



## Portland Area Mainline Needs Assessment



**DRAFT**

# Alternative 5a – Public Transportation: New or Improved Regional Bus Service

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## 5a.1 Overview

This alternative assesses the potential for new or improved regional bus services to reduce demands on the Maine Turnpike between Exits 44 and 53. Regional providers included in this alternative are the ZOOM Bus (Biddeford - Portland) and the METRO Breez (Portland - Brunswick). In this alternative, these bus systems were evaluated to determine the effects of:

- Increases in regional 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.

## 5a.2 Approach



This alternative involved an examination of existing and planned bus service, specifically the proposed regional transit network assumed in the Portland Area Comprehensive Transportation System (PACTS) travel demand model for 2040. Figure 5a.1 shows the current existing Metro Breez Express Route. Stops are limited to the Portland Transportation Center, Monument Square, Yarmouth Town Hall, Downtown Freeport, and the Brunswick Train Station. The stops have connections to other local and regional transit options including the Metro Bus, Bowdoin College, proximity to the Yarmouth Park & Ride, and Amtrak/Concord Trailways. Ridership costs range from \$1.50 to \$3 per person in each direction with discounts for punch cards and reduced monthly passes.

The Shuttle-Bus ZOOM has two routes that operate within the PACTS region as shown in Figure 5a-2: the Intercity to Portland and the Zoom Turnpike Express. The Intercity to Portland route begins in Biddeford and has routes that follow the coast north through Saco, Old Orchard Beach, Scarborough, and South Portland to Portland with several downtown stops. The Zoom Turnpike Express picks up from Park & Ride lots at Exit 32 (Biddeford) and Exit 36 (Saco) with stops in Downtown Portland. Ridership costs for the Shuttle-Bus ZOOM are

\$1.50 each way with 10-punch, monthly, and quarterly commuter cards.

It is important to note that neither the Metro Breez nor the Shuttle-Bus ZOOM have regional transit routes that use the Maine Turnpike between Exit 44 and Exit 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 regional transit providers helped identify practicable system improvements for these regional bus services. These were assimilated into the PACTS travel demand model used to forecast regional 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 5a, as described in the sections below.

#### 5a.2.1 Increased Bus Frequency

It was assumed for this alternative that headways along key existing and planned corridors would be reduced to include at least one additional bus during the peak hours. 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.

#### 5a.2.2 Bus Rapid Transit Transponder System

To improve the efficiency of the regional bus service, the implementation of a Bus Rapid Transit (BRT) type transponder system was assumed in the downtown Portland Area. A BRT system provides reduced travel times for regional 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.

#### 5a.2.3 Transit Infrastructure

In order to estimate the maximum benefit of this alternative, it was assumed that regional 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. Parking will need to be sizably extended in the future to accommodate additional transit demand identified in this alternative, either through a surface lot to the east or a new parking structure.

#### 5a.3 Estimate of Increased Regional Bus Ridership

As previously discussed, this analysis was conducted assuming increased regional peak hour 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 720 new daily transit trips.

However, this substantial increase in ridership would reduce to one trip removed from the Turnpike during the PM Peak Hour from Exit 46-47. This is because the 720 new daily trips would be reduced to a peak hour – approximately 90 (as indicated by the PACTs model), and further reduced to those users who would be removed from the Turnpike. In terms of 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 that this increased number of trips does provide a reduction in vehicle hours traveled (VHT) and vehicle miles traveled (VMT) throughout the region, and 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.

#### 5a.4 Capital and Operating Costs

The capital costs to add buses to accommodate increased peak hour headways and a bus rapid transit transponder system was estimated to be approximately \$3 million in 2017 dollars.

With these additional buses and the transponder system, the additional operating and maintenance costs for this alternative would be approximately \$1.7 million per year.

#### 5a.5 Findings

Improvements to regional bus service as defined for this alternative yielded a substantial regional increase in bus ridership of 720 new transit trips per day.

Because the majority of these trips center around I-295, the estimated number of vehicles that could be reduced from the peak hour traffic on the Maine Turnpike in the Portland area is only estimated to be 1 vehicle. 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:

##### 5a.5.1 Key Benefits

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

- 0.1% reduction in regional vehicle hours traveled (VHT);
- 0.2% reduction in regional vehicle miles traveled (VMT);
- 0.2 % reduction in vehicle emission pollutants;
- 9% increase in transit ridership;
- No potential wetland impacts;
- No legal or policy obstacles to implementation; and
- Can be implemented within a short timeframe.

##### 5a.5.2 Key Impacts

The key impacts and challenges of Alternative 5 – 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.