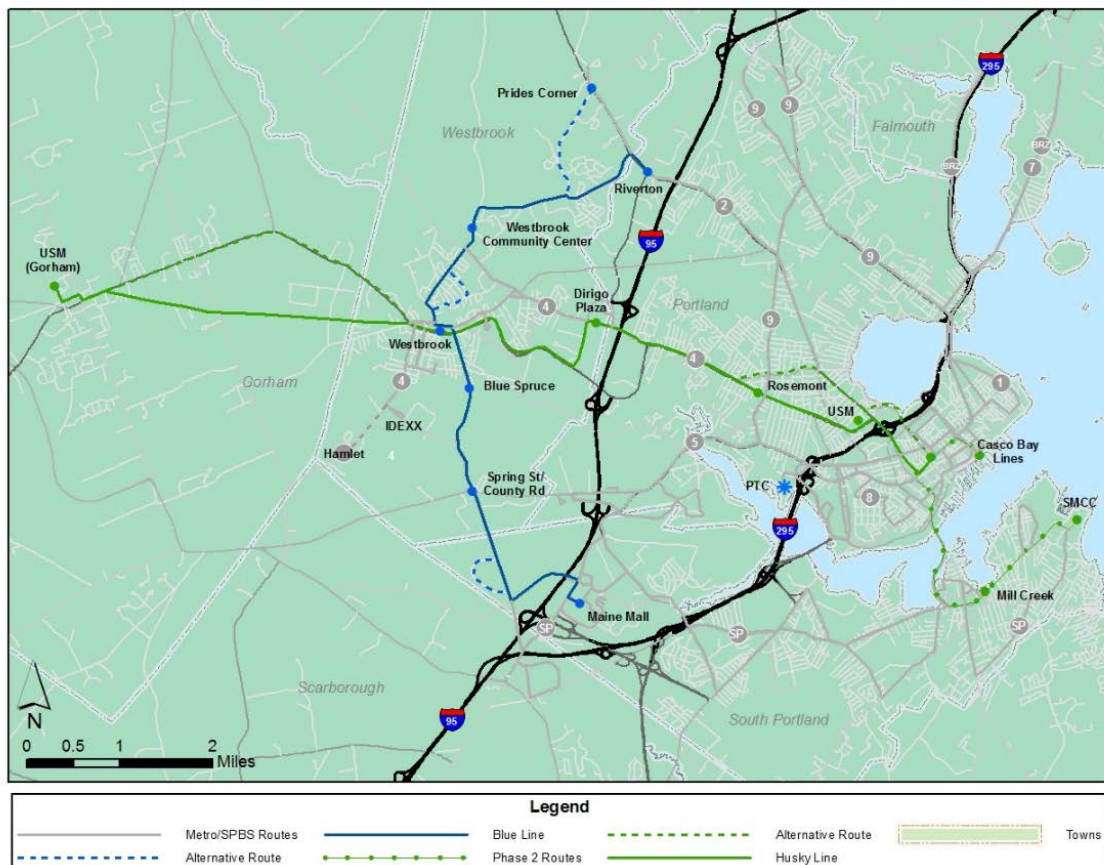


Figure 5b-1: Greater Portland METRO Routes

There are three bus routes set by the City of South Portland Bus Service as shown in Figure 5b-2. Routes begin to the west from the Mall Area, continuing east to Southern Maine Community College (SMCC), and to the north onto the Portland Peninsula. Full priced fares are \$1.50 with discounts and options for 10-ride and monthly passes.

