



Portland Area Mainline Needs Assessment

DRAFT

Alternative 11 – Widening I-295 to Three Lanes in Each Direction with Tolls

Table of Contents

11.1 Overview 11-1

11.2 Key Assumptions 11-2

11.2.1 Toll Rate Structure 11-2

11.2.2 Traffic Impact Analysis 11-2

11.2.3 Traffic Impact Analysis Findings 11-2

11.3 Capital and Operating Costs..... 11-2

11.4 Findings 11-3

11.4.1 Key Benefits..... 11-3

11.4.2 Key Impacts 11-3

11.1 Overview

Roadway widening alternatives are typically construction alternatives that require a fair amount of capital investment, including right-of-way acquisition. They sizably increase the throughput capacity (number of vehicles that can travel) of the roadway.

As part of the Portland Area Mainline (PAM) Needs Assessment, the Study Team assessed the impacts of widening I-295 to three general purpose lanes in each direction from Exit 44 in Scarborough to Exit 11 in Falmouth and placing tolls on I-295. Figure 11-1 shows the project limits. The key components of this alternative would consist of:

- Widening I-295 for approximately 11 miles to provide a three-lane cross section in each direction;
- Reconstruction of 27 bridges including the Fore River Bridge and Tukey’s Bridge;
- Reconstruction of any side road underpasses and existing drainage structures not already designed for additional mainline lanes; and
- Construction of two tolling locations – at/near Fore River Bridge and at/near Tukey’s Bridge.



Figure 11-1: I-295 Widening with Tolling Project Limits

11.2 Key Assumptions

The analysis of this alternative followed a methodology that is based on engineering standards and practices. Factors in the analysis included forecast year, design hours, traffic growth, roadway capacity analysis, travel demand model, and traffic impact analysis.

11.2.1 Toll Rate Structure

The toll rate structure for placing tolls on I-295 was assumed to be an open barrier system. Because of the number and geometry of the existing interchanges on I-295 in the Portland area, it would be cost effective to consider two tolling points at the major bridges in Portland instead of at every entrance (like the Maine Turnpike in the Portland area). The drawback to this tolling structure is that some local trips on I-295 would not be tolled. A toll rate was set by calculating the weighted rate per mile on the Turnpike in the Portland area. This rate per mile was then applied to I-295. The resulting passenger vehicle toll for each tolling location was calculated to be \$1.10 for a passenger vehicle.

11.2.2 Traffic Impact Analysis

The Portland Area Comprehensive Transportation System (PACTS) regional travel demand model is an accepted tool that estimates the amount of traffic on the road as well as likely travel routes in the region based on socio-economic factors. The model provides information on travel by vehicles on all the roadways in the study area, providing information on vehicle-miles traveled (VMT) and vehicle-hours traveled (VHT).

The PACTS travel demand model was run with a widened I-295 with two tolling locations to determine the traffic impacts on the Portland area roadways for 2040. The traffic impacts identified included changes in traffic volumes on I-295 and key arterials, and changes in vehicle miles travelled (VMT) and vehicle hours travelled (VHT) for the Portland area. Traffic impact analysis results also provided the basis for estimating potential toll revenue that could be generated by tolling I-295 as identified.

11.2.3 Traffic Impact Analysis Findings

Widening I-295 through Greater Portland with two tolling locations would provide mixed transportation impact results. A summary of key transportation findings includes:

- Introduction of tolls on I-295 would result in a shifting of traffic to the Maine Turnpike as thru-traffic on I-295 shifted to the Maine Turnpike, even with notable congestion, to avoid the additional toll charge; and
- Increase in VMT and VHT as traffic seeks to avoid tolls on I-295.

11.3 Capital and Operating Costs

The capital costs to widen I-295 one additional lane in each direction with two tolling locations between Exits 44 on the Maine Turnpike and Exit 10 was estimated to be approximately \$246.6 million in 2018 dollars.

The widening of I-295 to three-lanes in each direction within the Study Area would increase the total number of lane miles to be maintained by approximately 22 miles. With these additional miles, the

additional operating and maintenance costs for this alternative would be \$800,000 based on current Maine Department of Transportation (MaineDOT) per mile operation and maintenance estimates.

11.4 Findings

Widening of I-295 to three general purpose lanes and tolling it was found to *increase* the traffic volumes on the Maine Turnpike. Under projected volumes from the travel demand model, the Maine Turnpike would be over capacity with this alternative in 2040 (1.47). 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:

11.4.1 Key Benefits

The key benefits of Alternative 11 – Widening I-295 with Tolls are the following:

- Additional Toll Revenue of \$17.8 million annually from I-295, and potential additional toll revenue on the Maine Turnpike from additional traffic on I-95; and
- Has a Benefit/Cost ratio of 1.2.

11.4.2 Key Impacts

The key impacts and challenges of Alternative 11 – Widening I-295 with Tolls are the following:

- An expected 6.8% increase in the number of crashes on the Turnpike;
- An additional peak hour demand of 378 vehicles on the Turnpike;
- An increase in the volume to capacity ratio (v/c) to 1.47 on the Maine Turnpike;
- 0.4% increase in regional vehicle miles traveled (VMT);
- 1.9% increase in regional vehicle hours traveled (VHT);
- 9 acre increase of impervious pavement in Urban Impaired Stream Watersheds;
- Potential wetland impacts;
- This alternative has no viable funding source;
- Obstacles to implementation – would require approval from the Federal Highway Administration;
- Timeframe to implement is unknown due to federal regulations restricting tolls on a roadway built with federal money; and
- Does not address Portland Area Mainline Needs Assessment Study Purpose.