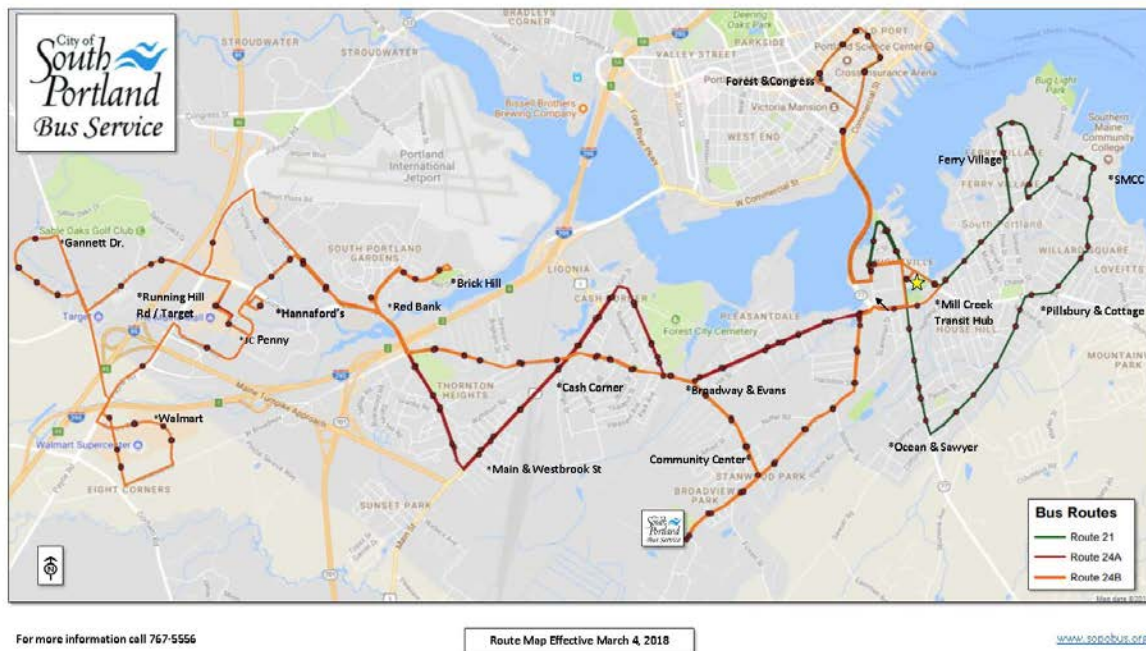


Figure 5b-2: City of South Portland Bus Service Routes

While the Portland Metro and South Portland Bus Service both provide transfer opportunities, no local transit routes use the Maine Turnpike between Exit 44 and 53.

Bus ridership is dependent on multiple factors, including travel cost, travel time, service, frequency, convenience, the availability of parking at the destination, and other personal factors such as vehicle availability and driving capacity. Discussions with local transit providers helped identify practicable system improvements for these local bus services. These were assimilated into the PACTS travel demand model used to forecast local bus ridership. The model provided transit ridership forecasts for all local and regional bus providers, as well as measures such as vehicle-miles traveled (VMT) and vehicle-hours traveled (VHT).

Three key service and operations assumptions were made for the assessment of Alternative 5b, as described in the sections below.

5b.2.1 Increased Bus Frequency

Currently, headways for local bus service range from 15 to 60 minutes during peak operating periods. It was assumed for this alternative that headways along key existing and planned corridors would be

reduced to 15 minutes¹. This increased bus frequency resulted in an increased number of passenger trips as forecasted by the PACTS travel demand model. Increased bus passenger trips were then converted to a reduction in vehicle trips based on the PACTS mode share model.

5b.2.2 Bus Rapid Transit Transponder System

To improve the efficiency of the local bus service, the implementation of a Bus Rapid Transit (BRT) type transponder system was assumed. A BRT system provides reduced travel times for local bus systems because the transponder gives buses priority at signalized intersections. It was assumed that the BRT transponder system would provide a ten percent reduction in travel times for buses along key corridors, a reduction consistent with similar transponder type systems at signalized intersections.

5b.2.3 Transit Infrastructure

In order to estimate the maximum benefit of this alternative, it was assumed that local bus service would grow unconstrained and not be limited by infrastructure deficits such as available buses, parking availability, or by failure of implementation of a BRT system. Modernization of the Metro fare collection system is planned.

5b.3 Estimate of Increased Local and Regional Bus Ridership

As previously discussed, this analysis was conducted assuming two new planned Portland bus routes, increased local bus frequency, and reduced travel times with bus rapid transponders. The combination of these improvements would yield a substantial regional increase in bus ridership of 2,590 new transit trips per day.

However, this substantial increase in ridership would reduce to three trips being removed from the Turnpike during the PM Peak Hour from Exit 46-47. This is because the 2,590 new daily trips would be reduced to a peak hour – approximately 410 as indicated by the model – and further reduced to those users who would be removed from the Turnpike. In terms of local and regional transit, the majority of public transit users would alternately travel on either I-295 and other east-west arterials, with trips originating and culminating in or around the densely populated and employed downtown Portland area.

It should be noted, however, that this alternative is not impeded by legal or policy driven obstacles. The improvements could be implemented within a relatively short time frame; however, there are currently no funding sources for improvements beyond the two new Metro Bus Routes.

5b.4 Capital and Operating Costs

The capital costs to add buses to accommodate 15 minute headways and a bus rapid transit transponder system was estimated to be approximately \$7 million in 2017 dollars.

With these additional buses and the transponder system, the additional operating and maintenance costs for this alternative would be \$2 million per year.

¹ Local Transit Meeting, 26 February 2018, Greater Portland Council of Governments

5b.5 Findings

Improvements to local and regional bus service as defined for this alternative yielded a substantial regional increase in bus ridership of 2,590 new transit trips per day.

Based on this data, the estimated number of vehicles that could be reduced from the peak hour traffic on the Maine Turnpike in the Portland area is approximately 3 vehicles. With this reduction, the volume to capacity ratio would still be greater than one in 2040 (1.37). 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:

5b.5.1 Key Benefits

The key benefits of Alternative 5 – Local Bus Service are the following:

- 30% increase in transit ridership;
- No potential wetland impacts;
- No legal or policy obstacles to implementation; and
- Can be implemented within a short timeframe.

5b.5.2 Key Impacts

The key impacts and challenges of Alternative 5b – Local Bus Service are the following:

- A volume to capacity ratio (v/c) that is still greater than one (1.37) on the Maine Turnpike; and
- Could reduce toll revenue.